STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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New Haven-Hartford-Springfield High Speed Intercity Passenger Rail Program
Section 106 Consultation
State Project 170-2296
February 17, 2015

The Connecticut Department of Transportation (Department) is proposing a program of rail infrastructure and service improvements along the existing 62 mile New Haven-Hartford-Springfield (NHHS) Rail Corridor between New Haven, Connecticut and Springfield, Massachusetts. The Federal Railroad Administration (FRA) is providing partial funding for the project through the High-Speed Intercity Passenger Rail Program and is the lead agency for compliance with the National Environmental Policy Act, Section 4(f) of the Department of Transportation Act of 1966, and Section 106 of the National Historic Preservation Act of 1968.

The FRA, following consultation with the Connecticut State Historic Preservation Office (CTSHPO), has determined that portions of the project will have an adverse effect on some bridges and culverts that are contributing elements to the historic NHHS Line.

In accordance with Stipulation VIII.A.5. and VIII.C.2. of the Programmatic Agreement between FRA, the Department, the Federal Transit Administration, CTSHPO, the Massachusetts State Historic Preservation Office, and the National Railroad Passenger Corporation (2012), the Department is making the draft Memorandum of Agreement and draft Treatment Plan available for public inspection along with the Technical Report on Historic Architectural Properties. If you have any questions, comments, or need additional information please contact Mr. Stephen V. Delpapa, Transportation Supervising Planner (860) 594-2941.

Mark W. Alexander
Transportation Assistant Planning Director
Bureau of Policy and Planning

New Haven-Hartford-Springfield High-Speed Rail Program

Phase 1: Mile Post 20 to Mile Post 31
Phase 2: Mile Post 0 to Mile Post 20 and Mile Post 31 to Mile Post 37
Phase 3A: Mile Post 37 to Mile Post 43

Hamden, North Haven, Wallingford, Meriden, Berlin, New Britain, Newington, West Hartford, Hartford and Windsor, Connecticut

State Project Nos. 0170-2296, 0170-3154, 0170-3155, and 0170-3156

Technical Report: Historic Architectural Properties

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Management Summary

The Connecticut Department of Transportation (CTDOT) is planning a series of improvements to AMTRAK's railroad line between New Haven, Connecticut, and the Massachusetts State Line, including restoration of the second track; new and reconstructed drainage elements; replacement of the signaling system; repair, reconstruction, and replacement of existing bridges and culverts; construction of new retaining walls, and upgrading grade crossings. This Technical Report, covering the area between Milepost 0 in New Haven and Mile Post 43 in Windsor, identifies possible historic architectural properties that could be affected by project actions, assesses the effects of project actions on National Register-listed or eligible properties, and recommends possible mitigation of adverse effects.

The entire New Haven to Springfield rail corridor is considered a single linear historic resource that is eligible for listing in the National Register; many bridges and culverts along the line are considered contributing elements of the historic rail line. The line and its components are described in greater detail in a Preliminary Technical Report prepared in 2012 (Clouette et al. 2012). The historic rail line and its components are subject to the provisions of a Programmatic Agreement (PA) executed by CTDOT, the Federal Railroad Administration (FRA), the Connecticut State Historic Preservation Office (CTSHPO), and other parties on August 9, 2012 (FRA 2012).

The proposed **double-tracking** and **drainage** improvements will take place entirely within the existing railroad right-of-way (ROW) and will not involve any new construction that could result in indirect visual effects on nearby historic architectural properties. The existing track and other ROW features are not considered historic, since they date from the reconstruction of the line in the 1980s.

Replacement of the signaling system will require two types of new construction: small signal houses like those already in place along the line, and Central Instrument House (CIH) facilities that will have a larger building, free-standing electrical components, and a fenced-in enclosure. The former are not considered to fall within the category of a "large building or structure" that the PA cites as possibly creating a visual effect on adjacent or nearby historic properties. The location of one CIH facility was found to be adjacent to an historic district that is listed in the National Register, and another was found to abut a National Register-eligible former factory complex. In neither case, however, were the indirect visual effects of CIH construction characterized as adverse effects.

The project will require the reconstruction, or replacement of 29 **bridges and culverts** that were identified as contributing components of the historic rail corridor. Ten are replacements. Others involve extension of the structure on one side or replacement/modification of one side in order to achieve the required width for the upgraded tracks. Two multiple-arch stone bridges from the 1870s will require concrete extensions to the spandrels that will result in the removal of the top course of brownstone. It is recommended that these project actions be regarded as adverse effects, but that written and photographic documentation of the structures be considered appropriate mitigation.

Masonry repair on the historic bridges and culverts will follow the Secretary of the Interior's Standards and will not constitute an adverse effect. The safety railings that will be installed on several bridges are a two-pipe open design that will have minimal physical and visual effects.

Nearly all of the proposed **retaining walls** will be in areas that are wooded and undeveloped or else densely built up with modern commercial and industrial buildings. One listed historic district immediately abuts the location of a retaining wall, but there is expected to be minimal visibility because the tracks run substantially below street level at that point. The chief effects of the retaining-wall

component of the project occur where the walls come close to historic bridges and culverts; the retaining walls will substantially change the setting of the structures, thereby resulting in adverse effects. All of the structures affected by retaining walls are included in the Treatment Plan cited above.

Several listed or eligible historic properties are adjacent to the location of proposed **grade-crossing** upgrades. However, the replacement of existing lights, gates, signage, and pavement markings with improved components will not result in any incremental visual effect over what is already in place.

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I. Introduction

The Connecticut Department of Transportation (CTDOT) is planning a series of improvements to the railroad line between New Haven, Connecticut, and the Massachusetts State Line. The line is owned by the National Railroad Passenger Corporation (Amtrak) and primarily serves Amtrak's intercity passenger service between the Northeast Corridor along Connecticut's shoreline and Springfield, Massachusetts. The track improvements will take place in a series of phases, along with site-specific projects at several station locations.

Because the Federal Railroad Administration (FRA) is providing funding for the project, the project is subject to the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 C.F.R. part 800, which provide that federally funded or licensed undertakings take into account their effects on historic properties. Historic properties are defined as buildings, structures, objects, districts, and sites that are listed in, or eligible for listing in, the National Register of Historic Places. Historic properties thus can include not only old buildings, but also structures such as bridges, objects such as boundary markers, groups of related properties that make up geographically cohesive districts, and archaeological sites that may contain important cultural materials.

On August 9, 2012, FRA, CTDOT, the Connecticut State Historic Preservation Office (CTSHPO) and other parties executed a Programmatic Agreement (PA) regarding the New Haven-Hartford-Springfield High-Speed Intercity Passenger Rail Project, of which the project described in this document is a component. The PA (FRA 2012) provided that for each phase or site-specific component of the project, CTDOT would prepare separate technical reports for historic and archaeological properties.

