

**United States Department of the Interior  
National Park Service**

LISTED ON:  
VLR 06/19/2008  
NRHP 01/02/2013

**NATIONAL REGISTER OF HISTORIC PLACES  
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

**1. Name of Property**

historic name Bowstring Truss Bridge  
other names/site number Roaring Run Bowstring Truss Bridge (HAER VA-7); King Tubular Arch Truss Bridge;  
VDHR File #060-5066 and #009-5279

**2. Location**

street & number Interstate 81, Ironto Rest Area not for publication N/A  
city or town Ironto vicinity X  
state Virginia code VA county Montgomery code 121 zip code 24087

**3. State/Federal Agency Certification**

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this X nomination \_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets \_\_\_ does not meet the National Register Criteria. I recommend that this property be considered significant \_\_\_ nationally \_\_\_ statewide X locally. (\_\_\_ See continuation sheet for additional comments.)

[Signature] \_\_\_\_\_ Date 11/9/12  
Signature of certifying official  
**Virginia Department of Historic Resources**  
State or Federal Agency or Tribal government

In my opinion, the property \_\_\_ meets \_\_\_ does not meet the National Register criteria. (\_\_\_ See continuation sheet for additional comments.)

\_\_\_\_\_  
Signature of commenting official/Title Date

\_\_\_\_\_  
State or Federal agency and bureau

**4. National Park Service Certification**

I, hereby certify that this property is:

- entered in the National Register
- See continuation sheet.
- determined eligible for the National Register
- See continuation sheet.
- determined not eligible for the National Register
- removed from the National Register
- other (explain): \_\_\_\_\_

\_\_\_\_\_  
Signature of the Keeper

\_\_\_\_\_  
Date of Action

5. Classification

Ownership of Property (Check as many boxes as apply)

Category of Property (Check only one box)

- private
- public-local
- public-State
- public-Federal

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

Contributing	Noncontributing	
<u>0</u>	<u>0</u>	buildings
<u>0</u>	<u>0</u>	sites
<u>1</u>	<u>0</u>	structures
<u>0</u>	<u>0</u>	objects
<u>1</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register 0

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) N/A

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat: Transportation Sub: Road-related (vehicular)

Current Functions (Enter categories from instructions)

Cat: Transportation Sub: Pedestrian-related

7. Description

Architectural Classification (Enter categories from instructions)

Other: Pratt Pony Truss

Materials (Enter categories from instructions)

foundation \_\_\_\_\_

roof \_\_\_\_\_

walls \_\_\_\_\_

other Truss: Iron; Abutments: concrete; Deck: Wood Plank

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
B Property is associated with the lives of persons significant in our past.
X C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

- A owned by a religious institution or used for religious purposes.
X B removed from its original location.
C a birthplace or a grave.
D a cemetery.
E a reconstructed building, object, or structure.
F a commemorative property.
G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

Engineering

Period of Significance 1878

Significant Dates 1878

Significant Person (Complete if Criterion B is marked above) N/A

Cultural Affiliation N/A

Architect/Builder King Iron Bridge Company, Cleveland, Ohio

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- preliminary determination of individual listing (36 CFR 67) has been requested.
previously listed in the National Register
previously determined eligible by the National Register
designated a National Historic Landmark
recorded by Historic American Buildings Survey #
X recorded by Historic American Engineering Record # VA-7

Primary Location of Additional Data

- X State Historic Preservation Office
X Other State agency
Federal agency
Local government
University
Other

Name of repository: Virginia Department of Transportation; Virginia Department of Historic Resources

10. Geographical Data

Acreage of Property .015 of an acre

UTM References (Place additional UTM references on a continuation sheet)

Table with 4 columns: Zone, Easting, Northing. Values include 1 17 568791 4121688, 2, 3, 4.

See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Antony F. Opperman/Preservation Program Manager
organization Virginia Department of Transportation date May 23, 2008
street & number 1401 East Broad Street telephone 804-371-6749
city or town Richmond state VA zip code 23219

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

- Maps A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs Representative black and white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name Commissioner, Virginia Department of Transportation
street & number 1401 East Broad Street telephone
city or town Richmond state VA zip code 23219

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings.

