Written and Photographic Documentation:

Danbury and Norwalk Railroad: South Norwalk

Norwalk, Connecticut

Danbury Dock Yard Improvements Project
Norwalk, Connecticut
State Project No. 301-180

Prepared for the

Connecticut Department of Transportation

by

Marguerite Carnell, M. Phil.
Bruce Clouette, Ph.D.

Archaeological and Historical Services, Inc.
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DANBURY AND NORWALK RAILROAD: SOUTH NORWALK
Norwalk, Connecticut

Location:	Along the Danbury and Norwalk railroad line between its junction with the main line, just north of Washington Street in South Norwalk and the Jennings Place grade crossing.
U.S.G.S. Quadrangle:	Norwalk South
Latitude/Longitude:	41° 5' 57.93" N / 73° 25' 6.3732" W (north end) 41° 6' 39.1932" N / 73° 24' 44.7516" W (south end)
Design Engineer:	As originally built: Alexander C. Twining Bridges (1895): W. H. Moore, New York, New Haven & Hartford Railroad Company
Contractor:	As originally built: Beard, Church and Company
Date of Construction:	Original line: 1852 Tracks raised: 1895-1896 Electrification: 1914
Significance:	The line from South Norwalk to Danbury, originally built by the Danbury & Norwalk Railroad, played an important role in the economic history of western Connecticut, connecting the hat factories and other industries in the Danbury area to the emerging regional rail network; it also helped sustain agriculture and extractive enterprises and facilitated both long-distance and commuter passenger travel. This particular portion of the line has added significance because it was raised up as part of the 1890s four-tracking of the main line, a massive undertaking by the New York, New Haven & Hartford Railroad, and because it was part of the 1914 completion of the pioneering electrification of the New York-New Haven line.
Project Information:	This document fulfills a stipulation in a Memorandum of Agreement among the Federal Transit Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Office, and other parties regarding the Danbury Dock Yard Improvements Project, State Project No. 301-180. This documentation was completed in September 2017.

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I. INTRODUCTION

The Connecticut Department of Transportation (CTDOT) is planning a set of improvements to a portion of Metro North Commuter Railroad's Norwalk-to-Danbury branch line, including track work, new track turnouts, and the alteration and replacement of historic catenary support structures (State Project No. 301-180). The project extends approximately one mile from the junction of the branch with the New Haven main line in South Norwalk to just south of the Jennings Place grade crossing. The undertaking is the subject of a Memorandum of Agreement (MOA) among the Federal Transit Administration (FTA), the Connecticut Department of Transportation (CTDOT), the Connecticut State Historic Preservation Office (CTSHPO), and other parties. Stipulation No. 1 in the project's MOA, executed in May 2017, is as follows:

> When track access is granted to view individual catenary structures and prior to demolition, CTDOT shall prepare written and photographic documentation of historic structures on the Danbury Line, within the limits of the Undertaking, to the professional standards of CTSHPO. The documentation will address historic bridges, catenary support structures, retaining walls, and any historic trackside features such as mileposts. The documentation will also provide context views that incorporate the former Norwalk Lock Company buildings and the former R&G Corset Factory. CTDOT shall submit the documentation to FTA and CTSHPO for review and revise the documentation according to any comments. CTDOT shall submit the revised documentation to CTSHPO for permanent archiving and public accessibility.

This documentation is intended to fulfill that stipulation. The methodology that was used to prepare the documentation is described in the next section, followed by detailed descriptions of the bridges, retaining walls, and catenary structures along the line, as well as an assessment of their historical and engineering significance. References to historical and secondary sources of information are at the end of the document. The bound version of this report includes prints of 44 captioned photographs as Appendix C, along with an index to photographs and a graphic photographic key (on separate sheets).

This documentation was prepared by Marguerite Carnell, M.Phil., Historian, and Bruce Clouette, Ph.D., Senior Historian, both of Archaeological and Historical Services, Inc. of Storrs, Connecticut. Copies of this report, as well as archival copies of the text and photographs, will be submitted by CTSHPO to become part of the Connecticut Historic Preservation Collection housed at the Dodd Research Center at the University of Connecticut in Storrs.

II. METHODOLOGY

The products that make up this documentation include the following:

- Narrative text on acid-free, archival paper
- Digital color images on CD-ROM, .tif format, 300 dpi, minimum 1,200 by 1,600 pixels
- Index of photograph numbers and captions
- Graphic photograph keys
- Archival 5" by 7" color prints, labeled in soft pencil and placed in archival paper sleeves

In addition to the archival version deposited at the Dodd Center at the University of Connecticut, bound copies of the text and photographs have been compiled for CTDOT and CTSHPO, and one copy of the bound version will be included as part of the archived materials.

Standards for written and photographic documentation have been issued by CTSHPO (Saunders and Moore 2007), and the narrative text and photographs that make up this documentation meet or exceed all the specifications in the standards. The photographs were taken in May 2017 (unless otherwise noted) using a 14.5-megapixel Pentax K-7 camera. Digital color images were saved on DVD-ROM as uncompressed .tif files, 300 dpi, 24-bit RGB color, at a resolution of 2000 by 3000 pixels or greater. The archival 5" by 7" color prints produced for this documentation meet National Park Service standards for permanency; they were printed using Epson Claria™ high-definition archival inks and Epson Premium Glossy Photo Paper™. The prints were labeled using soft pencil and numbered sequentially. Photographs were placed in 5" by 7" acid-free paper archival sleeves, which also were labeled with the photograph number. In the bound copies, the photographs appear as Appendix C.

The historic resources are grouped into the following categories: catenary and signal support structures, historic bridges, and retaining walls. Representative photographs are included to show the various types of catenary support structures and the different kinds of retaining walls, but not every structure or section of wall is included so as to avoid repetition and redundancy. In order to fulfill the stipulation in the MOA, additional photographs were included that show nearby historic buildings and one portion of the former Dock Yard freight facility.

The graphic keys accompanying the photographs (Appendix B) were prepared at a scale of 1” = 90’. This scale was chosen so that the resources could be related to some nearby intersection or other landmark, rather than being presented in isolation; at the same time, the scale is adequate to show the vantage points from which the photographs were taken.

In addition to the photographs, this documentation includes narrative text that gives a brief history of the railroad line and discusses the historical and engineering significance

of the bridges and other features. To prepare the narrative text, background research was conducted using published histories of Danbury and Norwalk (e.g., Bailey 1896, Selleck 1896, Ray and Stewart 1979), railroad histories (e.g., Karr 1995, Turner and Jacobus 1989, and Cornwall 1987), and the reports filed by the railroad companies with the Connecticut Railroad Commission. Previous documentation studies that were consulted included the Historic American Engineering Record (HAER) documentation of the Northeast Corridor Line (HAER CT-11) and the state-level documentation of historic catenary structures along the line (Stewart 2000). Archival sources included railroad-company maps of the line dating from 1910, 1916, and ca. 1960. The sources of information for the narrative are identified in the References section of this document (Section VI).

In order to identify and record all historic features, the entire line between the junction of the Danbury and Norwalk track with the main line and the Jennings Place grade crossing was inspected on foot by a team consisting of an industrial historian and an architectural historian. The team compiled extensive notes and took a total of 98 photographs, from which 44 were selected for inclusion in the documentation. Subsurface investigations were beyond the scope of the project, so it is possible that some historic engineering features are no longer visible and are therefore not included in this documentation.

Two culverts that appear near Crescent Street on an early survey (New York, New Haven & Hartford Railroad Company 1910, Figure 6) could not be located, despite extensive exploration of the area abutting the tracks. It is likely that modern commercial and residential development in the vicinity has displaced the small brooks that formerly were accommodated by the culverts.

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III. DESCRIPTION OF THE HISTORIC RESOURCES

The resources inventoried for this documentation are described here, generally in a south-to-north order, according to the following categories: catenary and signal support structures, historic bridges, retaining walls, and adjacent properties. The locations of the resources, as well as the positions from which the photographs were taken, are shown on the six graphic photograph keys included in Appendix B. The photographs are reproduced as Appendix C in the bound copies of this documentation.

A. Catenary and Signal Support Structures

- **Catenary Bridge 526**
  Located at the junction of the main line and the Danbury line and therefore part of both, Catenary Bridge 526 (Figure 12, Photograph 1) is the only structure of its type included in this documentation. It consists of two lattice-girder uprights that support a latticed box-beam or truss over the tracks; curved angle braces appear at the corners. The uprights taper from the top to the base, where they rest on four-sided concrete footings. This is the standard type of main-line catenary support for the 1914 Stamford-to-New Haven four-track electrification (Stewart 2000), except that it is 12 feet wider than the usual 61 feet, so as to accommodate the additional track branching off to the north. Two original lattice extensions for carrying feeder and signal lines are mounted in the middle of the bridge, with a structure for modern utility lines appended to the south extension.

- **Single Lattice Pole-Bracket Type**
  This type consists of a steel lattice-girder pole, tapered from bottom to top, and a long arm of paired angles, termed a "bracket" by Bean (1927), that extends over the track, braced by a sag brace made from two curved angles (Figures 10, 11, and 13; Photographs 2-4). Above the beam is a smaller arm that carried signal lines and feeders; some wires remain in place. On some structures, there are high latticed extensions to carry additional lines. The girders rest on four-sided concrete bases; where the structures are located on the line's stone retaining wall, the concrete base is set directly into the masonry along the top of the wall (Photograph 34). More typically, the base is partially or completely beneath grade (Photographs 3 and 5). This type of catenary support is used for single-track portions of the line; there are four single lattice pole-bracket structures.

- **Paired Lattice-Pole Type**
  Paired lattice-pole structures were used for multiple-track locations (Figures 8, 9 and 14; Photographs 6 to 10). The uprights are lattice-girders like those for the single lattice-pole-bracket type. The uprights rest on similar concrete bases, and most are braced by guy wires. The H-column diagonal bracing for one support of this type (Photograph 7) probably represents a later modification. The west upright of each pair has a small arm that formerly carried signal and feeder wires. Each pair has three wires spanning the track between the uprights to carry the catenary. On straight sections, the catenary is supported by vertical drop wires

(Photograph 9), but on curves the drop wires are at an angle (Photograph 10). The wires are insulated by stacks of three ceramic bell-type insulators. There are 12 paired lattice-pole type structures; some are on single-track portions of the line that formerly had more than one track.

- **Braced H-Column and Lattice-Pole Type**
  This hybrid bridge type pairs a tapered lattice-girder upright with an H-column upright (Figure 15; Photographs 11 to 13), joined together by a paired-angle crossbeam; the angles are bent at each end so as to connect to the lattice and H-column uprights (Photographs 12 and 13). The lattice-girder upright has a curved sag brace and at the top, a small arm that formerly carried signals and feeders. In addition to the crossbeam, a single wire with insulators connects the two uprights to help support the catenary. The H-column upright is bolted to fixtures set into the concrete base (Photograph 14). The use of H-columns is primarily associated with the 1925 electrification of the remainder of the Danbury branch, so this type, of which there is only one, may represent an alteration of what originally was a paired lattice-pole structure.

- **Paired H-Column Type**
  The paired H-column catenary bridges on either side of Interstate Highway 95 (I-95) were probably added ca. 1958 during construction of the highway (Figure 16; Photograph 15). On the north side of the highway, the H-columns are connected with a crossbeam braced from above by angle sag braces. On the south side of I-95, the two H-column uprights are connected by three wires rather than a cross beam. These are the only two paired H-column-type structures.

- **Single H-Column Pole**
  This free-standing single H-column pole (Photograph 16) may have been erected for guy-wire bracing; the wire currently terminates shortly beyond the stack of three ceramic insulators. The use of H-columns for the 1925 electrification of the remainder of the Danbury branch suggests that this structure was not part of the 1914 work. There is only one single H-column structure.

