

Indian Leap Pedestrian Bridge
Yantic St
Norwich
New London County
Connecticut

HAER No. CT-4

HAER
CONN,
6-NOR,
18-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington DC 20240

HAER
CONN,
6-NOR,
18-

MONOGRAPH
FOR
HISTORICAL AMERICAN ENGINEERING RECORD
INDIAN LEAP RECREATIONAL AREA
PEDESTRIAN BRIDGE
OVER
YANTIC RIVER
IN
NORWICH, CONNECTICUT
MAY 1979

PREPARED BY: C-E MAGUIRE, INC.

NEW BRITAIN, CONNECTICUT

HAER CT-4

INDEX

SUMMARY

GENERAL DESCRIPTION EXISTING BRIDGE

HISTORY AND DESCRIPTION OF BRIDGE

PART 1

SCOPE OF INSPECTION WORK

PART 2

SUMMARY OF INSPECTION FINDINGS

PART 3

LOCATION OF BRIDGE

APPENDIX A

SECTIONAL ELEVATION

APPENDIX B

HISTORIC AMERICAN ENGINEERING RECORD

Indian Leap Pedestrian Bridge

CT-4

Location: Spanning the Yantic River near Yantic Street Number One on the North to Indian Leap Recreational Area on the South.
Latitude : 41° 31' 45" N.
Longitude: 72° 05' 50" W.

Date of Construction: 1904

Designer and Builder: Presumed to have been designed by Berlin Construction Co.
Contractor was Berlin Construction Co., Berlin, Connecticut.

Original and Present Owner: City of Norwich, Connecticut.

Present Use: Pedestrian Bridge crossing the Yantic River approximately 5000 feet from where the Yantic River flows into the Thames River.

Significance: Relatively long pedestrian bridge using structural steel for particular era (1904).

Historian: Edward J. Dziewisz, May 1979.

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SUMMARY

Findings of the condition survey and structural analysis indicated that the pedestrian bridge over the Yantic River is in immediate need of repair or replacement.

Although repair of the existing bridge would preserve the historical value of the structure, it could be stated that the bridge has served out its useful life after seventy-five (75) years. The useful life of a bridge is normally considered to be in the order of fifty (50) years assuming reasonable maintenance. It should also be noted that additional repair work is anticipated in the future for those areas of the structure which do not presently require rehabilitation. Replacement of the existing bridge was determined to be the least expensive alternate and would require minimal future maintenance (assuming the use of weathering steel for a new structure). A new bridge is being designed which would be aesthetically pleasing and compatible with the surrounding area.

PART 1-HISTORY AND DESCRIPTION OF BRIDGE

HISTORY AND DESCRIPTION OF BRIDGE

On the 24 May 1904, the Committee on Public Works for the City of Norwich, Connecticut, submitted a report to the Court of Common Council of the City of Norwich. The Committee on Public Works consisted of N. B. Lewis, Duncan Gilman and James Harvey.

The Committee on Public Works report of 24 May 1904 also made reference to their report of 23 November 1903 that, for public convenience and necessity, a public walk be constructed in the area of the Falls, now known as the Norwich Falls.

The Public Works Committee also made a supplementary report to the effect that the Common Council considered the construction of bridges needed for the above-mentioned public walk.

The bridges needed to continue the public walk would span the Yantic River and the Central Vermont Railway and the New London Northern Railroad. The Railroad Companies executed a grant so that the City could build these bridges over and on their property. The land grants by the Railroad to the City consisted merely of an agreement that imposed no appreciable burden or incumbrance upon the City of Norwich.

It was also resolved that the use of this public walk could only be utilized after the completion and safety of these bridges for travel.

The Common Council meeting of 24 May 1904 ended with the acceptance of the Committee on Public Works report of 23 November 1903 and empowered the Mayor to execute for and in behalf of the City of Norwich all agreements between the Town of Norwich, City of Norwich and the Railroads.

When one considers that the useful life of a bridge is normally to be in the order of fifty (50) years, and that this pedestrian bridge is more than seventy (70) years old, it can safely be said that the "good old days" have certainly left us a fine legacy in engineering design and construction.

The existing pedestrian bridge over the Yantic River is a 140 ft. single span steel truss structure supported on stone masonry abutments. The width of the bridge, measured between the centerline of each truss, is approximately 8 ft. The usable walkway width, measured between bridge railings, is approximately 6'-9". The bridge was built in 1904.