Estimated Burden Statement: Public reporting burden for this form is estimated to average 36 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form.

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**NATIONAL REGISTER OF HISTORIC PLACES  
CONTINUATION SHEET**

**Bowstring Truss Bridge  
Montgomery County, VA**

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**Architectural Description**

The Bowstring Truss Bridge is located at the Ironto Rest Area on Interstate 81 in Montgomery County, Virginia. The structure is a single-span, four-panel tubular arch pony truss measuring 55 feet long, 12 feet wide, and 6.5 feet high with an open roadway width of approximately 9.5 feet. Each of the two tubular arches that express the distinctive load-bearing form of the bridge consist of two horizontal channels connected together by cover plates, thus forming a rectangular "tube" beneath which the deck is suspended. The main structural components are manufactured of wrought iron including the tubular arches, floorbeams, stringers, tie rods, tie bars, and trussed suspenders. The bearing plates and connectors are cast iron. Rivets are used to assemble the tubular and trussed suspenders, while bolts or nuts/treaded connections are used elsewhere in the structure. The presence of bolted splice plates at the apex of the tubular arches may reflect that the bridge was partially disassembled and moved from its original location to a second site during the early twentieth-century where it remained until 1977. The deck is wood and the abutments are concrete, both installed when the bridge was moved to its present (third) location in 1977. Except for deck and abutments, most of the main structural components are original.

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CONTINUATION SHEET**

**Bowstring Truss Bridge  
Montgomery County, VA**

Section 8 Page 2

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**Statement of Significance**

The Bowstring Truss bridge was fabricated by the King Iron Bridge and Manufacturing Company of Cleveland, Ohio and was originally erected over Stony Fork in Bedford County in 1878 after flooding destroyed an earlier structure in 1877 – along with five others. Bedford County contracted with the King Iron Bridge and Manufacturing Company to replace all six bridges by May 1878 with the “latest improved patent of Wrought Iron arch bridges”, perhaps a unique engineering and procurement accomplishment by a local government during the immediate post-Civil War period (Deibler n.d.). Of those six bridges, all of the same tubular arch truss design, only the Bowstring Truss has survived in Virginia (Miller and Clark 1997:11-12; Spero 1980:8-11). Outside of Virginia, tubular arch truss bridges appear to be uncommon despite being widespread during the late nineteenth-century.

The King Iron Bridge and Manufacturing Company was one of the most prolific manufacturers of metal truss bridges during the late nineteenth-century and the tubular arch was their signature design. The earliest patent for a bowstring truss bridge dates to 1841, but it was Zenas King who refined the design through two patents of his own in 1861 and 1866. As noted in the documentation prepared by the Historic American Engineering Record (HAER VA-7), the Bowstring Truss Bridge exhibits the improvements of King’s 1866 patent whereby nuts are included to increase the tension of the lower chord and reduce sagging. In contrast, the Bowstring Truss Bridge does not manifest the improvements of the 1861 patent whereby the top chord (the tubular arch) would have a thicker cross section at the apex for strengthening, probably due to negligible benefit relative to difficulty in fabrication. Few nineteenth-century bridges in Virginia offer such a direct opportunity to understand how a bridge functions to carry load relative to the documented and patented concepts of its designer as does the Bowstring Truss Bridge.

By the 1930s, the Bowstring Truss Bridge had been moved approximately 10 miles north of its original location, probably at the Stony Fork crossing of the New London and Rocky Mount Turnpike at Davis Mill, to a second site on Route 637 over Roaring Fork, also in Bedford County, where it remained until 1977. Location, however, is not a factor in the significance of the structure. Moving metal truss bridges was not an uncommon practice and many historically significant bridges are not located at their original sites. The Bowstring Truss Bridge embodies the distinctive characteristics of tubular arch bridge construction, a rare and unusual configuration, and retains integrity of those aspects most essential to conveying its engineering significance under National Register Criterion C: materials, design, and workmanship. As a property that has been moved, the Bowstring Truss Bridge also satisfies National Register Criteria Consideration B since it is “significant primarily for architectural (engineering) value”.