- **Signal Masts**
  On the west side of the tracks, just south of the Ann Street Bridge, is a tall pipe tower which served as a mast for the railroad's lighted-semaphore signals (Photograph 17). Another signal mast, the top portion of which has been broken off, is found on the opposite side of the tracks south of the Marshall Street Bridge (Photograph 18). It has a metal access ladder, also broken off just above what remains of the mast itself. There are two extant signal masts.

B. Bridges

- **Marshall Street Bridge** (State Bridge No. 4134R; Bridge 1200^{A} per 1895 drawing; Bridge No. 2.86 per 1915 valuation map). The railroad bridge over Marshall Street is a steel deck-plate-girder bridge constructed in 1895 (Figure 17; Photographs 19 through 25). The single-span, single-track bridge is 55' long. It

rests on brownstone abutments and is set at a 20° skew relative to the street. The girder web plates are 40" x 5/8", and the girders are set 6'-6" on center. The number of flange plates increases from one to four toward the center of the bridge for greater strength (Photograph 21). There are eight intermediate stiffeners typically set 6'-1" apart; on the west side, one of them has been replaced (Photograph 19). The girder bracing consists of diagonal 3½" x 3" x 3/8" angles that run from side to side and top to bottom. The last cross brace at the north end has been repaired (Photograph 22). Most of the rivets have been drilled out and replaced in kind or reattached with high-strength bolts. Drawings dating from 1920 indicate a repair project involving the replacement-in-kind of cross-bracing and gusset plates. Along the east side of the bridge, the rail ties are cantilevered beyond the girder to support an open-grill walkway and a two-rail hand railing.

The abutments for the bridge are built of coursed ashlar of brownstone blocks, about 18" high and ranging in length from 24" to 48". Many blocks exhibit drill marks (possibly for lifting with a derrick). Stepped portions of the abutments are capped with projecting quarry-faced brownstone blocks, roughly 18 by 24". The west ends of both abutments are tied into fieldstone retaining walls. The east side of the south abutment terminates in a wing wall that is parallel to the track. The size and surface texture of the wing wall's stone blocks are more irregular than those of the abutments, and the sloped wall is capped with projecting brownstone blocks. The east end of the north abutment steps down to meet a short fieldstone wall along Marshall Street. Both ends of the bridge itself rest on concrete seats, which represent later modifications.

- **Ann Street Bridge** (State Bridge No. 8200R; Bridge No. 1206^{B} per 1895 drawing; Bridge No. 2.94 per 1915 valuation map). The railroad bridge over Ann Street is a steel deck-plate-girder bridge constructed in 1895 (Figure 18; Photographs 26 through 31). The 53' single span is set on brownstone abutments and originally carried three tracks; it now carries two tracks and a pedestrian walkway. Each track is carried on a pair of girders. The bridge rests on brownstone abutments and is set at a 30° skew relative to the street.

  The girders are 8" wide and are set 6' on center. Within each pair, one girder is 2" higher than the other; girder webs are 40" x 5/8" x 17'-10 ¾" (low girder) and 42" x 5/8" x 17'-10 ¾" (high girder). The number of flange plates increases from one to four toward the center of the bridge for greater strength (Photograph 28). There are six intermediate stiffeners typically set 6'-4 ¾" apart (Photograph 26). The girder bracing consists of diagonal 3½" x 3" x 3/8" angles that run from side to side and top to bottom. Most of the 7/8" rivets have been drilled out and replaced in kind or reattached with high-strength bolts. On the east side of the bridge, the rail ties are cantilevered beyond the girder. The easternmost track has been removed and replaced with a pedestrian walkway. There is no protective railing.

The abutments for the bridge are built of coursed ashlar of brownstone blocks, about 18" high and ranging in length from 24" to 48". Many blocks exhibit drill marks (possibly for lifting with a derrick). The abutments' stepped ends are capped with projecting quarry-faced brownstone blocks, roughly 18 by 24". The west end of the south abutment is tied into the fieldstone retaining wall, while the west end of the north abutment is stepped to terminate in a low wall adjacent to the R & G Corset Factory. The east ends of both abutments are stepped, acting as retaining walls for the railway's earthen embankments.

Both ends of the bridge itself rest on brownstone block seats except for the two western-most girders, where the brownstone has been replaced with concrete.

C. Retaining Walls

The rail line in South Norwalk was elevated ca. 1895 with embankments that rise above street level. The embankments were built by constructing large wooden trestles and then dumping fill from cars brought onto the trestle (Figure 4). In some places, the embankment has an earthen slope; in other places, it is contained by stone retaining walls. On the Danbury line, the embankment has retaining walls from a point just north of the intersection of North Main and Washington streets to a point a short distance north of the Ann Street Railroad Bridge. On the east side, much of the embankment is obscured by dense vegetation, but it appears to be an earthen slope, possibly incorporating a wood-crib structure.

In contrast to the brownstone bridge abutments and wing walls, the retaining wall masonry is rough and irregular in character, with stones ranging in size from small rocks to boulders (Photographs 32 through 39). The masonry is punctuated at irregular intervals with square weep holes that range in location from the base to midway up the wall (Photograph 36). The stone masonry varies in color from gray to brown, set in gray mortar with untooled joints. The wall is topped with brownstone capping that is stepped in several locations to accommodate changes in elevation. The capping stones are rusticated, with quarry-faced blocks surrounded by a smooth 1 ½" wide border. The stone wall is roughly 11' to 13' in height south of Ann Street; north of it, the wall is considerably lower. Some portions of the wall are covered in vines.

Just north of the Marshall Street Bridge is a niche formed by a blocked-off archway (Photographs 37 and 38). It is about 7' wide, 8' deep, and about 10' high. The niche is fieldstone, except for the triple row of voussoir header bricks on the face of the retaining wall above the spring line and the arch barrel, which is also red brick. It is possible that the niche is a remnant of a pedestrian tunnel, but no evidence of a tunnel's existence could be found in historical records.

Several catenary support concrete footings are set into the top of the wall (Photographs 32 and 34). Behind the former movie theater at 29 North Main Street, a wooden clothesline pole is attached to the wall in the same location that a

clothesline pole appears in a ca. 1925 photograph (Photographs 33 and 35; Figure 10).

North of Ann Street, there is a much lower wall section with a high sloped earthen embankment above (Photographs 40 and 41). A deteriorating low rubble wall continues for a short distance, then tapers to a single row of brownstone blocks that matches the brownstone capping on the rest of the wall. The brownstone blocks are laid over fieldstone rubble.

D. Context Views

The Danbury Line is deeply imbedded within the urban fabric of South Norwalk, passing close to buildings both historic and modern. Photograph 2 shows, on the left, the rear of an early 20th-century theater that lies within the historic district on North Main Street. High building density also characterizes the settings of the Marshall Street and Ann Street railroad overpasses (Photographs 19, 20, 25, 26, and 30). Of special note are two historic factories from the 19th century, the Norwalk Lock Company building at 20 North Water Street, which faces west toward the tracks (Photograph 42), and the R & G Corset Company factory at 21 Ann Street (Photograph 43).

The area east of the line was formerly the Dock Yard freight facility, established to consolidate smaller freight yards after the Danbury and Norwalk Railroad was absorbed into the New York, New Haven & Hartford Railroad in 1892. Today, the Dock Yard area is characterized by dense commercial, residential, and industrial development. One area that remains open has been transformed into a small park (Photograph 44).

IV. HISTORICAL BACKGROUND OF THE DANBURY & NORWALK RAILROAD

The Danbury & Norwalk Railroad was chartered in 1835, after a proposed canal project connecting the two towns proved too expensive. The charter was obtained from the legislature by several local businessmen, including Jonathan Camp and Asa Smith, under the name of "Fairfield County Railroad Company." The project was initially met with great skepticism by residents and merchants. It was not until 1850 that construction on the line began, with service beginning in 1852 (Bailey 1896: 266). The original intention for the short line was much grander: it was planned to end at Wilson's Point on Long Island Sound in Norwalk, thereby allowing passengers to continue to New York City by steamboat. North of Danbury it was planned to meet the Boston and Albany Railroad.

Initial service involved just two southbound and two northbound trains daily (Ray and Stewart 1979: 110). During the Civil War, LeGrand Lockwood took control of the Danbury & Norwalk and greatly expanded the line, adding two smaller branch lines to reach into the surrounding countryside and the extension from South Norwalk to Wilson's Point, where in 1882 the company built a steamboat pier. The 1880s were a time of consolidation in the railroad industry, especially for small lines, and in 1886, as part of that nationwide movement, the Danbury & Norwalk line was leased to the Housatonic Railroad for 99 years. The Housatonic Railroad, the main line of which went from Bridgeport to Pittsfield, Massachusetts, was itself absorbed into the New York & New England Railroad (NY & NE) soon thereafter. The NY & NE attempted to compete with the New York, New Haven & Hartford Railroad (NY, NH & H) by creating a combined "Long Island and Eastern States Line," which carried passengers and freight from Wilson's Point to Brooklyn, New York. However, it was plagued by accidents, delays, and breakdowns, and in 1892, the NY & NE was absorbed into the NY, NH & H system. Over time, the Norwalk-to-Danbury route eclipsed the former Housatonic route starting in Bridgeport as the NY, NH & H's main north-south line in western Connecticut, and it became known as that railroad's Berkshire Division.

During the 1890s, the entire New York-to-New Haven line was rebuilt as a four-track main line. In addition to greatly expanding the line's capacity, the project eliminated grade-level crossings. The raised elevation of the track necessitated stone-walled embankments in many areas, and dozens of new bridges were needed to carry the tracks over local roadways. Although the South Norwalk-to-Danbury line itself was not widened, the southern portion had to be rebuilt to meet the elevation of the main line, so it too received retaining walls and new bridges (Figure 4).

Two important changes to the Danbury line occurred as a result of its integration into the NY, NH & H. Prior to the 1890s, there were two small freight facilities in South Norwalk. The Danbury and Norwalk Railroad's freight house was located just west of the Norwalk Lock Company, near the railroad's junction with the main line; and the NY, NH & H's freight house was located west of the South Norwalk passenger station on Monroe Street, sandwiched in between two large hat factories. Neither facility had much in the way of tracks for storing freight cars. After the lines were consolidated, a new

freight yard was built north of Marshall Street and east of the Danbury line, on reclaimed land that had served as lumber storage for a lumber and coal business (Figures 3 and 5). It was called Dock Yard, probably because of the lumberyard's long plank wharf that ran along the river bank north of Marshall Street (the dock's location is outlined on the 1915 valuation survey, Figure 7). The new facility included a large freight house with long platforms, sixteen long sidings, and, at the northern end, a small turntable. None of the freight yard components remain standing; today the site is a park (Photograph 44).

Local manufacturers benefited from their proximity to the Danbury line. The Norwalk Lock Company at 21 Water Street (Photograph 42), and the Norwalk Ironworks were large enough to have their own rail siding (the Norwalk Ironworks was originally served from the main line, but after the tracks were raised, it was served by a spur from Dock Yard). The R & G Corset Factory building at 21 Ann Street (Photograph 43) was not; instead, it used a team track at the nearby Dock Yard for loading goods.

The second major change resulting from the line's ownership by the NY, NH & H was its electrification. In 1907, the NY, NH & H completed the nation's first electrification of a railroad main line, building an overhead catenary system supported by bridge-type structures spaced at 200-to-300-foot intervals. The system ran on 11,000 volts (25 cycle, single phase) of alternating-current traction power, generated by the railroad's power plant at Cos Cob; additional power was purchased from other sources (Bean 1927: 960). Numerous improvements to the entire system were made in 1914, when electrification was extended to New Haven, the most significant of which was the use of autotransformers to reduce interference with communications lines. The 1914 electrification also included freight yards in New Haven, Bridgeport, and Norwalk. Because Dock Yard was accessed from the Danbury Line, about a mile of the line was electrified, as were the numerous tracks that made up the freight yard itself (Poor's Railroad Manual Company 1917: 878).