Pursuant to the provisions of the PA, this report covers historic properties that may be affected by Phase 1, Phase 2, and Phase 3A of the project. The purposes of the report include:

1. Identifying the Areas of Potential Effect (APE) for the proposed actions;
2. Identifying potentially significant historic properties, other than archaeological properties, that lie within the APEs;
3. Evaluating the properties in terms of their eligibility for the National Register; and
4. Determining the effects of the proposed actions on eligible and listed properties.

The PA anticipates that adverse effects on eligible and listed properties identified in this Technical Report will be mitigated according to a Treatment Plan that will be prepared for this portion of the project. The PA further anticipates that, in the case of adverse effects, consultation among FRA, CTDOT, and CTSHPO will result in a Memorandum of Agreement regarding this portion of the project's effects on historic properties.

This Technical Report was prepared by Bruce Clouette, Ph.D., Senior Historian with Archaeological and Historical Services of Storrs, Connecticut. It relies in part on a Preliminary Technical Report covering the entire New Haven-to-Springfield project referenced by the PA, completed in May 2012 (Clouette et al. 2012).

II. Description of the Project

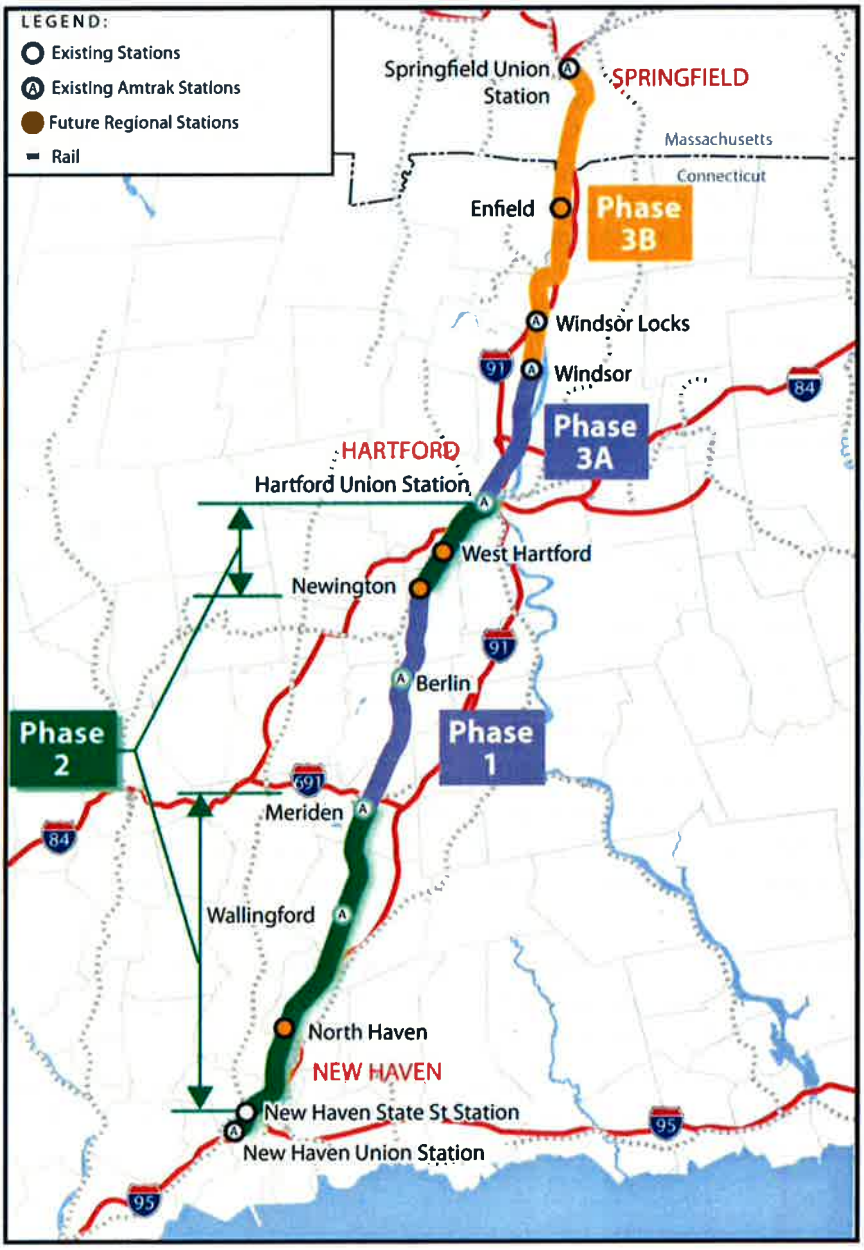
Phase 1, Phase 2, and Phase 3A cover track improvements between Mile Post 0 in New Haven and Mile Post 43 in Windsor, with actual work beginning at about Mile Post 3.7 in Hamden, just north of New Haven. The locations of the three phases are shown on a schematic map on the next page (Figure 1).

The proposed work consists of:

- Restoring the line to a two-track configuration instead of the single-track configuration that is currently in place in most locations. This reconfiguration will require reworking the connections with existing industrial and maintenance-of-way sidings and intersecting tracks along the line.
- Reconstructing the drainage system, with new components such as ditches, catch basins, pipes, manholes, stone linings, and culverts.
- Replacing the existing trackside signal system with a new communications and signal (C&S) system that will provide in-cab signals. In addition to small track-side enclosures for equipment, the signal improvements will require four Central Instrument House (CIH) facilities.
- Repairing, reconstructing, and replacing existing bridges and culverts.
- Constructing new retaining walls for the track in several locations.
- Improving grade crossings at several locations.

The verbal descriptions of project actions in this document are derived from an extensive series of drawings prepared by Parsons Brinckerhoff, the project's engineering consultant. Only selected excerpts from the drawings to show typical actions are included as figures in this document; the complete set of drawings is the definitive source for detailed descriptions of project actions.

Figure 1: **Location of Project Phases.**



III. Delineation of the Areas of Potential Effects

For the purpose of assessing effects on historic architectural properties, the APE for the first three categories of actions—restoring the double track, reconstructing the drainage, and installing the new signal system—is defined as the existing railroad right-of-way (ROW). No property acquisitions outside the ROW are needed for any of the work included in Phase I, Phase 2, and Phase 3A, and in the case of the first three actions, no work is planned that could in any way affect the setting or other key characteristics of adjacent or nearby historic properties. While the ROW is clearly visible from, and forms part of the setting of, numerous historic districts and individual historic properties that are listed in or eligible for the National Register of Historic Places, its current condition reflects the rebuilding of the line in the 1980s, when most of the existing double-track line was replaced with the current single track. In addition to realigning the track within the ROW in most places, the re-building also substantially changed the elevation of the rails at several locations. The existing welded rail, ties, ballast, and signals all date from the 1980s. In short, the visual impact of the ROW on adjacent or nearby historic properties is simply that the ROW establishes the properties' proximity to a major rail line and suggests that access to rail transportation probably played an important role in the history of the properties.