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**NATIONAL REGISTER OF HISTORIC PLACES  
CONTINUATION SHEET**

**Bowstring Truss Bridge  
Montgomery County, VA**

Section 9 Page 3

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**Bibliography**

Deibler, Dan Grove

n.d. The Patented Z. King "Tubular Arch Truss" in Bedford County (Virginia): Its Relocation and Restoration. Manuscript on file at the Virginia Transportation Research Council, Charlottesville.

Historic American Engineering Record (HAER); VA-7: Roaring Run Bowstring Truss Bridge, Bedford County, Virginia.

Miller, Ann B., and Kenneth M. Clark

1997 *Survey of Metal Truss Bridges in Virginia*. Virginia Transportation Research Council, Charlottesville.

Spero, Paula A. C.

1980 *A Survey and Photographic Inventory of Metal Truss Bridges in Virginia, 1865-1932, VII: The Salem Construction District*. Virginia Highways and Transportation Research Council, Charlottesville.

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**NATIONAL REGISTER OF HISTORIC PLACES  
CONTINUATION SHEET**

**Bowstring Truss Bridge  
Montgomery County, VA**

Section 10, Photographic Data Page 4

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**Geographical Data**

**Verbal Boundary Description**

The boundaries for the Bowstring Truss Bridge are defined by the overall footprint of the bridge itself as erected at its current site: 55 feet long and 12 feet wide.

Latitude: 37.239182, 37 degrees 14' 21.96"

Longitude: -80.22443, -80 degrees 13' 27.96"

UTM Zone 17; Northing 4121687.899, Easting 568790.985

**Boundary Justification**

The boundaries for the Bowstring Truss Bridge are defined by the overall footprint of the bridge itself as erected at its current site. The boundaries do not include the modern (1977) concrete abutments that support it nor do they include any portions of the surrounding I-81 Ironto Rest Area since the significance of the structure is embodied and expressed solely in its engineering design regardless of location, setting, or feeling.

**Photographs**

Name of Property: Bowstring Bridge  
City or Vicinity: Ironto Rest stop  
County: Montgomery County  
State: VA  
Name of Photographer: Meghan Hesse  
Date of Photographs: August 2012  
Location of Original Digital Files: 731 Harrison Ave. Salem, VA 24153

Photo #1 (VA\_MontgomeryCounty\_BowstringBridge\_0001), camera facing east.

Photo #2 (VA\_MontgomeryCounty\_BowstringBridge\_0002), camera facing southeast.