By July 1925, the rest of the Danbury line was electrified, one of two Connecticut branch lines integrated into the main line's electrification (Wall Street Journal 1924, Cornwall 1987: 84). Passenger trains heading to Danbury could use the same pantograph-equipped equipment as the main line, thus allowing the possibility of through trains to New York without a change in South Norwalk (Bean 1927: 996). Electric-powered trains ran on the Danbury line until 1961, when the service was switched to diesels. However, the steel lattice-pole type structures and much of the catenary (no longer energized) and other lines associated with the 1914 branch-line electrification were left in place.

In 1968, the NY, NH & H was reorganized as part of the Penn Central merger of the Pennsylvania and New York Central railroads. Combining three railroads, each on the brink of financial collapse, created an economically unstable entity, and Penn Central soon declared bankruptcy. For a time, the Consolidated Rail Corporation (Conrail, formed in 1976) provided both commuter and freight service along the Danbury line. Metro-North Commuter Railroad Company (MetroNorth) was created in 1983 when the Metropolitan Transit Authority, a quasi-public New York agency, partnered with CTDOT to take over commuter service from Conrail.

V. SIGNIFICANCE OF THE HISTORIC RESOURCES

Collectively, the sources included in this documentation, most of which are more than 100 years old, recall the importance of the Norwalk-to-Danbury rail line in the economic history of western Connecticut. By connecting the main line along the shore to a north-south route that extended northward into Massachusetts, the line made South Norwalk into a railroad junction, thereby furthering its commercial and industrial development. The hat-making enterprises of Danbury and Bethel were sustained by having rail access, as were the many other industries up and down the line. Farmers benefited from improved access to markets, and the area became part of the "milkshed" funneling dairy products into New York City.

The portion of the line in South Norwalk is particularly significant, since it was part of the four-tracking of the NY, NH & H main line. Primarily intended to increase capacity for the railroad, which by the 1890s had absorbed nearly all the competing railroads in southern New England, the four-track project was a mammoth undertaking that required lengthy stone retaining walls for the right-of-way embankment and new bridges over city streets and watercourses. The Danbury line's Marshall Street and Ann Street bridges, as well as the stone retaining walls, date from this period and stand as heritage resources that recall this important episode in Connecticut's transportation history.

Independent of the associations with the four-tracking project, the components of this portion of the Danbury line have significance as relatively intact examples of late 19th -century railroad engineering. The stone retaining walls are typical of those found elsewhere in Norwalk and other towns along the line, and the two plate-girder bridges represent the standard railroad-engineering practice of the period. Plate-girder bridges were favored for short and medium-length spans because of their substantial strength and ease of fabrication and erection. Although longer crossings might require trusses, the great majority of railroad bridges from 1890 onwards were plate girders. Although rather ordinary, structures like these are rapidly disappearing from the landscape. They deserve attention for their heritage value as increasingly rare survivors of once-common types.

Finally, the resources included in this documentation have significance as part of the NY, NH & H's pioneering main-line electrification. The 1907 New York-to-Stamford portion holds the place of honor as the first to be completed, but the 1914 extension to New Haven, of which the Danbury line-Dock Yard electrification was a component, perfected the system. The New Haven's experience with electrification was widely reported (e.g., Westinghouse Electric & Manufacturing Company 1924, Bean 1927) and served as an example for the Pennsylvania Railroad's New York-to-Washington electrification and many other electrification projects, both here and abroad.

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APPENDIX A:

FIGURES

Figure 1: Portion of the former Danbury & Norwalk Railroad line included in this documentation (shaded), as shown on the USGS Norwalk South Quadrangle, scale 1:24000.

Figure 2: The Danbury and Norwalk Railroad (shaded) as shown on the 1867 Beers map.

Figure 3: The south end of the Danbury and Norwalk Railroad (shaded) as shown on the 1875 Bailey bird's-eye view. The line runs at street level, with a long siding extending south to the lumber yard and dock at the end of Marshall Street.

Figure 4: Beginning of construction to elevate the Danbury branch as part of the raising of the main line, 1895 (Norwalk History Room, Norwalk Public Library). Wooden trestles support a single track, over which dump cars with fill will travel to create a raised embankment; the dump cars for the main line are visible in operation at the left. The buildings are the backs of the ones along the east side of North Main Street. The stone circle is the remnant of the small turntable shown in Figure 3.

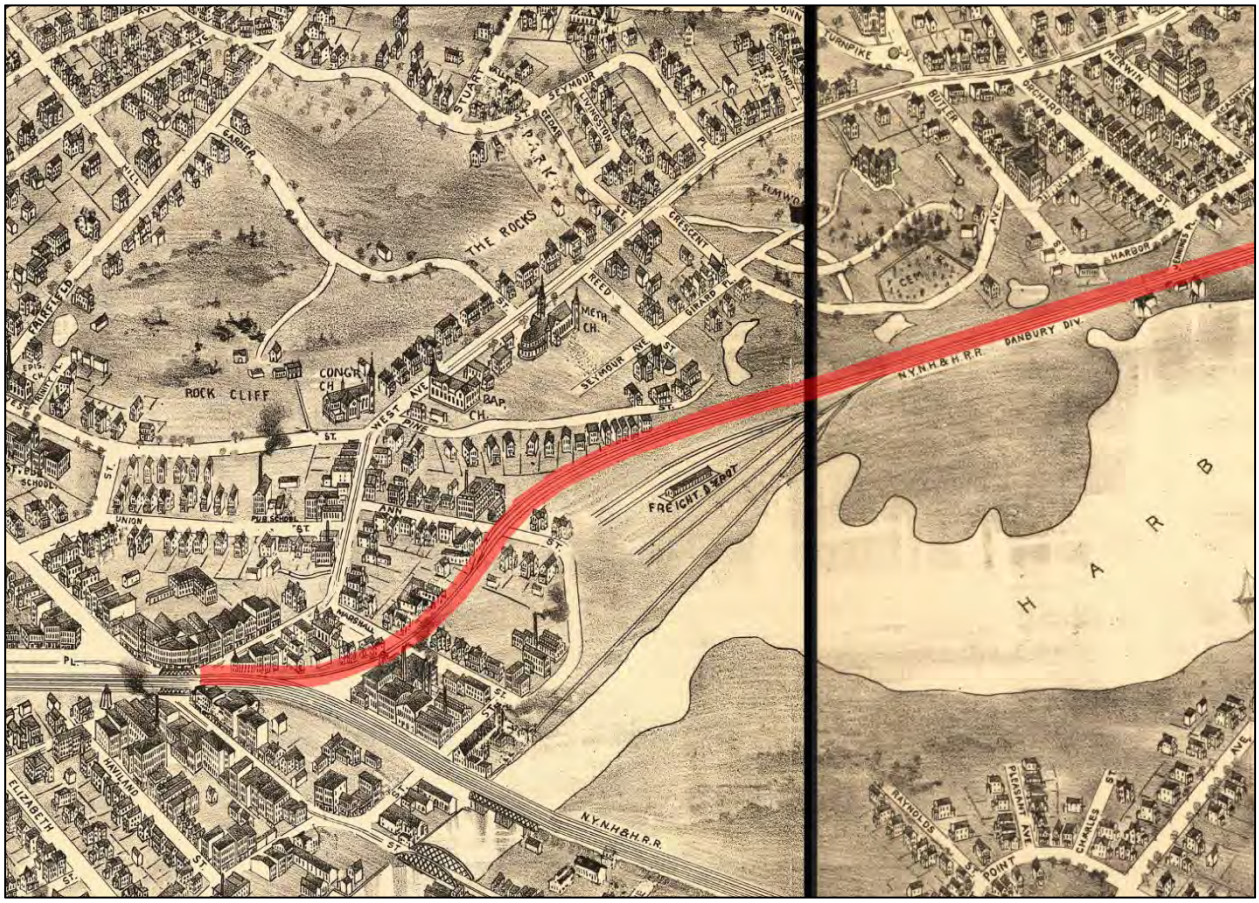

Figure 5: The south end of the Danbury and Norwalk Railroad (shaded) as shown on the 1899 Landis & Hughes bird's-eye view. The beginnings of the consolidated freight yard (Dock Yard) at the former lumber dock are apparent.

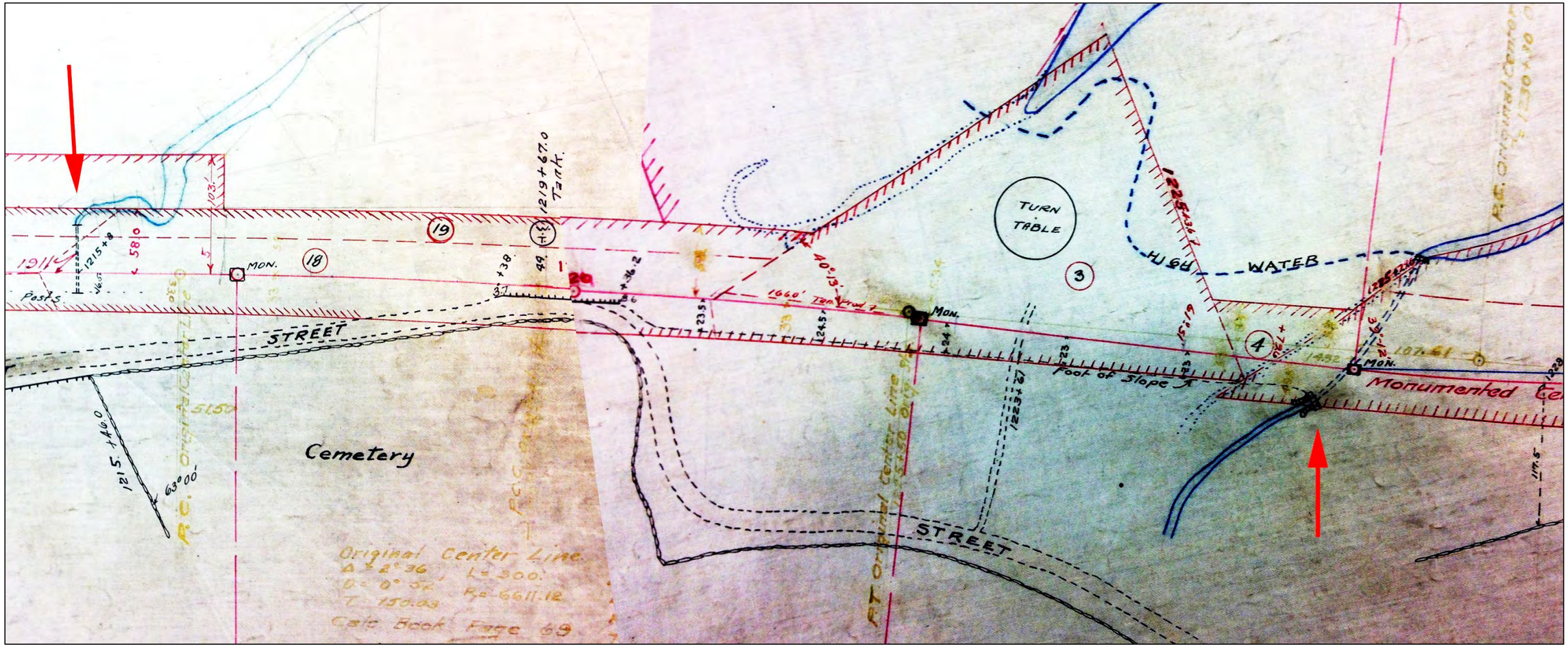

Figure 6: **Portion of 1910 New York, New Haven & Hartford Railroad survey of the right-of-way, showing location of two culverts (arrows).**