Each steel truss (Warren Type) consists of eleven vertical members (double angles) which are spaced approximately 11'-8" on centers. In general, the upper and lower truss chords and end posts are built up members (tee shaped) consisting of a web plate with double angles riveted together. The diagonal members and some of the lower chord members consist of double angles. The truss members are riveted to large gusset plates at the upper and lower panel points. Steel floor

beams (8 in. deep rolled channels) are connected at the lower panel points and support four continuous longitudinal stringers consisting of 5 in. deep rolled channels and I-beams. The stringers support 3/4 inch plywood decking on 9½" wide x 1½" deep wood planking.

It will be noted that the construction of this pedestrian bridge followed the design of the existing railroad bridge nearby.

SCOPE OF INSPECTION WORK

During the month of August 1977, C-E MAGUIRE, INC. conducted a field inspection of the subject bridge. Included in this work was the measurement of truss members, floor beams, stringers, wind bracing, connections and other members required to determine the loading capacity of the structure.

The inspection included the following:

1. Visual and photographic inspection performed by qualified engineers (Registered Professional Engineers) to determine the condition of the structure. The inspection items included truss members (upper and lower chords, diagonal, etc.), stringers, floorbeams, bearings plates, bridge railings, bridge decks, stone masonry abutments, stairway and ramp structures at bridge approaches, etc.
2. All physical features of the bridge which have an effect on their structural integrity were thoroughly examined.
3. Field measurements using tapes and calipers to determine material size and thickness for structural analysis. (As-Built plans of the structure are not available).

4. Removal of bridge decking in several locations in the cooperation with City personnel for close visual and photographic inspection of wood planking, lower chord panel point connections, truss members, stringers and floor-beams.

SUMMARY OF INSPECTION FINDINGS

Although visual and photographic inspection indicate that the bridge may be in fair conditional overall, major structural members, however, are in need of repair or replacement. Several members of the structural steel superstructure have extensive loss of section due to severe atmospheric corrosion. The flange angles and lower areas of the web plates of many of the bottom chord members are in a highly corroded state and have completely rusted through. The lower chord members at all bearings have nearly completely rusted away and the rivets connecting these members to the gusset plates at the bearings are in a highly corroded state with many of the rivet heads missing. The gusset plates at the bearings are severely corroded and have rusted through above the lower chord connection.

In general, the upper chord, vertical and diagonal members appear to be in fair to good condition with light rust formation pitting the paint surface. Some of the vertical and diagonal members, however, show moderate to severe rusting at the lower panel point connections with the ends of several members nearly completely rusted away. Vertical truss members were measured and found to be out of plumb by two to three inches in each direction.

Close inspection of the floor beams, stringers, lateral bracings,

connection plates and lower panel point gusset plates was limited to what could be observed from under the bridge and to those areas where the wood decking was removed or was missing. Most of the floor beams and stringers appeared to be in fair condition, however, the ends of the stringers at the abutments were completely deteriorated, all members being completely rusted through or missing. Several of the stringers nearer to midspan were observed to have moderate loss of top flange section with flaking of flanged and webs. Closer inspection of the floor beams where the decking had been removed showed moderate to severe rusting at the connections. The bottom flange and lower portion of web of the floor beams at these locations were completely rusted away along with the connecting rivets.

The bottom lateral bracing angles were observed to be generally in fair condition. The lateral bracing connection plate, however, at the Southwest corner of the bridge was completely rusted through. The top lateral bracing angles, sway bracing and portal members appeared to be in good condition. Several of the top lateral struts were observed to be rusted through at the connection plates.

