MILL STREET BRIDGE HAER No. NH-55
Spanning Ammonoosuc Rail Trail (former Boston & Maine Railroad)
Woodsville
Grafton County
New Hampshire

PHOTOGRAPHS

WRITTEN AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD

MILL STREET BRIDGE

HAER No. NH-55

Location: Spanning Ammonoosuc Rail Trail (former Boston & Maine Railroad
Woodsville
Grafton County
New Hampshire

Latitude: 44.145651 Longitude: -72.024009 (NAD83). Datum at approximate center of bridge, obtained 13 January 2018, using USGS TopoView online mapping with +/- 12 meters accuracy.

Present Owner/ Occupant: New Hampshire Department of Transportation.

Present Use: Highway bridge.

Significance: Mill Street Bridge was constructed in 1938 by the Boston & Maine Railroad (B&M) to replace an earlier structure of similar design, also built by the B&M about 1919 in conjunction with improvements to the line and the elimination of grade crossings. The seven span timber frame trestle is the largest and best surviving example in New Hampshire of a now rare bridge type. In 2014 the property was determined eligible for listing in the National Register of Historic Places under Criterion C for its engineering characteristics.

Historian: Richard M. Casella, Historic Documentation Company, Inc. April 2018.

Project Information: This documentation was prepared by Historic Documentation Company Inc. (HDC), Portsmouth, RI, for GM2 Associates, Inc., Concord, NH and the New Hampshire Department of Transportation (NHDOT). The documentation fulfills a requirement of a Memorandum of Agreement among the Federal Highway Administration, the NHDOT and the New Hampshire State Historic Preservation Officer dated 16 October 2017. The report was written and compiled by Richard M. Casella, Engineering Historian, Historic Documentation Company. Rob Tucher Photographic Documentation, High Bridge, NJ, conducted the large format black and white film photography.

Part I. Historical Information

A. Physical History:

1. Date(s) of construction: 1938. The Boston and Maine Railroad Engineering Department Main Track Structures List (1953) for New Hampshire identifies the subject structure as Bridge Number 94.79, Mill Street, a framed trestle built in 1938 on the NH Division Main Line, Woodsville to Berlin. The substructure consists of stone abutments and stone footings believed to date to construction of the preceding bridge. ca. 1919.

2. Engineer: Boston & Maine Railroad, Benjamin W. Guppy (1869-1960), Engineer of Structures. No original drawings of the bridge were located and therefore the designing engineer of the bridge could not be positively determined. When the bridge was constructed in 1938, Benjamin W. Guppy served as Engineer of Structures for the Boston & Main Railroad (B&M). Guppy assumed the position in 1909 and retired from it in 1950. From other bridge design work by B&M in the same time period, it is known that Guppy would have had final responsibility for the Mill Street Bridge design. Based on B&M plans for similar wood trestle bridges, the drawings would have been prepared by a draftsman and then checked and approved by Guppy.

3. Builder/Contractor/Supplier: Boston & Maine Railroad. No records of the construction of the bridge were located, however, B&M employed its own erection crews for most if not all timber, steel stringer and plate girder bridges. Other B&M trestle bridges of near-identical period and design for which plans exist were built by railroad forces. The Woodsville Terminal yard and headquarters of the B&M White Mountain Division was located a half-mile west of the bridge site and it is assumed that the track maintenance crew located there erected the Mill Street Bridge. The trestle is built entirely of creosote treated timber that was almost certainly supplied from the railroad's own treatment plant in Nashua, New Hampshire, which supplied treated rail ties and structural timber for the entire B&M system from from 1923 until 1982.

4. Original plans and construction:

No original drawings or historic photographs of the bridge were located.[1] The bridge superstructure is believed to be intact without alteration since its construction in 1938 and consists of a seven-span, timber frame trestle 147'-0" long overall (see Appendix A, Figure 1, Site Sketch). The spans average 20' in length and consist of nine timber stringers and a wood deck. Six timber frame bents carry the spans 38' above the former rail bed. The substructure consists of stone abutments and stone footings of split-face granite blocks that carry the 1938 timber superstructure. The substructure is believed to be unaltered from its original construction ca. 1919. A detailed description of the bridge is provided below in Part II, B, based on

[1] The following repositories were consulted for original plans and photographs: New Hampshire Historical Society, New Hampshire State Library, New Hampshire State Archives, New Hampshire Department of Transportation, New Hampshire Division of Historical Resources, all located in Concord; Woodsville Free Public Library, Haverhill Library Association, Patten-North Haverhill Library, Haverhill Heritage Commission, Haverhill Historical Society, all located in Haverhill, NH; Baldwin Memorial Central Library, Wells River, VT; Boston & Maine Railroad Historical Society archives, Center for Lowell History University of Massachusetts Lowell Libraries, Lowell, MA.

measurements and sketches made in 1979 for an engineering inspection by the New Hampshire Department of Transportation and in 2017 for this documentation.

5. Alterations and additions:

As stated above, the bridge substructure and superstructure are believed to be intact without significant alteration since their construction in ca. 1919 and 1938, respectively. Alterations include replacement of the 3" x 8" wood decking planks and replacement of the railing system, believed to have been made by NHDOT and estimated to date from ca. 2000 based on circumstantial evidence.[2] The decking was replaced "in-kind" with planking of similar or identical dimensions but treated with a modern preservative as opposed to the creosote used on the original planks. The original wood railing system consisting of posts, horizontal rail members between the posts and vertical wood planking 48" high nailed to the rail members, has also been replaced "in-kind" with modern pressure treated lumber of similar dimension and layout to the original.[3] Continuous chain link fencing 48" high and running the entire length of the bridge has been attached to the vertical planking on the inside face of the railing system; the date of installation is unknown.

B. Historical Context:

The former rail line right of way which Mill Street Bridge spans was originally built in 1853 as the White Mountain Railroad, chartered in 1848 to build 20.6 miles from the Connecticut River in Woodsville to Littleton, New Hampshire. A bridge over the Connecticut River at Woodsville was completed in 1853 to connect the line with the Connecticut & Passumpsic Railroad at Wells River, Vermont. Between Haverhill and Littleton, the line passed through the towns of Bath, Landaff, and Lisbon. The White Mountain Railroad (WM) struggled financially until 1858 when it was sold at auction, reorganized as the White Mountain New Hampshire Railroad, and leased to the Boston Concord & Montreal Railroad.

The Boston Concord & Montreal Railroad (BC&M) had opened to Woodsville in 1853, two months before the completion of the White Mountain line. The two lines were joined with a simple junction about ¾-mile south of the railroad station in downtown Woodsville. North-and southbound "through trains" on the WM line (running from Concord to Littleton and back) had to run over the Connecticut River bridge into Wells River in order to reverse the direction of the train. The Connecticut & Passumpsic line was equipped with a siding with a wye, a triangular junction with switches that enables trains to reverse direction. The train passed and stopped beyond the wye, backed onto the siding, then pulled forward onto the WM line, effecting the equivalent of a three-point turn. The WM through trains had to cross the river and proceed through busy downtown Woodsville twice, an exercise that was tolerated for passenger trains that were meeting and exchanging passengers at the Woodsville and Wells River stations. But as industry grew along the

[2] Visual evidence including type of lumber, fasteners and weathering of same suggests the deck and railing assembly are roughly twenty years old and date after 1996 when the rail line was purchased by the State of New Hampshire. The decking planks bear CCA pressure treated labels; CCA treatment was prevalent ca. 2000.