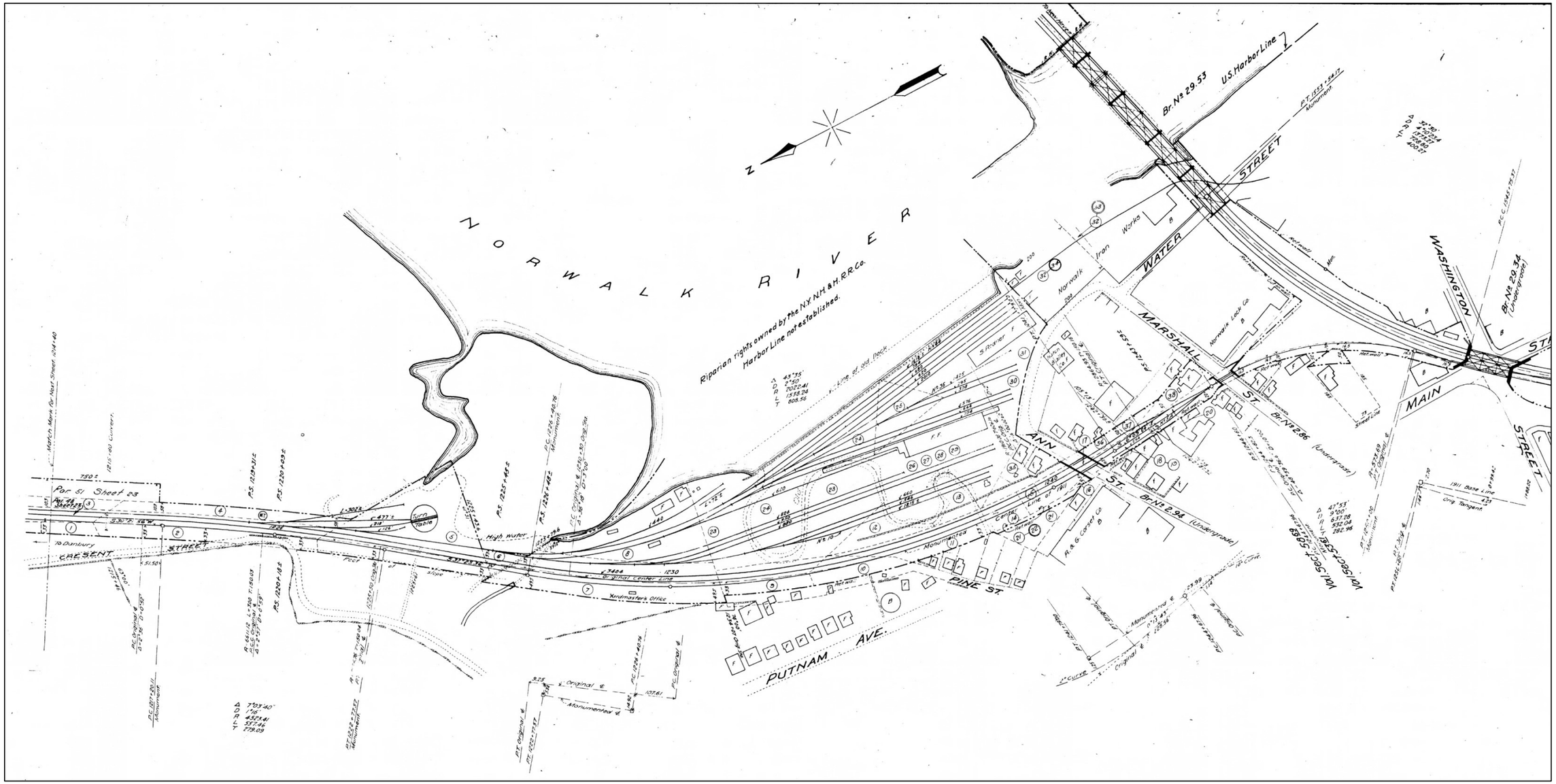

Figure 7: The south end of the Danbury branch, as shown on the New York, New Haven & Hartford Railroad valuation map, 1915.

Figure 8: **Dock Yard catenary, Harry F. Brown photograph, April 1914, looking south, with the tower of the Norwalk Lock building visible in the distance.**

Figure 9: **Dock Yard catenary, Harry F. Brown photograph, April 1914, looking north, with freight-yard tracks on the right.**

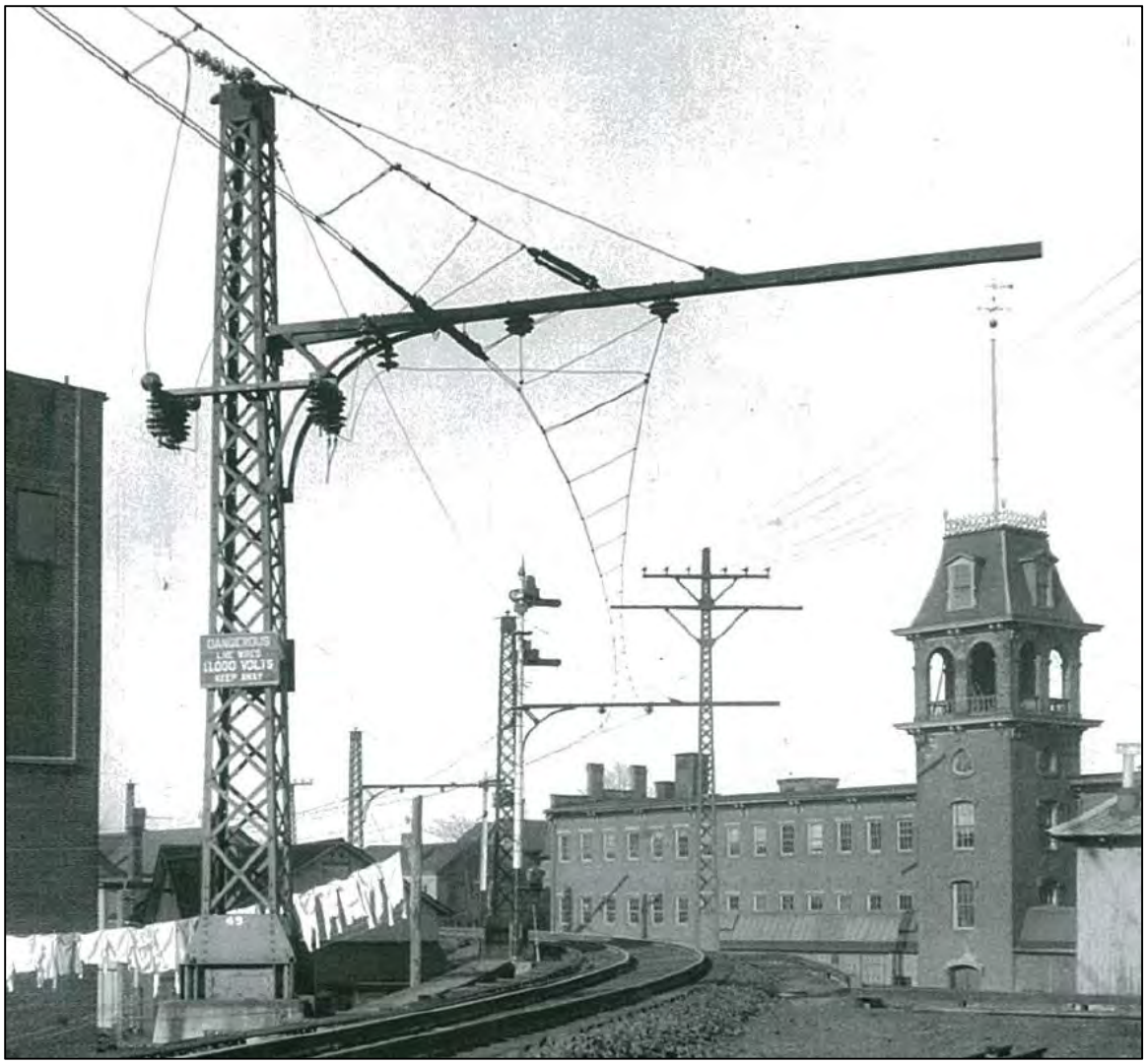

Figure 10: Undated view of the south end of the Danbury branch after completion of the electrification (1914), camera facing north. Houses and a clothesline were in close proximity to the railroad, along with the Norwalk Lock Company factory building, right, and the back of the movie theater on North Main Street, extreme left.

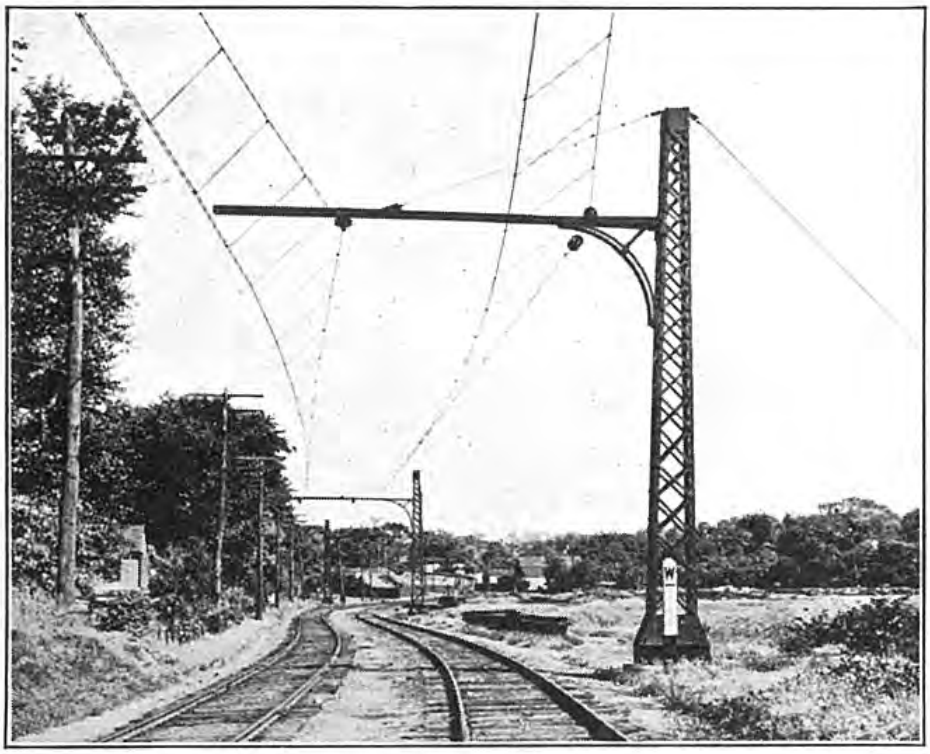

Figure 11: Danbury Branch catenary near Crescent Street, looking south, from Westinghouse Electric & Manufacturing Company (1924).

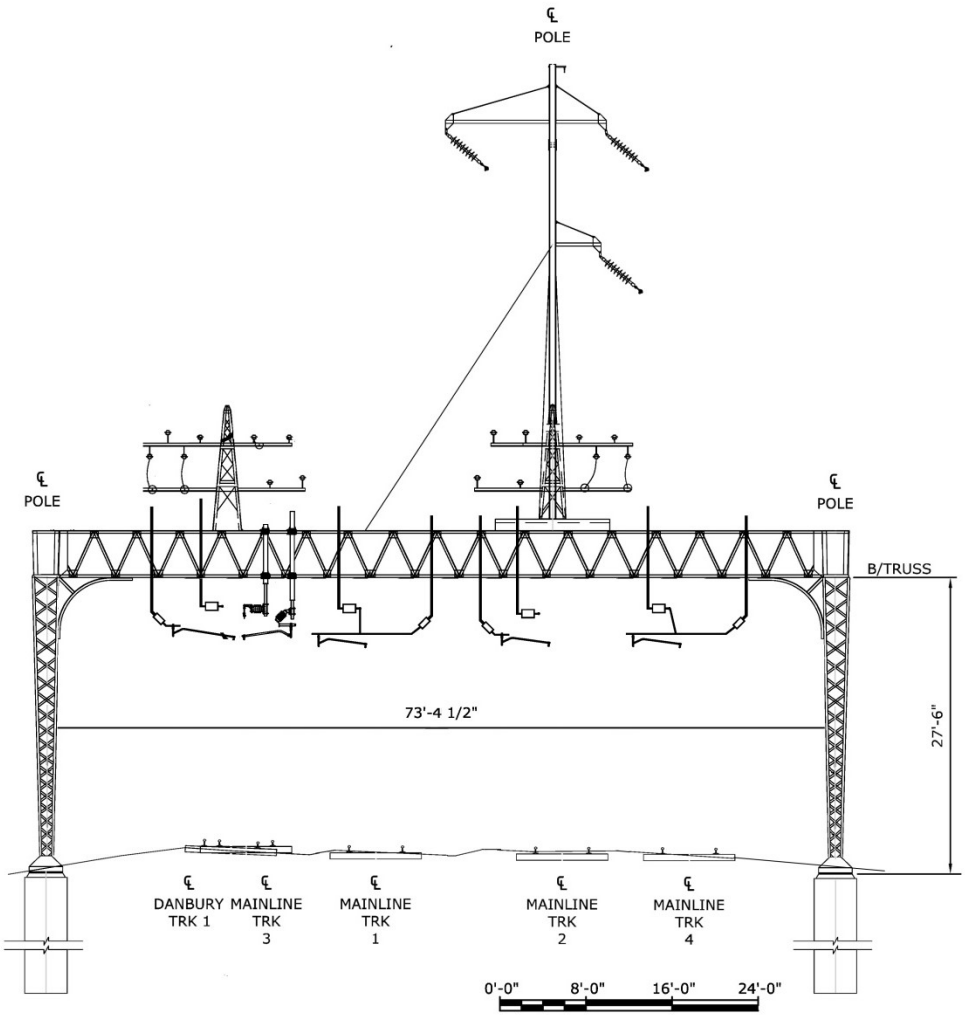

Figure 12: Dimensioned schematic of Catenary Bridge 526 (facing east).

