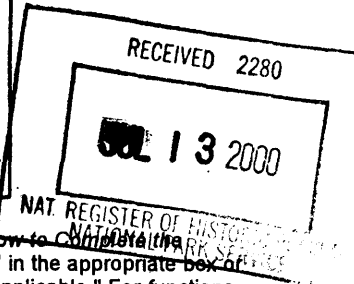
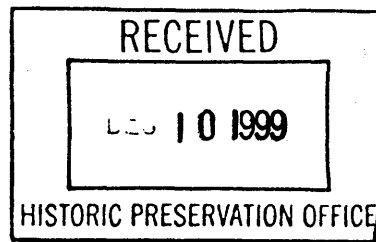


United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

g/12



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 "Y" in the appropriate box or by entering the information requested. If an 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 The Higginsville Road Bridges

other names/site number Somerset County Bridges # A0601 and #A0605; Hunterdon County Br. #R-183-S and #R-184-S
(New Jersey Department of Transportation Br. #18A0601 and #18A0605)

2. Location

street & number Higginsville Road at the South Branch of the Raritan River not for publication

city or town Hillsborough Twp, Somerset County - Readington Twp., Hunterdon County vicinity

state New Jersey code 034 county Somerset & Hunterdon code 035 & 019 Zip code S : 08853
H : 08822

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this 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 meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. See continuation sheet for additional comments.)

Carl R. Reid *6/28/00*
Signature of certifying official/Title Date
Assistant Commissioner, Natural & Historic Resources, DSHPO
State of Federal agency and bureau

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

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the 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:)

Carlson H. Beall *8/10/00*
Signature of the Keeper Date of Action

Name of Property

County and State

5. Classification

Ownership of Property (Check as many boxes as apply)

Category of Property (Check only one box)

Number of Resources within Property (Do not include previously listed resources in the count.)

- Ownership options: private, public-local (county), public-State, public-Federal

- Category options: building(s), district, site, structure, object

Table with 3 columns: Contributing, Noncontributing, and Resource Type (buildings, sites, structures, objects, Total). Values range from 0 to 3.

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

Number of contributing resources previously listed in the National Register

Metal Truss Bridges of Somerset County, NJ 1885-1927

0

6. Function or Use

Historic Functions (Enter categories from instructions)

Current Functions (Enter categories from instructions)

TRANSPORTATION: road-related

TRANSPORTATION: road-related

7. Description

Architectural Classification (Enter categories from instructions)

Materials (Enter categories from instructions)

N/A

foundation N/A

walls N/A

roof N/A

other Bridge members and connections - METAL: iron; steel

Abutment - STONE: sandstone; decking - asphalt

Narrative Description

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

See attached Continuation Sheets.

Name of Property

County and State

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.
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.)

Property is:

- A owned by a religious institution or used for religious purposes.
B removed from its original location.
C a birthplace or 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

1889 - 1893

Significant Dates

1889-1890; 1893

Significant Person

(Complete if Criterion B is marked above)

Cultural Affiliation

N/A

Architect/Builder

Br. #A0601: Milliken Bros., Brooklyn, NY (1890); NJ

Br. #A0605: Wrought Iron Bridge Co., Canton, OH (1893)

Narrative Statement of Significance

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

9. Major Bibliographical References

Bibliography

(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 #
recorded by Historic American Engineering Record #

Primary location of additional data:

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

Name of repository: Hunterdon Cty. Historical Society;

Somerset Cty. Library; Hunterdon Cty Library; Hunterdon & Somerset County Freeholders Office; Hunterdon & Somerset County Engineering and Planning Depts.

10. Geographical Data

Acreage of Property Approximately two (2) acres

UTM References

(Place additional UTM references on a continuation sheet.)

1	<u>18</u> Zone	<u>518170</u> Easting	<u>4484080</u> Northing
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 Mary Delaney Krugman, as consultant to Herbert J. Githens, Architect, 36 Park Street, Montclair, N.J. 07042

organization Mary Delaney Krugman Associates, Inc. date December 10, 1999

street & number 36 Park Street telephone (973) 746-2810

city or town Montclair state New Jersey Zip code 07042

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 SHPO or FPO.)

name Somerset and Hunterdon Counties, New Jersey

street & number S: 20 Grove Street, Somerville, NJ H: 1 East Main Street, Flemington, NJ telephone S: Planning: (908) 231-7021 H: Bridges: (908) 788-1227

city or town S: Somerville; H: Flemington state New Jersey Zip code S: 08876; H: 08822

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. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 7 Page 1

SECTION 7 - DESCRIPTION

General

"The Higginville Road Bridges" are two late-Nineteenth Century Pratt metal through-truss bridges, each one lane wide, joined by a common earth-filled stone masonry abutment. They are located near the intersection of Higginville Road in Readington Township, Hunterdon County and Three Bridges Road, in Hillsborough Township, Somerset County.

Together these bridges form the crossing over the South Branch of the Raritan River (the "South Branch") and an auxiliary channel at a hamlet called Higginville, which is part of Hillsborough Township, Somerset County. The bridge crossing is oriented in a northeast-southwest direction, and links the townships of Hillsborough, Somerset County, and Readington, Hunterdon County. The crossing point is approximately 1-1/2 miles southeast of its nearest neighboring community, Three Bridges, Hunterdon County, and approximately 2-1/2 miles west-northwest of Neshanic, Somerset County.

Location and Setting

The Higginville Road Bridges are located on a picturesque rural road that crosses a rural section of the South Branch of the Raritan River [Photos #1 and 2]. The surrounding land use is predominantly agricultural. Some Twentieth Century residential development is located nearby, along both Higginville Road and nearby Three Bridges Road. This development is located approximately 1/2 mile to one mile from the crossing, and is not generally visible from the vicinity of Higginville Bridges.

The South Branch is a tributary of the Raritan River, an important river of central New Jersey that flows eastward into the Raritan Bay. The north channel (100+ feet wide) is the main channel of the South Branch [Photo # 3], with a smaller channel to the south [Photo # 4].¹ The South Branch is stocked with fish each year for recreational fishing, and the Higginville Bridge crossing is a favorite location for this sport. Local youngsters also use the South Branch at Higginville as an unsupervised swimming area. Traffic is generally light across the spans, so such activities usually go undisturbed.

¹ The width of the secondary channel apparently varies substantially with the amount of rainfall. At the time of the photographic documentation (May 1999) it was approximately 30 feet wide, but after several months of dry weather, this channel was reduced to a trickle - more a muddy wetland than a river channel. This is the apparent reverse of the main and auxiliary channels at the time of the bridges construction. See Section 8, below.

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Continuation SheetSection number 7 Page 2The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

The main channel of the South Branch forms the county line between Hunterdon and Somerset Counties at Higginsville. The point of crossing is located in a small triangular point of western Somerset County, which is bounded on the north and the south by Hunterdon County. Although only a few miles from the highly trafficked Routes 31 and 202, the area immediately surrounding the bridges seems substantially unchanged from its Nineteenth Century appearance.

Description**A. Bi-County County Bridge #A0605 (Milliken Bros. of New York, 1890)²**

Milliken Bros. of New York erected this bridge (hereinafter "the Milliken Bridge") in 1890. (See illustrations: "Bi-County Bridges Nos. A0601 and A0605," Sheets 2-4, 6.) It is a 7-panel pin-connected Pratt through truss³ supported on ashlar abutments, and is composed of standardized rolled sections [Photos # A-1 and A-2]. The bridge has a built-up box member for the top chord and inclined end posts while the interior vertical members are comprised of two pair of back-to-back angles joined by lacing [Photo # A-3]. The original built-up floor beams are connected to the eye-bar hip and built-up interior verticals by U-shaped hangers [Photo # A-4]. The inclined end posts and bottom chord connect to an expansion shoe that rests on the abutment, which originally provided the structure a means of movement during expansion and contraction [Photo #A-5]. The latticed portal brace carries the maker's plaque. The only alteration to the original design is the replacement of the original railing with modern beam guide rails. It is not known if the bridge is composed of steel and/or iron members. The bridge is extremely well preserved.

This bridge is a span approximately 100' long, with a 16' wide asphalt roadway. Both portals carry an identical metal maker's plaque, which is inscribed with the words "1890 Built by MILLIKEN BROS. 55 Liberty Street, New York" [Photo # A-6]. Several of the members have been embossed with the word "Phoenix" [Photo # A-7]. The southeastern end post bears the identification marking "R184S" [Photo # A-8].

² NJ DOT, *Historic Bridge Survey*, Structure #18A0601 [sic]. The numbering for these two bridges was apparently reversed in error in the Bridge Survey documents. The correct NJ Department of Transportation identification number for this bridge is #18A0605. Somerset County identifies this bridge as #A0605, and Hunterdon County as #R-184-S. For consistency, both Higginsville Bridges shall be referred to throughout by their Somerset County identification numbers.

³ The *Historic Bridge Survey* identified this bridge as a "Pratt half-hip." However, in T. Allen Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," American Association for State and Local History, *History News*, Technical Leaflet 95, Vol. 32, No. 5 (May 1977), 6, a Pratt half-hip truss is distinguished from the true Pratt truss by inclined end posts that do not horizontally extend the length of a full panel. Both the Milliken Bridge and Wrought Iron Bridge at Higginsville have inclined end posts that extend the length of a full panel, and therefore should be classified as a true Pratt through truss bridge.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 7 Page 3

The approach to the Milliken Bridge from the northeast is bordered by a pipe rail fence. On the eastern side, it is lined with a fence of concrete posts and timber rails [Photo # A-9]. The western stone masonry wingwall, which faces upstream, has been reinforced with concrete facing. The portion closer to the shore and forming part of the approach ramp has retained its brown sandstone facing of roughly coursed ashlar, as has the eastern wingwall.

The deck has been replaced, in some places apparently more than once [Photo # A-10]. However, it does not appear that any further alterations have been made to this bridge since the 1994 bridge survey description above, apart from routine maintenance.

The Wrought Iron Bridge Co. and Milliken bridges share a common earth-filled stone masonry abutment at the center of the crossing, which is approximately 85' long. The western side of the abutment is curved outward near the Wrought Iron Bridge Co. bridge to a maximum width of approximately 20' so as to provide a vehicle passing area on the one-lane right-of-way. The western side of this abutment has been faced with concrete block with cement parging [Photo # A-11]. The eastern face is stone masonry of brown sandstone ashlar, roughly coursed [Photo # A-12]. A steel guide rail lines the top of the abutment along both sides.

B. Bi-County County Bridge #A0601 (The Wrought Iron Bridge Co., 1893)⁴

This bridge (hereinafter "the Wrought Iron Bridge Co. bridge") was fabricated and erected in 1893 by the Wrought Iron Bridge Co. of Canton, Ohio. (See illustrations: "Bi-County Bridges Nos. A0601 and A0605," Sheets 1, 3-5.) This 7-panel pin-connected Pratt through truss⁵ bridge carries a single land roadway over the flood plain and auxiliary channel of the South Branch of the Raritan River [Photos # B-1 and B-2]. Composed of rolled sections, the top chords and end posts consist of a built-up box member, and the lower chords are paired eye bars [Photo # B-3]. The verticals are toe-out channels with lacing, except for the hip vertical which is a bar [Photo # B-4]. The diagonals are paired bars and the counters single bars [Photo # B-5]. The I-beam floor beams are connected to the verticals by U-shaped hangers [Photos # B-6 and B-7]. One of the most distinctive features of the bridge is the 4-pronged basket loop on the bottom of the hip verticals for making the connection to the pin [Photo # B-8]. The upper struts are I-beams, and the upper laterals are rods with turnbuckles [Photo # B-5]. The portal bracing, which is composed of angles, carries a maker's plaque [Photo # B-9]. The bridge shows few signs of alterations except for the replacement of some of the riveted

⁴ NJ DOT, *Historic Bridge Survey*, Structure #18A0605 [sic]. The numbering for these two bridges was apparently reversed in error in the Bridge Survey documents. The correct NJ Department of Transportation identification number for this bridge is #18A0601. Somerset County identifies this bridge as #A0601, and Hunterdon County as #R-183-S.

⁵ Comp. 6. See Section 7, fn. 3 above.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 7 Page 4

connections with bolts along the lower chord and the replacement of the original railing with a beam guide rail. The *New Jersey Historic Bridge Survey* sheets noted that bridge cards from the Hunterdon county engineer's office indicate no major repairs between 1940 and 1960 except for the routine replacement of the deck [Photo # B-10]. It is not know whether the bridge is composed of steel and/or iron members. The bridge is exceptionally well-preserved."

This bridge span is approximately 100' long with a 16' wide asphalt roadway. Only one portal carries the metal maker's plaque, which is inscribed with the words "1893 WROUGHT IRON BRIDGE Co. Builders CANTON, OHIO." Several of the rolled members have been embossed with the word "Carnegie" [Photo # B-11). It does not appear that any further alterations have been made to this bridge since the 1994 bridge survey description above, apart from routine maintenance.

The roadway immediately to the south of the Wrought Iron Bridge Co. bridge turns sharply to the right up a small incline, at the top of which it joins Three Bridges Road at an angle. The abutment and wingwall to the south of the Wrought Iron Bridge Co. bridge is faced with a mixture of both coursed and random brown sandstone ashlar [Photo # B-10]. The top edge of the stonework on both sides of the roadway has been roughly ornamented by triangular cuts in the stone [Photos # B-12 and B-13]. A steel guide rail is installed along the top of the wingwalls on either side.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 1

STATEMENT OF SIGNIFICANCE

Summary Statement

The two Higginville Road Bridges are individually eligible for the National Register of Historic Places under **Criterion C** as remarkably intact examples of metal truss bridge engineering design of the Nineteenth Century. They are also eligible to be included in the Multiple Property Listing "The Metal Truss Bridges of Somerset County, New Jersey 1885-1927," because they meet all of the registration requirements for that listing:

- 1) they were both erected within the same period of significance;
- 2) they both function in a manner consistent with their original design and workmanship, i.e., they still rely on their original connection technique to function;
- 3) they are both highly intact examples of their type, alterations having been limited to expected maintenance and limited upgrading; and,
- 4) They both contribute to the themes of the historic context set forth in the Multiple Property Nomination form under "the application of metal truss bridge technology to highways within Somerset County, New Jersey."

The two Higginville Road Bridges constitute a single historic resource: a site with two related structures. They are inextricably linked to one another – not only in physical proximity, but also in their common histories, and the similarity of their function, design, and method of fabrication.

Historical Background

Early History

The crossing point of the South Branch of the Raritan River (the "South Branch") at Higginville has long been the site of human activity. Its earliest occupation reported to date was that of a Native American campsite, not far from several Native American villages along what is now Three Bridges Road.¹

Throughout the colonial period, the territory was sparsely populated. It was not among the original county divisions of East Jersey. Increases in population and a rising number of land use disputes moved the East Jersey governors to delineate the boundaries of Somerset as the area's fifth county in 1688.

¹ Max Schrabisher, *Map Showing Location of Indian Habitations in Warren & Hunterdon Counties, New Jersey* (_____: State of New York, Dept. of Conservation & Development, Division of Geology and Waters, 1914-1915).

UNITED STATES DEPARTMENT OF THE INTERIOR

National Park Service

National Register of Historic Places Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 2

Higginsville is located in western Somerset County, the boundaries of which were disputed for almost 200 years. Between the years 1713 and 1878, the county's boundaries, on one side or another, had been adjusted no fewer than nine times.² The Keith partition line, drawn in 1687, divided the state into East and West Jersey. (See illustration: "Map of Somerset County 1873.") Continued disagreement about the placement of the boundary resulted in Lawrence's line of 1743, which moved the partition line eastward – approximately down the center of modern-day Somerset County – throwing the greater part of what is now Somerset into West New Jersey.³ The boundary of Somerset County was not finally settled until the Twentieth Century.⁴

Transportation routes were important to the Nineteenth Century settlement of Somerset County. The growth of the railroads had a particularly important effect on development patterns. Only a short distance north of the Higginsville bridges, two major railroads serviced the Hunterdon-Somerset area during that period: the South Branch spur of the Central Railroad of New Jersey and the Easton and Amboy Railroad. These and others opened the interior of the farm communities to increased settlement, especially in the small-scale industrial sections along the Raritan River in the eastern portion of the county.⁵

The growth of railroads prompted great advances in metal bridge development. The increasing size and weight of rolling stock challenged engineers to design truss systems and develop new materials that would withstand the increased loads. Metal truss bridge technology became a necessity.⁶ The metal truss bridge, perhaps more than any other technological advance of that century, stimulated the development of vehicular and rail transportation networks, with far-reaching effects on the economic and physical development of Somerset County.⁷

² *New Jersey Statutes* 40:18-4, "Acts creating counties and affecting the boundaries thereof."

³ James P. Snell, *Comp., History of Hunterdon and Somerset Counties, New Jersey* (Philadelphia: Everts & Peck, 1881), 774; E. T. Corwin, D. D., *The Early Purchasers of Hillsborough, Montgomery, and Franklin Townships, Somerset County, New Jersey compiled from Reeds Map 1685 and Local Maps*, revised by E. T. Corwin (Nd).

⁴ Telephone interview with Stephanie Stevens of the Hunterdon County Cultural & Heritage Commission (14 July 1999).

⁵ McCahon, Mary. "Metal Truss Bridges of Somerset County, New Jersey 1885-1927," National Register of Historic Places, Multiple Property Documentation Form (June 1992), Section E: 7. Listed on New Jersey Register of Historic Places (11 September 1992) and on the National Register of Historic Places (12 November 1992). The early history and development of Somerset County has been well documented in the Multiple Property Documentation Form for "Metal Truss Bridges of Somerset County 1885-1927," and are incorporated herein by this reference.