[3] Photographs located in the NHDOT bridge inspection files of other railroad-built trestle overpass bridges built at about the same time, show that the current Mill Street Bridge railing system was used by the B&M in the 1930s and 1940s.

White Mountain line, freight-only trains were increasingly run and the Vermont turn-around was not only costly in time but doubled the exposure of freight trains to the dangers of a congested environment. The problem was remedied in 1883 when a second wye was built in Woodsville about 1500 feet south of the junction. Known as the White Mountain Transfer, the new ¼-mile section of track enabled through trains to bypass downtown Woodsville. A new freight platform and several sidings for sorting cars were later added just east of the BC&M junction (see Appendix A, Figure 2, Map of Woodsville).

In 1889, the BC&M merged with the Concord Railroad to form the Concord & Montreal Railroad, which was soon taken over by the Boston & Maine Railroad in 1895 and named the Boston and Maine White Mountain Division.[4] The B&M designated Woodsville the headquarters of the White Mountain Division and in 1895 began a program of improvements including a new engine house and freight yard on the Concord line just south of the junction with the White Mountain line. The continued growth, development and prosperity of the B&M operations in Woodsville into the first three decades of the 20th century precipitated the same effects in the surrounding community.

Sometime between 1901 and 1922, as evidenced by Sanborn Insurance Co. mapping, the Mill Street crossing of the tracks at grade between the junction and the transfer was discontinued. Mill Street was rerouted and extended east along the north side of the White Mountain line for a distance of about 2000 feet where it abruptly turned south and crossed the tracks on an overhead bridge. This first Mill Street Bridge is depicted as "Br. # 94.79 Framed Trestle O.H." [overhead], on the 1928 B&M Right of Way and Track map. The trestle was evidently of the same design as the present Mill Street bridge as evidenced by plans that exist for other B&M wood trestle overpass trestle bridges built at that time. The subject 1938 trestle was built on the existing stone footings and abutments of the ca. 1919 trestle, indicating the span lengths and widths were approximately duplicated. With completion of the ca. 1919 overpass, the extension of Mill Street was continued due south of the bridge about a half-mile to join the intersection of the Haverhill and Bath roads.

There are reasons to estimate that the establishment of the first Mill Street bridge occurred about 1919 or within a few years after. Two years earlier a highway bridge over the Connecticut River was built in Woodsville and Central Street through downtown was realigned. The B&M was heavily engaged at that time, ca. 1919 to 1920, in eliminating crossings at grade, to both increase train speeds and reduce the spiraling cost of crossing accidents stemming from proliferation of the Ford Model T automobile. Woodsville was a busy passenger station during the White Mountain tourist season, with thirty-one trains a day making stops in June 1920. Eliminating crossings at grade with a low cost wood trestle overpass was the method of choice for the B&M. Other examples of B&M highway trestles of the same design and materials as the Mill Street Bridge and built during the period between the two world wars remain in service at about a dozen locations in New Hampshire.[5]

The extension of Mill Street from the original crossing at grade to the new overpass bridge appears to have stimulated some of the residential development along the north side of the road; several of

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[4] Robert M. Lindsell, *The Rail Lines of Northern New England* (Pepperell, MA: Branch Line Press, 2000), p. 333.

[5] Two examples are the Fairmount Street Bridge and Baldwin Street Bridge in Nashua; see NHDHR Historic Property Documentations, Nos. 714 and 715. On file at New Hampshire Division of Historical Resources, Concord.

the houses exhibit styles typical of the pre-depression period. However, the effect of the new Mill Street Bridge and the elimination of the crossing at grade on the overall development of Woodsville appears to have been minimal, the greatest benefit being the improved safety and operation of trains and motor vehicles.

The exact reasons for the replacement of the Mill Street Bridge superstructure in 1938 were not determined; it may have been outdated in terms of load capacity, in need of repairs due to deterioration or overstressing, or built with treated wood of inferior rot resistance to that which became available after it was built. In May 1937 the B&MRR completed construction of the new plate girder railroad bridge (No. 95.07) over Route 10/302 (Dartmouth College Road) just a quarter-mile east of the Mill Street Bridge.[6] The project was one of the many Federally-funded Depression-era projects to eliminate railroad-highway crossings at grade. A temporary steel and wood railroad trestle was constructed as part of the project and then dismantled. All railroads practiced the reuse of bridges and their parts whenever possible, making it likely that new treated timber salvaged from the temporary trestle was used to reconstruct the Mill Street Bridge (and probably other wood bridges on the B&M lines). The materials and work crew were on site for the grade elimination project; reassembling part of the temporary trestle to extend the life of the Mill Street crossing would have been a simple project amounting to a few days of work. There is, however, no physical or documentary evidence to support that possibility.[7]

The B&MRR operated passenger trains on the line between Woodsville and Littleton until December 1961, and freights between Woodsville and Groveton until 1983 when the White Mountain Division was acquired by Guilford Transportation Industries. Guilford sold the line to New Hampshire & Vermont Railroad who ceased operations in 1995.[8] In 1995 the New Hampshire Department of Transportation (NHDOT) purchased 19.3 miles of the line from Woodsville to Littleton and subsequently constructed the Ammonoosuc Recreational Trail on the old rail bed. A New Hampshire Division of Historical Resources Historic District Area Form was completed in 1996 for the White Mountain Railroad line in conjunction with the NHDOT purchase.[9] The multi-use trail is presently under the jurisdiction of the New Hampshire Division of Parks and Recreation.

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[6] See, Haverhill Bridge 215/151, NHDHR Historic Property Documentation No. 590. On file at New Hampshire Division of Historical Resources, Concord.

[7] Reuse of the temporary trestle materials was considered in the budget; of the $16,370 charged the government for its construction, only a token $100 was for dismantling it, the balance of the labor compensated by the salvage of the materials by the railroad. See, Haverhill Bridge 215/151, NHDHR Historic Property Documentation No. 590. On file at New Hampshire Division of Historical Resources, Concord.

[8] Robert M. Lindsell, *The Rail Lines of Northern New England* (Pepperell, MA: Branch Line Press, 2000), p. 333.

[9] Elizabeth J. Hostutler and Worthern D. Muzzey, White Mountain Railroad Historic District, NHDHR Area Form, May 1996. On file at New Hampshire Division of Historical Resources, Concord.

Part II. Structural/Design Information

A. General Statement:

1. Character:

Bridge engineer J.A.L. Waddell defines a trestle as "a bridge structure composed of bents or towers and supporting stringers or girders forming the floor system."[10] He further defines three subtypes: a *framed trestle* is one having framed bents, a *pile trestle* has pile bents, and a *knee-braced trestle* is one having knee braces. Trestles may be primarily of wood, concrete or steel construction, or a combination of materials. Wood trestles that carry highways over railroads, railroads over highways, or in some cases span streams where rock or firm foundation material is near the surface, are typically framed trestles with the vertical bent members consisting of sawn timbers resting on stone or concrete footings. Wood trestles crossing water bodies or wetlands are typically pile trestles with the vertical bent members consisting of log pilings. The knee-braced trestle utilizes diagonal braces extending from the vertical bent members to the stringers or girders to effectively shorten their span length.