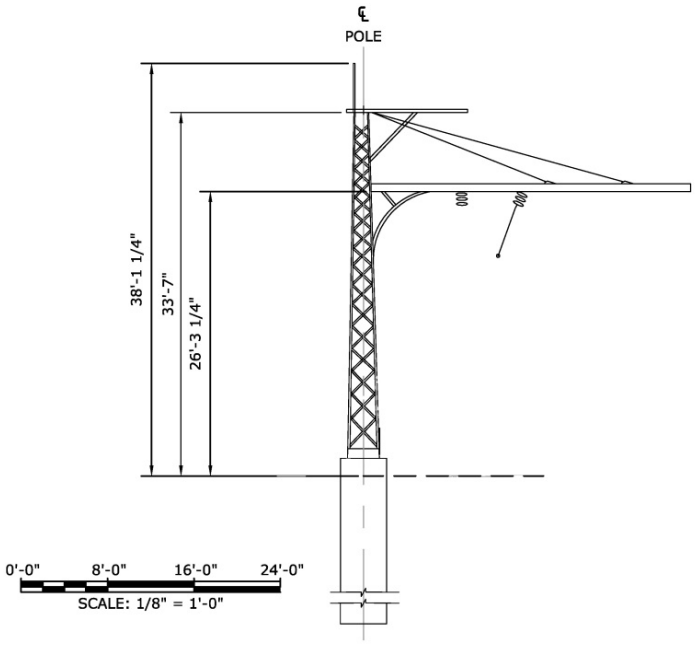

Figure 13: Dimensioned schematic of typical single lattice pole-bracket type.

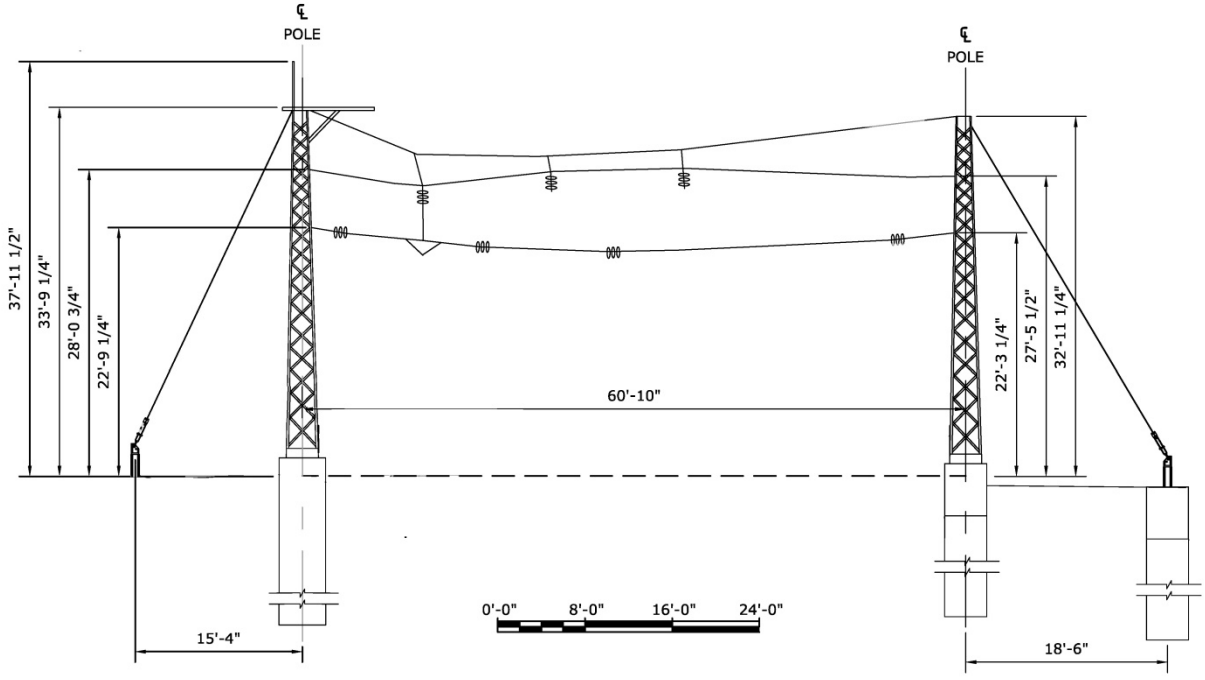

Figure 14: Dimensioned schematic of typical paired lattice-pole type.

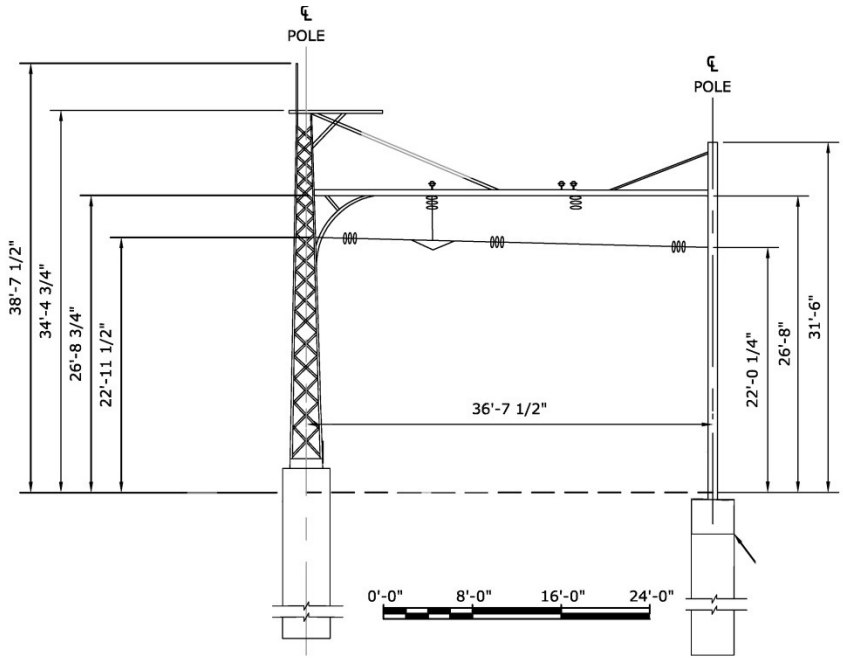

Figure 15: Dimensioned schematic of the braced H-column and lattice-pole type.

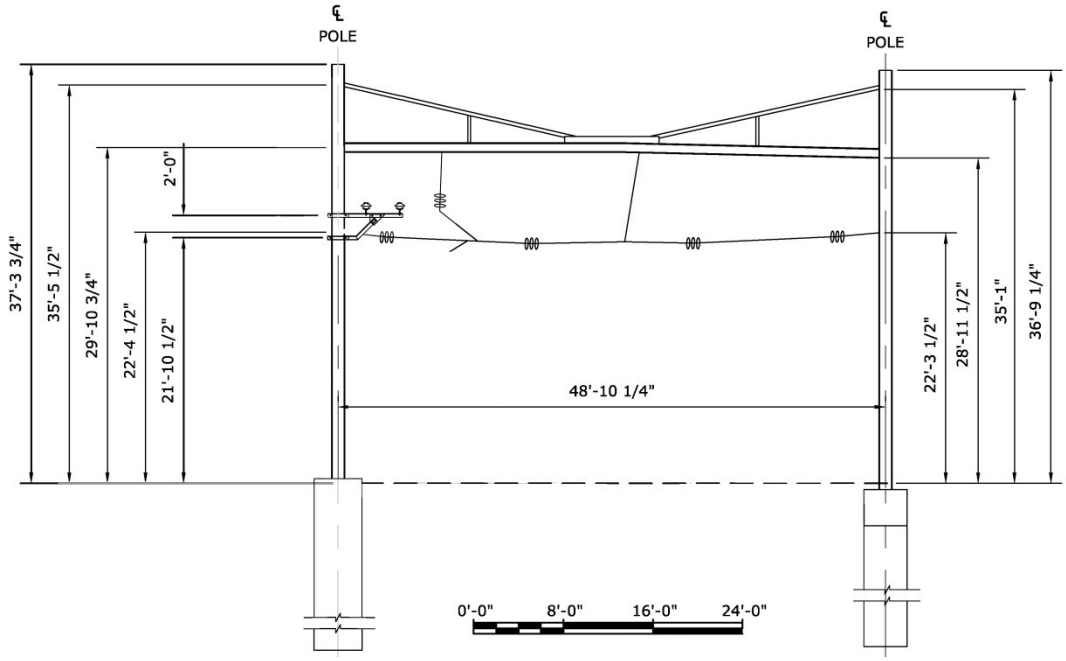

Figure 16: Dimensioned schematic of H-column-type catenary support. The pair on the south side of I-95 are connected by three wires, similar to those shown in Figure 14, rather than a cross-beam.