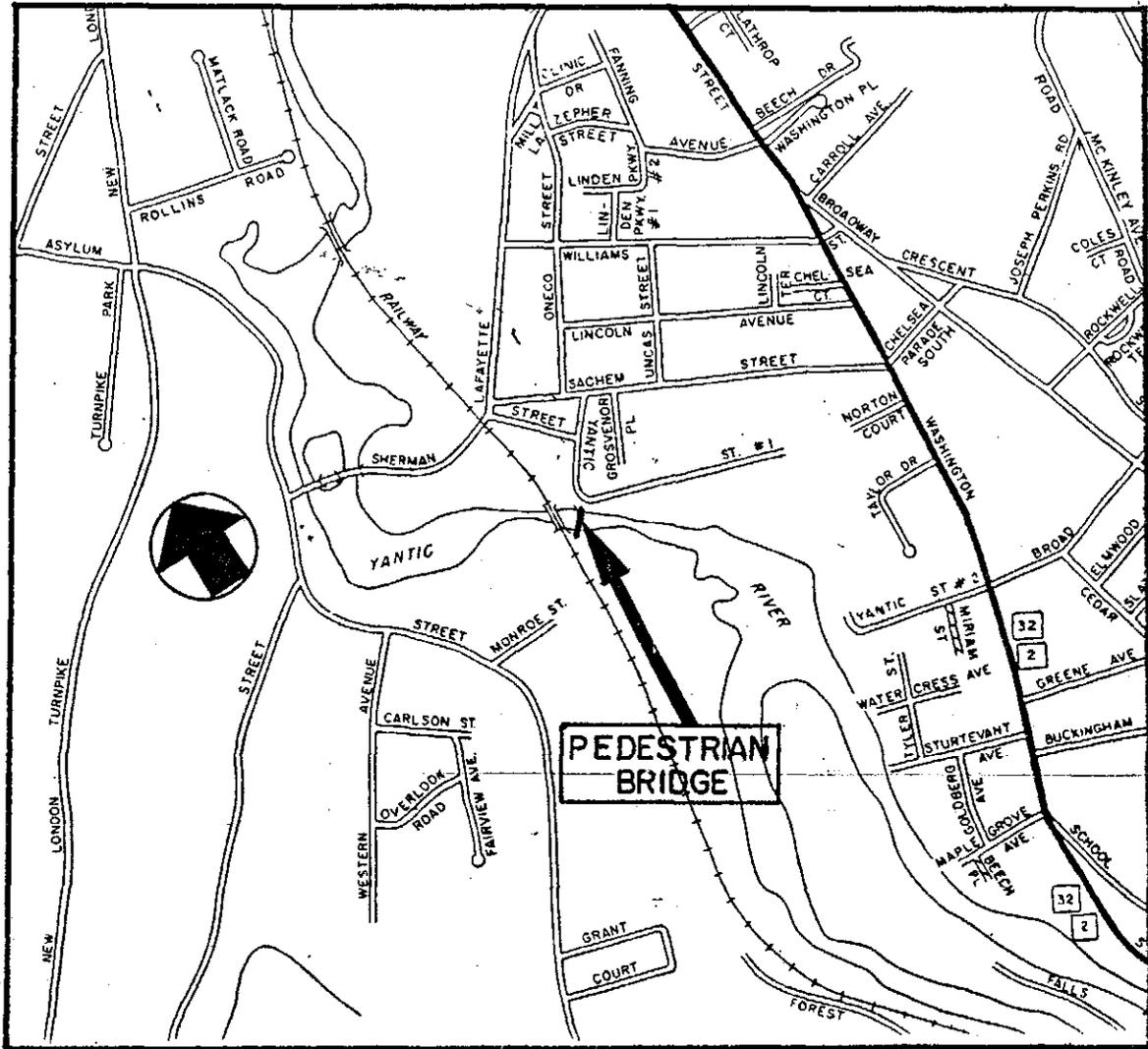
In general, the wood decking and support planking are in fair condition with large holes present at several locations which expose the stringers below and are hazardous to pedestrians. The wood decking and planking which was removed for inspection purposes

appeared soft and was observed to break easily. The exposed wood nailers fastened to the outside stringers were observed to be soft and crumbly and could be nearly completely penetrated with a sharp instrument, indicating a state of advanced decay.

The steel bridge railings and support brackets were observed to be in good condition and showed light rust pitting the paint surface.