Trestle bridges, one of the oldest bridge forms, are a multi-span version of the simple wood stringer span. They were common during the American Colonial period, built with hand tools and consisting of logs (stringers) laid across a stream resting on simple abutments of timber or stone. Smaller logs of uniform size were laid atop the stringers crossways to form a solid deck; flat planks were laid longitudinally down the center to provide a smooth roadway. Simple short spans were repeated as needed to cross wide streams with the ends resting on rock-filled timber cribs, wood piling or timber-framed bents, or stone piers.[11] Due to the limited strength of solid wood beams, stringer spans have seldom exceeded 30 feet for highway loading and half that for railroad loading.

During the 19th century the timber trestle was widely used in railroad construction due to its low material cost and rapid construction with mostly unskilled labor. Wood bridges, unless covered or treated with preservatives, lasted only about ten years and many were destroyed by fires caused by wood burning locomotives. Long trestles were replaced with earth fills and shorter bridges of a more permanent type as soon as possible. Timber trestles that have survived have generally been rebuilt several times since their original construction. [12]

Wood bridges remained popular with the B&M into the 20th century due to advances in the pressure-treatment of wood with creosote that increased the life of exposed wood by several

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[10] Waddell, 1916, volume 2, Glossary.

[11] See Llewellyn N. Edwards. "The Evolution of Early American Bridges." *Transactions of the Newcomen Society*, 13 (1932):95-116, and also his later work, *A Record of History and Evolution of Early American Bridges* (Orono, ME: University of Maine Press, 1959) for a discussion of the earliest wooden stringer bridges built in the Colonies. A pen and ink drawing of a 19th century log stringer "horse bridge" in New Hampshire, drawn by Edwards, appears in *American Wooden Bridges* [ASCE Historical Publication No. 4] New York: ASCE, 1976, on page 147.

[12] A. L. Johnson, in *Economical Designing of Timber Trestle Bridges* (1896) reports that "There are in the United States at least 2000 miles of timber trestle, representing an expenditure of more than $60,000,000. These have to be entirely replaced every nine years, on the average… consuming annually about 260,000,000 board feet of timber, nearly all of it being large sizes, very valuable for other purposes."

times. In the 1920s the railroad invested in the construction of a wood treatment plant on its property in Nashua, New Hampshire, to provide a lower cost and ready supply of treated ties and structural lumber. In 1927 there were 219 railroad trestles and 118 overhead highway trestles on the B&M system.[13] The B&M continued to build and rebuild bridges with treated wood during their steady economic decline through the Depression and into the 1940s.[14]

Mill Street Bridge is a good example of a wood framed-trestle of standardized design built by the thousands in the US during the 19th and 20th centuries. It incorporates design and construction methods and materials that have remained unchanged since the late 19th century and is therefore representative of a broad engineering trend that was both universally adopted and enduring. It is the best remaining example of the bridge type still in highway service in New Hampshire and was determined National Register of Historic Places under Criteria C, "as a rare surviving example of a structure embodying the distinctive characteristics of a once common method of construction."[15]

2. Condition of fabric:

The existing timber bridge is currently on the NHDOT's Red List of bridges due to its deteriorated condition and insufficient load capacity. The load rating of 6 tons is insufficient to carry maintenance vehicles, school buses, and emergency vehicles. The Federal Sufficiency Rating (FSR) for the bridge is 17% and classified as Structurally Deficient. The National Bridge Inventory Appraisal Rating for this bridge rated both the Deck Geometry and the Structural Evaluation as "2, Intolerable. Replacement." The structural aspects of the bridge were determined to have a high priority of replacement with both a deck and superstructure rating of 4 (Poor). The tops of several stringers are split and decayed, with light to moderate section loss with some stringers tipped. Decay is evident in several pier bracing timbers with heavy corrosion and section loss on the heads and nuts of several connection bolts. The granite substructure appears in good condition and has a condition rating of 6 (Satisfactory).

B. Description:

Mill Street Bridge is 147.0' long overall with an overall width of 18'-8" and a curb width of 16'-6". The bridge spans a cut made by the railroad to maintain the desired grade established by the rail yards located in Woodsville about 0.5 miles west. At the middle, the bridge deck is about 38' above the former rail bed. No original plans for the bridge were located but four sheets of measured field sketches were prepared during a 1979 structural condition inspection conducted by Sverdrup & Parcel Engineers for the NHDOT; the sketches are presented at the back of this document to supplement the following description (see Appendix A, Figures 3-6, Field Sketches).

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[13] Benjamin W. Guppy, "Our Bridges." *Boston & Maine Employees Magazine*, v. 3, n. 10, January 1927, p. 10.

[14] For more detailed information on the subject of B&MRR and timber trestles see NHDHR Historic Property Documentation No. 715, Fairmount Street Bridge, Nashua, NH. On file at New Hampshire Division of Historical Resources, Concord.

[15] New Hampshire Division of Historical Resources. *Determination of Eligibility Form, Mill Street Bridge over Former B&M Railroad/Ammonoosuc Rail Trail, HAV0077.* march 19,, 2014. On file at New Hampshire Division of Historical Resources, Concord.

From south to north, the spans measure (from center to center of bearings) 19'-0", 19'-0", 18'-0", 23'-0", 21'-8", 22'-0", 21'-8". The spans are carried on six timber-framed bents resting on cut granite footings and on two cut granite abutments; these substructures are all referred to as piers on the field sketches and numbered 1 to 8, south to north. This report will utilize the same numbering system, but will refer to the abutments as south abutment and north abutment, and refer to the framed bents as the inside bents (Bents 4 & 5, flanking the rail bed and carrying the center span), the intermediate bents (Bents 3 & 6) and the outside bents (Bents 2 & 7) the shortest, located between the abutments and the intermediate bents. The substructures on the north side (three bents and abutment) are identical in construction to the south side, so the following description applies to both.

All of the timber bents have several common features: four 10" x 12" columns, a 12" x 12" horizontal cap beam, 3" x 10" cross bracing, and 3" x 10" bottom ties (lower transverse bracing). Timber sills were not used: the columns bear directly on granite footings and are tied together with the lower transverse bracing members. All of the granite block visible in the bent footings is split-faced and carefully squared-up with six parallel faces to produce tight mortared joints.

The inside bents (4 & 5) with a height of 34' are constructed as two-story frames, meaning a second complete upper frame consisting of four columns, a cap beam and two cross braces is stacked atop an identical lower frame. The method of attaching and bolting the bracing to the columns and the ends of the cap beams unifies the connections of the upper and lower frames. The cap beams are extended past the columns about 6" to accept the bracing end bolt. Each column bears on a 24" square granite block footing extending above grade about 4" and to an unknown depth below grade. Additional diagonal bracing, referred to on the drawings as tower bracing, connects the columns of the two-story bent at a point just above and below the first-story cap beam, with the top and bottoms of the columns of the adjacent bent. Because the adjacent bent is single-story, built on a slope and shorter by about 6', the two bents together do not form a typical symmetrical timber trestle tower with two equal multi-story bents with each story fully cross-braced in both directions.