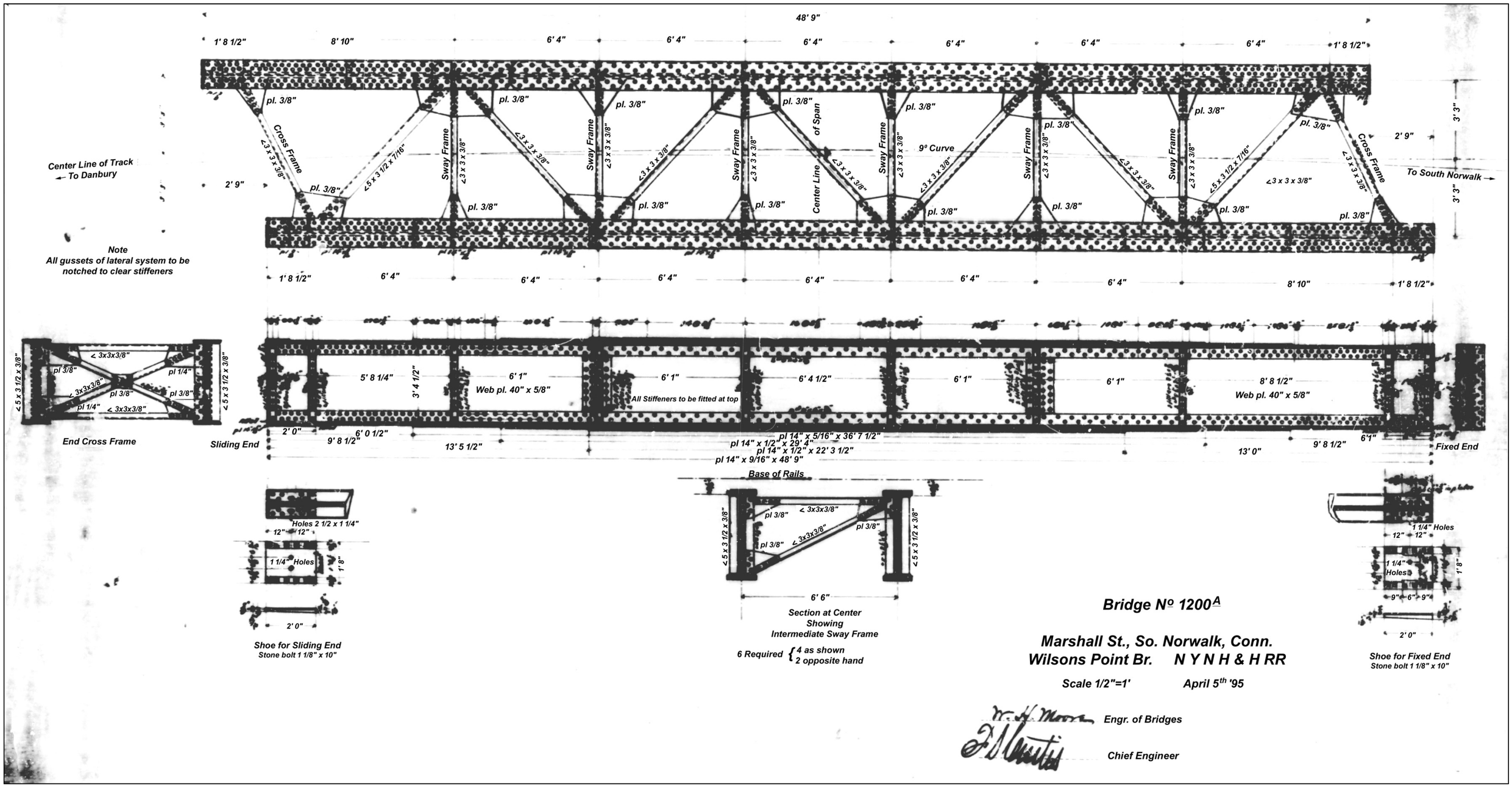

Figure 17: Elevation, plan, and sections of superstructure of Marshall Street Bridge, 1895. Aperture-card microform created by Consolidated Rail Corporation, ca. 1980, currently on file at CTDOT. Dimensions and notations re-lettered for legibility.

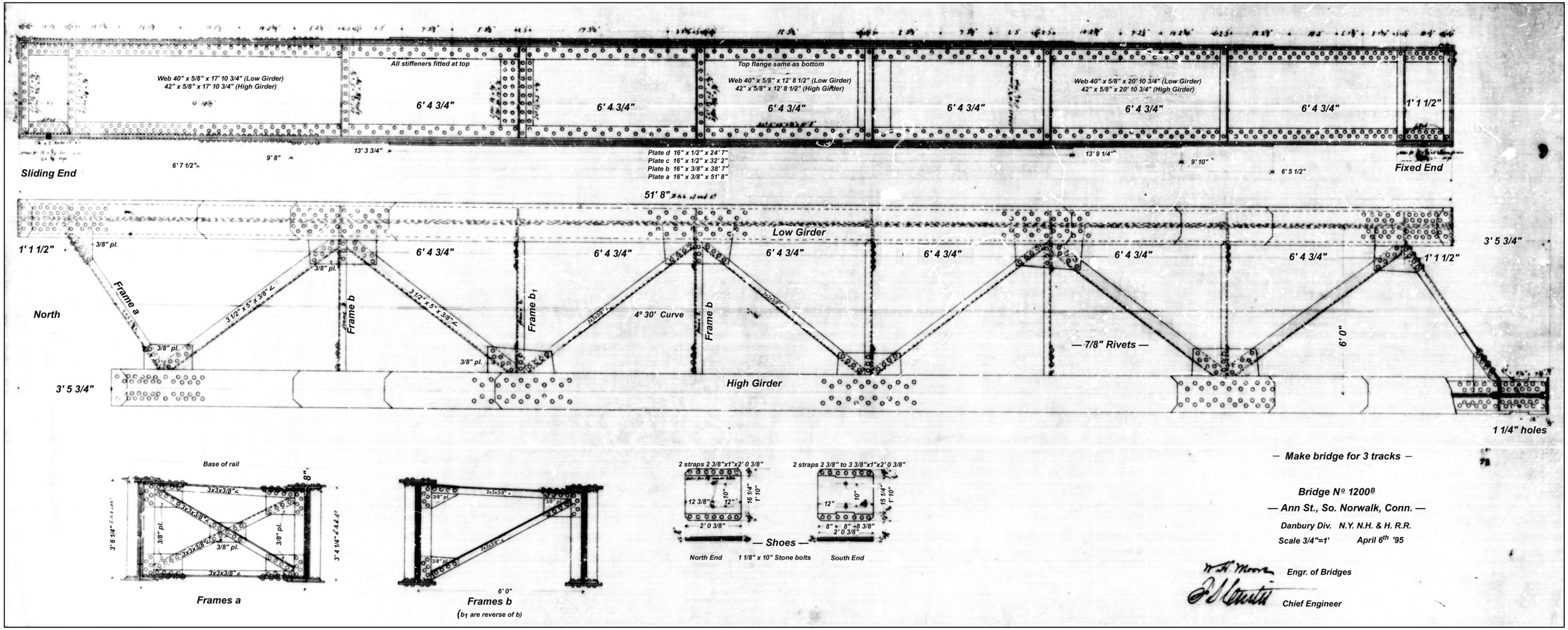

Figure 18: Elevation, plan, and sections of superstructure of Ann Street Bridge, 1895. Aperture-card microform created by Consolidated Rail Corporation, ca. 1980, currently on file at CTDOT. Dimensions and notations re-lettered for legibility. Note that the bridge consists of three of these girders, one for each track, set parallel on the abutments.

APPENDIX B:

INDEX TO PHOTOGRAPHS AND GRAPHIC KEYS

Danbury and Norwalk Railroad: South Norwalk

Index to Photographs

All photographs: AHS, Inc., May 2017 (unless otherwise noted)

Captions:

Photograph 1. Catenary Bridge 526, at the junction of the main line and Danbury line, camera facing southwest. This catenary structure is shared by the main line and Danbury branch.

Photograph 2. Typical example of the single lattice pole-bracket type used above single-track portions of the line. The structure has a high extension to carry signal lines.

Photograph 3. Typical catenary support of the single lattice pole-bracket type used above single-track portions of the line, camera facing northeast.

Photograph 4. Detail of insulators and catenary attachment, single lattice pole-bracket type, camera facing southwest.

Photograph 5. Detail of footing, single lattice pole-bracket type, camera facing southwest.

Photograph 6. Paired lattice-pole type, used for multiple-track situations, camera facing southwest.

Photograph 7. Paired lattice-pole type, used for multiple-track situations, camera facing southwest. The bracing on the south sides of the poles is an alteration.

Photograph 8. Detail of lattice pole, paired lattice-pole type, camera facing southwest.

Photograph 9. Detail of catenary attachment, for straight track, paired lattice-pole type, camera facing west.

Photograph 10. Detail of three-track catenary, paired lattice-pole type, curved section, camera facing south.

Danbury and Norwalk Railroad: South Norwalk
Norwalk, CT

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Photograph 11. Braced H-column and lattice-pole type, camera facing south.

Photograph 12. Detail of brace, braced H-column and lattice-pole type, camera facing southwest.

Photograph 13. Detail of overhead strut and catenary connection, braced H-column and lattice-pole type, camera facing south.

Photograph 14. Detail of typical H-column footing, camera facing southeast.

Photograph 15. H-column-type catenary support, ca. 1958, north of I-95, camera facing southwest.

Photograph 16. Single H-column pole, probably intended for a guy wire, camera facing south.

Photograph 17. Signal mast just south of the Ann Street Bridge, camera facing northwest.

Photograph 18. Remnant of signal mast with broken top just south of the Marshall Street Bridge, camera facing south.

Photograph 19. Marshall Street Bridge, west side, camera facing northeast.

Photograph 20. Marshall Street Bridge, east side, camera facing west.

Photograph 21. Marshall Street Bridge, detail of stiffener and bottom flange, west side, camera facing east.

Photograph 22. Marshall Street Bridge, underside of span, camera facing north.

Photograph 23. Marshall Street Bridge, south abutment and wing wall, camera facing southwest.

Photograph 24. Marshall Street Bridge, north abutment, camera facing northeast.

Photograph 25. Marshall Street Bridge at track level, camera facing south.

Photograph 26. Ann Street Bridge, west side of bridge and north abutment, camera facing northeast.

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Photograph 27. Ann Street Bridge, east side of bridge and south abutment, camera facing southwest.

Photograph 28. Ann Street Bridge, detail of stiffener and bottom flange, camera facing northeast.

Photograph 29. Ann Street Bridge, underside detail, camera facing north.

Photograph 30. Ann Street Bridge west side, south abutment, camera facing southeast.

Photograph 31. Ann Street Bridge at track level, camera facing south.

Photograph 32. Retaining wall south of Marshall Street, camera facing northeast.

Photograph 33. Retaining wall south of Marshall Street, camera facing northeast.

Photograph 34. Retaining wall south of Marshall Street, detail of catenary support concrete footing set into wall, camera facing east.

Photograph 35. Retaining wall south of Marshall Street, detail of clothesline pole attached to wall, camera facing northeast.

Photograph 36. Retaining wall south of Marshall Street, detail of weep hole, camera facing east.

Photograph 37. Arched recess in retaining wall, north of Marshall Street, camera facing east (March 2016 photograph).

Photograph 38. Detail of brick in arched recess in retaining wall, north of Marshall Street, camera facing east.

Photograph 39. Retaining wall, south of Ann Street, camera facing southeast.

Photograph 40. Retaining wall, north of Ann Street, camera facing northeast.

Photograph 41. Retaining wall, north of Ann Street, camera facing northeast.

Photograph 42. Track-level view of Norwalk Lock Company building at 20 North Water Street, camera facing southeast.

Danbury and Norwalk Railroad: South Norwalk
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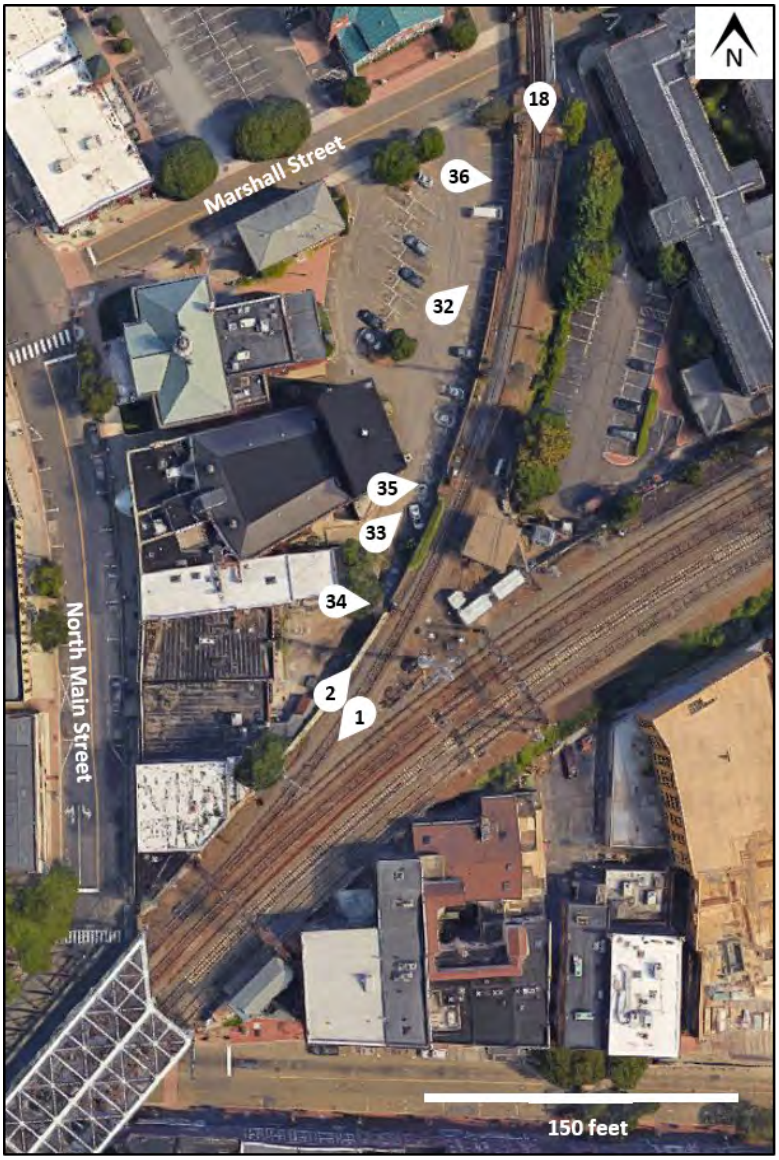
Photograph 43. Track-level view of R & G Corset Factory building at 21 Ann Street, camera facing north.