The APEs for the repair, reconstruction, and replacement of historic bridges and culverts include in each case the structure itself and the immediately surrounding portions of the ROW (in other words, the abutments of historic bridges and a reasonable extent of the embankment on either side of an historic culvert). The APEs also include adjacent or nearby historic properties if the bridge or culvert forms an important part of the property's setting. An example might be an historic district adjacent to the ROW, for which the period of significance includes the date of construction of a railroad bridge visible from (or actually within) the historic district.

Similarly, the APEs for the new retaining walls, which will be up to 8 feet high and a few hundred feet long, extend out from the ROW itself to include possible visual impacts on the settings of adjacent or nearby historic properties. The retaining walls will substitute a tall vertical concrete-and-steel surface for the current sloped stone and earth embankment, introducing a more identifiably modern element into the viewscape.

The APEs for grade-crossing improvements include the immediately adjacent portions of the highway that crosses the track and extends out to take into account the potential visual effects on adjacent or nearby historic buildings and districts.

It is important to note that the delineation of an APE only establishes a perimeter for potential effects on historic properties. The actual determination of effects as recommended by the preparer of this report are presented in the following section, organized by the categories of actions.

IV. Identification of Resources, Determination of Effects, and Recommendations for Mitigation

A. Restoration of the Double-Tracked Line

As noted above, the line currently has a single track in most locations. The existing track geometry, welded rail, ties, ballast, and signals date from the 1980s rebuilding of the line. Restoring the line to two tracks will involve creating a new track geometry, providing new rail, ties, and ballast, and reconstructing connections with intersecting rail lines, industrial sidings and maintenance-of-way sidings. In some places the second track will be constructed alongside the existing single track; in other places, both tracks will be reconstructed. The existing slope will have to be leveled out and raised up in order to support the added second track or both reconstructed tracks, but the resulting elevation will be only a few inches higher than the existing track.

A.1 Identification of Historic Properties

Since the APE for this action includes just the ROW itself, the only historic property that could be affected is the rail corridor itself and its individual component structures. According to the PA, the entire New Haven to Springfield rail corridor is recognized as a single linear historic resource eligible for the National Register of Historic Places; along the ROW are numerous bridges and culverts of varying design and date of construction that were identified as contributing or non-contributing components of the overall historic resource. (The overall resource also includes as contributing components numerous adjacent buildings, such as current and former freight and passenger stations; the APE for the restoration of the two tracks, however, does not extend to include such adjacent historic buildings).

A.2 Determination of Effects

Except for actions affecting bridges and culverts and the new retaining walls, both of which are discussed below, the restoration of the two tracks will replace components dating from the 1980s with new components having a generally similar character. There will be no incremental diminishment of the character of the line as a linear historic resource, since these components are already recognized as modern. A finding of No Adverse Effect is recommended for this project action.

A.3 Mitigation

No mitigative actions are needed for this project action.

B. Reconstruction of the Drainage System

The existing drainage system is a combination of ditches, swales, and culverts that include both obviously modern structures (e.g., pre-cast concrete pipe culverts) and brick and stone culverts that date back to the 19th century. Proposed improvements include installing new culverts, installing stone facing on the slopes of existing ditches, and creating new ditches.

B.1. Identification of Historic Properties

Since the APE for this action includes just the ROW itself, the only historic property that could be affected is the rail corridor itself. Although individual culverts were identified as contributing components in the Preliminary Technical Report (and are discussed separately below), the overall drainage system was not identified as a contributing component. Trackside drainage is assumed to have been constantly reconfigured and modified overtime, especially as a result of major rebuilding such as that which occurred in the 1980s, and therefore can be considered, overall, as an essentially modern component.

B.2 Determination of Effects

Except for actions affecting historic culverts, discussed below, modification of the drainage system will only affect components that do not contribute to the character of the historic rail corridor. Moreover, the reconstruction of the drainage features will not introduce any new components that are substantially different from the existing. A finding of No Adverse Effect is recommended for this project action.

B.3 Mitigation

No mitigative actions are needed for this project action.

C. Replacement of the Signaling System

The existing signaling system dates from the rebuilding of the line in the 1980s. Although the trackside signals, which are mast-mounted color-position lights arranged in a triangle against a circular target, are of a type introduced in the mid-1920s, they are not regarded as contributing components of the overall historic rail line because they were installed in the 1980s. The existing trackside signals will be removed, with their function replaced by in-cab signals. Associated electrical cabinets will also be removed. This part of the project also involves the construction of new electrical cabinets alongside the track, as well as small structures that will serve as signal and communication houses and somewhat larger facilities for four central instrument house (CIH) facilities. The locations of these facilities are plotted on USGS topographical quadrangle and are included with this report because they were not included in the Preliminary Technical Report.

C.1 Identification of Historic Properties

The APE for this action includes the ROW itself and, in the case of the CIH facilities, nearby or adjacent areas that could contain historic properties, the settings of which could be visually affected by the new construction.