The intermediate bents (3 & 6) and outside bents (2 & 7) are single story bents differing only in height, bracing and footing detail. The intermediate bents are about 28' tall, requiring two sets of cross bracing to brace the one-piece columns. The columns bear on the same type of individual granite footings like those carrying the inside bents. The outside bents are roughly 18' tall with one set of cross bracing. They bear on granite blocks that in-turn bear on a granite retaining wall, three courses of which is exposed on the down-slope face.

The abutments are constructed of coursed, split-face granite blocks laid in mortar. The blocks and mortar joints are not as finely squared and fitted as those of the bent footings but still meet the definition of ashlar masonry. On the face of the abutments, originally just two courses of stone were exposed but erosion has since exposed three or four courses and the concrete footings on which they were built. The abutments have a 16" seat and granite back walls 27" high. On top of the granite abutment is a 10" x 12" timber sill on which the stringers bear. A retaining wall consisting of pressure treated planks has been recently installed in front of the south abutment to check erosion.

There are nine 8" x 14" timber stringers spaced on 2'-2" centers. The road deck consists of 3-1/2" x 8" pressure treated planks laid flat and perpendicular to the stringers. The plastic identification labels that come attached to the ends of pressure treated lumber are still attached to many of the planks, indicating their fairly recent installation. The roadway is 16'-5" wide, edged with heavy timber curbs. There are no sidewalks. The solid wood railings are roughly 48" high, consisting of solid vertical wood planking nailed to horizontal timbers nailed to timber posts that are bolted to the outside stringers. Continuous chain link fencing has been attached to the inside face of the railings. Standard W-section steel guardrail on wood posts has been installed along the approaches.

C. Mechanicals/Operation: Not applicable.

D. Site Information: The bridge carries Mill Street over the former Boston and Maine Railroad right-of-way on the east side of Woodsville. The bridge is oriented approximately north-south. The structure spans a deep cut made by the railroad through a plateau in order to maintain the desired grade established by the rail yards located in Woodsville about 0.5 miles west of the bridge. The cut runs east-west, passing through a high section of flat ground at the south end of a steep hill around which the Ammonoosuc River passes to its north. The cut is approximately 40' wide at the bottom, 150' wide at the top, 2000' long and reaches a maximum depth of about 40' at the bridge. The area north, northeast and southeast of the bridge is heavily wooded and undeveloped. Immediately south of the bridge are open playing fields and the Woodsville Elementary School. At each end of the bridge which runs north-south, Mill Street turns west and runs along the top of the railroad cut through residential neighborhoods.

Part III. Sources of Information

A. Primary Sources:

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C. Likely Sources Not Yet Investigated:

None known.

APPENDIX A: SUPPLEMENTAL GRAPHICS

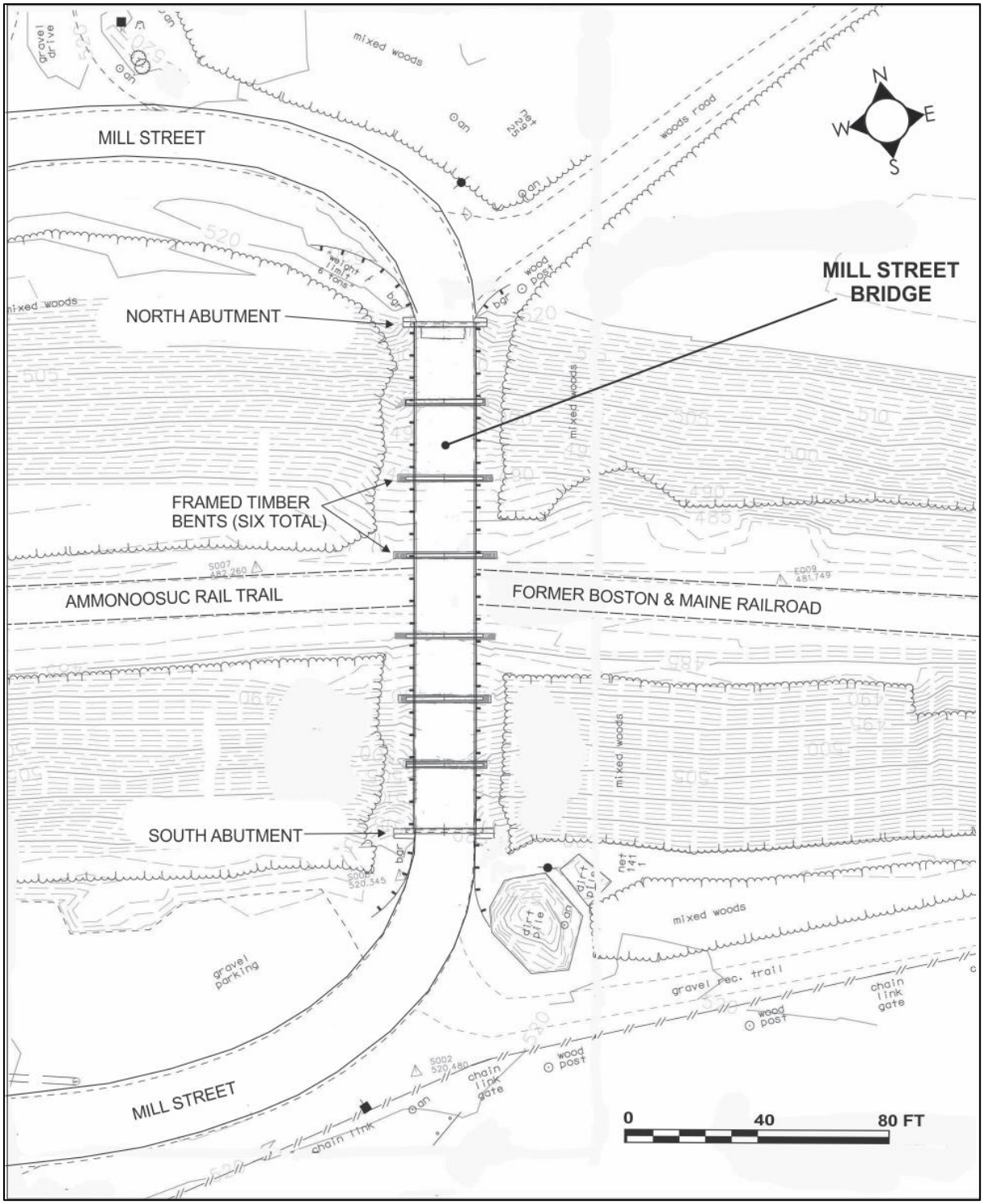

FIGURE 1: Site Sketch, Mill Street Bridge (Source: New Hampshire Department of Transportation, 2014).