Photograph 44. Site of former freight yard (Heritage Park playground), camera facing northeast.

Danbury & Norwalk Railroad: South Norwalk
Norwalk, CT

Key to Photographs

Photograph Key 1 of 6



Vicinity of North Main and Washington streets, Norwalk, as shown on Google Maps™ satellite view, 2017.

Danbury & Norwalk Railroad: South Norwalk
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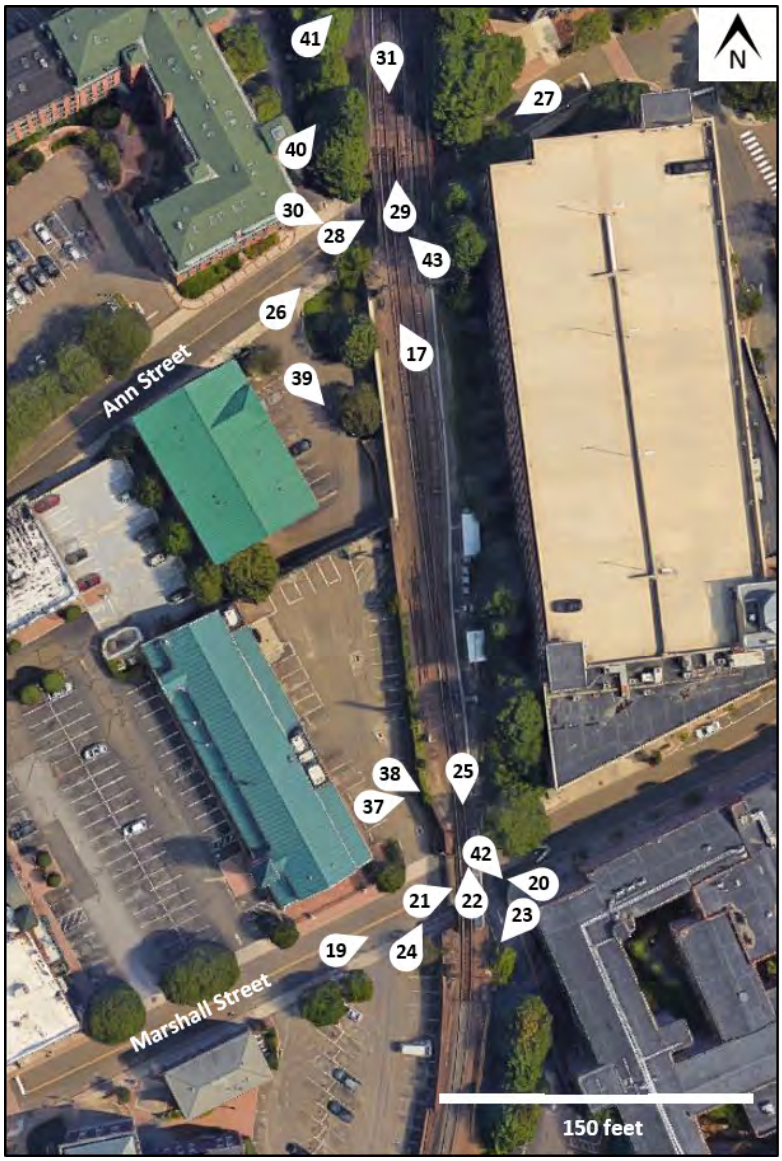
Key to Photographs

Photograph Key 2 of 6



Vicinity of Marshall and Ann streets, Norwalk, as shown on Google Maps™ satellite view, 2017.

Danbury & Norwalk Railroad: South Norwalk
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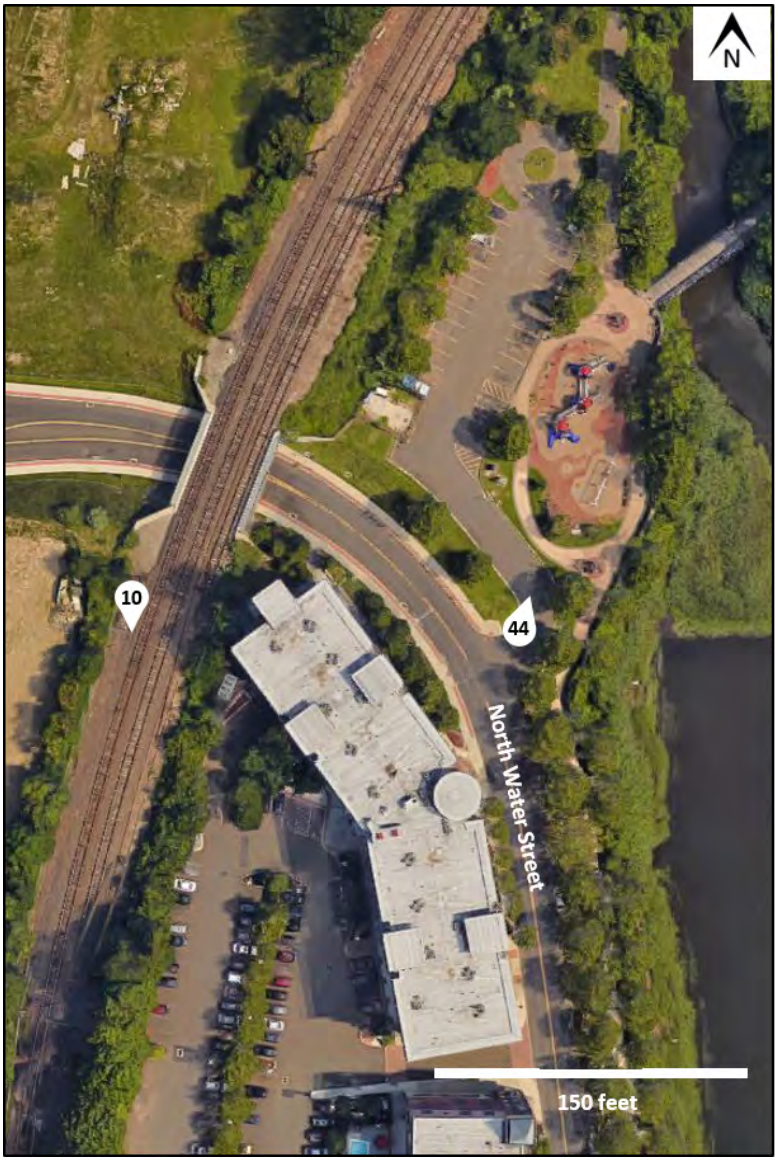
Key to Photographs

Photograph Key 3 of 6



Vicinity of North Water Street, Norwalk, as shown on Google Maps™ satellite view, 2017.

Danbury & Norwalk Railroad: South Norwalk
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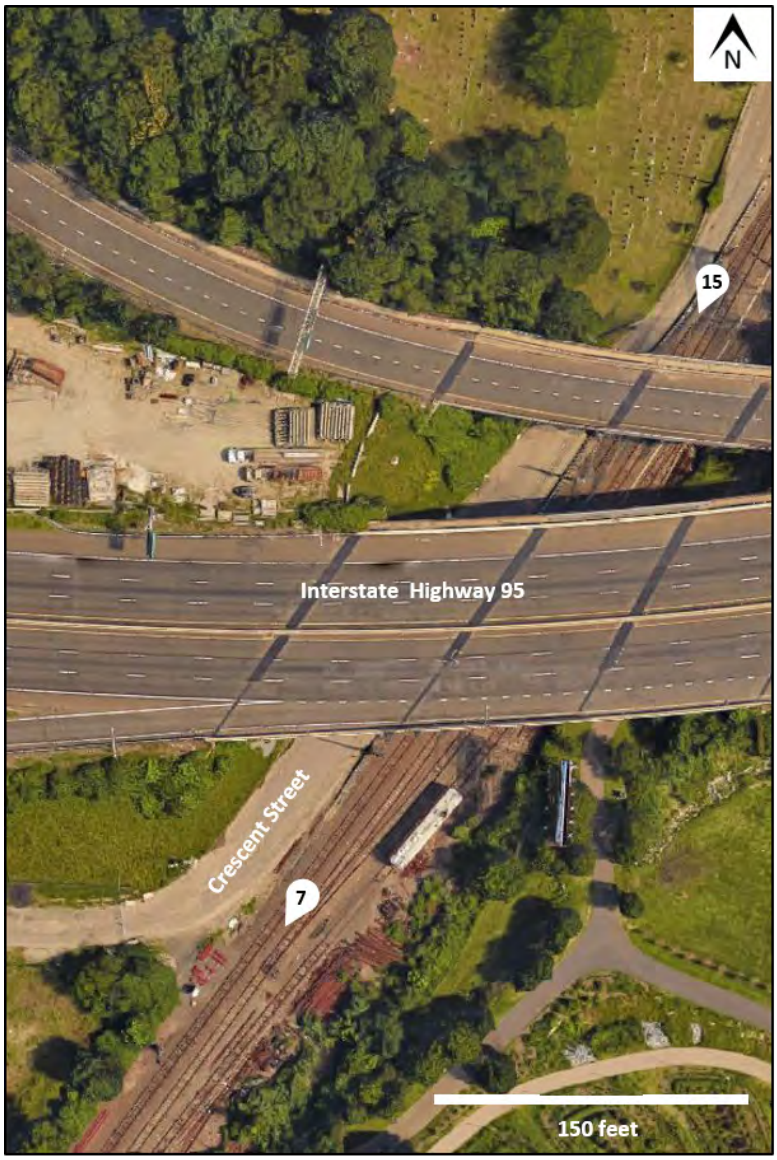
Key to Photographs

Photograph Key 4 of 6



Vicinity of Interstate Highway 95 and Crescent Street, Norwalk, as shown on Google Maps™ satellite view, 2017.