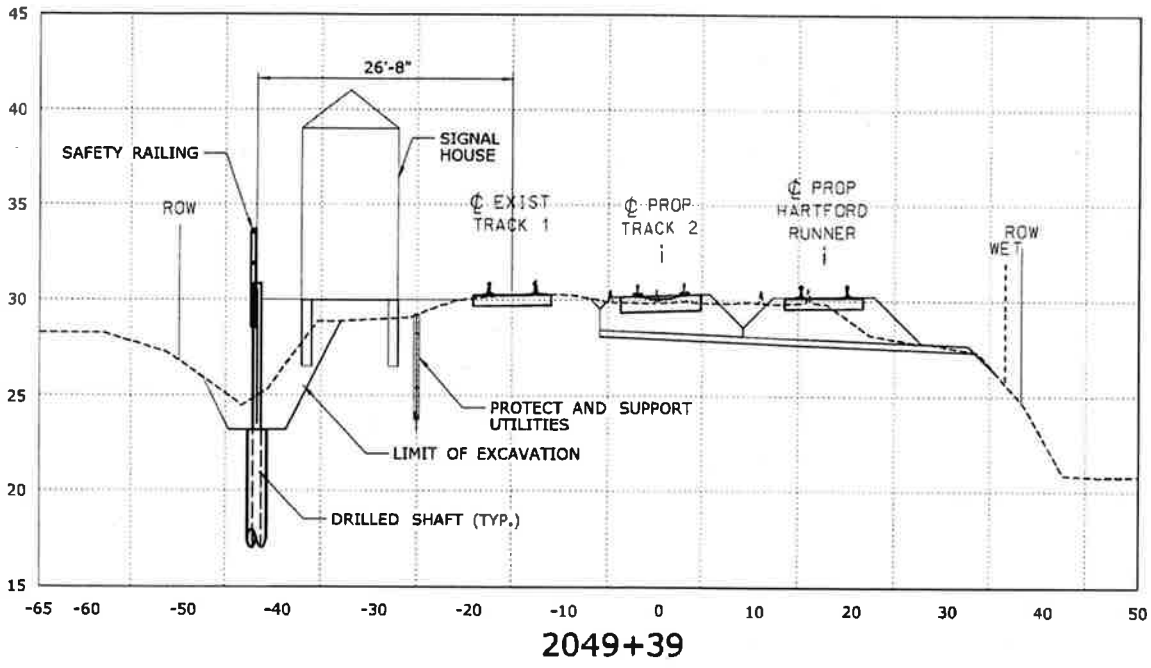
C.2 Determination of Effects

The removal of the 1980s signals and electrical cabinets will not affect the character of the overall rail line. For much of its lifetime, the corridor had no trackside signaling. Mast-mounted semaphores were introduced in the early 20th century and persisted in some locations even after World War II; no intact semaphores are found on the line today. In the 1940s, single-bulb "searchlight" type color lights were mounted alongside the track, mostly using the masts that earlier had accommodated the semaphores (the signalization in the 1980s provided new masts).

New construction for the signaling system in this undertaking includes various 24"-by-75" metal equipment enclosures and small peaked-roof metal communication and signal houses. The latter are typically 8' by 10' or 10' by 12' in plan and 12' high and will be located within the ROW immediately adjacent to the tracks on foundations constructed of pre-cast concrete wall units (see Figures 2 and 3). In many cases the new signal houses will replace existing 1980s signal houses. The equipment enclosures and communication and signal houses are not considered to fall within the category of a "large building or structure" that the PA cites as possibly creating a visual effect on adjacent or nearby historic properties (PA, page C-2).

The new communications and signal system will also require five CIH facilities, to be located in North Haven, Meriden, Berlin, and Hartford (2). These facilities will typically have a 10'-by-28' central instrument house, a 10'-by-10' communications house, freestanding switchboard and lighting panels, and several freestanding transformers (see Figure 4). Each facility will be enclosed by an 8'-high chain-link fence. The locations of the CIH facilities were checked for possible visual impacts on adjacent or nearby properties that are listed in or eligible for listing in the National Register of Historic Places. Table 1 presents the possible impacts of the CIH facilities. Because this component of the project was not explicitly addressed in the Preliminary Technical Report, the relevant USGS topographical quadrangles are included as location maps for the CIH facilities.

Figure 2: **Schematic of typical signal house elevation.**



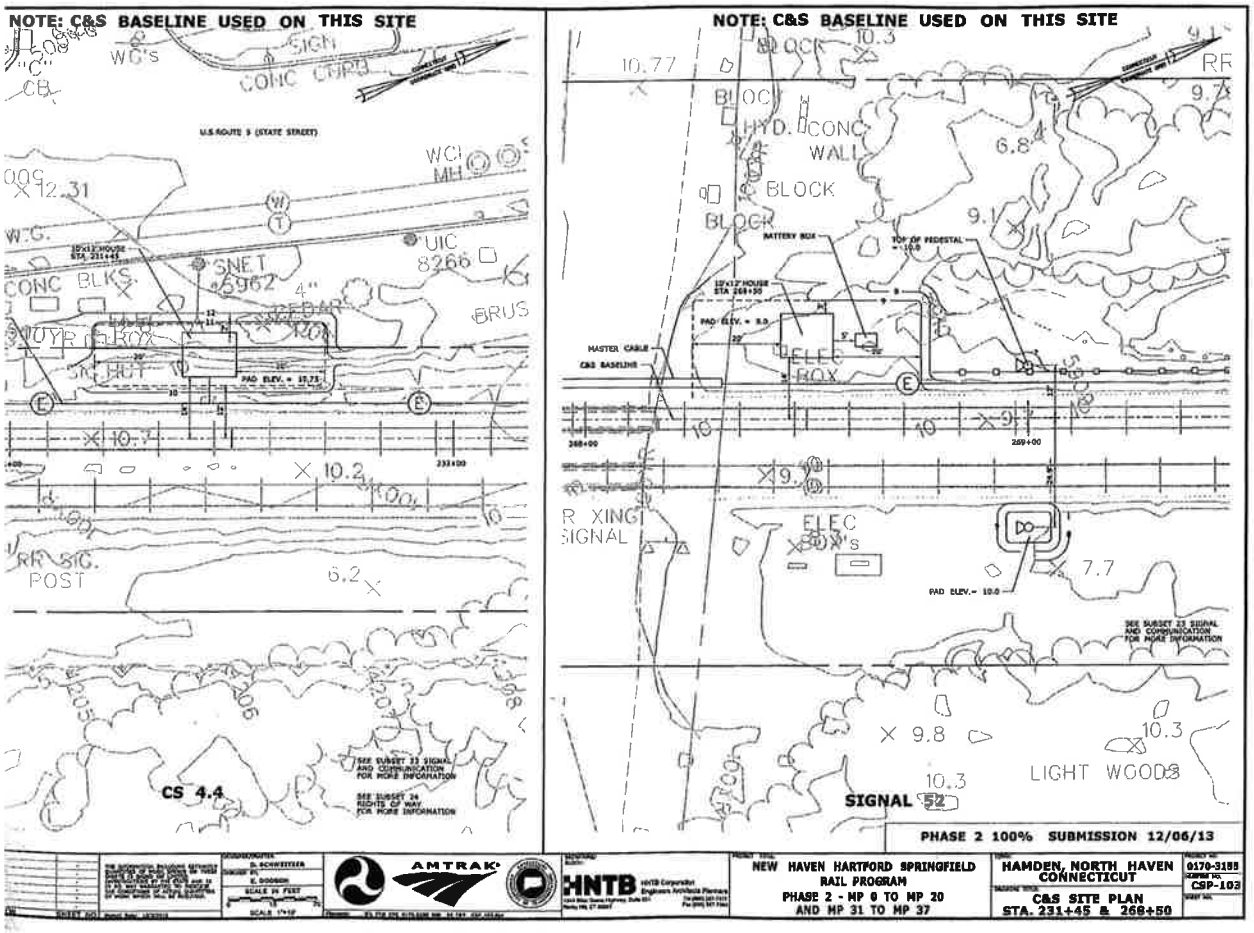


Figure 3:

Typical Signal House Plans

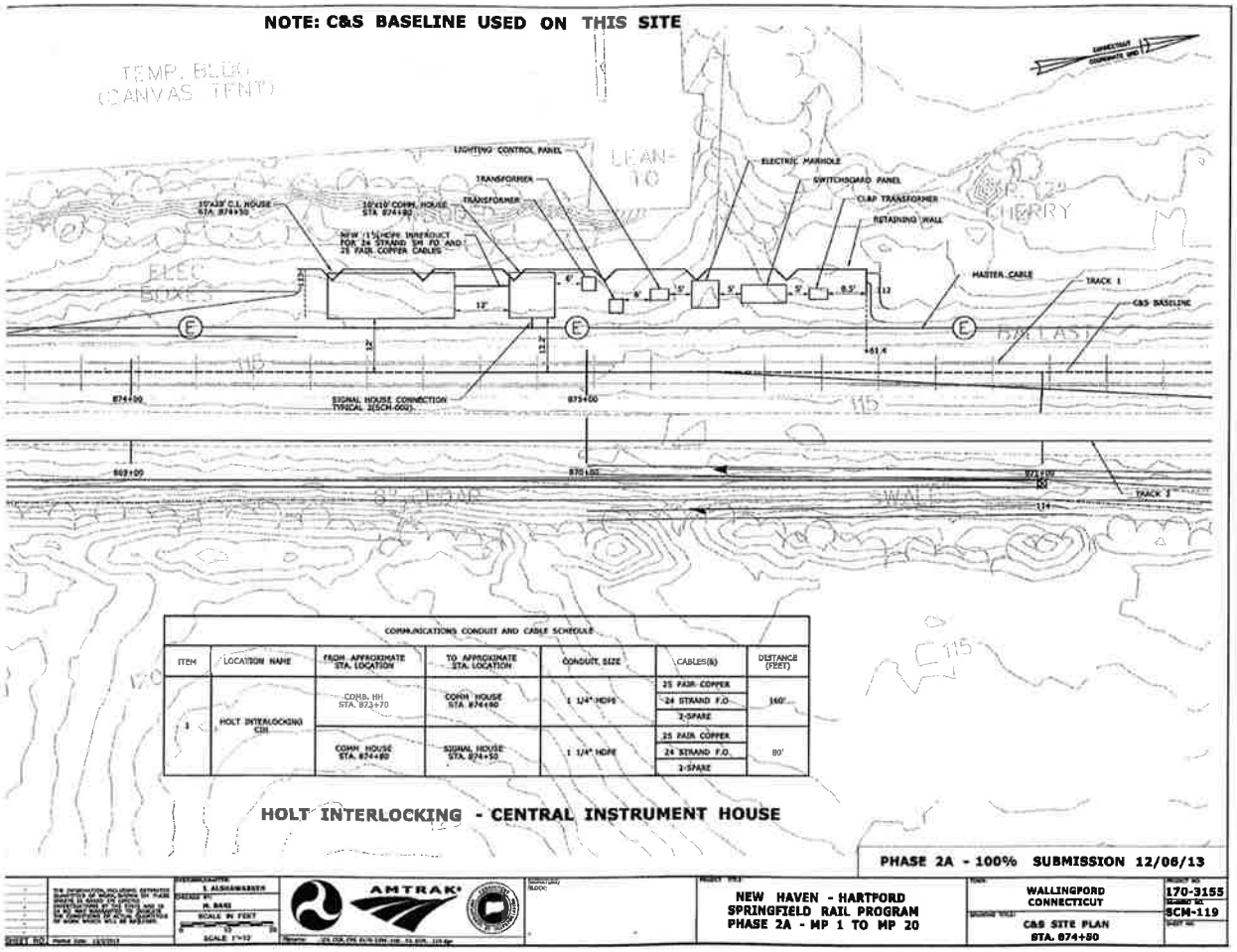


Figure 4:

Plan of Typical Central Instrument House Facility

Table 1:
Central Instrument House Facilities

Name	Mile Post	Town	Potential Historic Properties Adjacent or Nearby
Cedar Interlocking	8.20	North Haven	Adjacent to Pines Bridge Historic District (NR-listed). See Figures 5 and 6. Contributing building at this location was replaced in 2009 (Figure 7)
Holt Interlocking	16.50	Meriden	None. See Figures 8 and 9.
Willow Interlocking	26.60	Berlin	None. See Figures 10 and 11.
Hart	37.20	Hartford	None. See Figures 12 and 13.
Midland	39.00	Hartford	Adjacent to 1950s former HELCO warehouse (probably not NR-eligible); former Fuller Brush Co. (1922, probably NR-eligible) is just to the north. See Figures 14-17.

The Cedar Interlocking CIH facility (Figure 5) will be located within the railroad ROW immediately adjacent to the eastern boundary of the Pines Bridge Historic District in North Haven (Figure 6). At the time the district was listed in the National Register of Historic Places (1988), the property that is adjacent to the proposed CIH location, 70 Old Broadway West, contained a 2 ½-story ca. 1860 Italianate-style brick commercial building, with several later additions and alterations. In 2009, this building, the only one in the district on the north side of Old Broadway West, was replaced by a metal-sided warehouse/light industrial/commercial building (Figure 7). If the boundary of the district were being drawn today, this property would be excluded (according to current National Park Service practice) from the historic district because it contains a noncontributing building on the edge of the district. In any case, the 2009 building effectively prevents the location of the proposed CIH from being visible from most parts of the historic district. The proposed CIH facility will be located where two existing signal houses now stand, visually separated from the district by vegetation. (No aerial view was provided for this component of the project because the Bing 3D™ aerial shows the earlier building still in place.) A finding of No Adverse Effect is recommended.

The Holt Interlocking CIH facility (Figure 8) will be located in the railroad ROW in Meriden, just north of the Wallingford town line. The location is densely developed with propane tanks and modern industrial buildings on the west side of the line; the east side is wooded (Figure 9). There are no potentially historic buildings nearby. A finding of No Adverse Effect is recommended.

The Willow Interlocking CIH facility will be located within the railroad ROW in an undeveloped area just north of the northbound lanes of Route 9 (Figures 10 and 11). There are no buildings nearby. A finding of No Adverse Effect is recommended.

The Hart CIH facility (Figure 12) will be located south of the Windsor Street Bridge between the New Haven-to-Springfield rail line and the former Willimantic line that branches off to the east (currently ending in Manchester). Other than a small shed of indeterminate age, the lot is vacant. The general area is one of modern residential and light-industrial buildings and surface parking lots (see Figure 13). There are no potentially historic buildings nearby. A finding of No Adverse Effect is recommended.