⁶ Carl Condit, *American Building Art: The 19th Century* (New York: Oxford University Press, 1960), 103.

⁷ McCahon, "Metal Truss Bridges," Section F: 3.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 3

Higginville

The current county boundary near Higginville follows part of the old Keith Line, jogs southeast along the South Branch then turns to the northeast, forming a small triangle that juts into Hunterdon County's eastern boundary. Higginville is located within this triangle, which is part of the Township of Hillsborough, Somerset County.

Hunterdon County adjoins the Higginville triangle on two sides. Just across the county line south of Higginville lies the Township of Amwell; to the north across the river lies the Township of Readington, joined to Somerset County by the Higginville Road Bridges.⁸

One of the earliest recorded owners of this parcel was John Bennet, who purchased the irregular plot at this site in 1683. (See map: "The Early Purchasers of Hillsborough and Franklin Townships, Somerset County, N.J.")⁹ The parcel had been carved from the extensive land holdings of Peter Sonmans, one of the early proprietors, and embraced the settlements of Clover Hill and Neshanic.¹⁰ John Kay owned the property by 1712, along with an almost equal number of acres in Hunterdon County just across the county line.¹¹

The lands on the northern bank of the South Branch were divided into elongated parcels early in the Eighteenth Century.¹² The short ends of these parcels fronted on the waterway, allowing landowners valuable access to this main transportation route. Early families held on to these valuable plots for generations.¹³

The evolution of transportation networks around Higginville tracked development elsewhere in the county. The rivers were the first routes of travel, followed by roads that quickly developed on the borders of the upland and meadows and around the early settlements. These settlements were located, for the most part, along the south side of the Raritan River and its South Branch.¹⁴

⁸ Readington first appeared in court records in 1732 as the "town of Reading." The township is composed of a number of smaller villages, and is the largest township in Hunterdon County. Snell, 486-507.

⁹ This name is alternately spelled "Bennett" in other sources.

¹⁰ Snell, 774; E. T. Corwin, *The Early Purchasers of Hillsborough, Montgomery, and Franklin Townships, Somerset County, New Jersey compiled from Reeds Map 1685 and Local Maps*, revised by E. T. Corwin, n.d.

¹¹ D. Stanton Hammond, J. D., *Manuscript Map of Hunterdon County, Map Series #4, Sheet G* (____: Genealogical Society of New Jersey, 1967).

¹² Hammond.

¹³ Hammond; Samuel C. Cornell, *Map of Hunterdon County entirely from Original Surveys* (____: Lloyd Van Derveer and S. C. Cornell, 1851); F. W. Beers, *Atlas of Hunterdon Co. New Jersey: From Recent and Actual Surveys and Records* (New York: Beers, Comstock & Cline, 1873) Reprint (Flemington NJ: Hunterdon County Historical Society, 1977).

¹⁴ Snell, 779.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 4

The existence of early Native American settlements nearby suggests the possibility that Higginsville Road may have developed along an early pre-colonial trail, perhaps later shifting to align itself with property boundaries north of the river.¹⁵ Higginsville was important as the only river crossing point located between the settlements of Three Bridges and Neshanic -- a distance of approximately 6 miles. (See illustration: "Map of the Township of Readington, 1873" and "Map of the Western Region of Hillsborough Twp. 1873.")

A gristmill and store, which appear on a map of the area as early as 1850,¹⁶ added to the importance of the site. These early industries were essential to the agricultural economy of both Hunterdon and Somerset counties. Nearly every village had at least one gristmill; others were found in more remote locations in the countryside, as was that of Higginsville.¹⁷ A number of mills -- both grist and sawmills -- were located along the South Branch, taking advantage of the significant water resources. As purveyors of a vital service, millers were among the most prominent citizens of their communities.¹⁸ The mill at Higginsville was one of approximately six gristmills in Hillsborough Township during the mid-Nineteenth Century.

An 1850 map showed a substantial milldam at the Higginsville crossing, which would have allowed convenient access to the mill from the farms north of the river.¹⁹ An 1851 map, however, shows the crossing with a different configuration.²⁰ The path over the river then clearly formed an angle at the midpoint, pointing downstream that may have represented the construction of a new bridge. The change in profile and the fact that it was no longer described as a "milldam" seems to indicate that some change had occurred at the site.²¹

The 1851 map shows one structure immediately west of the crossing on the south bank between the river and the road, although not labeled as a mill. This map also shows a large wooded area a few hundred yards wide that runs along the northern riverbank. The only structures nearby are the residences of C. Vorhees and P. Low, just east of the roadway.²²

¹⁵ D. Stanton Hammond, J. D., *Manuscript Map of Hunterdon County, Map Series #4, Sheet G* (____: Genealogical Society of New Jersey, 1967).

¹⁶ J. W. Otley and J. Keily, *Map of Somerset County New Jersey, entirely from Original Surveys* (Camden NJ: L. Van Deveer, 1850).

¹⁷ Hunterdon County Cultural and Heritage Commission, *The First 275 Years of Hunterdon County 1714-1989* (Flemington NJ: Hunterdon County Cultural & Heritage Commission, 1989).

¹⁸ Stevens, Interview.

¹⁹ J. W. Otley, L. Van DerVeer, and J. Keily, *Map of Somerset County New Jersey, entirely from Original Surveys* (Camden NJ: L. Van Deveer, 1850).

²⁰ Samuel C. Cornell, *Map of Hunterdon County entirely from Original Surveys* (____: Lloyd Van DerVeer and S. C. Cornell, 1851).

²¹ The Hunterdon County Board of Freeholders minutes of June 20, 1889, state that the Board went to view an existing bridge, indicating that at some time between 1850 and 1889, a bridge had been constructed. Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892:250.

²² Cornell.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 5

Local maps from 1850 and 1860 show the property along the south bank as owned by a M. M. Bateman.²³ By 1873, "Brokaw & Higgins" apparently own the parcel (see illustration: "Map of the Western Region of Hillsborough Twp. 1873"). Local historian Ursula Brecknell noted that a partnership between these two families was understandable, given that George C. Higgins had married a Sarah Brokaw.²⁴ Both the Higgins and the Brokaw families appeared to be well-established families of the area at that time; their surnames appeared on many parcels in the county by 1860, most notably in the eastern section of Somerset County.

In 1886, Peter W. Brokaw deeded over 119 acres to George C. Higgins for \$5000, which apparently left George the sole owner of the mill.²⁵ Thereafter, the mill became known simply as Higgins Mills.²⁶ George and his family lived opposite the mill site in a substantial residence, which is still extant.

The original Higgins Mill no longer exists. The date and cause of its loss are unknown, given the research to date, nor have records yet been located that would establish the level of the mills' activity. It is probable that it shared the fate of other early water-powered mills faced with technological advances in the milling industry. Steam engines began to displace waterpower soon after the Civil War, and in the 1880s the roller process began to replace the stone-ground method of flour refining. These two trends contributed to a slow but inexorable decline of the country mills, which became obsolete by the early Twentieth Century.²⁷

The Higgins family eventually disposed of both the mill site and the residence. Brecknell reported that the homestead passed through a number of uses thereafter. It was a summer resort early in the Twentieth Century and during the 1940s, it was used as a summer camp for children with disabilities along with other recreational facilities over time. As late as 1996, several cottage-like buildings from this period were reported to be still extant.²⁸

²³ Otley, Van DerVeer, and Keily, *op. cit.* (1850); Matthew Hughes. *Farm Map of Hillsborough, Somerset Co., N. J.* (Philadelphia: Matthew Hughes, 1860).

²⁴ Ursula Brecknell, *Hillsborough: An Architectural History* (Somerville NJ: Aesthetic Press, Inc., 1996), 226.

²⁵ Brecknell, 226.

²⁶ Hunterdon County and Somerset County, *Minute Books of the Board of Chosen Freeholders 1889-1893*.

²⁷ Hubert G. Schmidt, *Rural Hunterdon: An Agricultural History* (New Brunswick NJ: Rutgers University Press, 1945), 214.

²⁸ Brecknell, 227.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 6

The mill building that stands today near the former Higgins homestead is not original to the site. It is the former "Rowland's Mill," which was dismantled and moved the nine miles to Higginsville in 1922 from a site in neighboring Readington Township, Hunterdon County.²⁹ Rowland's Mill was a local landmark that had long stood near the South Branch. After 1911 it remained idle -- a victim of changing technology that made these picturesque mills obsolete. The land and buildings were condemned to make way for what is now Route 31. Its then owner, Charles W. Alpaugh, moved the famous landmark to Higginsville where it was used to house a power generating station that lighted the community.³⁰ It is now used as a residence.

The Higginsville Road bridges and the rural context in which they are found have remained almost unchanged since they were constructed. The former Higgins residence still stands near a mill building, which even though not original, lends an appropriate Nineteenth-Century ambiance to the intersection. Nearby, fields are still under cultivation and the South Branch still flows gently eastward toward the Raritan Bay. Straddling it, the two iron truss bridges remain intact, looking very much the same as they did 100 years ago. The ensemble presents a remarkable juxtaposition of natural beauty and 19th Century engineering.

The Building of the Higginsville Road Bridges

The Higginsville Road bridges are owned and maintained jointly by Hunterdon and Somerset Counties. The story of their construction unfolds, albeit in capsule form, in the pages of the Freeholder minutes of those counties.

County government in New Jersey is organized around the Board of Chosen Freeholders, a semi-legislative body of elected officials. These Boards, established by an act of the legislature in 1714, functioned from the earliest days of colonial government, and included among their responsibilities were the construction of public buildings and care of the insane and indigent, among other things.

As early as the 1760s, it became clear that Freeholder duties had evolved into the building and maintenance of public bridges.³¹ As the road network grew, so did the need to build and maintain bridges. By the last half of the Nineteenth Century, bridge discussions typically dominated the business of Freeholder meetings.³²

²⁹ Stephanie Stevens, *Forgotten Mills of Readington* (NJ: Stephanie Stevens, 1987), 58; Brecknell, 224.

³⁰ Stevens, *Forgotten Mills*, 58.

³¹ Hunterdon County Cultural and Heritage Commission, 1989, 23.

³² New Jersey Department of Transportation, *The New Jersey Historic Bridge Survey*, prepared by A. G. Lichtenstein & Associates, Inc. (1994), 33.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 7

In Somerset County, timber and stone bridges predominated until 1872, when the Freeholders approved the county's first iron bridge at Weston (no longer extant). Thereafter, iron gradually rose to greater popularity. The new metal truss bridges enjoyed a high rating by the Freeholders, but cost was always a consideration in such decisions. They continued to approve various bridge types, including timber and iron trusses, timber and iron stringer bridges, and stone and brick arches. During the 1880s, Freeholders often asked for alternative bids for wooden and iron structures. By the 1890s, however, iron and steel bridges received approval more often than other types, although all types continued to be built³⁴

For the most part, the financial burden of bridge maintenance was born individually by each county, without contribution by other public or private entity. However, expenses for a "line bridge" – a bridge that crossed over county line – required contributions from each county in which it was located. Line bridges were usually separate items in Freeholder budgets, although the amounts allocated varied from county to county. From 1889 to 1893, Somerset County's total bridge appropriations typically ranged between \$18,000 and \$26,000. The amount budgeted for line bridges averaged approximately 30% of the annual county bridge budget. Hunterdon County, on the other hand, budgeted a consistent \$25,000 per year, with the exception of a slight drop in 1891.³⁵

Under the provisions of the line bridge statute, the repair or replacement of bridges across county lines required the agreement of the Freeholder Boards of both counties involved, and any costs incurred were shared between them. Should the Boards not agree, a supplement to the New Jersey Bridge Act approved March 5, 1884, governed. That provision conferred authority on any justice of the Supreme Court of the state to summarily decide matters relating to line bridges upon certification to the court by one of the parties that no agreement was possible.³⁶

A reading of the Freeholders minute books during the years when the Higginsville Bridges were under consideration reveals a number of instances where the Freeholder Boards met with the Boards of their neighboring counties on the question of the repair or replacement of line bridges. Those meetings appear to have been amicable and resulted in a readily agreed-upon course of action. However, both bridges at Higginsville were subjects of disagreement between the counties that resulted in adjudication.

³⁴ New Jersey Department of Transportation, *The New Jersey Historic Bridge Survey*, SOM-3 - SOM-4; McCahon, "Metal Truss Bridges," Section E: 11-12.

³⁵ Minute Books of the Boards of Chosen Freeholders of Somerset and Hunterdon Counties, New Jersey, 1889-1891. Hunterdon County did not specify line bridges as a separate line item. These appropriations sometimes changed mid-year, often the result of extraordinary expenditures required to repair or replace bridges damaged or lost in the severe storms of 1889 and 1890.

³⁶ *Somerset v. Hunterdon*, 52 N. J. L., 23 Vroom, 512-517 (1890), 512.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 8

Bi-County Bridge # A0605: The Milliken Bridge (1890)

Freeholder Approval

The first discussion related to either of the Higginville truss bridges was scheduled for a Joint Meeting of the Somerset and Hunterdon Freeholders on June 20, 1889. After viewing the existing, apparently deteriorated bridge,³⁶ the Boards adjourned to the hotel at Three Bridges for a joint session to consider the matter. The Somerset Freeholders, however, declined to join Hunterdon, delivering instead the following resolution:

"... After due consideration, this Board refuses to join the Hunterdon County Board of Freeholders in building a Bridge over an *alleged* waterway³⁷ near Higgins Mills in the Township of Readington, Hunterdon County and Hillsborough Township, Somerset County. [Emphasis added.]"³⁸

John Fesch, Somerset County's legal counsel, argued that the bridge at Higgins Mills fell entirely within Hunterdon County boundaries. As a result, the "line bridge" statute – regulating the building or repair of a bridge that crossed county lines – did not apply. Therefore, no contribution by Somerset County was required and any participation by it in Hunterdon's decision-making would be improper. Somerset's challenge closely followed the April 18, 1889 passage of a Supplement to the New Jersey Bridge Statute that further defined that which constituted a line bridge under certain circumstances.

The Hunterdon Freeholders were not unprepared for Fesch's arguments. They attempted to provide the measurements that would prove that this bridge was a line bridge. The Somerset Freeholders rebuffed the efforts and left the hotel soon thereafter. Perhaps both sides anticipated litigation to interpret the 1889 line bridge statute supplement, but nature prevented the papers from being filed immediately.

Just one month later, floods ravaged the East Coast of the United States. Plainfield, in Somerset County, was among the region's hardest hit communities, suffering the loss of many milldams, bridges, and

³⁶ Unfortunately, no further description of this bridge is offered by the Freeholder minutes.

³⁷ This phrase tends to indicate that the waterway to be spanned at this point was not the main channel of the South Branch. Taken together with the description found in the Somerset Freeholder's Minutes of May 29, 1893, which described the *southern* channel as the "main channel" of the river, it seems clear that the river has shifted its course somewhat since the construction of the bridges. Somerset County Board of Chosen Freeholders, Minute Book 6:36 (29 May 1893). The main channel of the South Branch as it exists today is the northern one, while the southern channel is auxiliary.

³⁸ Somerset County Board of Chosen Freeholders, Minute Book 5:457 (20 June 1889); Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892:250-251 (20 June 1889).

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 9

buildings washed away in the torrent.³⁹ On August 14, heavy downpours called "freshets" again resulted in massive flooding and the destruction of dams and bridges in Hunterdon and Somerset Counties.⁴⁰

Freeholders in both counties were hard-pressed to keep up with the repair and reconstruction of the many damaged bridges. Freeholders sometimes met weekly, rather than monthly, to expedite the rebuilding process. Expenditures for bridge repairs and replacements in both counties exploded over \$40,000 – far exceeding the normal bridge appropriations, which usually hovered around \$25,000.⁴¹ (See illustration: "Bridge Expenditures - Somerset County (1889-1893).") Avoiding additional or unnecessary bridge expenditures became especially important, as repair costs skyrocketed.⁴²

Meanwhile, the Higginsville case was working its way through the courts. Justice Magie rendered his decision in June 1890, finding that bridge was, in fact, a "line bridge" requiring contribution from both counties.⁴³ He found that when a river had more than one channel and the separation between the points where the channels divided and then reunited was less than 500', then both channels were part of the same waterway that formed the county boundary. This became an important precedent for future interpretation of the line bridge statute. Its immediate effect was to require contribution from Somerset towards the construction of a new bridge, thereby supporting Hunterdon County's position.

The Court's decision did not end the interchange between the counties, however. There was the question of what type of bridge should be constructed. Somerset adamantly supported a wooden bridge with iron stringers; Hunterdon was equally committed to an iron bridge. The rationale behind their respective positions is not included in either set of Freeholder minutes.⁴⁴

³⁹ "Big Floods in New-Jersey: Dams Carried Away and Buildings Destroyed." *The New York Times* (31 July 1889), 1:6; "A Storm of Wide Extent: Great Damage By Flood in the Orange Valley." *The New York Times* (1 August 1889), 2:1; "Jersey's Loss by Floods: Half a Million Damage in Essex County." *The New York Times* (2 August 1889), 5:1; "A Flood at Plainfield." *Hunterdon County Democrat* (6 August 1889), 3:3.

⁴⁰ "A Robust Visitor!" *Hunterdon County Democrat* (20 August 1889), 3:3.