Danbury & Norwalk Railroad: South Norwalk
Norwalk, CT

Key to Photographs

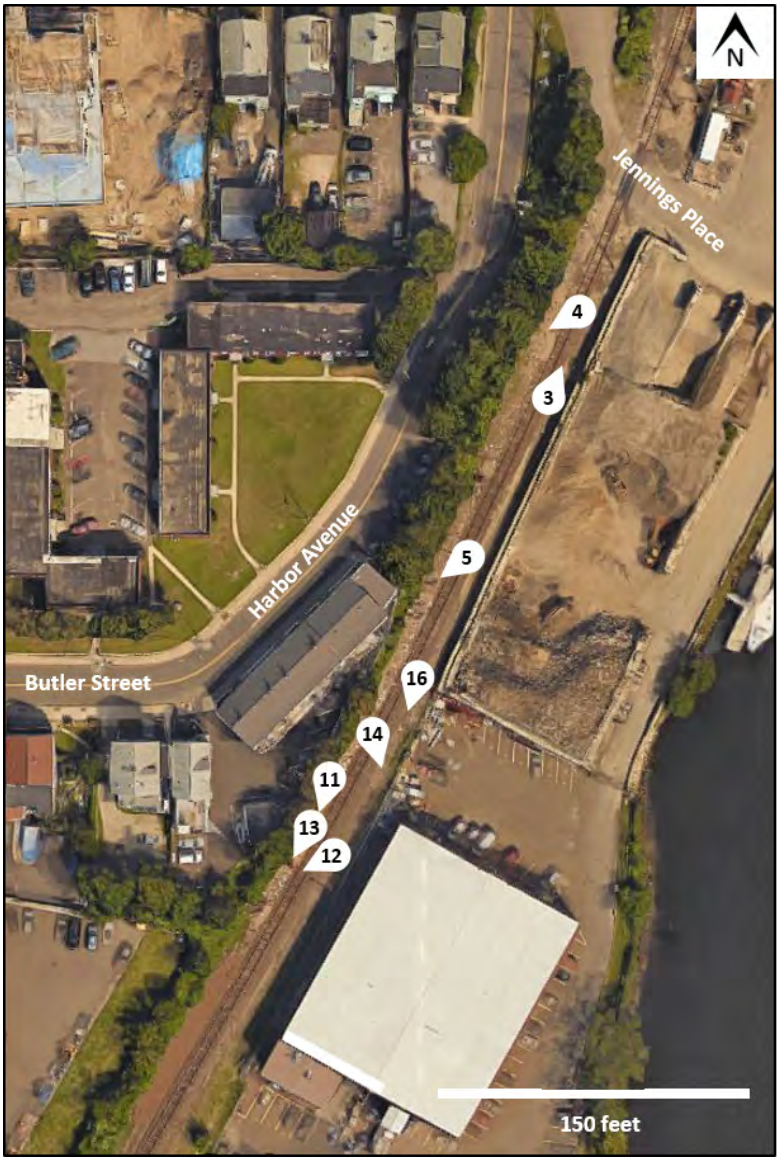
Photograph Key 5 of 6

Vicinity of Crescent Street, Norwalk, as shown on Google Maps™ satellite view, 2017.

Danbury & Norwalk Railroad: South Norwalk
Norwalk, CT

Key to Photographs

Photograph Key 6 of 6



Vicinity of Harbor Avenue and Jennings Place, Norwalk, as shown on Google Maps™ satellite view, 2017.

APPENDIX C:

Photographs

Danbury & Norwalk Railroad: South Norwalk
Norwalk, CT

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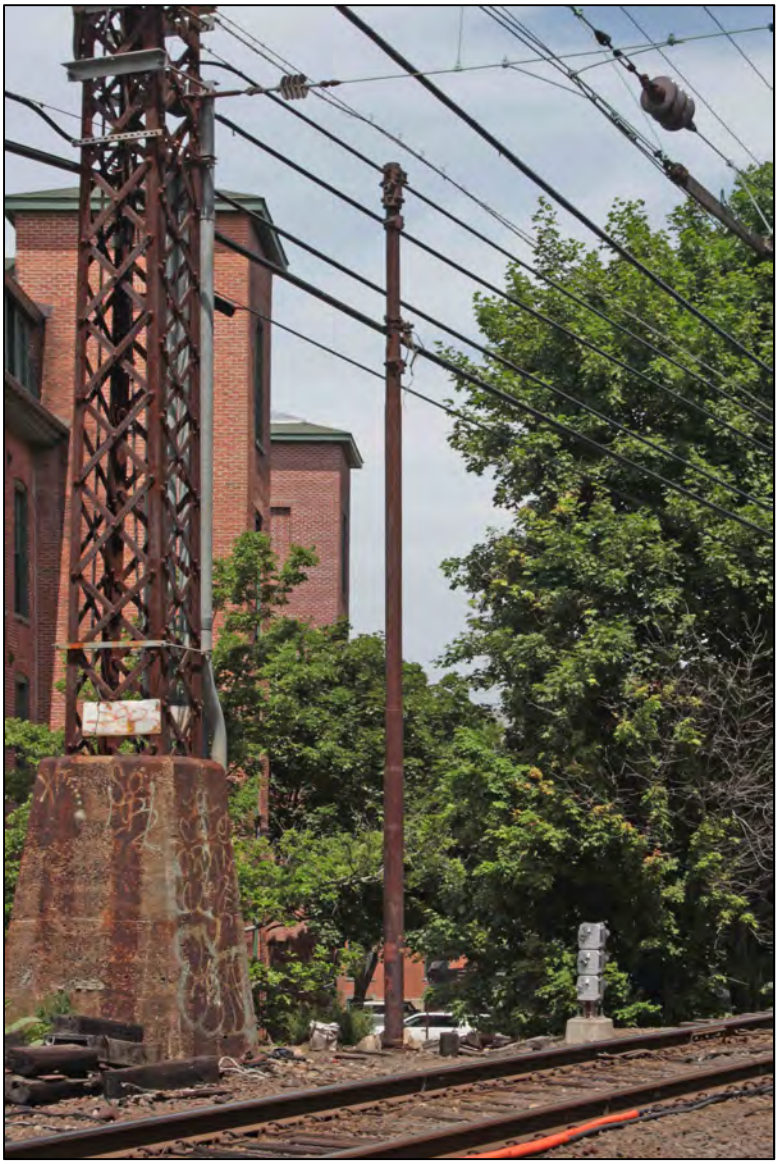

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Photograph 26: **Ann Street Bridge, west side of bridge and north abutment, camera facing northeast.**

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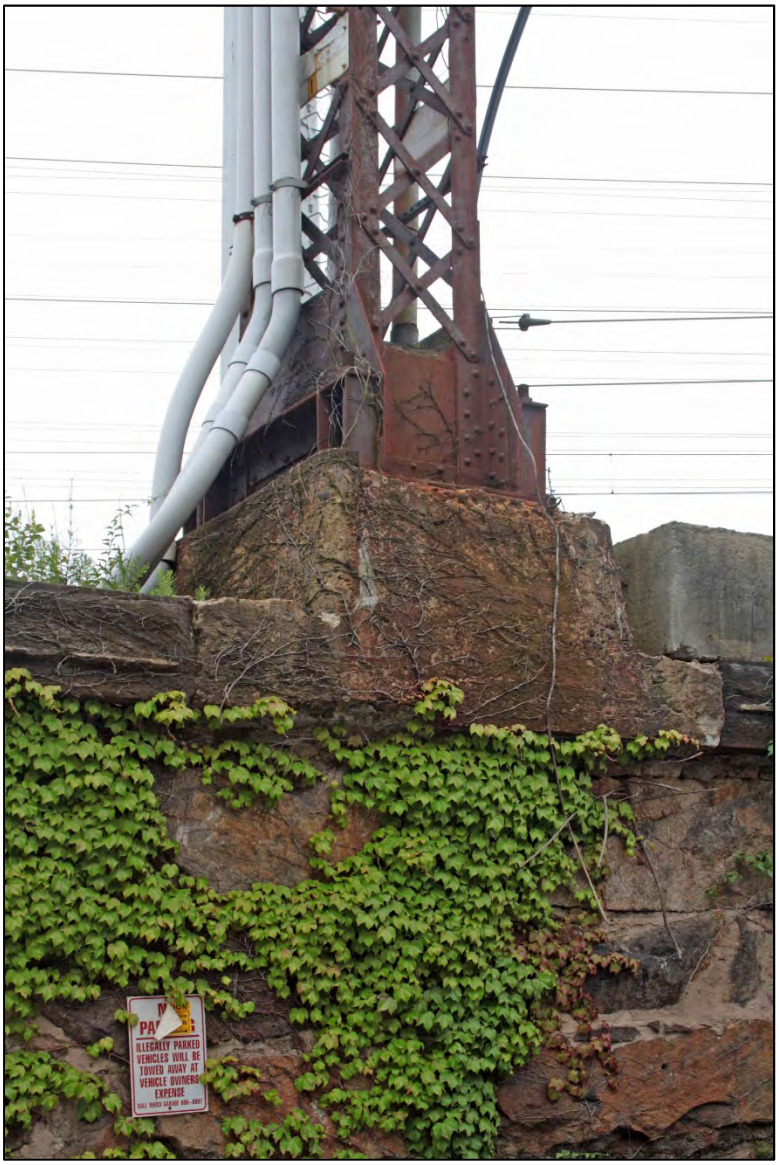

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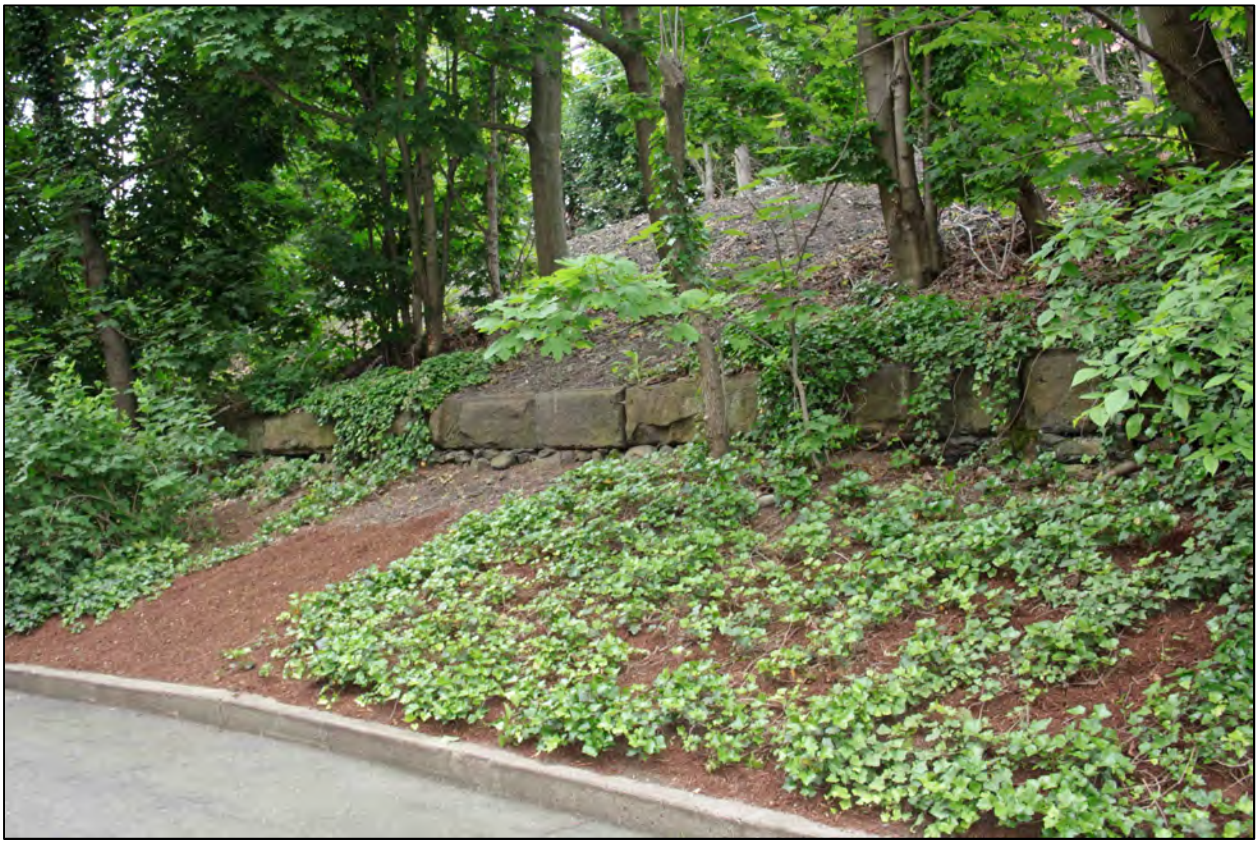

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