APPENDIX A: SUPPLEMENTAL GRAPHICS (continued)

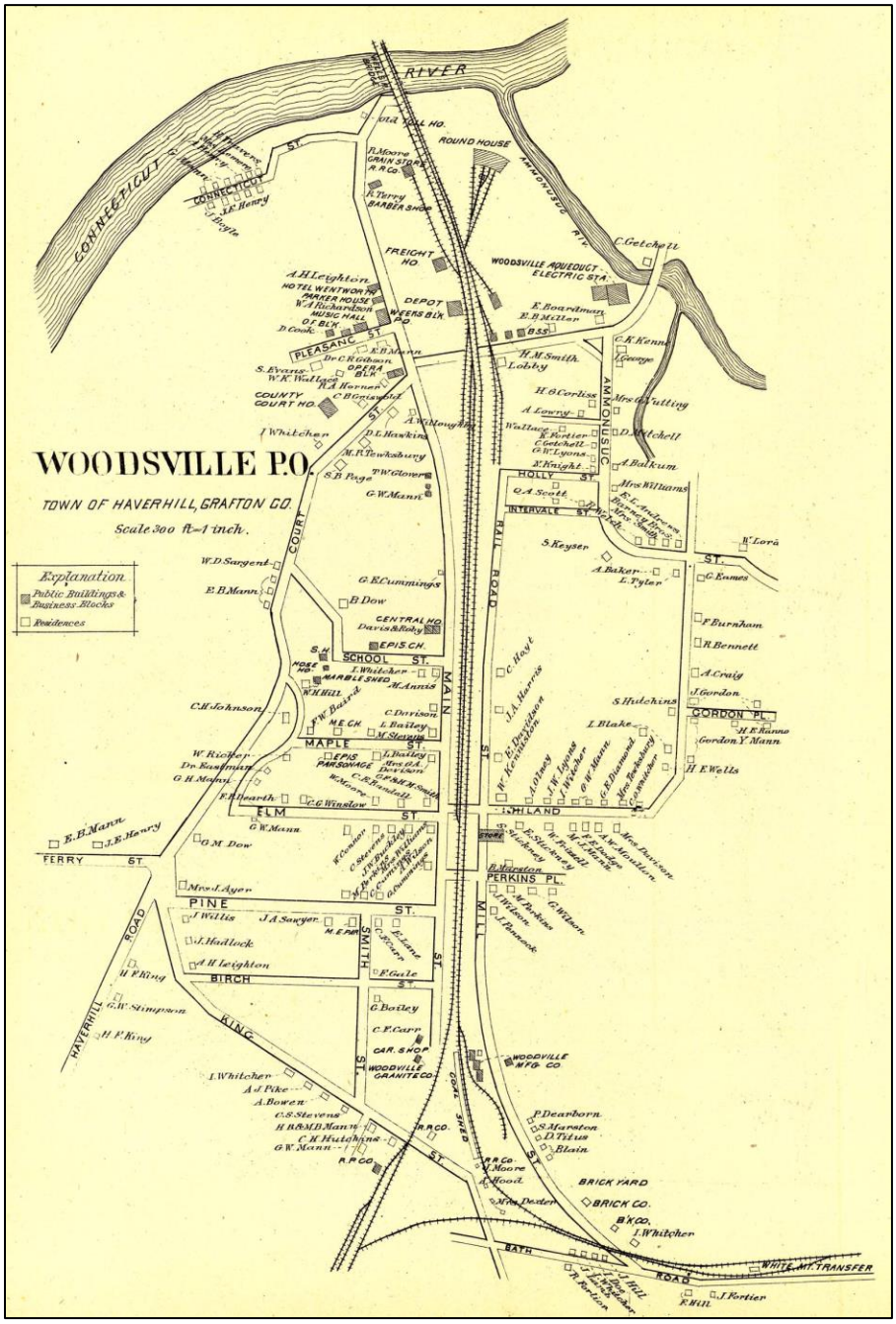

FIGURE 2: Map of Woodsville, 1892, showing railroad tracks and facilities associated with future Mill Street Bridge including Mill Street crossing tracks at grade about 2000 feet west of present Mill Street Bridge, prior to elimination of grade crossing and extension of Mill St. east along north side of tracks to present bridge crossing location (Source: D.

APPENDIX A: SUPPLEMENTAL GRAPHICS (continued)

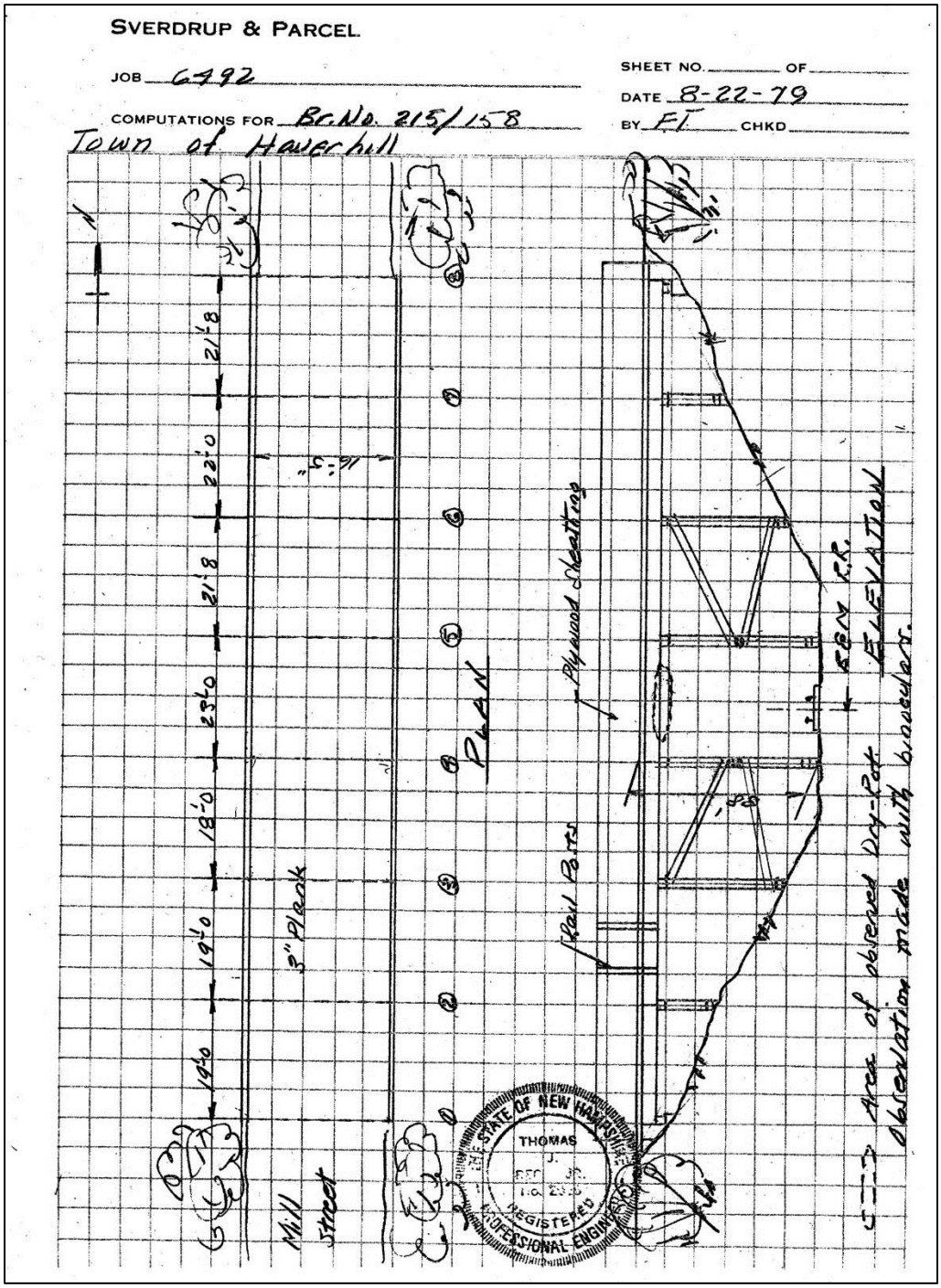

FIGURE 3: Site Sketch, Mill Street Bridge (Haverhill Bridge # 215/158) Plan & Elevations. Inspection Sketch by Sverdrup & Parcel Engineers, 22 August 1979 (NHDOT Bridge Inspection File).