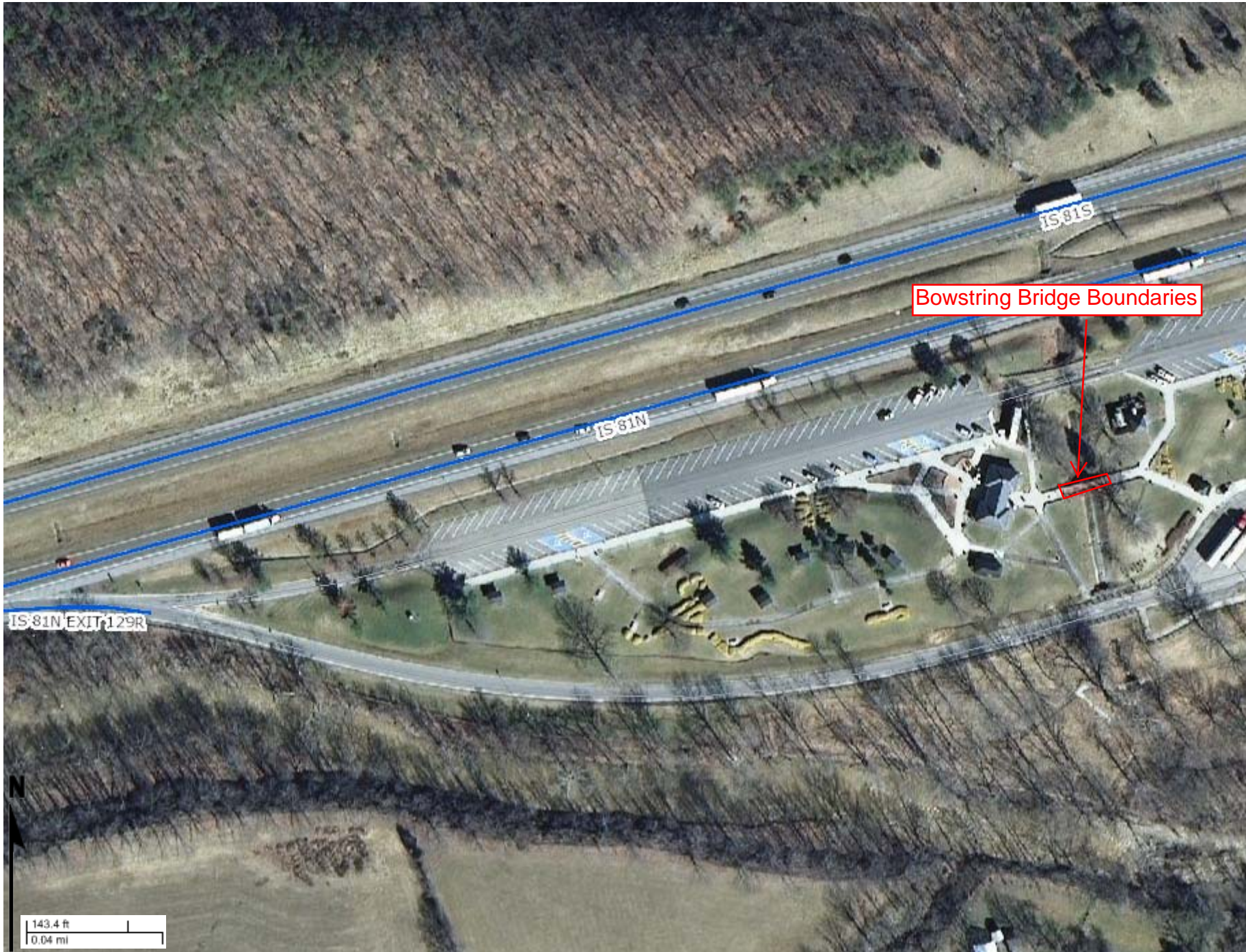
Photo #3 (VA\_MontgomeryCounty\_BowstringBridge\_0003), camera facing northeast.

Photo #4 (VA\_MontgomeryCounty\_BowstringBridge\_0004), camera facing underneath the bridge.

**Attachments**

1. Reproductions of drawings from Historic American Engineering Record (HAER) VA-7: Roaring Run Bowstring Truss Bridge, Bedford County, Virginia.
2. Reproductions of photographs from Historic American Engineering Record (HAER) VA-7: Roaring Run Bowstring Truss Bridge, Bedford County, Virginia.





Bowstring Bridge Boundaries

IS 81N EXIT 129R

143.4 ft  
0.04 mi



## ROARING RUN BOWSTRING TRUSS BRIDGE

THIS HIGHWAY BRIDGE, FABRICATED BY KING IRON BRIDGE & MANUFACTURING COMPANY OF CLEVELAND, OHIO, IS ONE OF THE FEW SURVIVING BRIDGES OF THIS TYPE CURRENTLY UTILIZED ON PUBLIC HIGHWAYS. THE 55-FOOT SPAN INCORPORATES CAST IRON, ROLLED WROUGHT IRON, AND RIVETED WROUGHT IRON PLATES IN ITS CONSTRUCTION.