The Midland CIH facility will be located within the railroad ROW behind a 1950s brick warehouse at 3476 Main Street, Hartford (Figures 14 -16). The building is on a parcel that formerly was owned by the Hartford Electric Light Company (HELCO), and it appears that HELCO used the building for storing equipment. The shape of the building reflects the circumstance of its being originally located on a siding that provided rail access to other HELCO buildings on the parcel. Brick warehouses from the 1950s and 1960s such as this one are found throughout the state, and there is little to set this one apart. It is recommended that it be regarded as Not Eligible for listing in the National Register of Historic Places. In any event, there will be no visibility of the proposed CIH facility from Main Street or even from the front (northwest) side of this building. The other side of the railroad ROW is an area of parking lots and light industrial buildings from the second half of the 20th century. The nearest potentially eligible historic property is the 1922 factory complex at 3580 Main Street built by the Fuller Brush Company in 1922 (Figure 17). While this complex may be eligible for listing in the National Register—Fuller Brush was a major employer in Hartford until 1962, and the buildings are typical of early 20th-century industrial architecture—the proposed CIH facility is located a short distance to the south, and there will be minimal visibility from the historic factory complex except from the portions that immediately abut the tracks. As the general area already has parking lots and numerous modern buildings that are visible from the rear of the Fuller Brush complex, the addition of the CIH facility cannot be regarded as affecting the historic property's setting. A finding of No Adverse Effect is recommended.

C.3 Mitigation

No mitigative actions are needed for this project component.

Figure 5: **Location of Cedar Interlocking CIH facility, North Haven, plotted on the USGS Wallingford Quadrangle, scale 1:24000.**

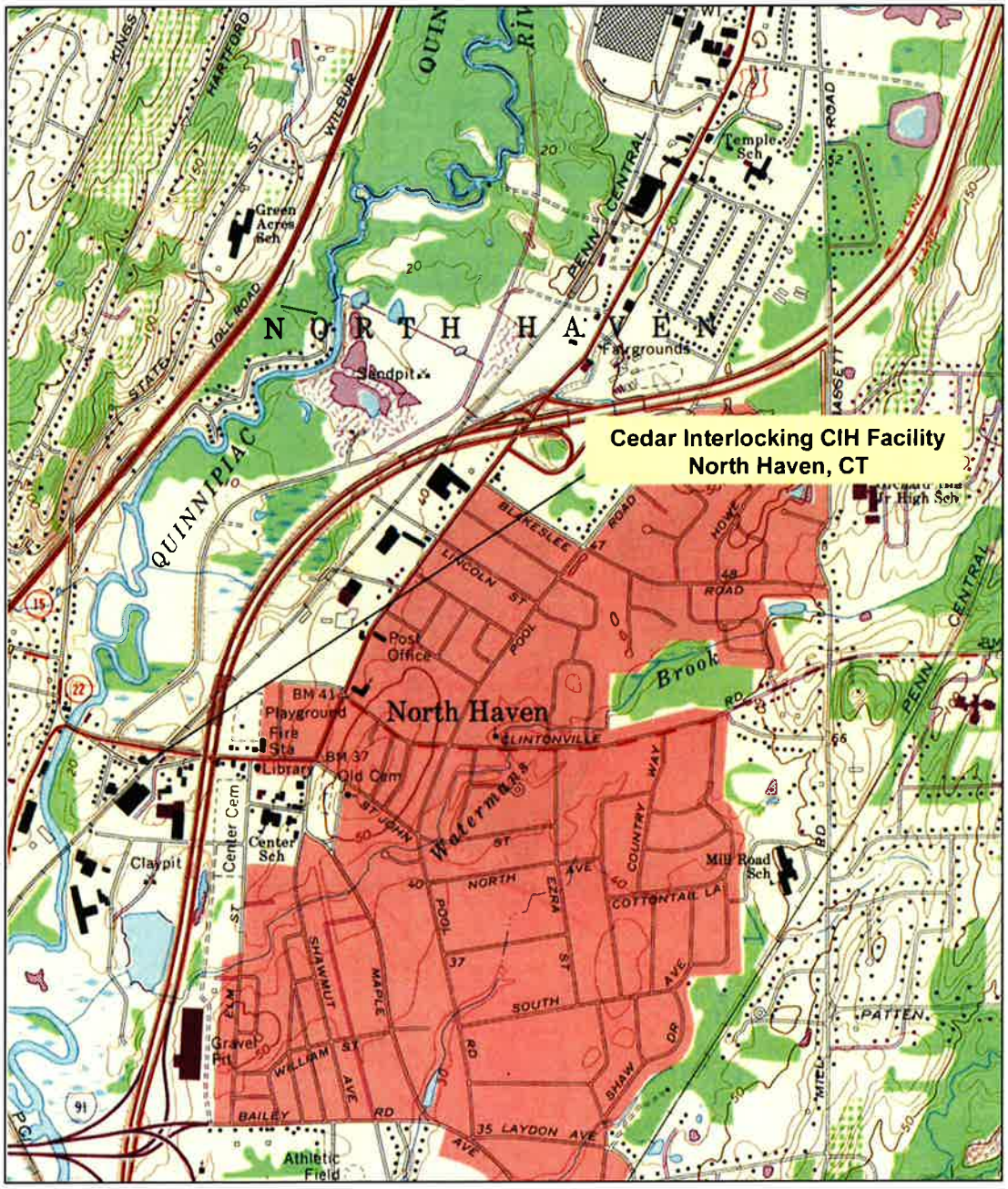


Figure 6: **Location of Cedar Interlocking CIH facility plotted on National Register map of Pines Bridge Historic District (1988).**