APPENDIX A: SUPPLEMENTAL GRAPHICS (continued)

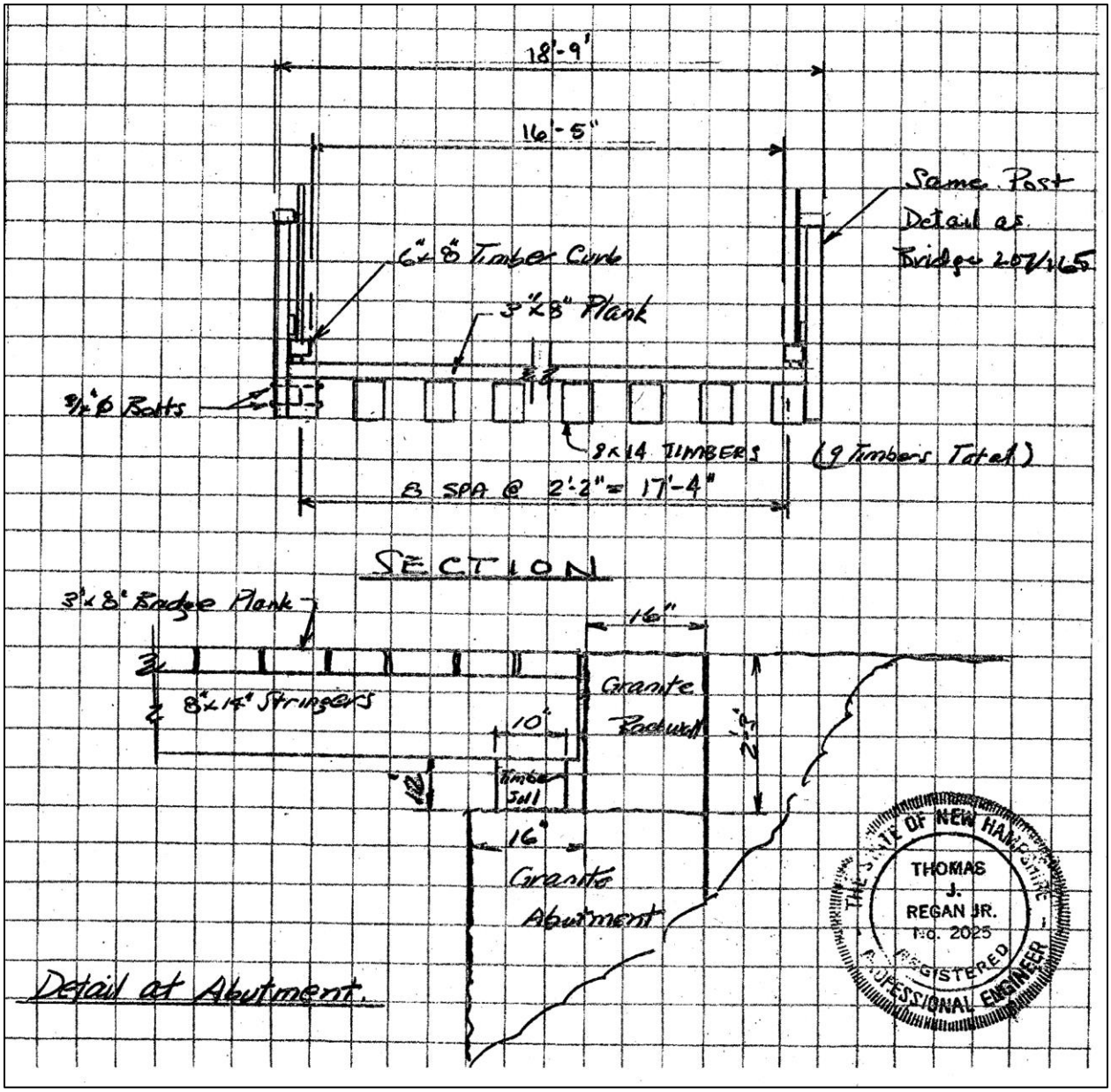

FIGURE 4: Site Sketch, Mill Street Bridge (Haverhill Bridge # 215/158) Section and Detail at Abutment. Inspection Sketch by Sverdrup & Parcel Engineers, 22 August 1979 (NHDOT Bridge Inspection File).

APPENDIX A: SUPPLEMENTAL GRAPHICS (continued)