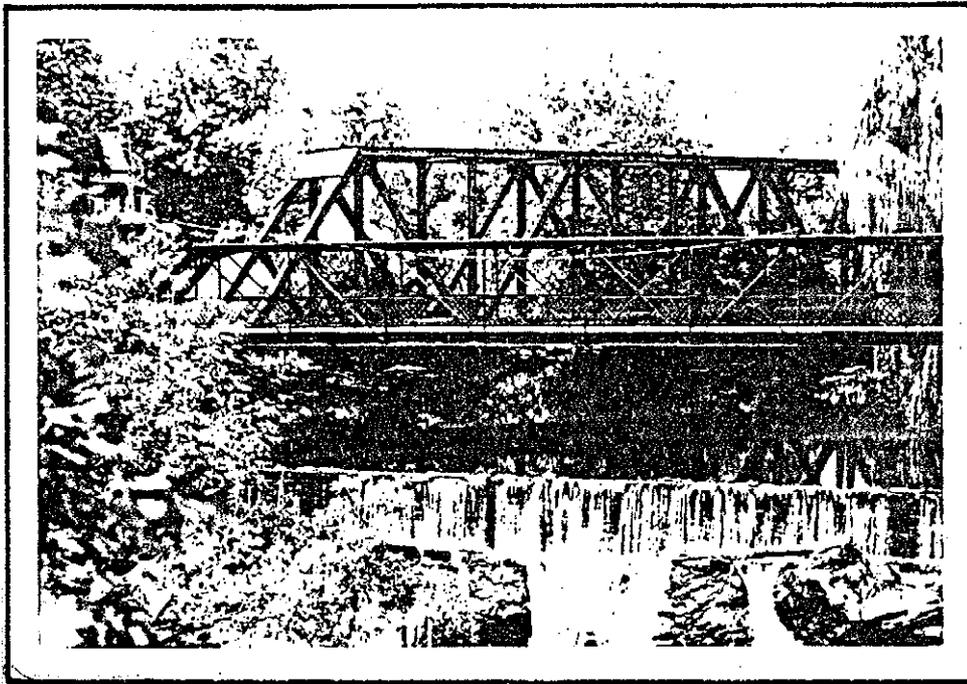
The stone masonry abutment at the East end of the bridge was observed to be in good condition, however, excessive dirt accumulated behind the bearing plates and the extensive corrosion in the bearing area probably restrains proper thermal movement of the structure. The stone masonry abutment at the West end of the bridge was observed to be in fair condition. The mortar joints were observed to be cracking and spalling with tree branches and foliage growing out from between the stones.

APPENDIX A- LOCATION OF BRIDGE



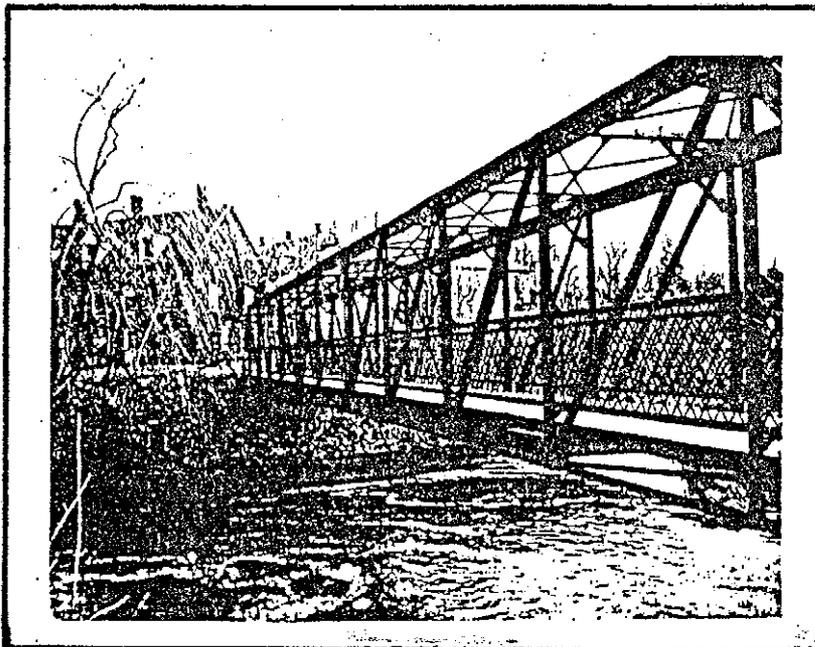
LOCATION PLAN
OF
INDIAN LEAP RECREATION AREA
PEDESTRIAN BRIDGE
IN
NORWICH, CONN.