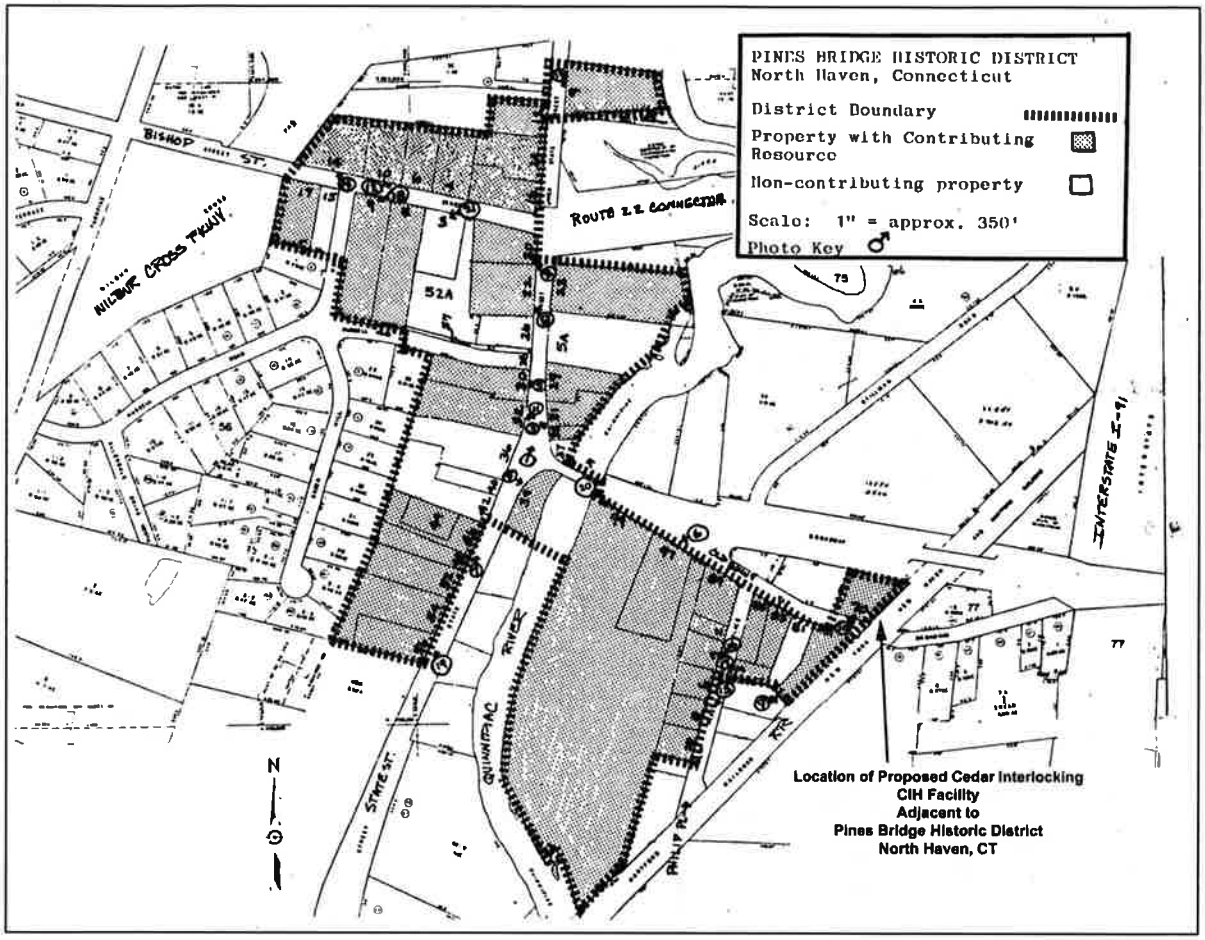


Figure 7: **Building at 70 Old Broadway West, built in 2009, that replaced a ca. 1860 building in the Pines Bridge Historic District (inset, from National Register nomination, 1999). The CIH facility will replace the existing signal houses seen above the greenery at the right front corner of the building and will have about the same limited visual impact.**

Figure 8: **Location of Holt Interlocking CIH facility, Meriden, plotted on the USGS Meriden Quadrangle, scale 1:24000.**

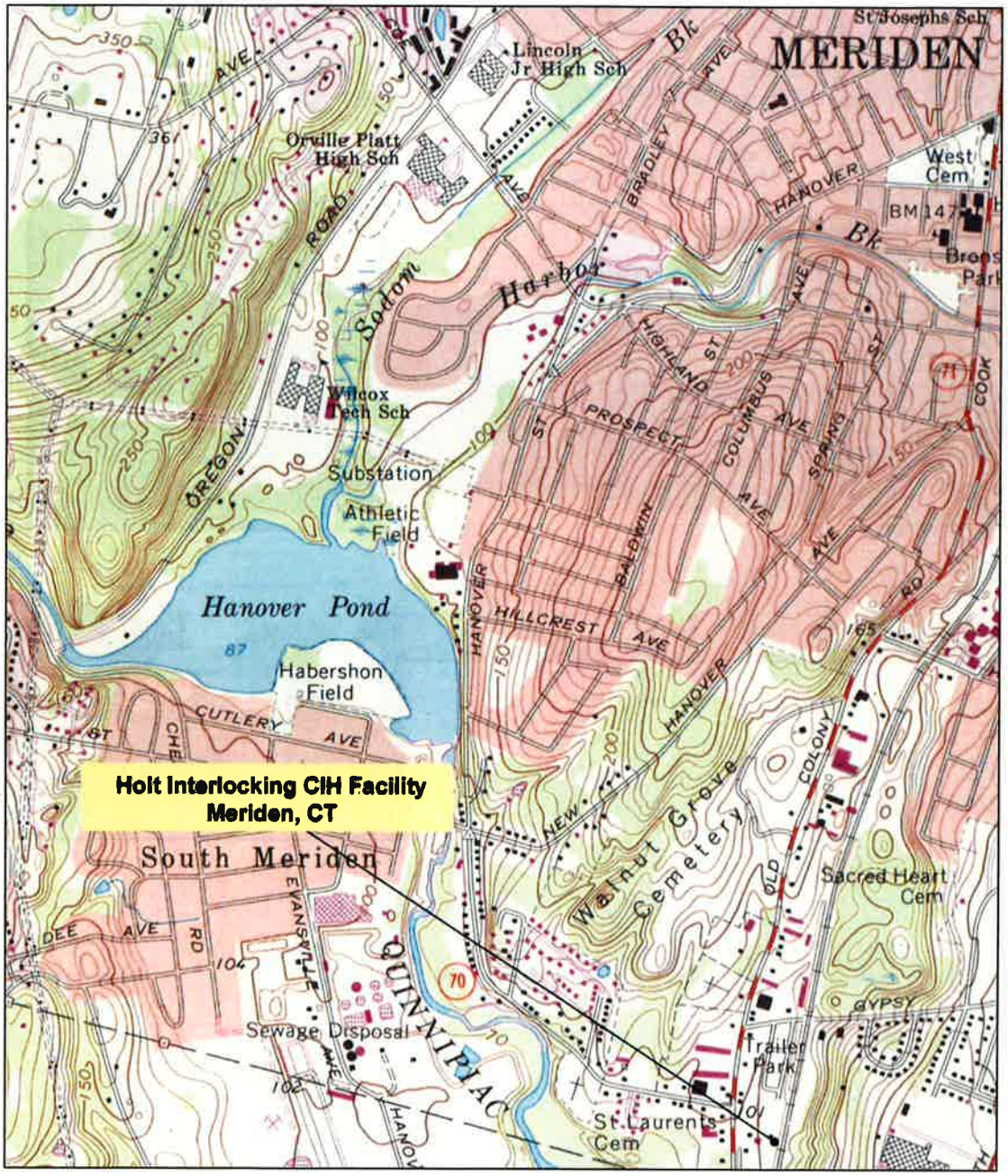


Figure 9: **Aerial view (Bing 3D™) showing location of Holt Interlocking CIH facility.**

Figure 10: **Location of Willow Interlocking CIH facility, Berlin, plotted on the USGS New Britain Quadrangle, scale 1:24000.**