⁴¹ Minute of the Boards of Chosen Freeholders of Somerset and Hunterdon Counties, New Jersey, 1889-1890.

⁴² In general, the Counties tended to have two different responses to the losses incurred by the flooding. Somerset rather routinely rebuilt or repaired bridges and abutments. Hunterdon County, however, found that it was often less costly to remove a bridge, acquire the necessary land, and construct a road in its place. This may be one reason why there are a greater number of extant metal truss bridges in Somerset County than in Hunterdon.

⁴³ *Somerset v. Hunterdon*, 52 N. J. L., 23 Vroom, 512-517 (1890); "Somerville Must Toe the Mark." *Hunterdon County Democrat* (17 June 1890), 3:3.

⁴⁴ It is, however, possible to speculate on the relative costs and benefits to each county of a bridge at this location. It is likely that Hunterdon County residents would have received greater benefit from the Higginsville Road Bridge, for it was Hunterdon farmers who brought their grain across the bridge to Higgins Mills. The crossing also provided other residents north of the river easy shortcut to the communities of Three Bridges and Flemington, among others. For Somerset, however, the Higgins Mills triangle was an awkward outcrop at its western boundary – it was not particularly "on the way" to anywhere else in the county. The crossing there may have served the residents of Somerset marginally, if at all – with the exception of grist mill owner George C. Higgins.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 10

It took six votes to reach a compromise. The Freeholders formed a joint committee that would solicit bids for a "High Truss Iron Bridge." If the bids exceeded \$2250, all would be rejected and they would then solicit bids for a "Head Beam A Truss iron stringer bridge." This solution was very much in keeping with Somerset County's tendency to solicit alternative bids. The Freeholders also approved a span of 100' with a 16' roadway. The abutment walls were to be constructed of rockface, not less than 6 cubic feet in each stone. The height of the abutment and the length of the wingwalls were left to the discretion of the committee. The plank roadway was to be "of the best Georgia Pine ... and 3 inches thick."⁴⁶

During the 1880s and 1890s, the Freeholders tended to award contracts for shorter spans to local contractors, while awarding longer spans or multi-span bridges to larger, usually national fabricators.⁴⁷ The 100' proposed span for Higginsville fell into the "large span" category. Milliken Brothers of 55 Liberty Street, New York submitted the winning bid for a high truss iron bridge: \$1932.00. Therdon Hendershot, the masonry contractor, constructed the abutments through the autumn months, finally completing them at a total cost of \$3189.23. J. W. Scott provided the gas pipe guard railing for \$62.40.⁴⁸

In the meantime, George C. Higgins had built his own temporary bridge over the South Branch, just west of the existing span. No doubt his mill business suffered during the yearlong wait for the outcome of the litigation in the absence of a safe bridge crossing for his customers.⁴⁹ Soon after the June 1890 compromise, Higgins presented Hunterdon County the bill for his cost to erect the temporary bridge and the grading and laying of walls, but action on the bill was tabled. Higgins presented the same bill to Somerset County a year later.⁵⁰ Research to date does not show whether he was ever compensated.

The Design and Significance of the Milliken Bridge

The seven-panel Pratt through-truss bridge constructed by Milliken Brothers at Higginsville is individually significant for its engineering and design, and for its associations with the history of bridge making in the United States. (See illustrations: "Bi-County Bridges Nos. A0601 and A0605," Sheets 2-4, 6.)

⁴⁶ Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892:369 (21 June 1890).

⁴⁷ McCahon, "Metal Truss Bridges," Section E: 12.

⁴⁸ J.W. Scott was a local contractor who also erected metal truss bridges. The Pratt truss bridge at Woodfern Road, approximately 1 mile downstream from the Higginsville crossing is one of Scott's bridges. McCahon, "Metal Truss Bridges," Section E: 12.

⁴⁹ George H. Cook, *Topographical Map of the Vicinity of Flemington from Somerville & Princeton Westward to the Delaware from original surveys and levelings based on the triangulation of the U.S. Coast and Geodetic Survey* (Trenton NJ: State of New Jersey, 1889).

⁵⁰ Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892:382-383 (9 July 1890); Somerset County Board of Chosen Freeholders, Minute Book 5:628 (8 September 1891). Neither county records a resolution to this matter – action on his bill was either tabled indefinitely or referred to counsel. According to current research, it is unknown whether Higgins was ever compensated.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 11

The basic Pratt truss was patented in 1844 by Thomas and Caleb Pratt and is distinguished by diagonal members in tension and vertical members in compression, except for the hip verticals adjacent to the inclined end posts. This configuration reduced the length of the compression members to help prevent them from bending or buckling. A through truss carries the load level with the bottom chords, and has lateral bracing on the top chords.⁵¹

The *New Jersey Historic Bridge Survey* notes the significance of this bridge as follows:

"The ... Pratt thru truss [at Higginville] is not only one of the most complete examples of the popular late-Nineteenth Century bridge type in the region, but it is a rare example of the New York City fabricator Milliken Bros. ... Few of their bridges have been documented. The design itself appears to be undistinguished from the host of other Pratt trusses of the era but the pristine condition of the bridge is remarkable...

"The Pratt truss was the most common late Nineteenth Century bridge type, but few examples in the region are as complete as the Higginville Road span. It survives in basically unaltered condition and it thus an important example of Nineteenth Century technology and construction techniques. The bridge works in tandem with the 1893 Pratt thru truss (18A0605) [sic]⁵² fabricated by the Wrought Iron Bridge Company of Canton, Ohio....

"The bridge was designed and fabricated by the Milliken Brothers of Brooklyn, New York (1887-1907).⁵³ There are few documented examples of their work, which increases the historical importance of the Higginville Road span. Milliken Brothers was established in 1887 by brothers Foster and Edward Milliken as the successor to their father's Brooklyn company, Milliken Smith & Co., agent for the Phoenix Iron Works. The brothers took on structural iron and steelwork for buildings and, in 1893, they dropped their association with the Phoenixville company in order to concentrate on fabricating and erecting their own design. Foster Milliken was a structural engineer trained at Columbia University. The company flourished primarily on its structural steel and building operations with branch offices located all over the world. Because of its phenomenal growth, the brothers moved their operation from Brooklyn to a 175-acre plant complete with an open-hearth steel mill on Staten Island in 1903-06. The expansion proved too costly and ambitious, and the firm failed

⁵¹ Allen T. Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," American Association for State and Local History, *History Now*, Technical Leaflet 95, Vol. 32, No. 5 (May 1977): 2, 3, and 6.

⁵² *New Jersey Historic Bridge Survey*, Structure # 18A0601 [sic; correct number is #18A0605].

⁵³ These dates conflict with Victor C. Darnell, *Directory of American Bridge Building Companies 1840-1900* (Washington DC: Society for Industrial Archeology, 1984), 43, which reports that Milliken Brothers was in existence from 1891-1901. The 1887 date appears to be the correct one., given the date of the maker's plaque. The Brooklyn address, however, conflicts with information on the maker's plaque, which establishes the firm's address as 55 Liberty Street, New York, in Lower Manhattan.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 12

in 1907. Edward Milliken died in 1906, and Foster went on to work for the construction firm of Charles T. Wills.

"Milliken Bros. is representative of the many small designers/fabricators who dominated 19th Century bridge construction. They obviously learned the trade serving as representatives for another company, and then went off on their own. The pattern is not unusual. Their corporate history is a significant contributor to the understanding of how early metal truss bridges were designed, marketed and built."

In annual operating capacity, Milliken Brothers was the fourth largest independent bridge company in the United States in 1903.⁵⁴

The fabricator's mark, "Phoenix" – most likely for the Phoenix Iron Company – appears on several rolled members of the Milliken bridge, demonstrating a relationship between Milliken Brothers and the Phoenixville company at least through 1890. Controlled by the Reeves family, the Phoenix Iron Company first rose to prominence in the bridge-building industry as a result of the proprietary "Phoenix column," a built-up wrought iron circular section that is stronger and more economical than its cast iron equivalent. Patented in 1862 by company president Samuel Reeves, this section advanced the proliferation of metal truss bridges for railroads.

The Phoenix Iron Company built a 151-foot span for Smith, Latrobe & Company during 1866-1868, which may have led to the formation in 1870 of Clarke, Reeves and Company, later the owner of Phoenix Bridge Works (1870-1884). It maintained offices in Philadelphia and Phoenixville, Pennsylvania. From 1884 to 1901, this company was known as the Phoenix Bridge Company.⁵⁵

Phoenix was so successful in building railroad bridges that the company totally ignored the road bridge market during the 1860s and 1870s. It did not focus on this sector until after the early 1880s, when the increased weight of rolling stock demanded higher load-bearing capacity than the Phoenix column could deliver.⁵⁶ The presence of Phoenix-made compressive members in the Milliken Bros. bridge at Higginsville is evidence of that company's shift from rail bridges to the fabrication of highway bridges and bridge components. Although engaged in bridge building itself, the company also sold bridge components to other bridge construction firms as well, including Milliken Brothers and J. W. Scott, the local contractor who constructed the nearby Woodfern Road truss span.⁵⁷

⁵⁴ Darnell, Appendix A, 77-81. No other production figures were available for Milliken in this Appendix.

⁵⁵ Darnell, 65.

⁵⁶ *New Jersey Historic Bridge Survey*, 46.

⁵⁷ *New Jersey Historic Bridge Survey*, SOM-4

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 13

The Pratt truss, like that used in the Higginville bridge, was the most commonly used truss design in the United States. It was recognized for its simplicity (composed of rolled plate, angle, and or channel shapes), its easily determined structural action, and its economy of fabrication.⁵⁷ The bridge's pinned connections are characteristic of Nineteenth Century bridges, in contrast to riveted ones, which are more typical of Twentieth Century engineering. The use of pins allowed for ease of erection in the field and, composed of wrought iron or steel eyebar, tended to be regarded as more trustworthy than those made exclusively with rolled sections.⁵⁸

The long-lived Milliken Brothers bridge over the South Branch is a fine example of the quality and durability of a bridge designed and fabricated by that company and is typical of truss bridge design of the late Nineteenth Century.

Bi-County Bridge #A0601 - The Wrought Iron Bridge Co. Bridge (1893)

Freeholder Approval

After the construction of the Milliken Bridge over the South Branch at Higginville, apparently there was little co-county bridge business to bring the two Freeholder Boards together. Discussions of whether repairs should be made to a railroad bridge a few hundred yards from the South Branch at Higginville were uneventful, resulting in a rather perfunctory decision to approve the repairs.⁵⁹

On May 29, 1893, however, the Boards met together to consider two bridges at Higginville - the deteriorating railroad bridge and an existing 88' wooden bridge spanning the south channel next to Higgins Mills, with the Somerset County minutes describe as the "main channel" of the river. This was the first time the bridge was described in the Freeholder minutes as the "Riverside Bridge," named after the new flag station, "Riverside," created by the South Branch Rail Road in June 1890.⁶⁰

The Freeholders first voted to fill in the railroad cut and the remove the bridge over the tracks, then considered the span over the river. The minutes of this joint session (recorded by the secretary of the

⁵⁷ McCahon, "Metal Truss Bridges," Section E: 2.

⁵⁸ McCahon, "Metal Truss Bridges," Section E: 2.

⁵⁹ Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892 (4 June 1891); Somerset County Board of Chosen Freeholders, Minute Book 5 (4 June 1891). This rail bridge was apparently that of the South Branch of the Central Railroad of New Jersey over which Higginville Road passed. It was also regarded a "line bridge" within the meaning of the statute. The repairs were necessitated by the railroad having raised its roadbed. This bridge was eventually removed and the cut filled in, by joint action of Hunterdon and Somerset Counties. This rail line is no longer extant.

⁶⁰ "Local Department," *Hunterdon County Democrat* (1 July 1890), 3:1.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 14

Hunterdon Board of Freeholders) were disputed by Somerset County, which supported only repairs to the wooden bridge, including the insertion of brace trusses with a head beam. The official minutes, however, recorded joint approval for construction of a "High Truss Iron Bridge" of 100' span with a 16' wide roadway.⁶¹

When Somerset County discovered the error, it refused to adopt the minutes and again challenged the need for a new truss bridge. It immediately instructed its counsel to make application to the court to appoint engineers to review the existing bridge and report on its condition.⁶² The court appointee – a Morris County civil engineer named Howell – returned his report three weeks later, in which he condemned the bridge and requested danger notices be posted. In their following session, the Somerset Freeholders, after first considering alternate motions for a wooden replacement bridge and for an iron bridge the same span as the existing, finally resolved to construct a "high truss iron bridge," 100 feet in length with new abutments and wingwalls.⁶³ It joined Hunterdon County in approving the project at the joint meeting two days later.⁶⁴

The contract for the bridge's construction was awarded to the Wrought Iron Bridge Company of Canton, Ohio (see display advertisement below), which specialized in the construction of highway bridges.⁶⁵ According to the Somerset County Freeholder Minutes, the company had built several bridges for Somerset County in the past, including the Rockview Avenue Bridge, North Plainfield (1889); the Richmond Street Bridge, North Plainfield (1889); the Bridge Street bridge, Somerville (1890); Rocky Hill Bridge (1892),⁶⁶ as well as the Nevius Street bridge, Raritan Township (1886). It is unknown at the time of this writing, how many of these bridges are still extant. The *New Jersey Historic Bridge Survey* seems to indicate that only the Nevius Street Bridge – the earliest extant documented metal truss bridge constructed in Somerset County⁶⁷ – survives.

⁶¹ Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892 (29 May 1893).

⁶² Somerset County Board of Chosen Freeholders, Minute Book 5 (13 June 1893).

⁶³ Somerset County Board of Chosen Freeholders, Minute Book 5 (10 July 1893).

⁶⁴ Hunterdon County Board of Chosen Freeholders, Minute Book 1886-1892 (12 July 1893).

⁶⁵ McCahon, Mary and Patrick Harshbarger. "Raritan Bridge, a/k/a Nevius Street Bridge, Raritan-Hillsborough Townships, Somerset County, NJ." National Register of Historic Places Registration Form; this property was listed on New Jersey Register of Historic Places (11 September 1992); and on the National Register of Historic Places (12 November 1992) as part of the Multiple Property Listing "Metal Truss Bridges of Somerset County, NJ 1885-1927," cited herein.

⁶⁶ Somerset County Board of Chosen Freeholders, Minute Book 5 & 6 (1889 - 1893).

⁶⁷ McCahon, "Metal Truss Bridges," Section F: 3.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 15

The Design and Significance of the Wrought Iron Bridge Company Bridge

The Pratt through-truss bridge⁶⁹ was fabricated and erected in Higginsville by the Wrought Iron Bridge Company in 1893. It is individually significant for its engineering and design, and also as part of the historic resource known as the Higginsville Road Bridges. The arrangement of compression and tension members is identical to those found in the Milliken Bridge. However, there are differences in the configuration of the built-up members and some connection detail. (See illustrations: "Bi-County Bridges Nos. A0601 and A0605," Sheets 1-6.)

The *New Jersey Historic Bridge Survey* notes the significance of this bridge as follows:

"The bridge was designed and fabricated by the Wrought Iron Bridge Company of Canton, Ohio. Organized in 1864 by David Hammond, the company was one of the first wrought iron truss manufacturers, and continued in existence for 36 years before being absorbed by the giant American Bridge Company in 1900. The company claimed in its promotional literature to have constructed trusses in 30 states, mostly east of the Mississippi River. In Canton, the fabricator had shops for the drafting, laying out, shearing, drilling, punching, and riveting of truss members, but did not roll its own steel. The Wrought Iron Bridge Company was recognized as one of the most significant regional manufacturers of iron and steel trusses because of its workmanship and prolificacy. Unlike many of its competitors, the Wrought Iron Bridge Company did not specialize in one truss type, but constructed a wide diversity of small and large, inexpensive and expensive truss types, depending on local preferences. According to the company's 1885 trade catalogue, at least 10 other Wrought Iron Bridge Company trusses were built in New Jersey prior to 1885: six in Middlesex County, three in Mercer County, and one in Union County. One other Wrought Iron Bridge Company bridge is known to survive in Somerset County: the well preserved Nevius Street Bridge (1886), a two-span double intersecting Pratt thru truss across the Raritan River in the town of Raritan.

"The Wrought Iron Bridge Company was one of the most successful of the many small designers/fabricators who dominated 19th Century bridge construction. The Higginsville Road bridge is an important example of their craftsmanship, as well as a locally significant example of a bridge type that was one common in Somerset County."⁷⁰

⁶⁹ Although the *New Jersey Historic Bridge Survey* describes this bridge as a "Pratt half-hip" design, Comp would describe it as a true Pratt through-truss, since the length of the end panel is equal to that of an interior panel. See Comp, 6.

⁷⁰ *New Jersey Historic Bridge Survey*, Structure # 18A0605 [sic: correct number is #18A0601].

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 16

Like the Milliken bridge, this pin-connected metal truss bridge was typical of Pratt truss bridges of its day. However, the hanger system at the hip verticals includes a distinctive detail in the four-pronged basket loop (see illustration: "Bi-County Bridges Nos. A0601 and A0605, Sheet 5: Details – Bridge No. A0601" and Photo B-8 first identified in the *New Jersey Historic Bridge Survey*.⁷¹ This detail appears to have been hand-forged, probably at the Canton, Ohio factory.⁷²

The function of the hip verticals, which carry tensile loads, is different from that of the interior verticals, which carry compressive loads. As a result, they are configured differently: each hip vertical consists of a single 1-1/5" square bar terminating in a 4-prong basket loop that connects to the lower pin. Each interior vertical, on the other hand, consists of a pair of toe-out channels with lacing bars with a slotted hole gusset plate on the bottom for making the connection to the lower pin. The interior verticals are much stiffer than the wrought iron hip verticals and are able to withstand the compressive stresses of both dead and live loads. A single 1" square bar hanger supports each end of each floor beam.