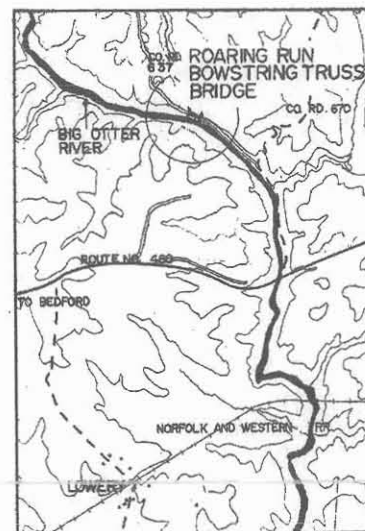
THE STRUCTURE IS PATTERNED AFTER THE BOWSTRING TRUSS BRIDGE PATENTED BY SQUIRE WHIPPLE IN 1841, BUT INCORPORATES FABRICATING MODIFICATIONS RESULTING FROM THE ADVANCE OF BUILDING TECHNOLOGY OVER A PERIOD OF 30 YEARS. IT IS CONJECTURED THAT THE STRUCTURE WAS ERECTED IN THE MID 1870'S.

## COMMONWEALTH OF VIRGINIA SURVEY

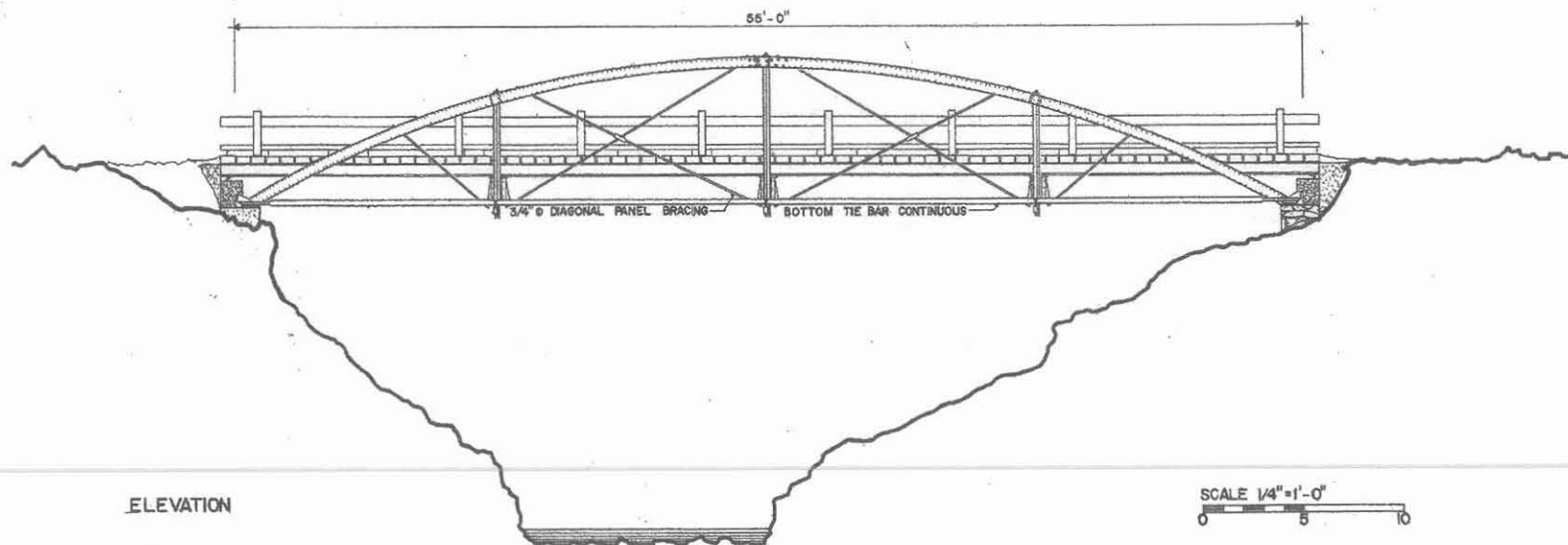
THE FIRST STATE-WIDE SURVEY TO BE CONDUCTED BY THE HISTORIC AMERICAN ENGINEERING RECORD DOCUMENTS A SELECTED GROUP OF HISTORICALLY SIGNIFICANT ENGINEERING STRUCTURES THROUGHOUT VIRGINIA. THE SURVEY WAS SPONSORED BY THE NATIONAL PARK SERVICE, OF WHICH HAER IS A PART, THE COMMONWEALTH OF VIRGINIA, AND THE UNIVERSITY OF VIRGINIA.