APPENDIX B- PHOTOGRAPHS AND SECTIONAL ELEVATION

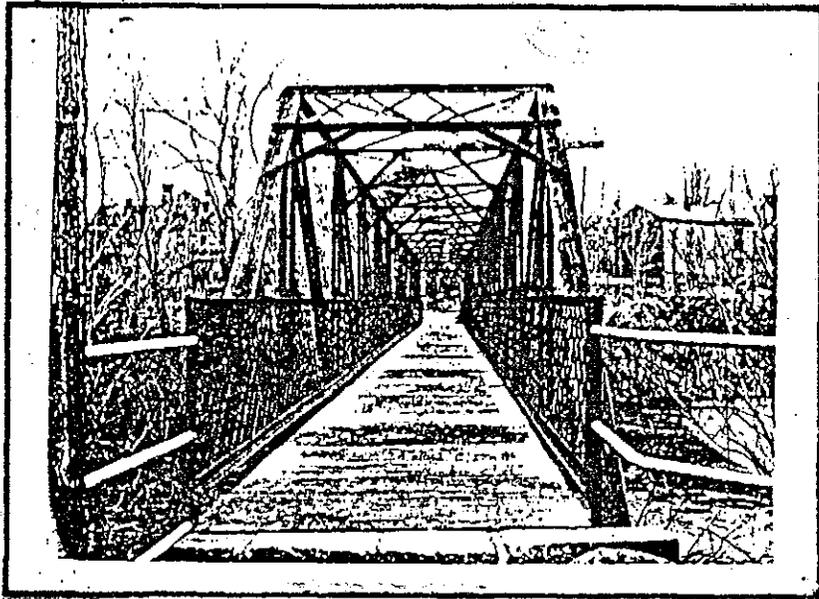


LOOKING WEST

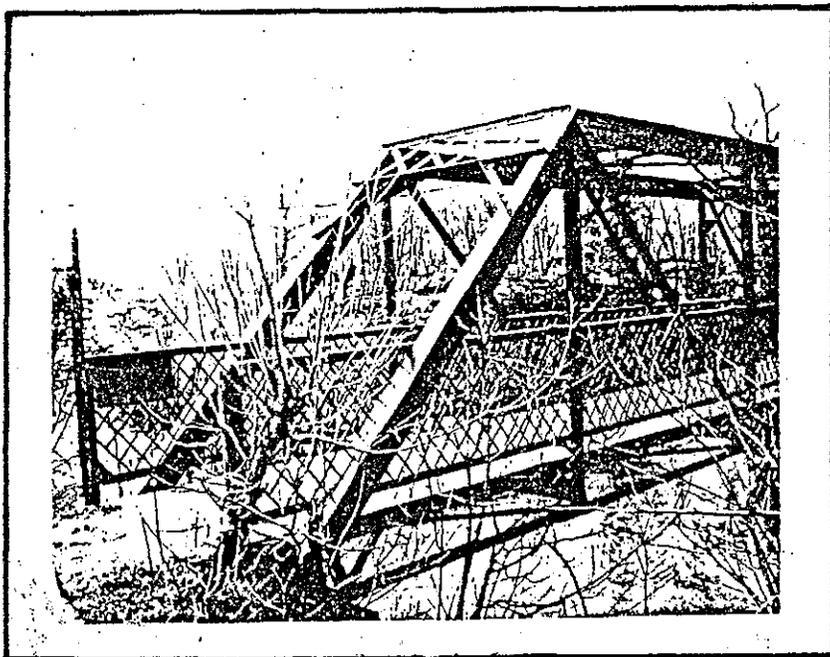
PEDESTRIAN BRIDGE OVER YANTIC RIVER IN FOREGROUND
RAILROAD BRIDGE OVER YANTIC RIVER IN BACKGROUND