The loop consists of a vertical wrought iron eyebar, 1-1/5" square that splits into four 1" prongs at the bottom and loops around the pin connection, straddling the vertical U-bolt upon which hangs the I-beam for the decking. The connection of the hip vertical to the top chord and endpost is more typical.

The basket loop detail appears to be unusual, if not unique, in American metal truss bridge construction.⁷³ Authorities consulted tended to regard it as a shop craftsman's solution to connection problem rather than one that was "engineered" and patented. It may even have been the result of an experiment. By providing loops on both sides of the U-bolt, the basket loop provided additional strength and stability to the connection.⁷⁴ Other advantages to the basket loop configuration include:

- 1) Ease of field assembly (only one bar to handle during assembly, as opposed to two eye bars, such as in the Milliken Bridge);
- 2) Optimization of member size (smaller members reduce the dead load, i.e. the weight of the bridge itself);

⁷¹ *New Jersey Historic Bridge Survey*, Structure # 18A0605 [sic: correct number is #18A0601].

⁷² David Simmons, Correspondence with Preparer dated 20 October 1999.

⁷³ Eric DeLony, Chief, Historic American Engineering Record, telephone interview with Preparer, 19 October 1999; David Simmons, telephone interview with Preparer, 19 October 1999. A 2-pronged forged fork connection was recently noted to exist in the Haughs of Drimmie Bridge constructed prior to 1834 in Glenericht, Scotland. Ted Ruddock, "Blacksmith Bridges in Scotland and Ireland 1816-1834," *Proceedings of the International Conference on Historic Bridges to Celebrate the 150th Anniversary of the Wheeling Suspension Bridge, October 21-23, 1999* (Morgantown, West Virginia: West Virginia University Press, 1999), 133-146: 141-142.

⁷⁴ Brian Maurer, P. E., Keller & Kirkpatrick, telephone interview with Preparer 9 November 1999.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 17

- 3) Symmetry of pin configuration (the prongs cradle the lower pin while providing clearance for the single floor beam hanger to align with the single hip vertical).

The interior verticals, configured as built-up members, are constructed in a standard detailing practice of the time period. The 4-pronged basket loop, however, appears to be a unique approach to simplify the pin connection at the hip vertical.⁷⁵

David Hammond incorporated the Wrought Iron Bridge Company in 1871. By 1880, the company had built 3,300 spans, varying in length from 20 to 301 feet, and in width from 6 to 120 feet. The company was reported to have built more highway bridges since it started than any other works in the country. They had been erected in 25 states and some in Canada.⁷⁶ The company's annual operating capacity was 10,000 long tons from 1894 - 1898.⁷⁷ In 1900, it was absorbed into the American Bridge Company founded that year by J.P. Morgan. It was one of 24 companies acquired by American Bridge that year, which together represented approximately 50% of the nation's fabricating capacity.⁷⁸ By 1903, its annual operating capacity increased to 12,000 long tons.

The Wrought Iron Bridge Company was a powerhouse among bridge fabricators operating in the United States. Its Higginsville bridge is a fine example of its notable engineering design and quality construction, and remains almost unchanged from its original construction.

Conclusion

Both of the Higginsville Road Bridges are individually eligible for the National Register of Historic Places under Criterion C as a result of the historic significance of their distinctive engineering, design, and method of construction. In addition, both bridges meet the registration requirements for the National Register Multiple Property Listing entitled "Metal Truss Bridges of Somerset County 1885-1927," and are therefore worthy of inclusion within that listing. Because of they are closely linked to one another in their physical location, their similar histories, and their similarity of function and design, they should be considered as a single historic resource having two related structures within its boundary.

⁷⁵ Brian Maurer, P. E., Keller & Kirpatrick, Inc., Engineers. Memorandum to Preparer dated November 19, 1999.

⁷⁶ "Bridge Builders of Canton and Massillon," Broadcast WHBC-WHBCFM, November 7, 1948, reported in Edward T. Heald, *The Stark County Story*, Vol. 1 (Canton, OH: The Stark County Historical Society, 1949), 628-631.

⁷⁷ Darnell, 48.

⁷⁸ Darnell, Appendix C, 85. In 1901, the American Bridge Company became a subsidiary of United States Steel Corporation, Pittsburgh, Pennsylvania.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 18

Chronology

- 1683 John Bennet mapped as owner of parcel now known as Higginville.
- 1687 Keith partition line drawn, dividing the state into East and West Jersey.
- 1712 John Kay owner of parcel that later became known as Higginville.
- 1743 Lawrence's partition line drawn, moving the boundary of East and West New Jersey farther to the East through the middle of Somerset County.
- 1850 Gristmill, store and milldam mapped on South Branch of the Raritan River near current location of the Higginville Road bridges.
- 1851 Store and possible bridge structure mapped near Higginville Road bridge site.
- c. 1870s Power generated by steam engines begins to displace water power.
- 1873 Brokaw and Higgins mapped as owners of mill site at Higginville.
- c. 1880s The roller process begins to replace the older methods of flour milling; farmers increasingly turn to outside suppliers for grain feed, contributing to the decline of local gristmills.
- 1884 Supplement to the New Jersey Bridge Act approved March 5, 1884, authorizing the New Jersey Supreme Court to settle line bridge disputes.
- 1886 Peter W. Brokaw deeded over 119 acres to George C. Higgins for \$5000.
- 18 April 1889 Supplement passed to the New Jersey Bridge Statute that defines what shall constitute line bridges over waterways with one or more channels.
- 20 June 1889 Somerset County Board of Freeholders refuses to join Hunterdon County in a joint session to discuss matters pertaining to a bridge at Higginville on the grounds that it lay solely within the jurisdiction of Hunterdon County.
- 30 July 1889 Severe floods wash away milldams, bridges and buildings in many parts of Somerset County NJ; the community of Plainfield NJ is hardest hit.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 19

- 3 August 1889 Hunterdon County Board resolves to bring the matter of the Higginville Bridge before the New Jersey Supreme Court.
- 14 August 1889 No fewer than 40 bridges in Hunterdon County swept away by torrential rainfall; Somerset County bridges also suffer great damage.
- June 1890 Supreme Court rules on Higginville Bridge dispute; requires Somerset County to contribute to repair or replacement of Higginville Bridge.
- 21 June 1890 Joint meeting of Hunterdon and Somerset Freeholders on construction of a new bridge at Higginville, in accordance with NJ Supreme Court decision. Compromise reached.
- June 1890 South Branch Railroad creates "Riverside," a new flag station near Higginville Bridges, increasing access to train travel in area.
- 9 July 1890 Higgins Bros. presents Hunterdon Freeholders a bill for damages sustained by the counties' failure to provide a bridge and Higgins' cost to build and maintain a temporary bridge.
- 11 February 1891 Milliken Bros. awarded contract for construction of bridge at Higginville in the amount of \$1932.00.
- 8 September 1891 Higgins Bros. presents Somerset Freeholders a bill for damages sustained by the counties' failure to provide a bridge and Higgins' cost to build and maintain a temporary bridge.
- 29 May 1893 Joint meeting of the Somerset and Hunterdon County Freeholders regarding two bridges near Higgins Mills -- a railroad bridge and the existing wooden bridge on the south channel of the South Branch.
- 13 June 1893 Somerset Freeholders refuse to adopt the minutes of the May 29, 1893 joint meeting with Hunterdon County Freeholders; challenge need for new bridge.
- 16 June 1893 Somerset Freeholders vote to submit the matter to Judge Magie to obtain an engineers report.
- 10 July 1893 Somerset County Freeholders receive the report of the Court appointed engineer, who condemned the existing bridge. They then approve a 100' long "high truss iron bridge" with new abutments and wingwalls.

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 8 Page 20

- 12 July 1893 Joint meeting between Hunterdon and Somerset Freeholders. They agree to construct a new bridge.
- 19 July 1893 Contract for the iron bridge across the south channel of river at Higgins Mills awarded to Wrought Iron Bridge Co. of Canton, Ohio.
- c. 1920s Former George C. Higgins residence used as a summer resort.
- 1922 Rowland's Mill is dismantled and moved the nine miles to Higginsville from a site in neighboring Readington Township, Hunterdon County for use as a power generating facility.
- c. 1940s Former George C. Higgins residence used as summer camp facilities for children with disabilities.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 9 Page 1

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United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 9 Page 2

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 9 Page 3

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 9 Page 4

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 9 Page 5

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 10 Page 1

VERBAL BOUNDARY DESCRIPTION

The boundary for the Higginville Road Bridges encompasses a site that includes the entirety of the area subject to the publicly-owned easement for both bridges, following a line on both sides of Higginville Road where it passes over the South Branch of the Raritan River and extending from the ends of the wing walls and bridge abutments on both sides of the river, including the common abutment between the two nominated structures.

VERBAL BOUNDARY JUSTIFICATION

The boundary encompasses the site occupied by the two nominated structures, as well as their respective supporting abutments and related road surfaces.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 10 Page 2

PHOTOGRAPHS

The following information is the same for all of the photographs listed below:

1. *Name of Property:* The Higginville Road Bridges
2. *County, City, and State where located:* Hillsborough Township, Somerset County & Readington Township, Hunterdon County, New Jersey
3. *Name of Photographer:* Mary Delaney Krugman
4. *Date of Photographs:* May 1999
5. *Location of original negatives:* Mary Delaney Krugman Associates, Inc.
36 Park Street
Montclair, New Jersey 07042

6 & 7 Description of views; number of photograph:

- Photo 1 of 29 The Higginville Road Bridges (foreground: Wrought Iron Bridge Co. Bridge, 1893; background: Milliken Bridge, 1890), looking NE;
- Photo 2 of 29 The Higginville Road Bridges (foreground: Milliken Bridge, 1890; background: Wrought Iron Bridge Co. bridge, 1893), looking S;
- Photo 3 of 29 Main (northernmost) channel of the South Branch of the Raritan River from the Milliken Bridge, looking NW;
- Photo 4 of 29 Auxiliary (southernmost) channel of the South Branch of the Raritan River from the WIB bridge, looking NW;

The Milliken Brothers Bridge (1890)

- Photo A-1 of 29 Milliken Bridge looking N showing truss bridge and abutments;
- Photo A-2 of 29 Milliken Bridge looking NE showing truss bridge and abutments;

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

The Higginsville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 10 Page 3

- Photo A-3 of 29 Milliken Bridge looking NE from riverbank, looking up and NE showing western bottom chord and interior vertical members in foreground, the eastern top chord in the background;
- Photo A-4 of 29 U-shaped hangers on western elevation connecting the floor beams to interior verticals, looking E;
- Photo A-5 of 29 End post on western elevation anchored into abutment, looking SE.
- Photo A-6 of 29 Milliken Bros. maker's plaque on northeastern portal;
- Photo A-7 of 29 "Phoenix" fabricator's mark on bridge member, looking W
- Photo A-8 of 29 Hunterdon County Bridge identification marking (# R-184-S) on southeastern end post, looking NE.
- Photo A-9 of 29 Northern approach roadway with side railings, looking SSW.
- Photo A-10 of 29 Underside of Milliken Bridge, showing decking and longitudinal stringers and transverse floor beams, looking NE.
- Photo A-11 of 29 Western face of common abutment, looking NE.
- Photo A-12 of 29 Eastern face of common abutment, looking NW.

The Wrought Iron Bridge Company Bridge (1893)

- Photo B-1 of 29 WIB, looking SE.
- Photo B-2 of 29 WIB and auxiliary channel of South Branch of the Raritan River, looking NW.
- Photo B-3 of 29 Lower chord, interior verticals with laced channels, and diagonals with turnbuckles, looking SE.
- Photo B-4 of 29 Connection detail showing pinned joint of end post, top chord, hip vertical, diagonal, and top chord lateral bracing.
- Photo B-5 of 29 View of interior of bridge from roadway, showing diagonals and counters with turnbuckles, verticals, and steel guide rail, looking SW.

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

**National Register of Historic Places
Continuation Sheet**

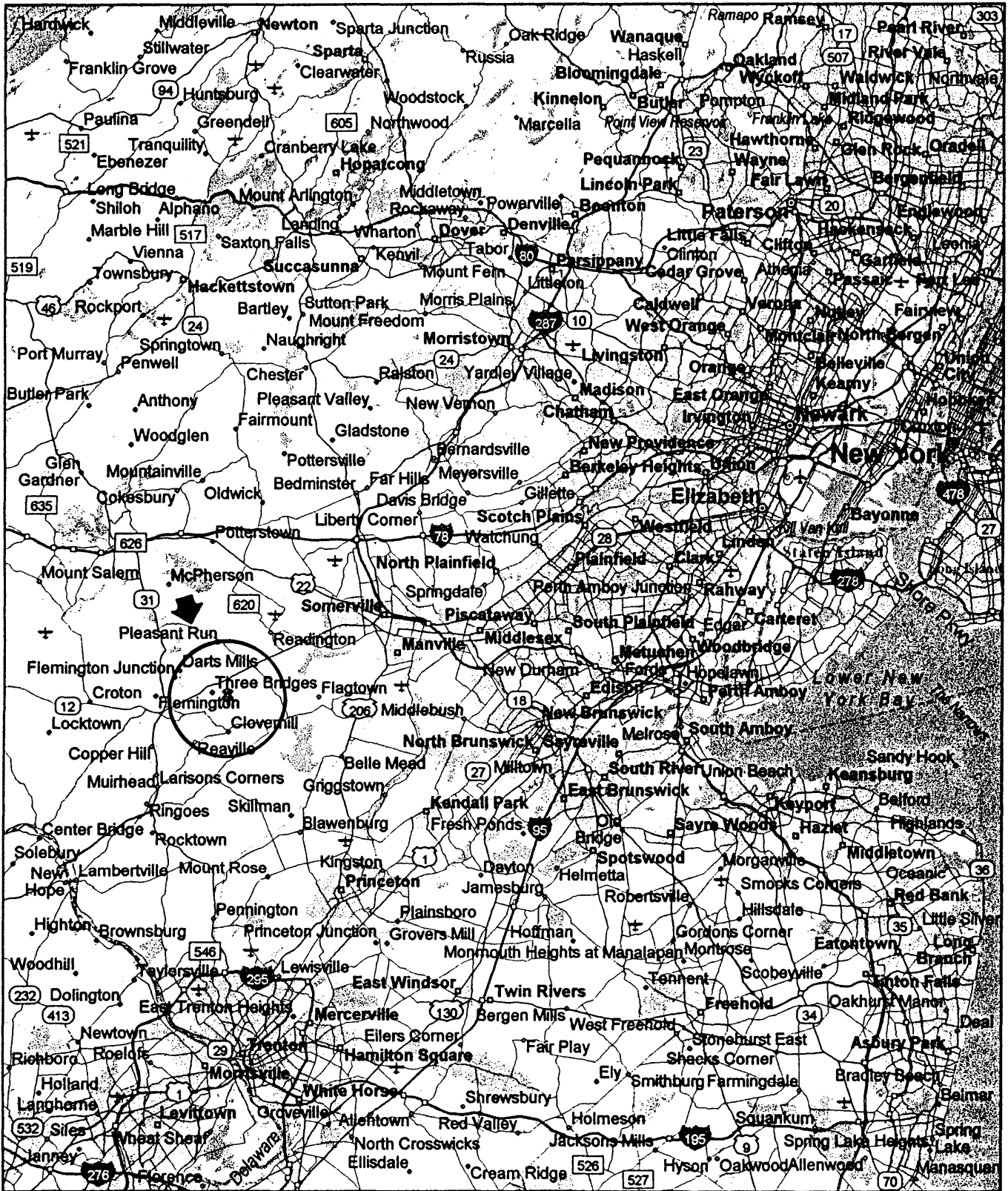
The Higginville Road Bridges
Hillsborough Township, Somerset County
& Readington Township, Hunterdon County
New Jersey

Section number 10 Page 4

- Photo B-6 of 29 U-shaped hanger and floor beam connection at interior vertical, looking NE.
- Photo B-7 of 29 U-shaped hanger and floor beam connection at interior vertical, looking SE.
- Photo B-8 of 29 4-pronged basket loop connecting hip vertical and pin on western elevation, looking down from midpoint of span.
- Photo B-9 of 29 Portal bracing and interior view of makers' plaque, looking SW.
- Photo B-10 of 29 Underside view of bridge roadway showing transverse floor beams, longitudinal stringers, decking, and ashlar abutment and western wingwall, looking SW.
- Photo B-11 of 29 Embossed fabricator's mark on northwestern end post, looking W.
- Photo B-12 of 29 Ornamental triangular stone cuts on coping stone of eastern wingwall, looking N.
- Photo B-13 of 29 Ornamental triangular stone cuts on coping stone of western wingwall, looking W.