THE FIELD WORK AND HISTORICAL RESEARCH WERE CONDUCTED AND THE FINAL DRAWINGS PRODUCED DURING THE SUMMER OF 1970 UNDER THE GENERAL DIRECTION OF JAMES C. MASSEY, CHIEF HISTORIC AMERICAN BUILDINGS SURVEY, JAMES MOODY, DIRECTOR, VIRGINIA HISTORIC LANDMARKS COMMISSION; ROBERT M. VOGEL, CURATOR, MECHANICAL AND CIVIL ENGINEERING, SMITHSONIAN INSTITUTION. THE PHOTOGRAPHY WAS DONE DURING THE SPRING OF 1971. RICHARD J. POLLAK, PROFESSOR, COLLEGE OF ARCHITECTURE AND PLANNING, BALL STATE UNIVERSITY WAS PROJECT SUPERVISOR.

SURVEY TEAM: DONALD G. PRYCE, ARCHITECT (TEXAS A&M UNIVERSITY); JAMES J. DEPASQUALE, STUDENT ARCHITECT (UNIVERSITY OF VIRGINIA); AND CHARLES KING, STUDENT ARCHITECT (UNIVERSITY OF VIRGINIA). SURVEY HEADQUARTERS: SCHOOL OF ARCHITECTURE, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VIRGINIA. PHOTOGRAPHER: JACK E. BOUCHER.



SITE MAP  
0 0.5 1  
SCALE 1" = 0.4 MILE



ELEVATION

SCALE 1/4" = 1'-0"  
0 5 10

DRAWN BY: J. BURTON, 1970

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION  
COMMONWEALTH OF VIRGINIA SURVEY  
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,  
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE

ROARING RUN BOWSTRING TRUSS BRIDGE, c.1875

CO. RD. 637-5 MILES E. OF BEDFORD

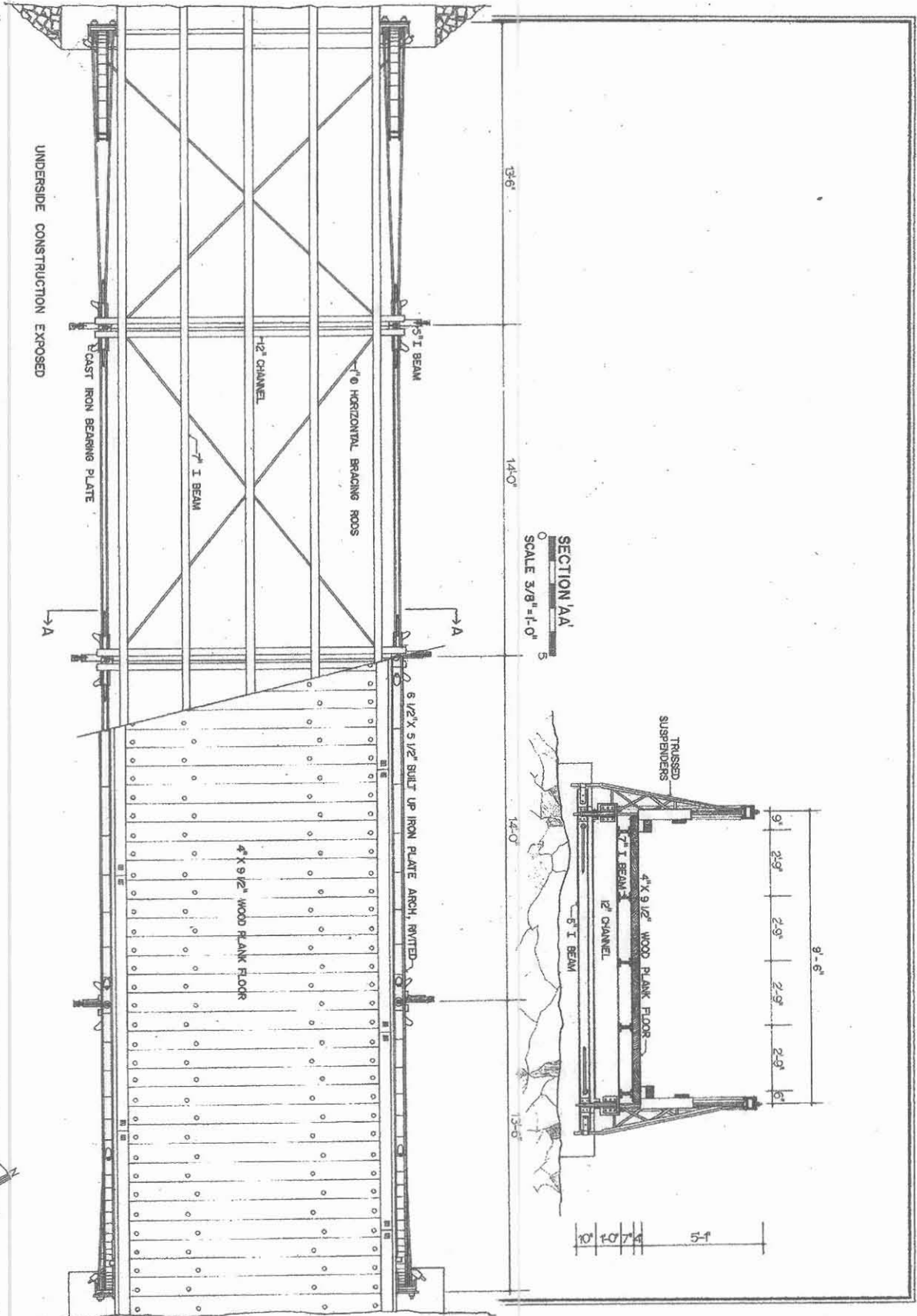
BEDFORD CO.

VIRGINIA

RECORD NO.  
HAER  
VA-7

HISTORIC AMERICAN  
ENGINEERING RECORD  
SHEET 1 OF 3 SHEETS

UNIVERSITY OF VIRGINIA



PLAN

SECTION 1A-A  
SCALE 3/8" = 1'-0"

SCALE 3/8" = 1'-0"



DRAWN BY DONALD C. FRYBERG 1970  
 OFFICE OF ANCESTRY AND HISTORIC PRESERVATION  
 COMMONWEALTH OF VIRGINIA SURVEY  
 UNDER DIRECTION OF THE NATIONAL PARK SERVICE  
 UNITED STATES DEPARTMENT OF THE INTERIOR