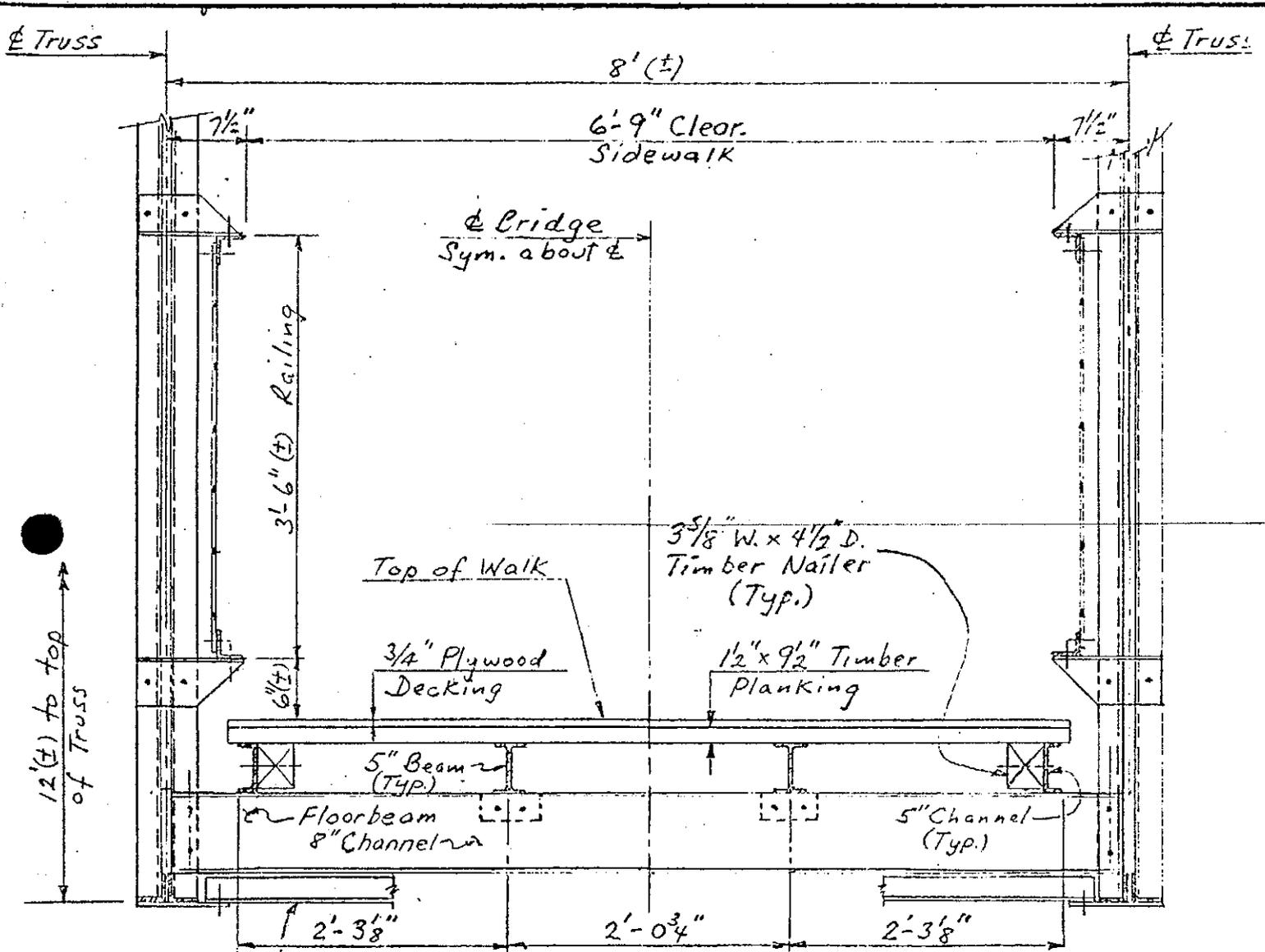
LOOKING SOUTH-WEST



SOUTH END OF BRIDGE



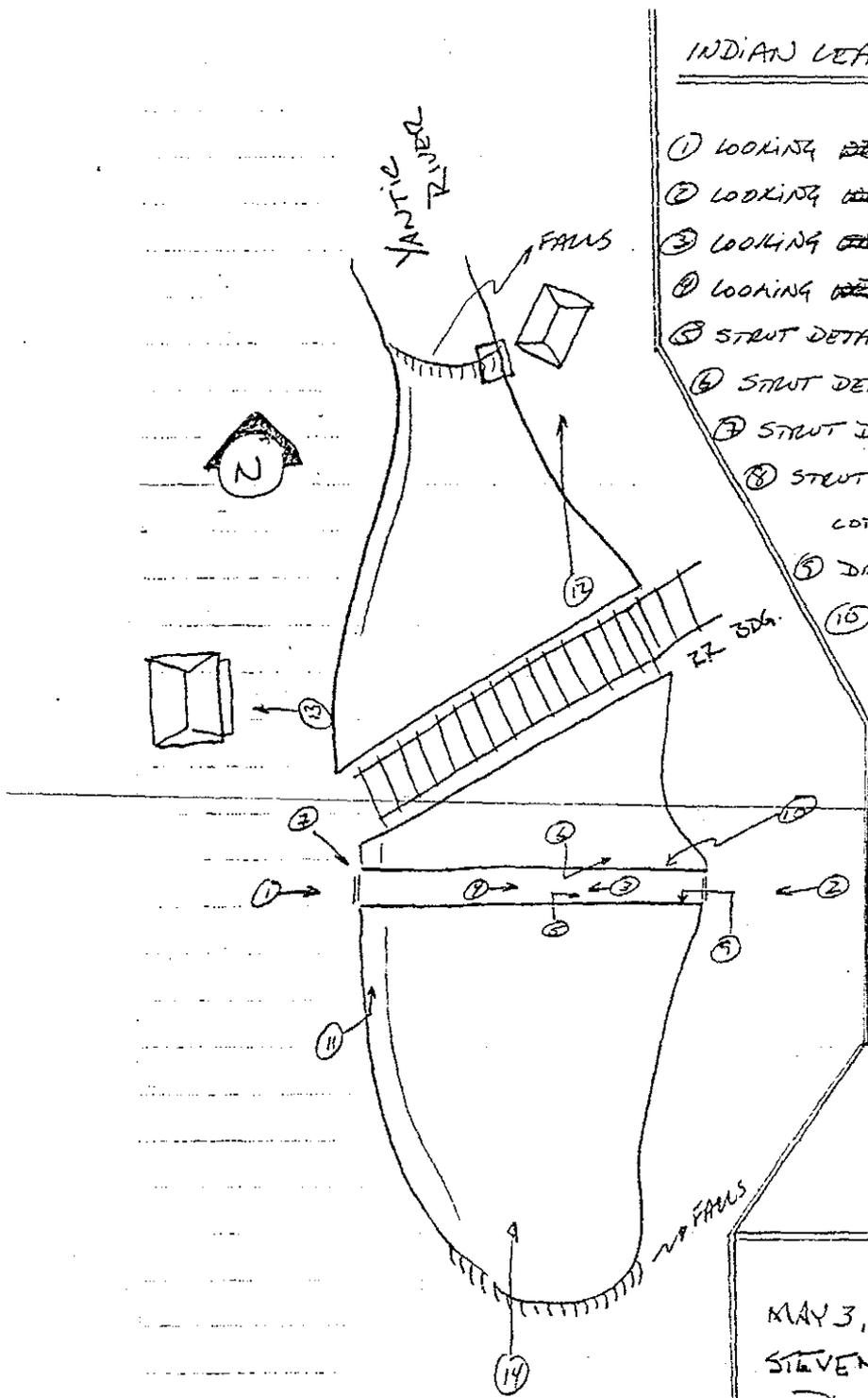
NORTH END OF BRIDGE



TYPICAL BRIDGE SECTION
 Scale: 3/4" = 1'-0"

L 2 1/2 x 2 1/2 x 4
 Lat. Bracing
 (Typ.)

INDIAN LEAP FOOT BRIDGE



- ① LOOKING ~~WEST~~ EAST
- ② LOOKING ~~WEST~~ WEST
- ③ LOOKING ~~WEST~~ WEST
- ④ LOOKING ~~WEST~~ EAST
- ⑤ STRUT DETAIL LKG. EAST
- ⑥ STRUT DETAIL LOOKING N.E.
- ⑦ STRUT DETAIL N.W. CORNER
- ⑧ STRUT & FENCE DETAIL N.W. CORNER. (SEE LOC. 7)
- ⑨ DATE PLATE
- ⑩ UNDERSIDE OF PIERL DETAIL
- ⑪ DETAIL - STONE CLEATS
- ⑫ POWDL. HSE & MILL RACE
- ⑬ FARM HSE
- ⑭ GENERAL VIEW NORTH...

MAY 3, 1979
 STEVEN ZANE
 PHOTOGRAPHER

INDIAN LEAP FOOTBRIDGE
 NORWICH, CONN.