Location of Higginsville Road Bridges

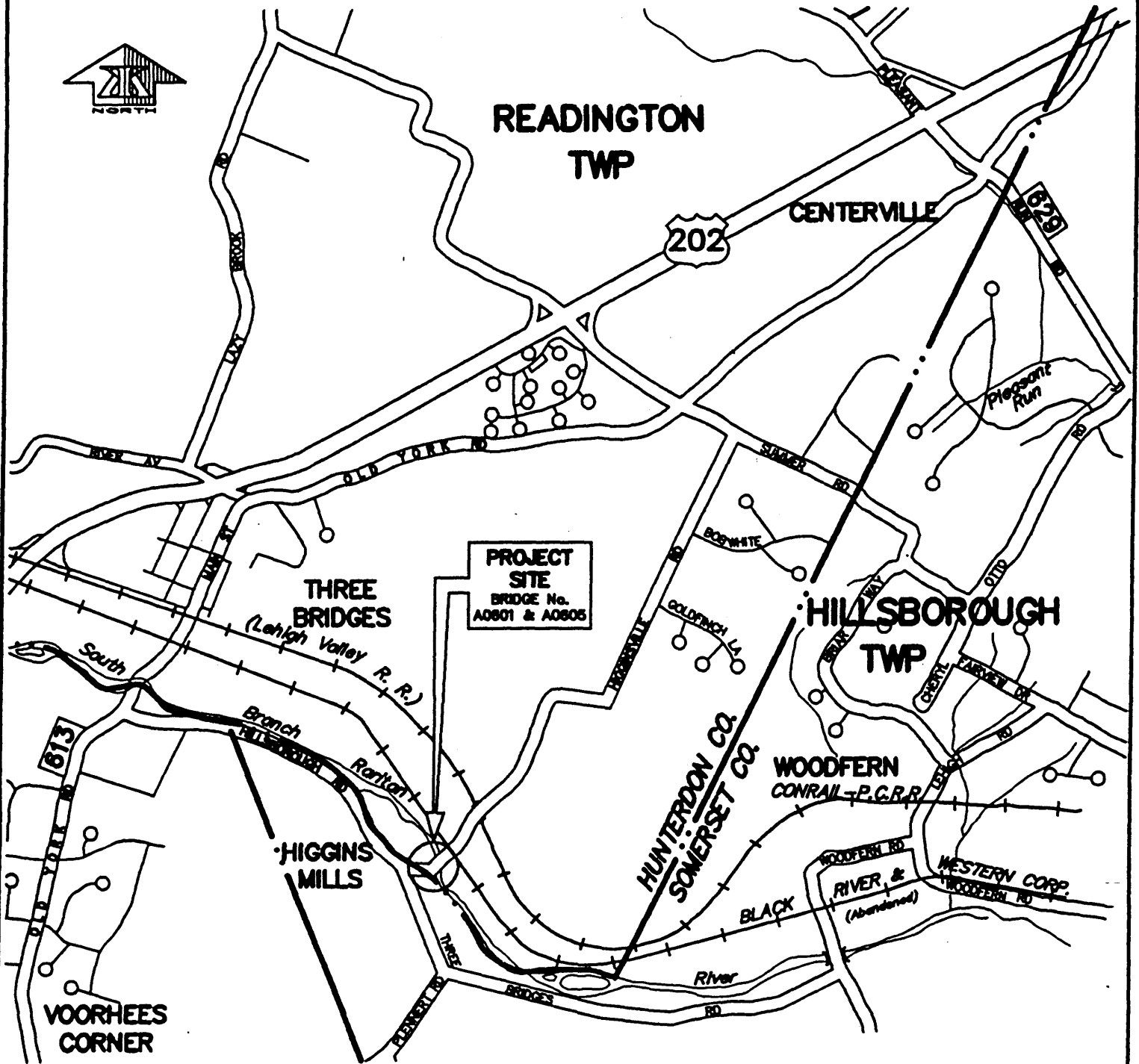
Somerset - Hunterdon County, New Jersey



Microsoft Streets
Streets98

Location Map

The Higginsville Road Bridges
 Hillsborough Twp, Somerset County
 & Readington Twp., Hunterdon County
 New Jersey



900 Landex Plaza, Parsippany, N.J. 07054 201-377-8500

CONSULTING ENGINEERS
 LAND SURVEYORS

LANDSCAPE ARCHITECTS
 PLANNERS

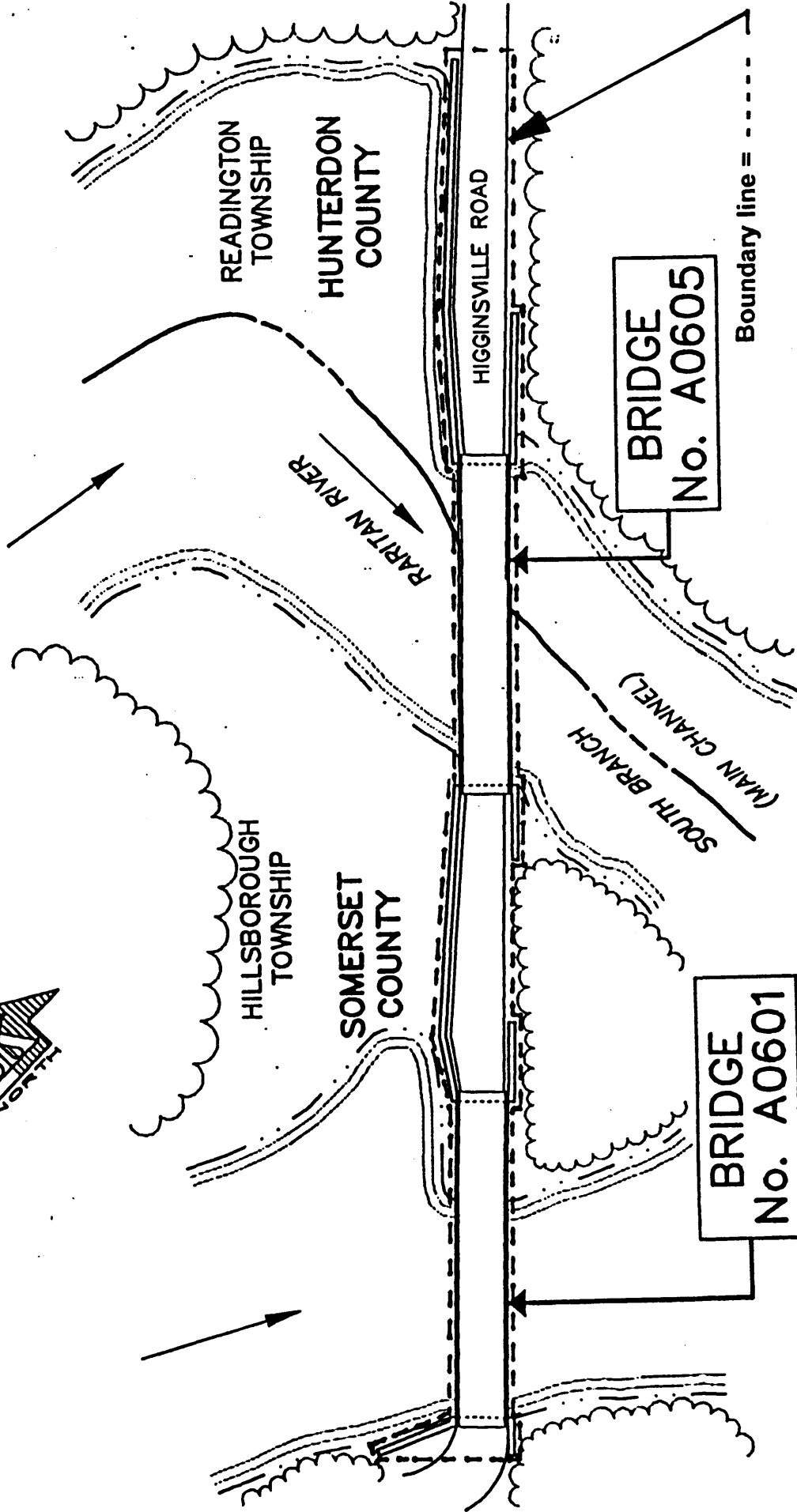


REHABILITATION OF BI-COUNTY BRIDGES

No. A0801 & No. A0805

HIGGINSVILLE ROAD
 OVER SOUTH BRANCH OF THE RARITAN RIVER

HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
 READINGTON TOWNSHIP, HUNTERDON COUNTY



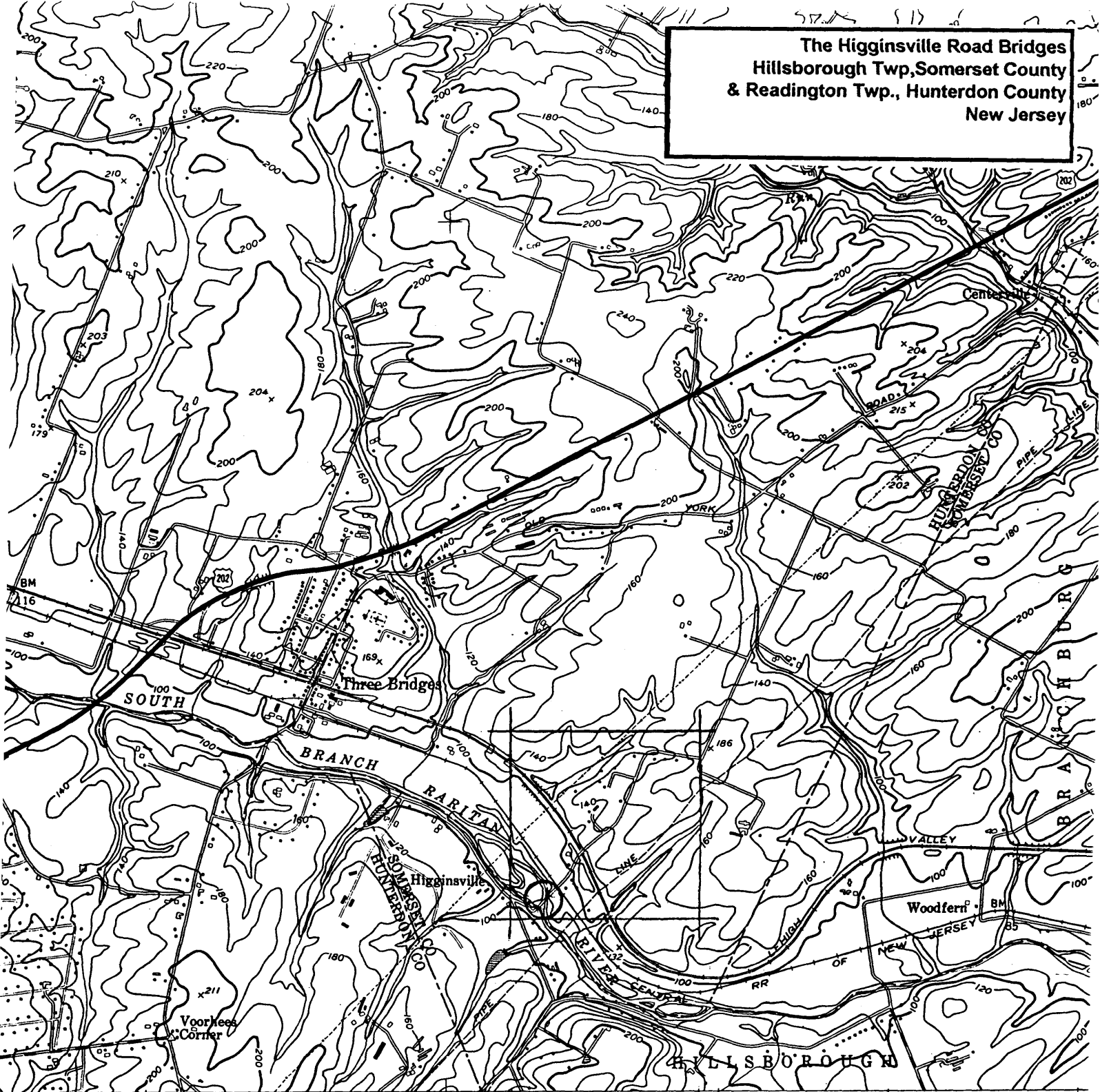
SCALE: 1.00" = 45.71'

The Higginsville Road Bridges
Hillsborough Twp., Somerset County
& Readington Twp., Hunterdon County
New Jersey

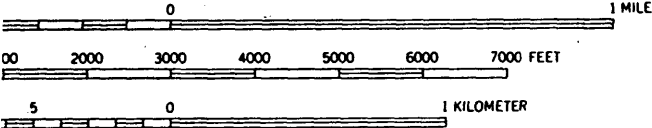
Site Map
1" = 45.71'

Keller & Kirkpatrick, Inc
900 Lakeside Plaza, Perth Amboy, N.J. 07054 201-377-8600
CONSULTING ENGINEERS LANDSCAPE ARCHITECTS
LAND SURVEYORS

The Higginville Road Bridges
 Hillsborough Twp., Somerset County
 & Readington Twp., Hunterdon County
 New Jersey



SCALE 1:24000



ROAD CLASSIFICATION

- Heavy-duty
- Medium-duty
- Light-duty
- Unimproved dirt
- U. S. Route
- State Route



QUADRANGLE LOCATION

CONTOUR INTERVAL 20 FEET
 ANAL GEODETIC VERTICAL DATUM OF 1929

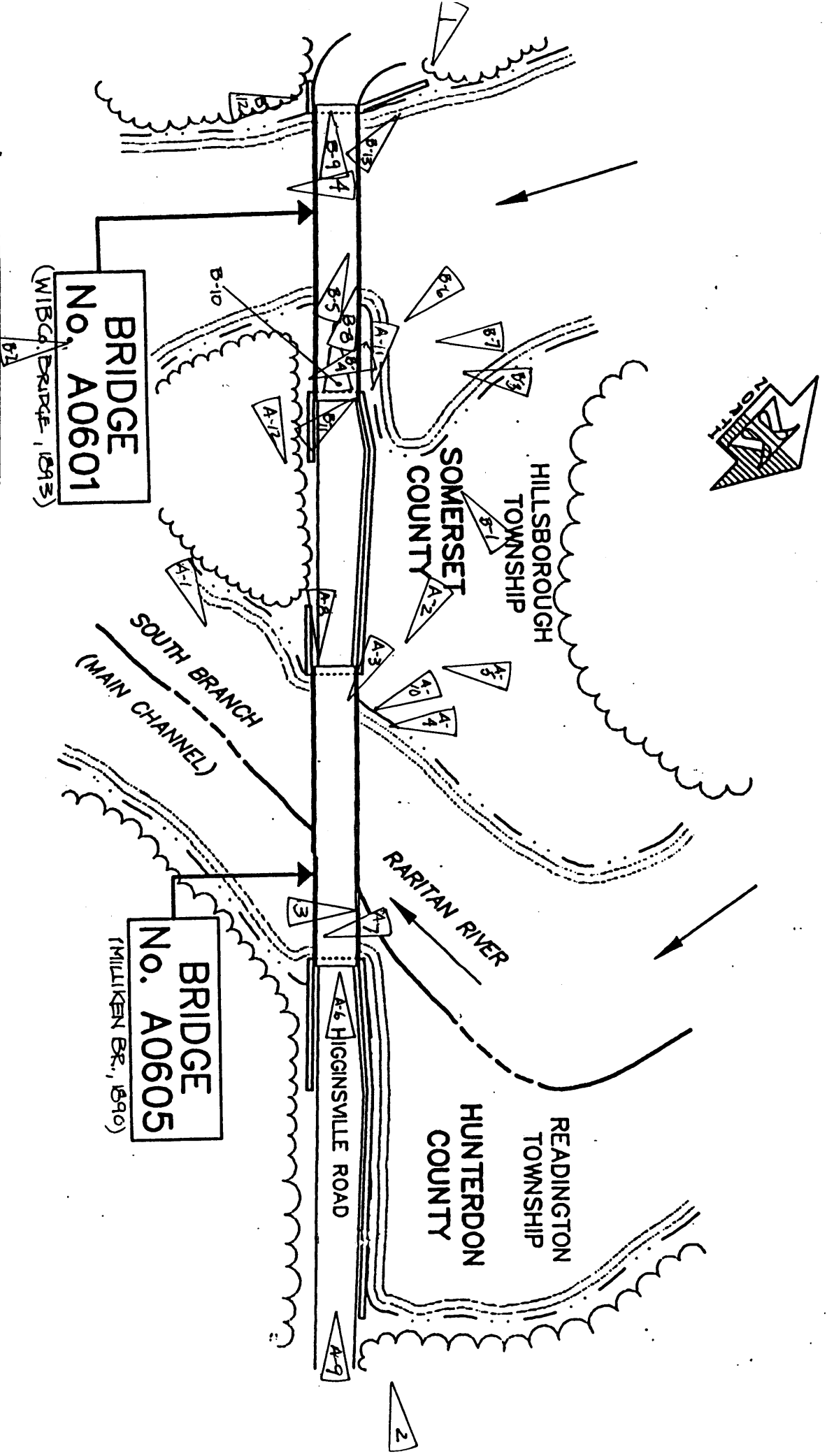
COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
 FOR SALE BY U. S. GEOLOGICAL SURVEY
 COLORADO 80225, OR RESTON, VIRGINIA 22092
 TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

FLEMINGTON, N
 N4030-W7445/7.5
 PHOTOINSPECTED 1977
 1954
 PHOTOREVISED 1970
 AMS 6065 III SE-SERIES V

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 LAND SURVEYORS PLANNERS

Key to Photographs

The Higginsville Road Bridges
 Hillsborough Twp, Somerset County
 & Readington Twp., Hunterdon County
 New Jersey



BRIDGE
No. A0601
 (WIBC BRIDGE, 1893)

BRIDGE
No. A0605
 (MILLIKEN BR., 1890)