CO. RD. 657 - 5 MILLS E. OF BEDFORD

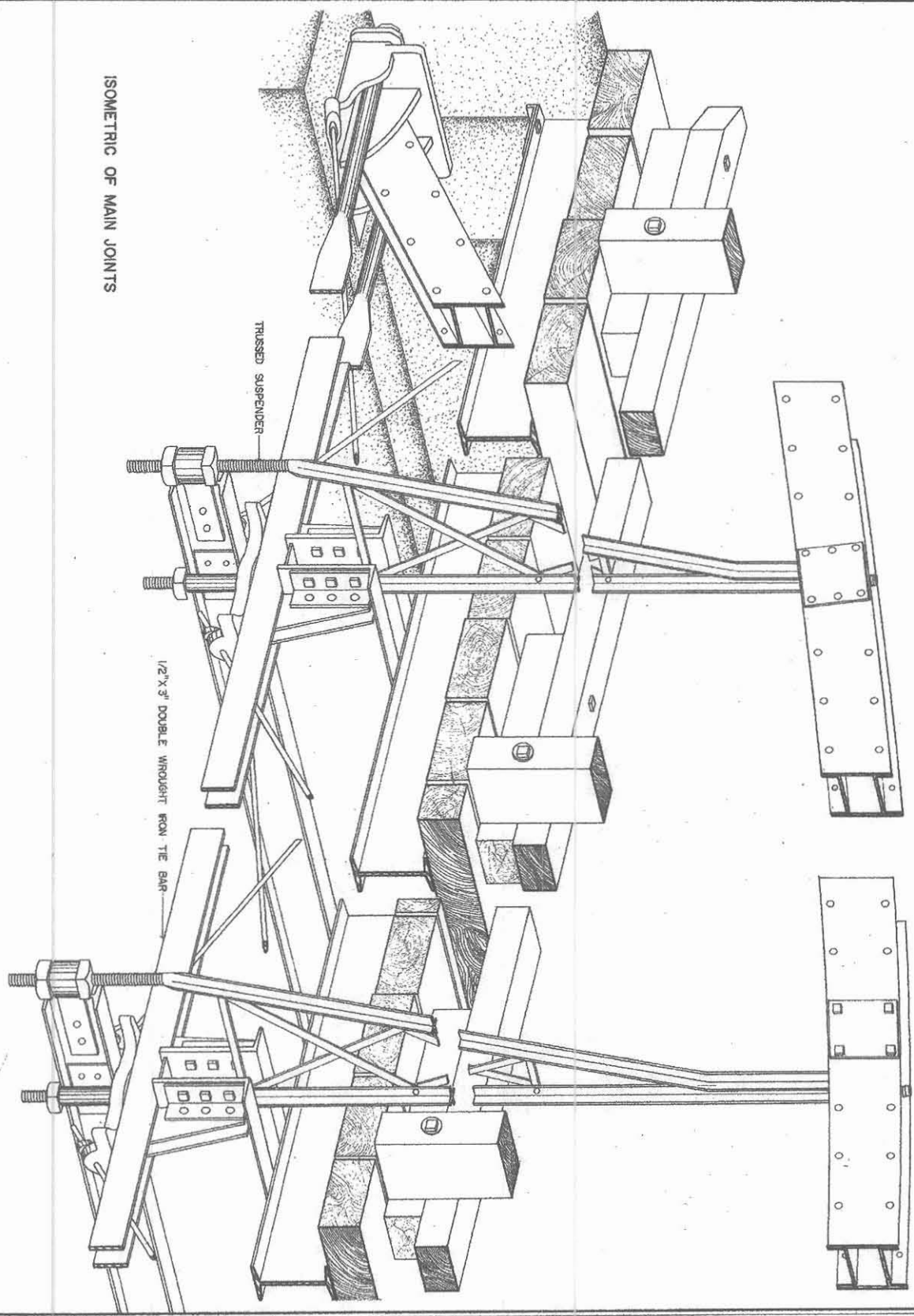
NAME AND LOCATION OF STRUCTURE

ROARING RUN BOWSTRING TRUSS BRIDGE, C1875  
 BEDFORD CO. VIRGINIA

RECORD NO.  
 HAER VA-7

HISTORIC AMERICAN  
 ENGINEERING RECORD  
 SHEET 2 OF 3 SHEETS

TRAIL LINE



ISOMETRIC OF MAIN JOINTS

DRAWN BY C. J. ... 1/17/1970  
 OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION  
 COMMONWEALTH OF VIRGINIA SURVEY  
 UNDER DIRECTION OF THE NATIONAL PARK SERVICE,  
 UNITED STATES DEPARTMENT OF THE INTERIOR

CO. RD. 637-5 MILES E. OF BEDFORD

NAME AND LOCATION OF STRUCTURE  
**ROARING RUN BOWSTRING TRUSS BRIDGE, c1875**  
 BEDFORD CO. VIRGINIA

RECORD NO. HAER VA-7  
 HISTORIC AMERICAN ENGINEERING RECORD  
 SHEET 3 OF 3 SHEETS

TRAIL LINE

LC-USZ42-19