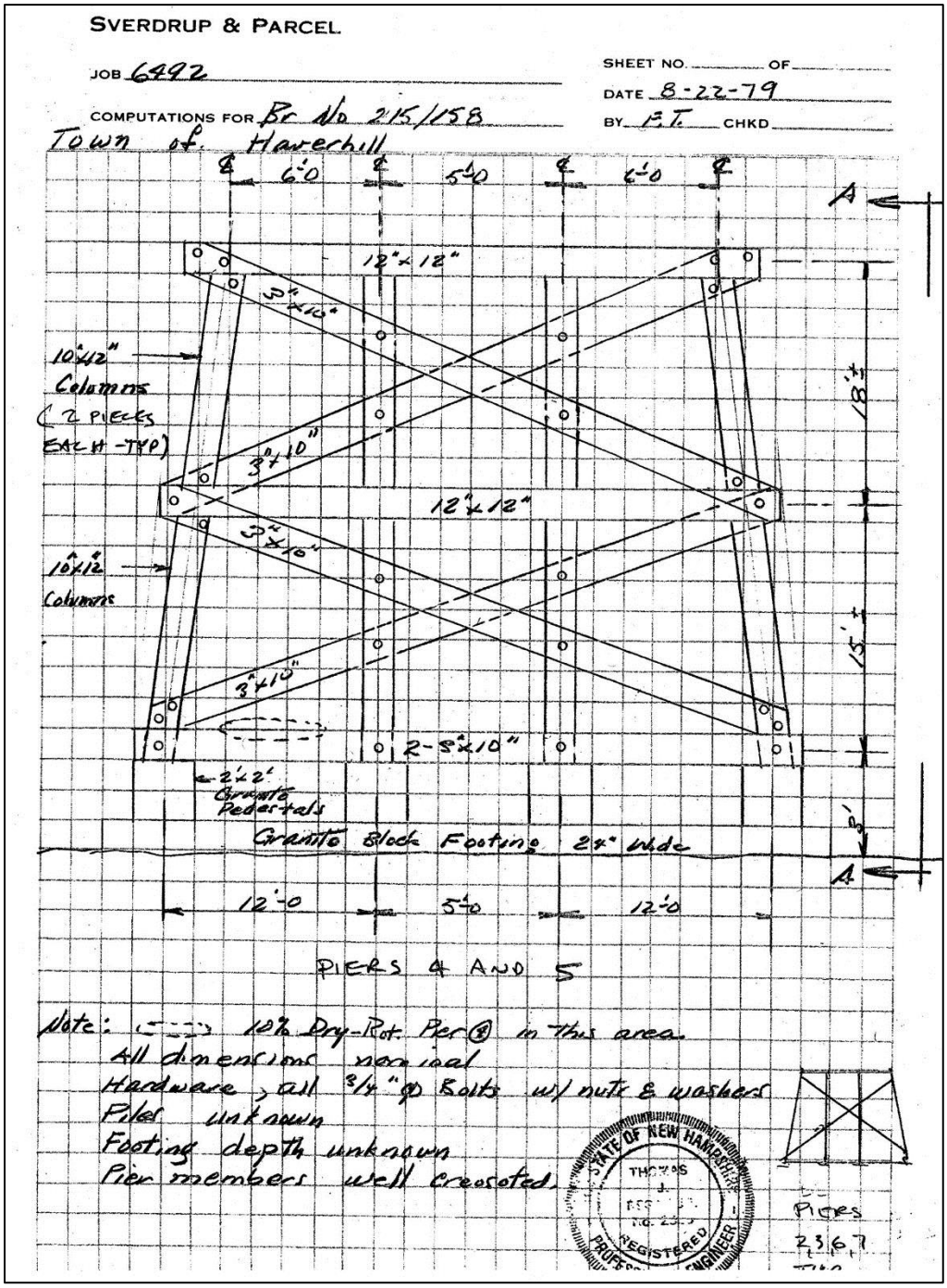

FIGURE 5: Site Sketch, Mill Street Bridge (Haverhill Bridge # 215/158) Elevation of Timber Bent. Inspection Sketch by Sverdrup & Parcel Engineers, 22 August 1979 (NHDOT Bridge Inspection File).

APPENDIX A: SUPPLEMENTAL GRAPHICS (continued)

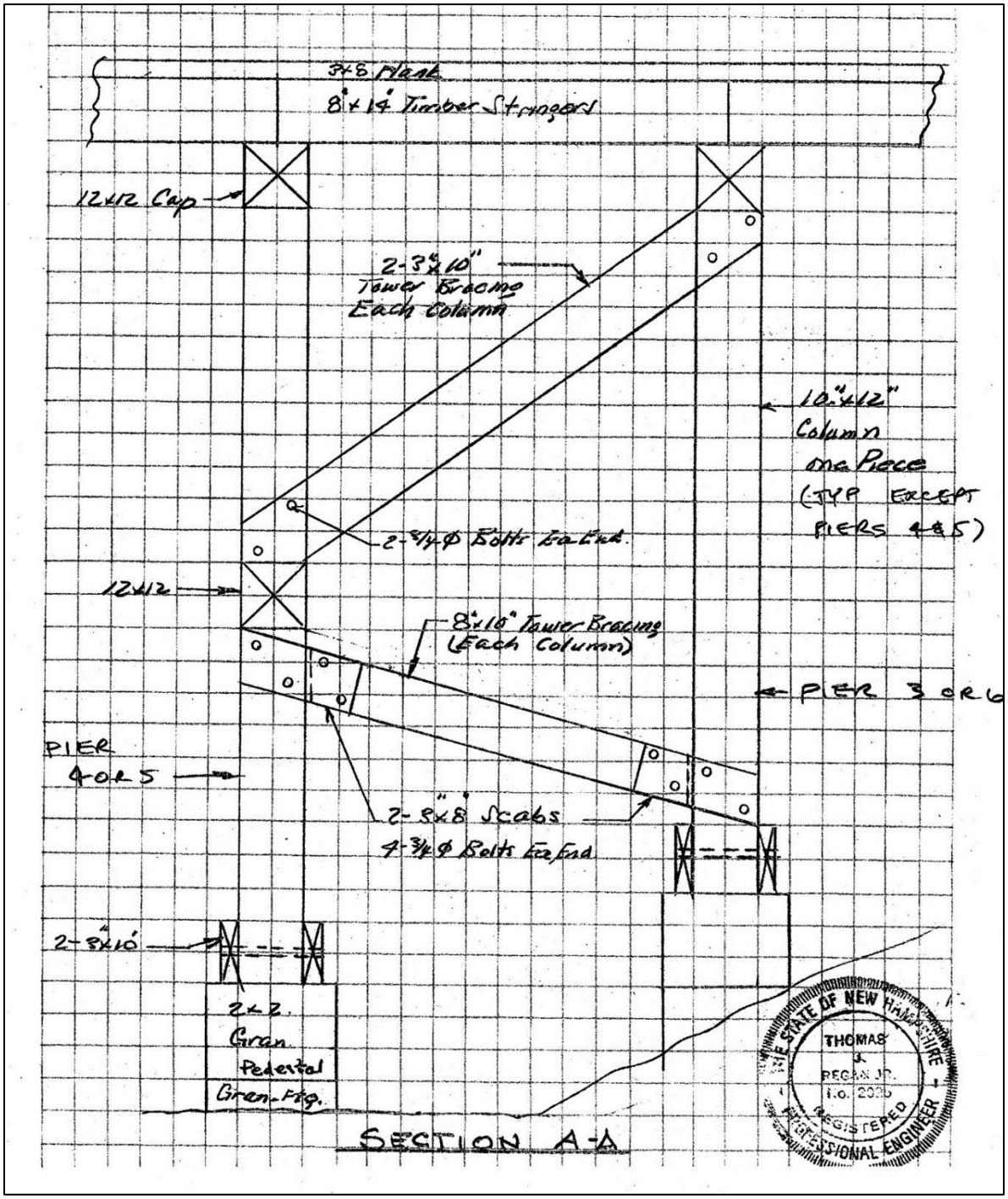

FIGURE 6: Site Sketch, Mill Street Bridge (Haverhill Bridge # 215/158) Section thru Timber Bents. Inspection Sketch by Sverdrup & Parcel Engineers, 22 August 1979 (NHDOT Bridge Inspection File).

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MILL STREET BRIDGE HAER No. NH-55
Spanning Ammonoosuc Rail Trail (former Boston & Maine Railroad)
Woodsville
Grafton County
New Hampshire

Photographer: Rob Tucher, December 2017

NH-55-1 APPROACH TO BRIDGE FROM NORTH. VIEW LOOKING SOUTH.

NH-55-2 APPROACH TO BRIDGE FROM SOUTH. VIEW LOOKING NORTH.

NH-55-3 OBLIQUE VIEW OF EAST ELEVATION, SHOWING RAILING ASSEMBLY, FLOORING, BENT ATTACHMENTS. VIEW LOOKING SOUTHWEST.

NH-55-4 WEST ELEVATION FROM FORMER RAILROAD BED. VIEW LOOKING EAST.

NH-55-5 EAST ELEVATION FROM FORMER RAILROAD BED. VIEW LOOKING WEST.

NH-55-6 OBLIQUE VIEW OF SOUTH BENTS. VIEW LOOKING SOUTHEAST.

NH-55-7 DETAIL OF NORTH INTERMEDIATE BENT SHOWING CROSS BRACING CONNECTIONS AND LATERAL BRACING OF INTERIOR TWO-STORY BENT. VIEW LOOKING SOUTHEAST.

NH-55-8 ELEVATION OF NORTH INTERIOR TWO-STORY BENT. VIEW LOOKING NORTH.

NH-55-9 ELEVATION OF SOUTH INTERIOR TWO-STORY BENT, WITH SCALE. VIEW LOOKING SOUTH.