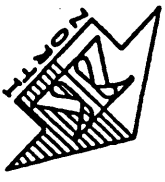
HIGGINSVILLE ROAD

SOUTH BRANCH
 (MAIN CHANNEL)

RARITAN RIVER

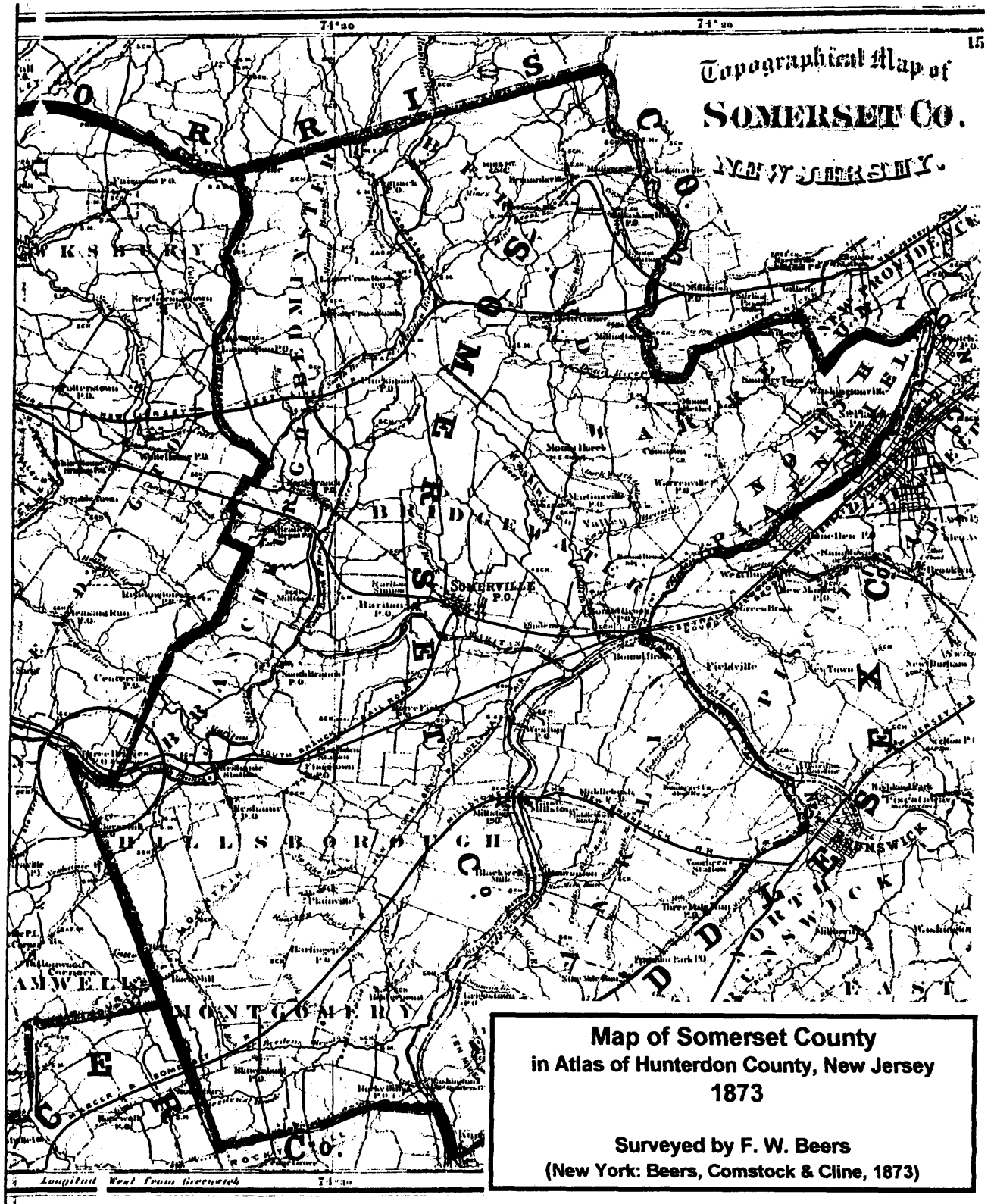
SOMERSET COUNTY
 HILLSBOROUGH TOWNSHIP

READINGTON TOWNSHIP
 HUNTERDON COUNTY



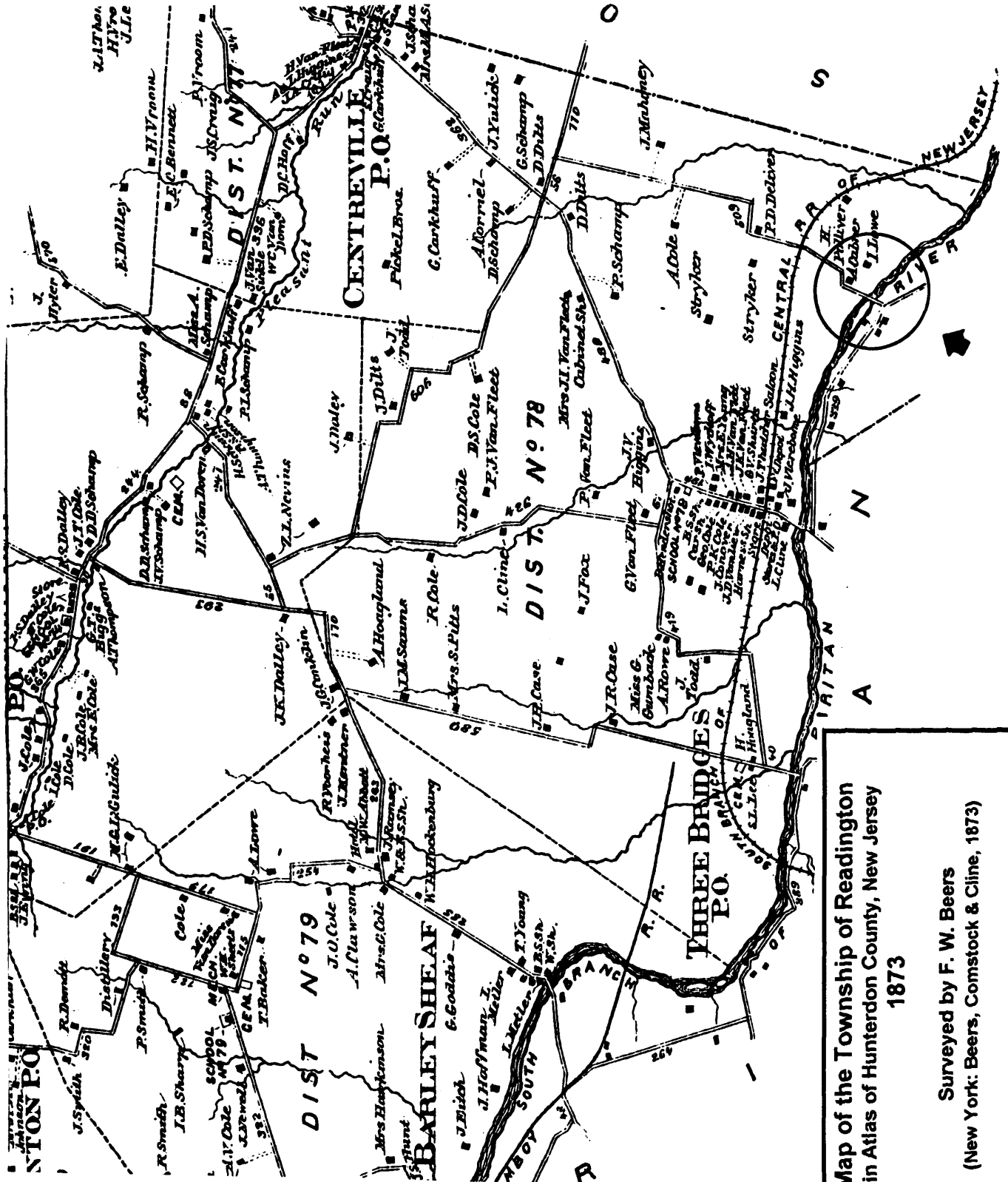
2

The Higginsville Road Bridges
Hillsborough Twp, Somerset County
& Readington Twp., Hunterdon County
New Jersey



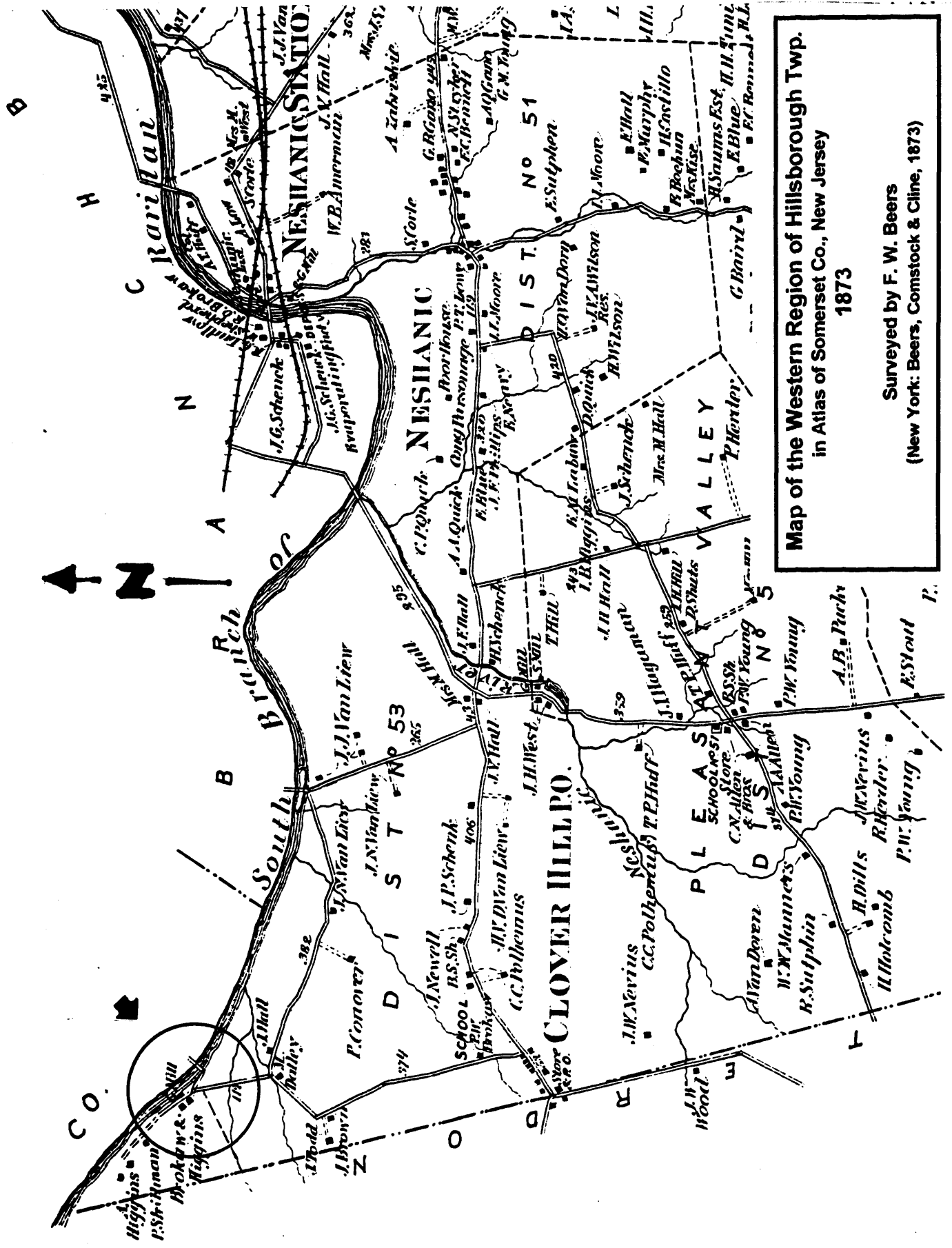
Map of Somerset County
in Atlas of Hunterdon County, New Jersey
1873
Surveyed by F. W. Beers
(New York: Beers, Comstock & Cline, 1873)

The Higginsville Road Bridges
 Hillsborough Twp, Somerset County
 & Readington Twp., Hunterdon County
 New Jersey



Map of the Township of Readington
 in Atlas of Hunterdon County, New Jersey
 1873
 Surveyed by F. W. Beers
 (New York: Beers, Comstock & Cline, 1873)

The Higginsville Road Bridges
 Hillsborough Twp, Somerset County
 & Readington Twp., Hunterdon County
 New Jersey



Map of the Western Region of Hillsborough Twp.
 in Atlas of Somerset Co., New Jersey
 1873
 Surveyed by F. W. Beers
 (New York: Beers, Comstock & Cline, 1873)

The Higginsville Road Bridges
Hillsborough Twp, Somerset County
& Readington Twp., Hunterdon County
New Jersey

WROUGHT IRON BRIDGE CO.

Iron and Steel

BRIDGES, VIADUCTS,

GIRDERS, TURN-TABLES,

Power-Houses, Electric-Light Stations,

STEEL AND IRON ROOFS.

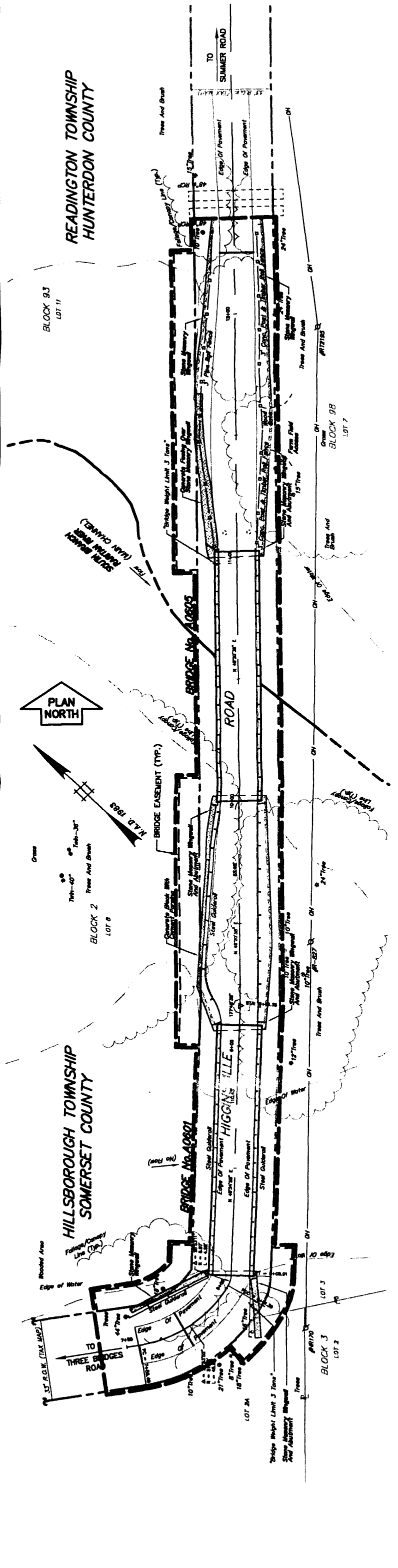
COMMUNICATE WITH NEAREST OFFICE.

Canton, OHIO. 136 Liberty Street, NEW YORK CITY. 1309 Monadnock Building, CHICAGO, ILL.

New York Life Building, Kansas City, Mo.

Display Ad for the Wrought Iron Bridge Company
of Canton, Ohio (c. 1880)

(Reprinted in Victor C. Darnell, *Directory of American Bridge Building Companies 1840-1900* (Washington DC: Society for Industrial Archeology, 1984))



PLAN
SCALE: 1"=40'

GENERAL NOTES

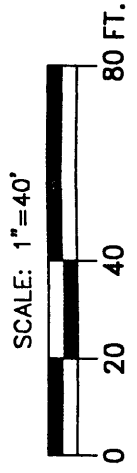
1. VERTICAL DATUM IS N.A.V.D. OF 1988 AS DETERMINED FROM SOMERSET COUNTY G.P.S. MONUMENT NUMBER 166 (E.L. 176.64 FT.).
2. HORIZONTAL DATUM IS N.A.D. OF 1983 AS DETERMINED FROM SOMERSET COUNTY G.P.S. MONUMENT NUMBERS 166 AND 167.
3. UTILITY LOCATIONS SHOWN HEREIN ARE FROM ABOVE-GROUND OBSERVATIONS AND MARK OUT AS ORDERED THROUGH "N.J. ONE CALL".
4. LOT AND BLOCK NUMBERS SHOWN HEREIN ARE BASED UPON THE CURRENT TAX MAPS OF HILLSBOROUGH TOWNSHIP AND READINGTON TOWNSHIP.

REFERENCES:

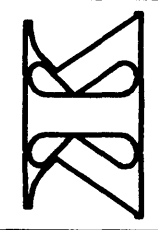
1. THE DRAWINGS, SKETCHES AND DETAILS ARE FROM THE PLANS FOR THE REHABILITATION OF BI-COUNTY BRIDGES No. A0801 AND No. A0803, HIGGINSVILLE ROAD OVER THE RARITAN RIVER, HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY AND THE READINGTON TOWNSHIP, HUNTERDON COUNTY, NEW JERSEY, DATED MAY 17, 1999 PREPARED BY KELLER & KIRKPATRICK, INC. FOR SOMERSET COUNTY'S SUBMISSION TO THE NEW JERSEY HISTORIC TRUST FUND.
2. THE BRIDGE EASEMENTS SHOWN ARE FROM THE ALIGNMENT MAP AND EASEMENT ACQUISITION MAP, SHEET 1 OF 1, DATED SEPTEMBER 9, 1998 PREPARED BY KELLER & KIRKPATRICK, INC. FOR THE REHABILITATION OF BI-COUNTY BRIDGES No. A0801 AND No. A0803, HIGGINSVILLE ROAD OVER SOUTH BRANCH OF THE RARITAN RIVER, HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY AND READINGTON TOWNSHIP, HUNTERDON COUNTY.