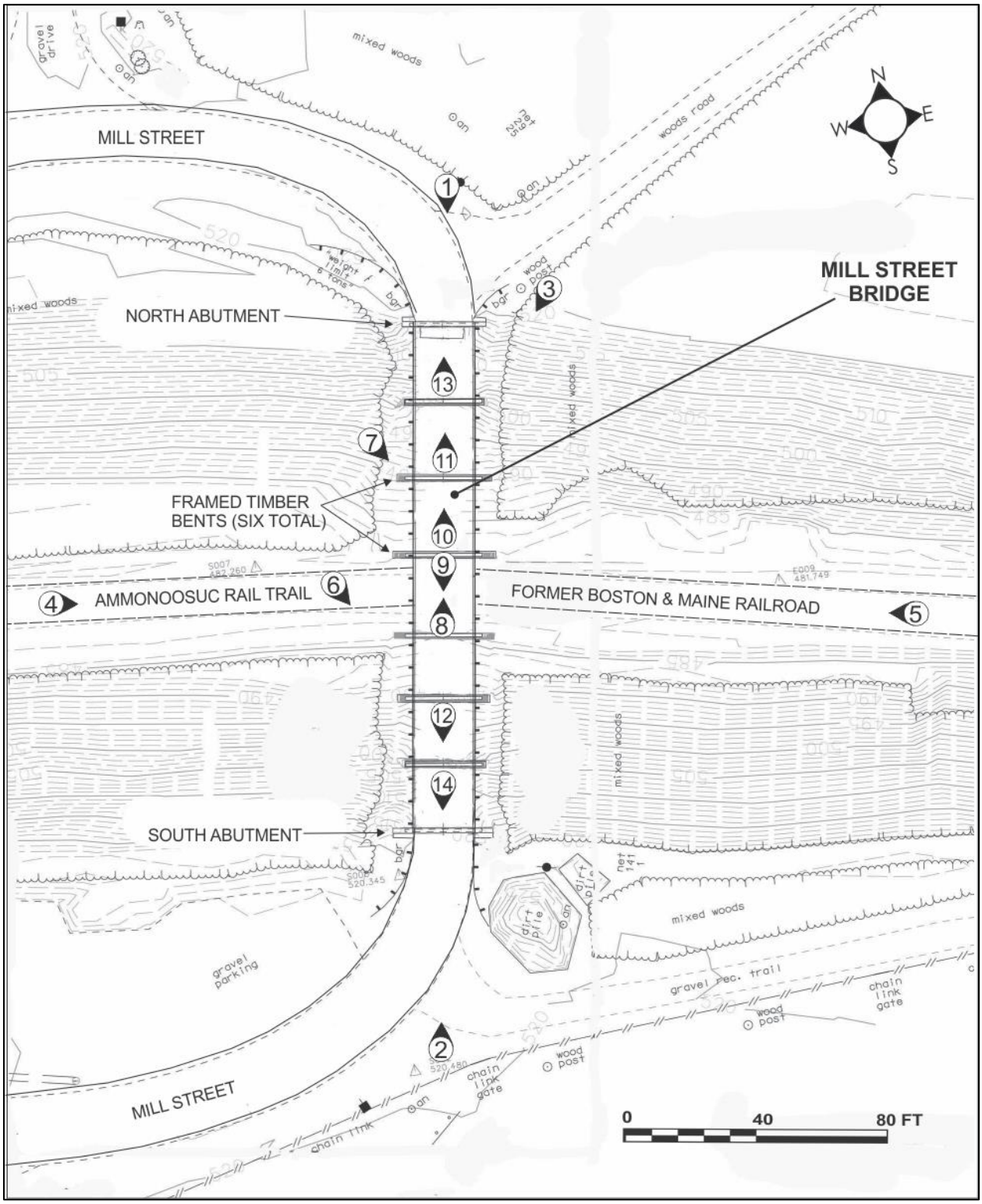
NH-55-10 NORTH INTERMEDIATE BENT AND FOOTINGS SHOWING LATERAL BRACING CONNECTION. VIEW LOOKING NORTH.

NH-55-11 NORTH INSIDE BENT AND GRANITE FOOTING. VIEW LOOKING NORTH.

NH-55-12 SOUTH INSIDE BENT AND GRANITE FOOTING WITH SCALE. VIEW LOOKING SOUTH.

NH-55-13 NORTH ABUTMENT. VIEW LOOKING NORTH.

NH-55-14 SOUTH ABUTMENT, WITH SCALE. VIEW LOOKING SOUTH.


MILL STREET
MILL STREET BRIDGE
NORTH ABUTMENT
SOUTH ABUTMENT
FRAMED TIMBER BENTS (SIX TOTAL)
AMMONOOSUC RAIL TRAIL
FORMER BOSTON & MAINE RAILROAD
MILL STREET
mixed woods
gravel parking
gravel rec. trail
dirt pile
chain link gate
wood post
N
E
S
W
0
40
80 FT

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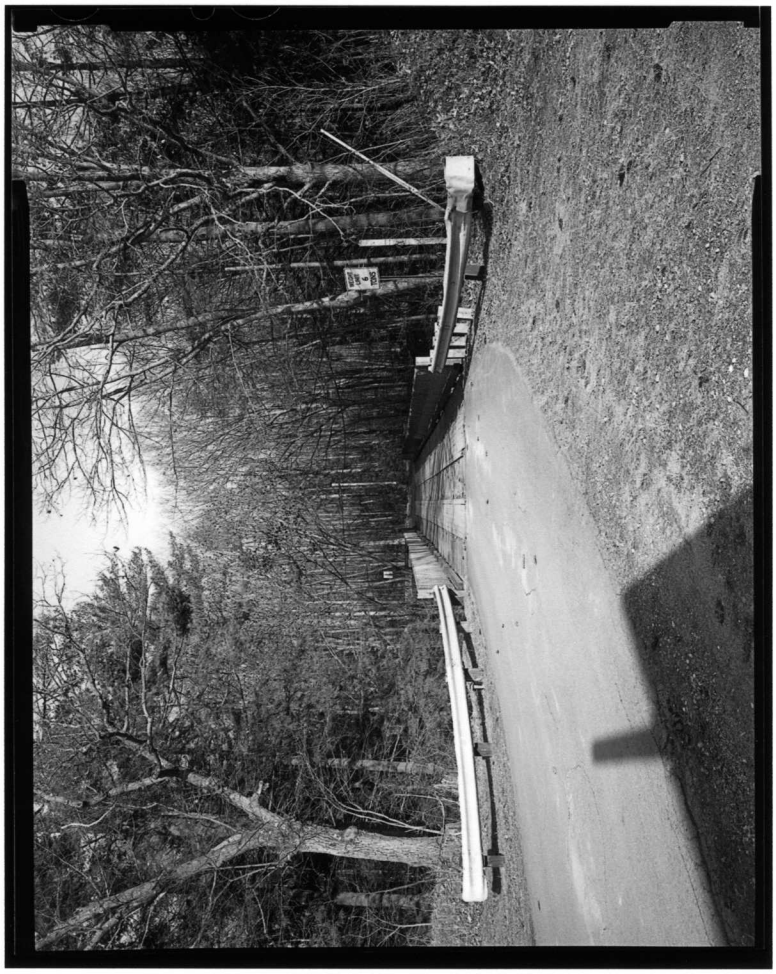

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