LEGEND

- Sign
- Utility Pole
- Fence
- Overhead Wires
- Gutter
- Edge Of Pavement
- Edge Of Water
- Limit Of Wetlands
- R.O.W.
- Property Line
- BRIDGE EASEMENT
- BOUNDARY LINE

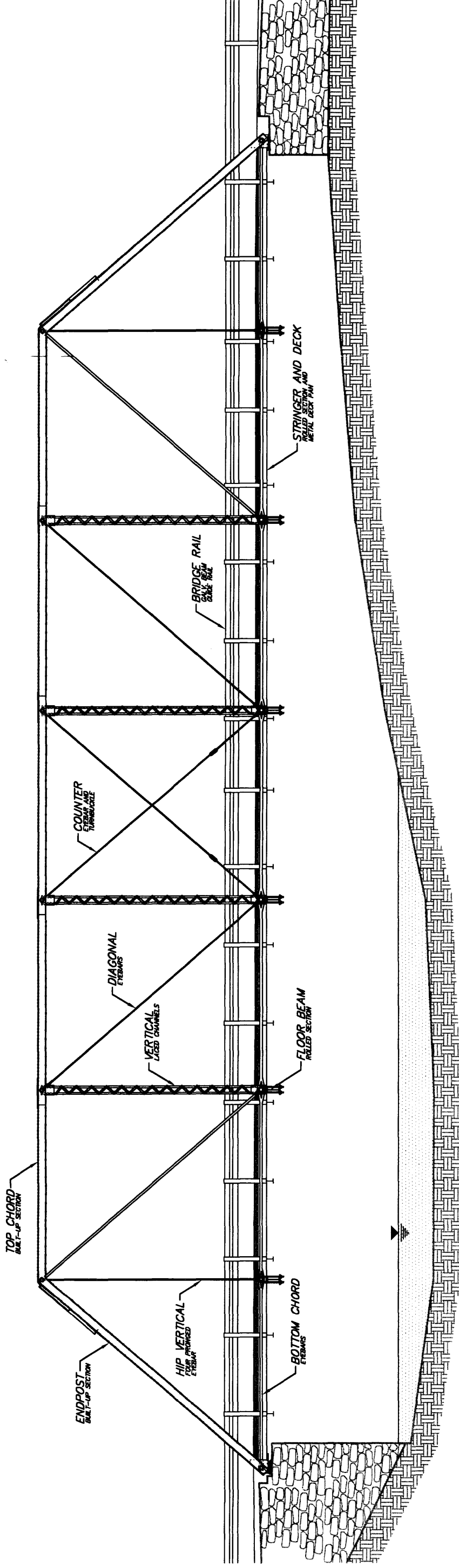


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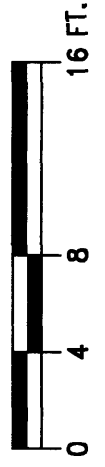
BI-COUNTY BRIDGES No. A0601 & No. A0605
SITE BOUNDARY MAP
 HIGGINSVILLE ROAD
 OVER SOUTH BRANCH OF THE RARITAN RIVER
 HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
 READINGTON TOWNSHIP, HUNTERDON COUNTY

SHEET NO.
1
 OF
1



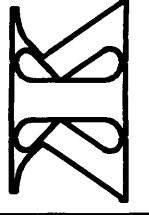
TRUSS ELEVATION - BRIDGE No. A0601

(LOOKING UPSTREAM)
SCALE: 1/8"=1'-0"



REFERENCE: THE DRAWINGS, SKETCHES AND DETAILS ARE FROM THE PLANS FOR THE REHABILITATION OF BI-COUNTY BRIDGES No. A0601 AND No. A0605, HIGGINSVILLE ROAD OVER SOUTH BRANCH OF THE RARITAN RIVER, HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY AND READINGTON TOWNSHIP, HUNTERDON COUNTY, SHEETS 1-41, DATED MAY 7, 1999, PREPARED BY KELLER & KIRKPATRICK, INC. FOR SOMERSET COUNTY'S SUBMISSION TO THE NEW JERSEY HISTORIC TRUST FUND.

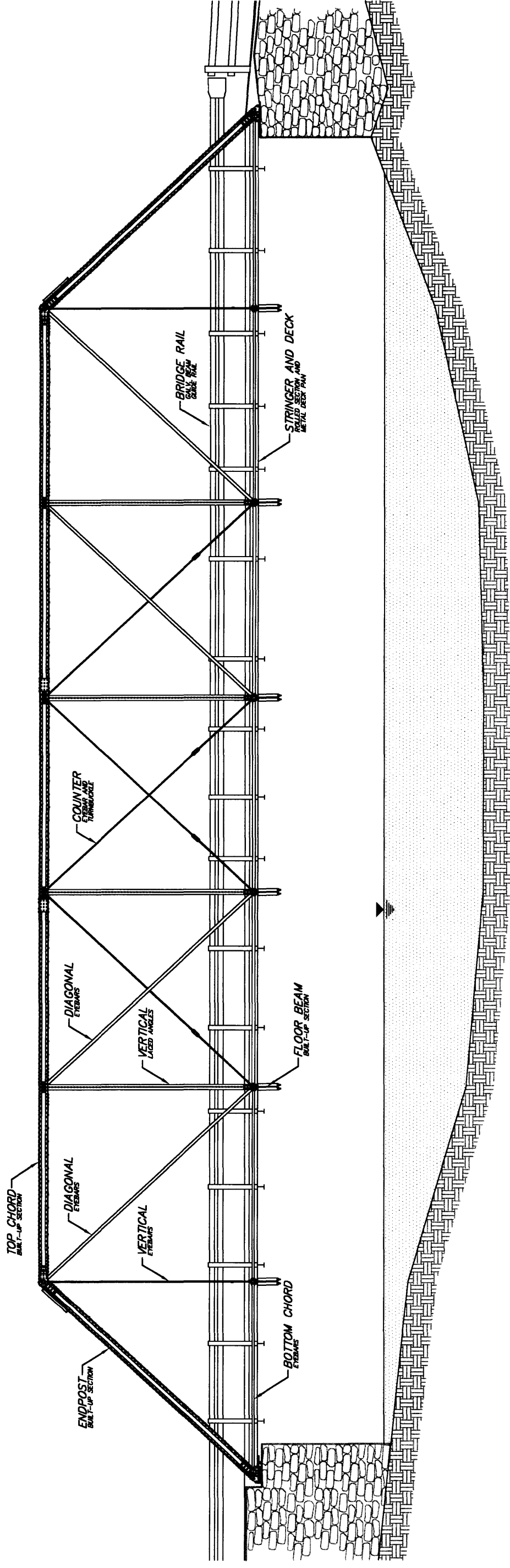
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LAND SURVEYORS PLANNERS



BI-COUNTY BRIDGES No. A0601 & No. A0605
TRUSS ELEVATION
BRIDGE No. A0601
HIGGINSVILLE ROAD
OVER SOUTH BRANCH OF THE RARITAN RIVER
HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
READINGTON TOWNSHIP, HUNTERDON COUNTY

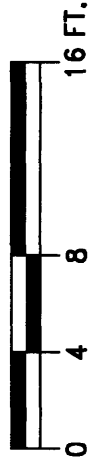
SHEET NO. **1** OF **6**

DATE: NOVEMBER 16, 1999



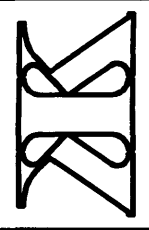
TRUSS ELEVATION - BRIDGE No. A0605

(LOOKING UPSTREAM)
SCALE: 1/8"=1'-0"



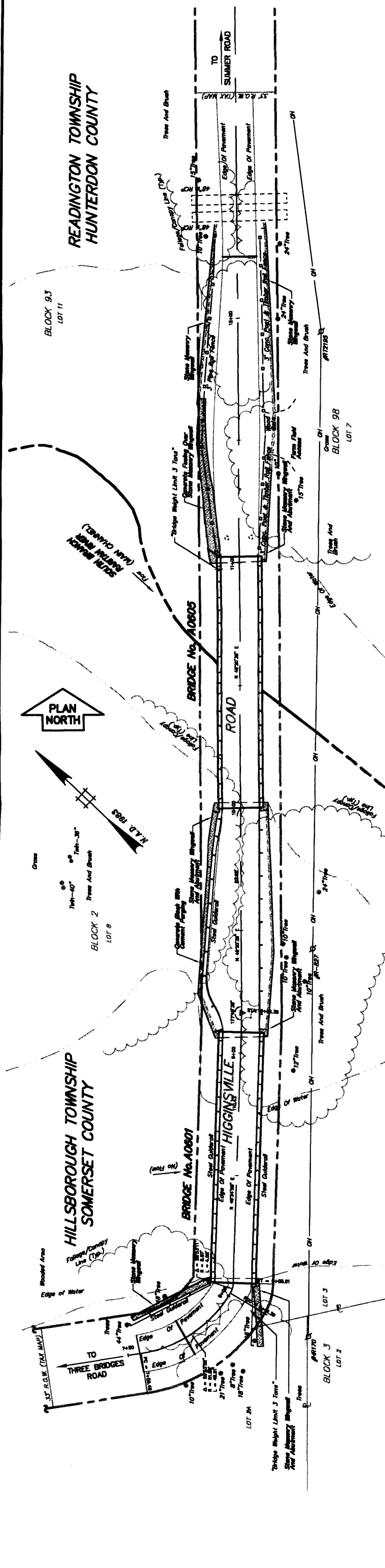
REFERENCE: SKETCHES AND DETAILS ARE FROM THE PLANS FOR THE REHABILITATION OF THE DRAWINGS, SHEETS 1-41 AND 1-42, HIGGINSVILLE ROAD RIVER COUNTY OF BI-COUNTY BRIDGES No. A0601 AND No. A0605, HIGGINSVILLE ROAD RIVER COUNTY AND HILLSBOROUGH TOWNSHIP, HUNTERDON COUNTY, SOMERSET COUNTY, PREPARED BY KELLER & KIRKPATRICK, INC. FOR SOMERSET COUNTY'S SUBMISSION TO THE NEW JERSEY HISTORIC TRUST FUND.

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LAND SURVEYORS PLANNERS

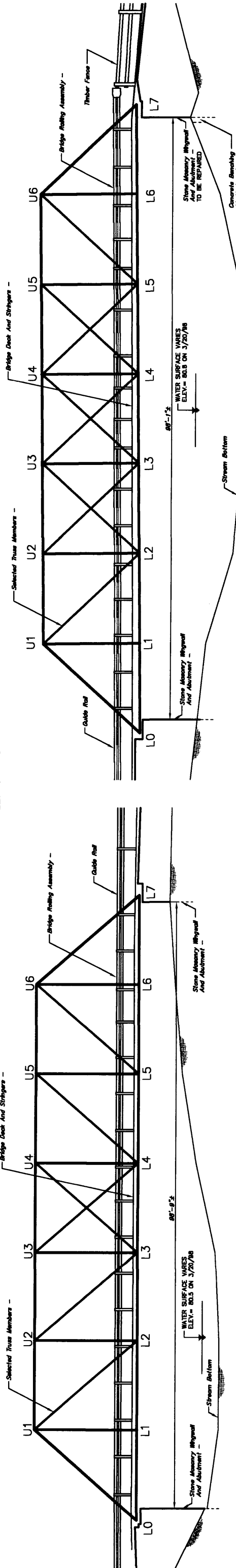


BI-COUNTY BRIDGES No. A0601 & No. A0605
TRUSS ELEVATION
BRIDGE No. A0605
HIGGINSVILLE ROAD
OVER SOUTH BRANCH OF THE RARITAN RIVER
HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
READINGTON TOWNSHIP, HUNTERDON COUNTY

SHEET NO. **2** OF **6**



PLAN
SCALE: 1"=40'



ELEVATION - EAST TRUSS
BRIDGE No. A0605
(LOOKING UPSTREAM)
SCALE: 1/16"=1'-0"

ELEVATION - EAST TRUSS
BRIDGE No. A0601
(LOOKING UPSTREAM)
SCALE: 1/16"=1'-0"

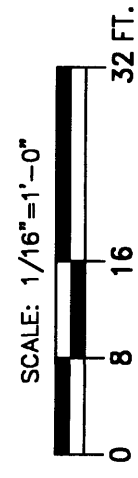
GENERAL NOTES

1. VERTICAL DATUM IS N.A.S.D. OF 1988 AS DETERMINED FROM SOMERSET COUNTY G.P.S. MONUMENT NUMBER 166 (E.L. 176.84 FT.).
2. HORIZONTAL DATUM IS N.A.S.D. OF 1983 AS DETERMINED FROM SOMERSET COUNTY G.P.S. MONUMENT NUMBERS 166 AND 187.
3. UTILITY LOCATIONS SHOWN HEREON ARE FROM ABOVE-GROUND OBSERVATIONS AND MARK OUT AS ORDERED THROUGH "N.J. ONE CALL".
4. LOT AND BLOCK NUMBERS SHOWN HEREON ARE BASED UPON THE CURRENT TAX MAPS OF HILLSBOROUGH TOWNSHIP AND READINGTON TOWNSHIP.

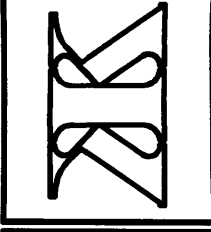
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LEGEND

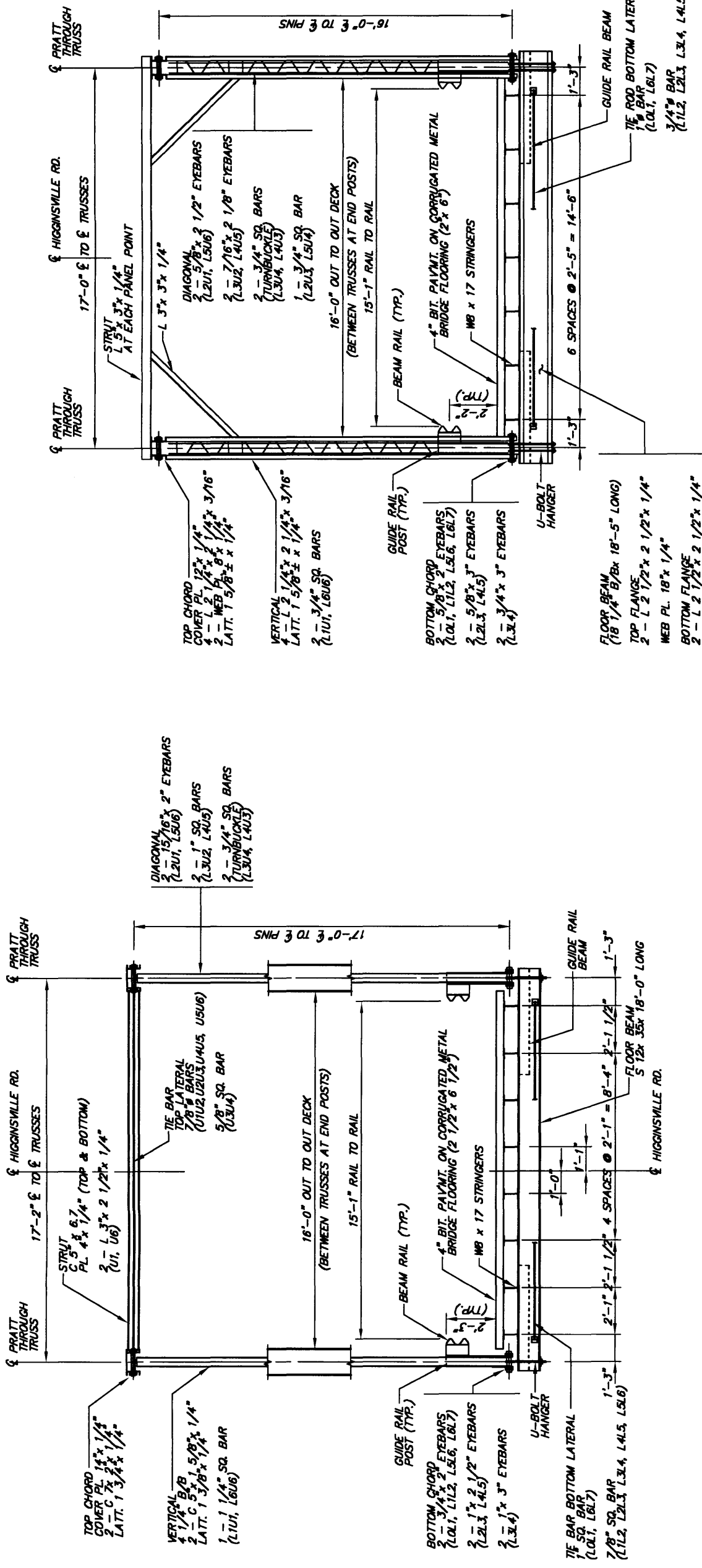
- ▽ Sign
- Utility Pole
- Fence
- OH Overhead Wire
- Culvert
- Edges Of Pavement
- Edges Of Water
- Limit Of Wetlands
- R.O.W.
- Property Line



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BI-COUNTY BRIDGES No. A0601 & No. A0605
GENERAL PLAN AND ELEVATIONS
HIGGINSVILLE ROAD
OVER SOUTH BRANCH OF THE RARITAN RIVER
HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
READINGTON TOWNSHIP, HUNTERDON COUNTY



SECTION - BRIDGE No. A0601

SECTION - BRIDGE No. A0605

TYPICAL BRIDGE SECTIONS

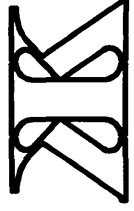
(LOOKING NORTH)
SCALE: 3/16" = 1'-0"



REFERENCE: THE DRAWINGS, SKETCHES AND DETAILS ARE FROM THE PLANS FOR THE REHABILITATION OF BI-COUNTY BRIDGES No. A0601 AND No. A0605, HIGGINSVILLE ROAD OVER SOUTH BRANCH OF THE RARITAN RIVER, HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY AND READINGTON TOWNSHIP, HUNTERDON COUNTY, SHEETS 1-41, DATED MAY 7, 1996, PREPARED BY KELLER & KIRKPATRICK, INC. FOR SOMERSET COUNTY'S SUBMISSION TO THE NEW JERSEY HISTORIC TRUST FUND.

DATE: NOVEMBER 16, 1999

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BI-COUNTY BRIDGES No. A0601 & No. A0605
TYPICAL BRIDGE SECTIONS
HIGGINSVILLE ROAD
OVER SOUTH BRANCH OF THE RARITAN RIVER
HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
READINGTON TOWNSHIP, HUNTERDON COUNTY

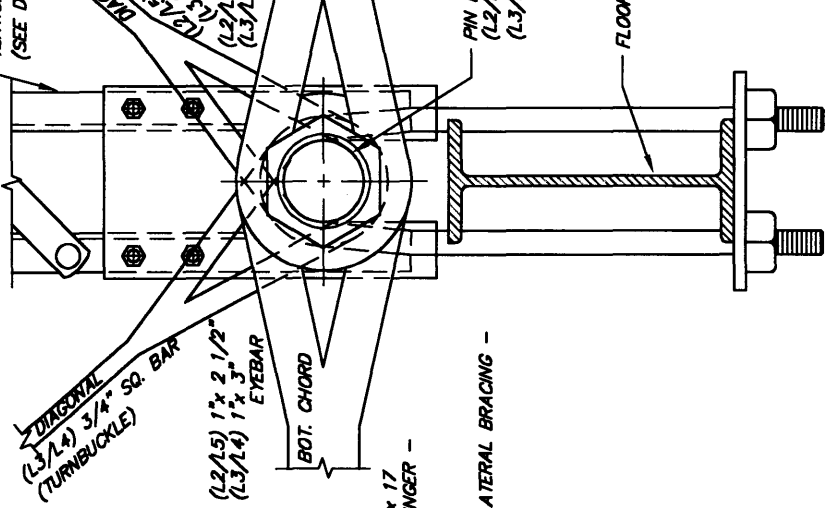
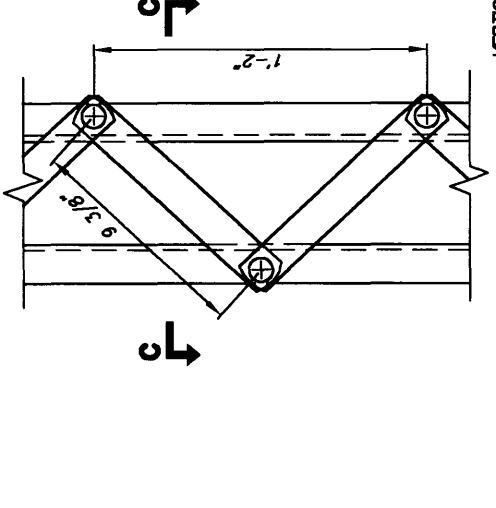
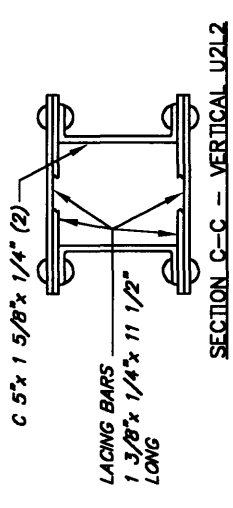
SHEET NO.

4

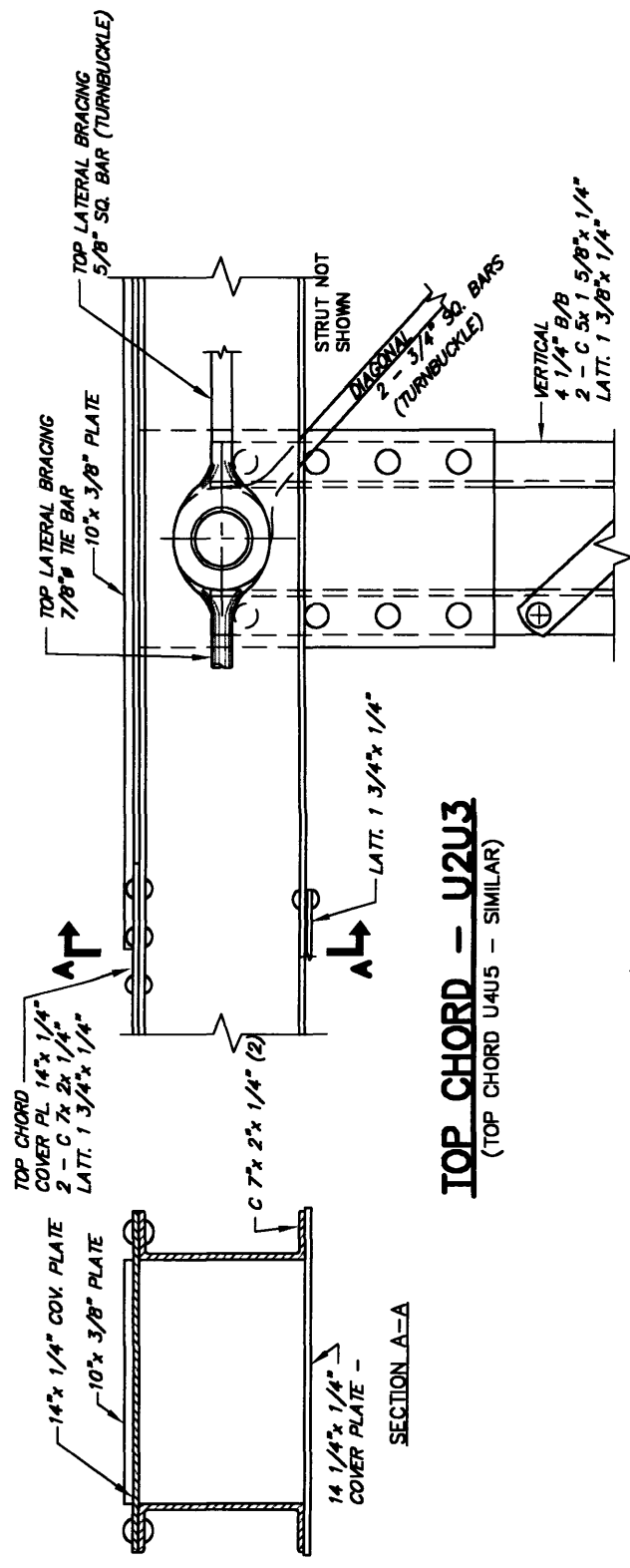
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OF

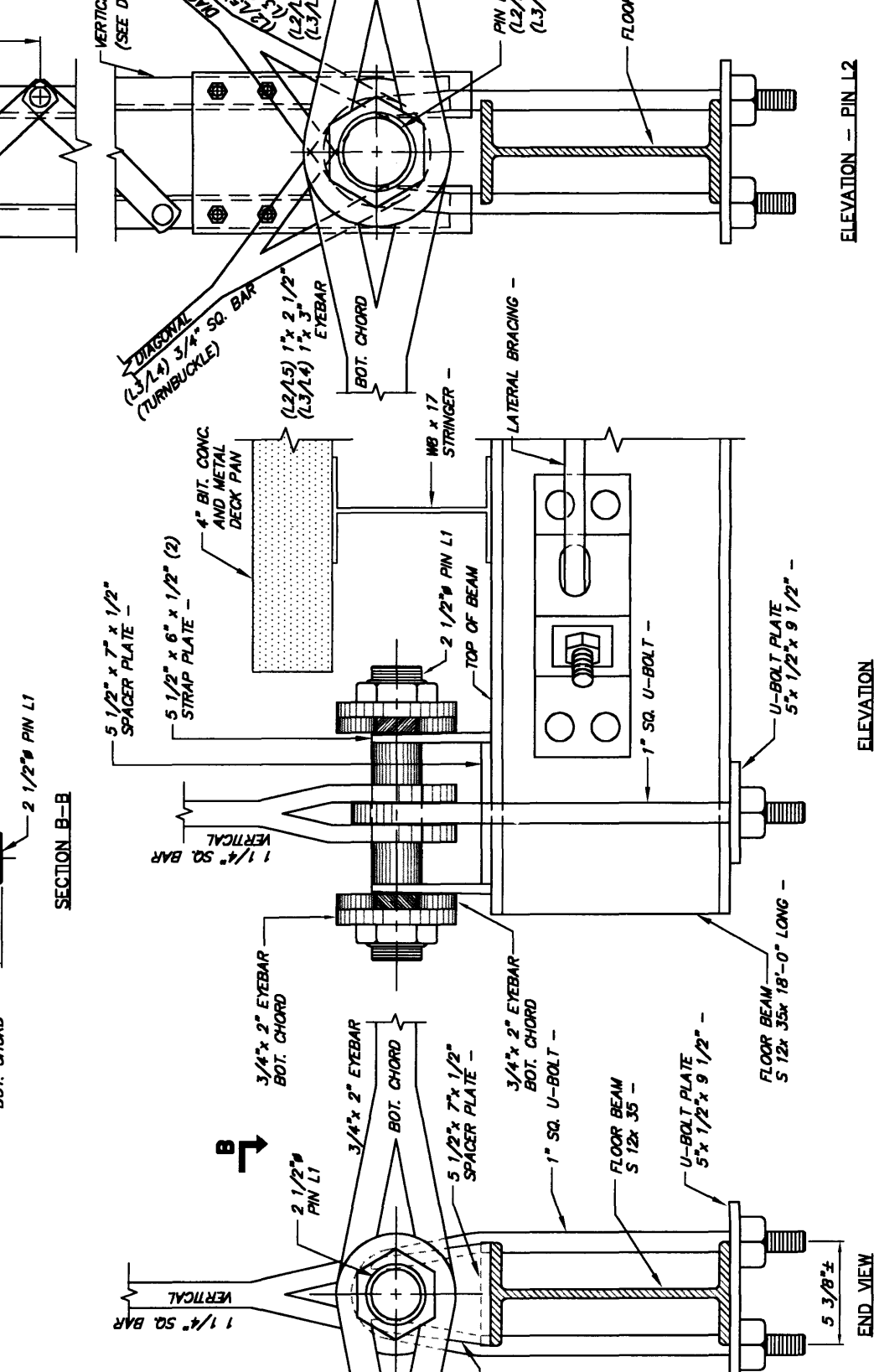
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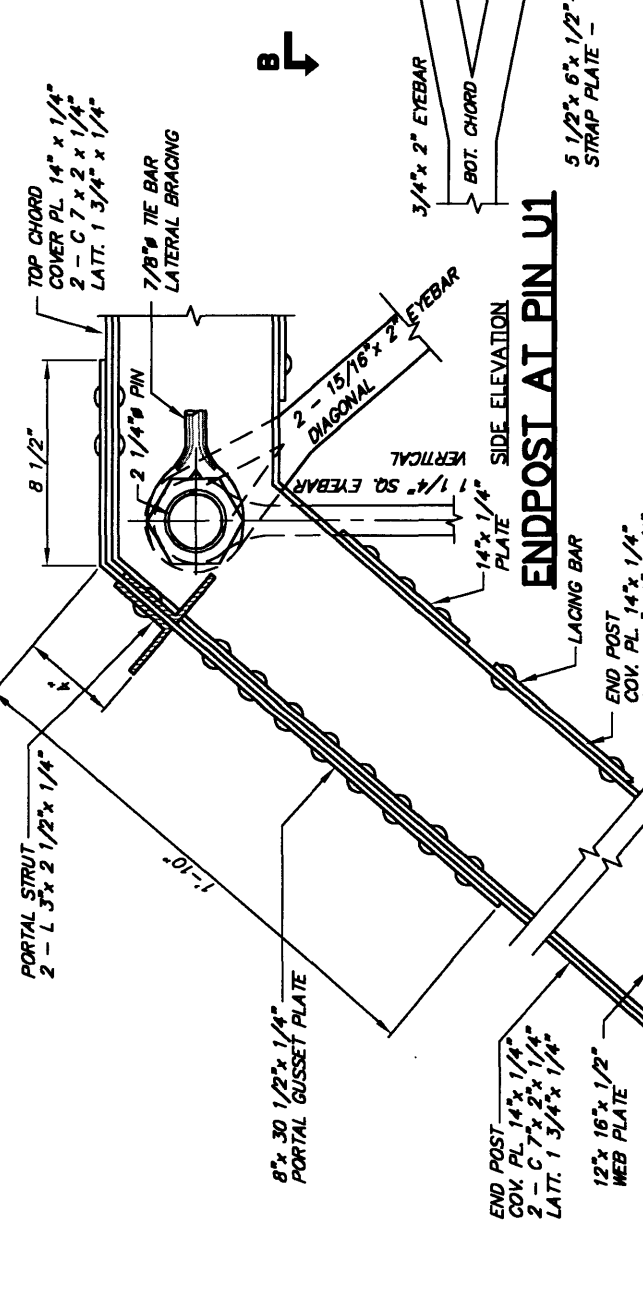
ELEVATION - PIN L2



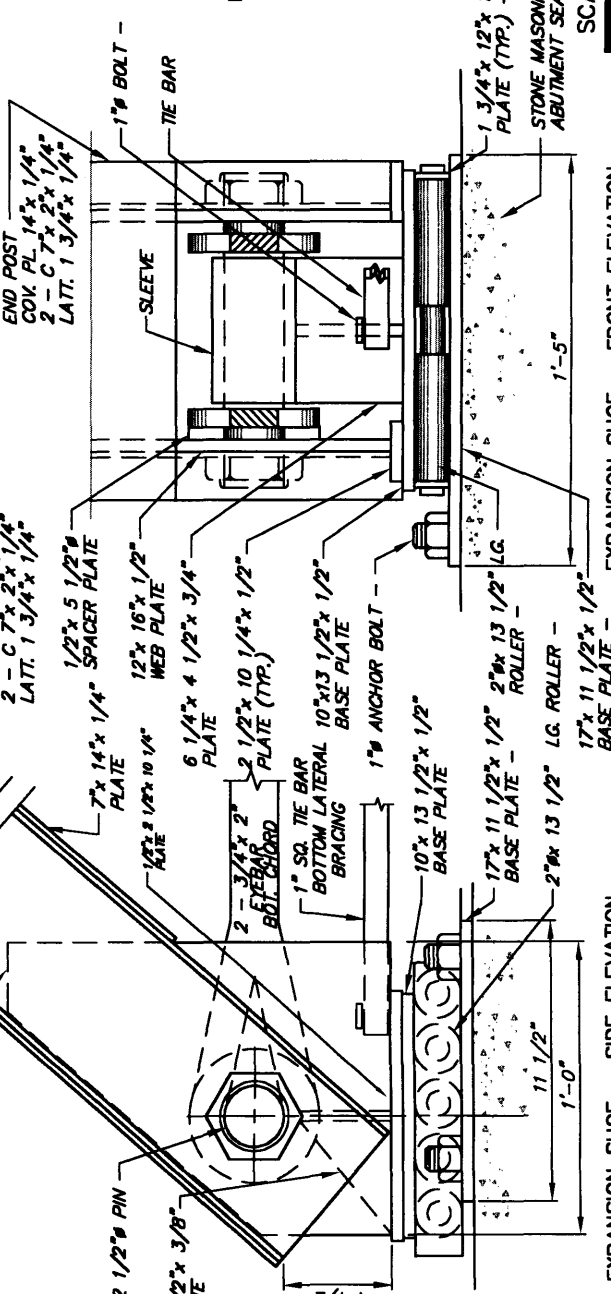
TOP CHORD - U2U3
(TOP CHORD U4U5 - SIMILAR)



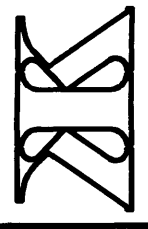
FLOOR BEAM FB1 AT PIN L1
(FLOOR BEAM FB6 - SIMILAR)



ENDPOST AT PIN U1



TRUSS BEARING AT PIN L0



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BI-COUNTY BRIDGES No. A0601 & No. A0605
DETAILS - BRIDGE No. A0601

HIGGINSVILLE ROAD
 OVER SOUTH BRANCH OF THE RARITAN RIVER
 HILLSBOROUGH TOWNSHIP, SOMERSET COUNTY
 READINGTON TOWNSHIP, HUNTERDON COUNTY

VERTICAL COVER PLATES - PIN L2
 (VERTICAL COVER PLATES AT PINS L3/L4/L5 - SIMILAR)

SHEET NO. **5** OF **6**