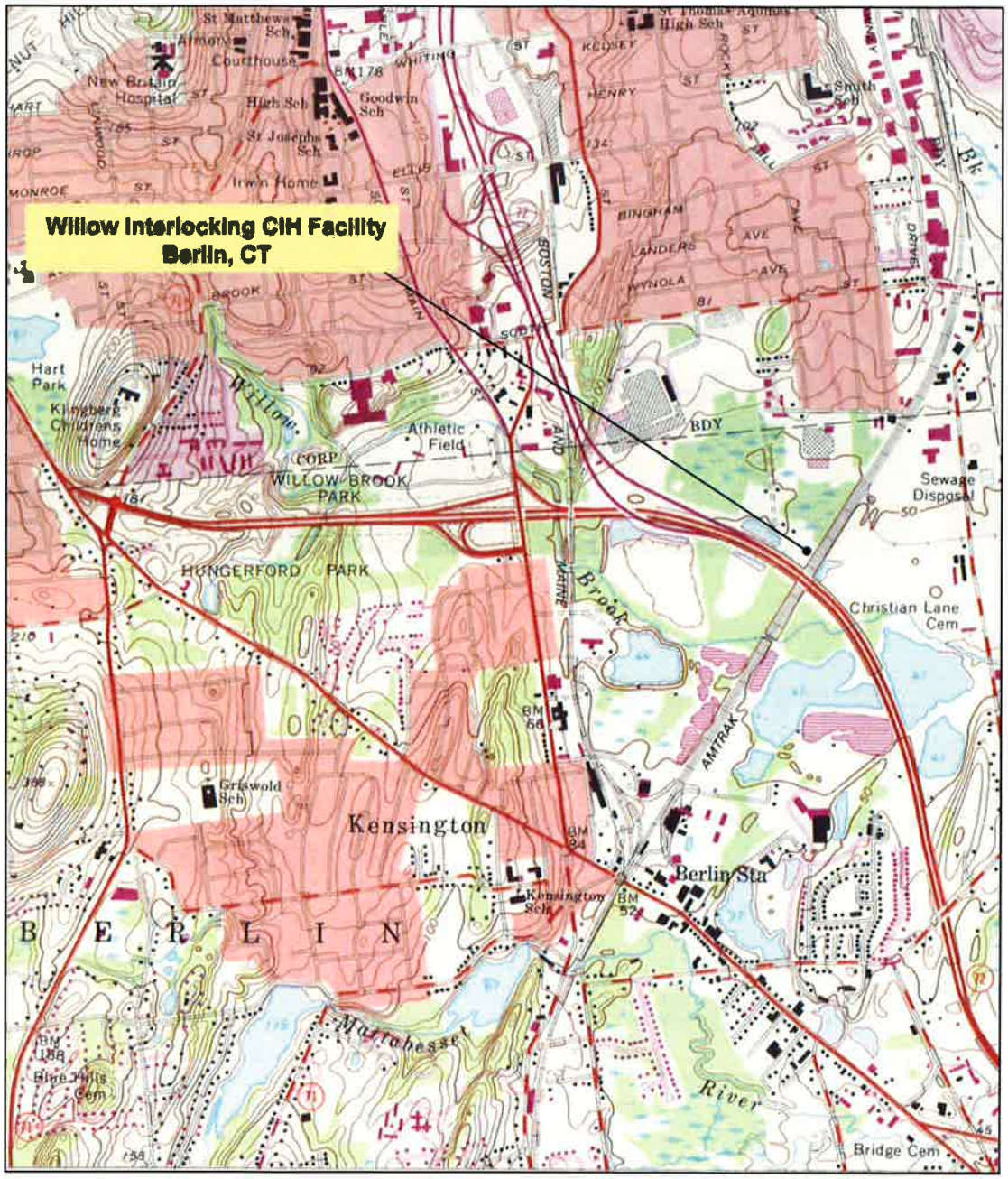


Figure 11: Aerial view (Bing 3D™) showing location of Willow Interlocking CIH facility.

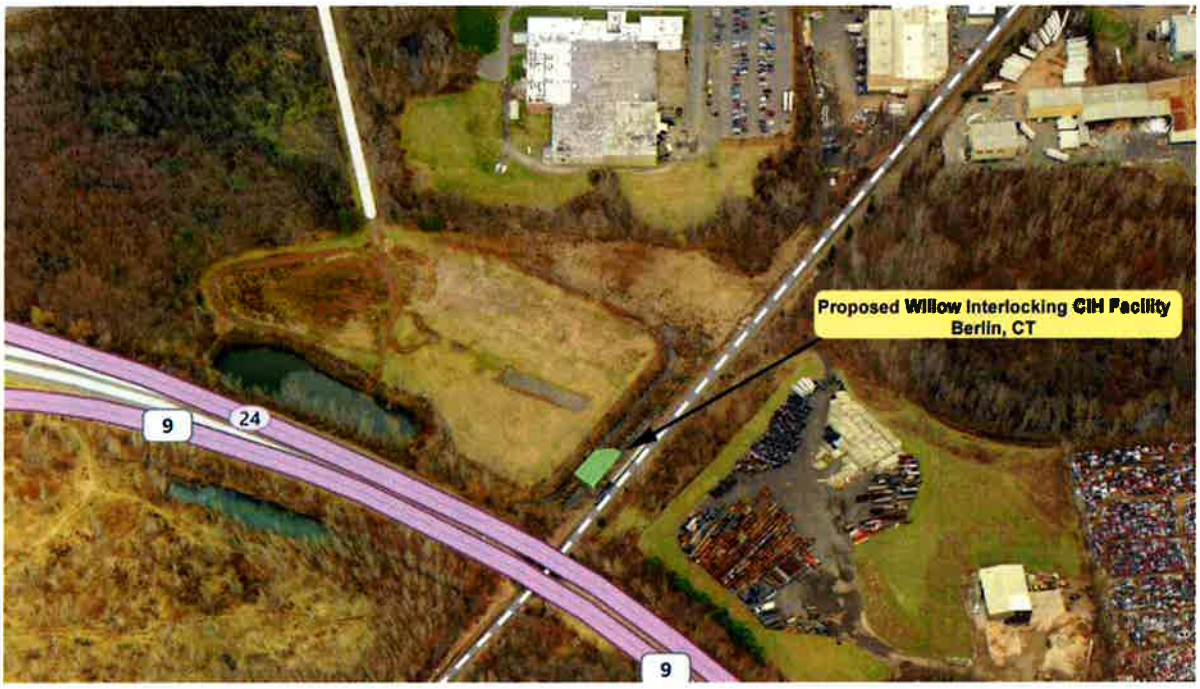


Figure 12: **Location of the Hart CIH facility, Hartford, plotted on the USGS Hartford North Quadrangle, scale 1:24000.**

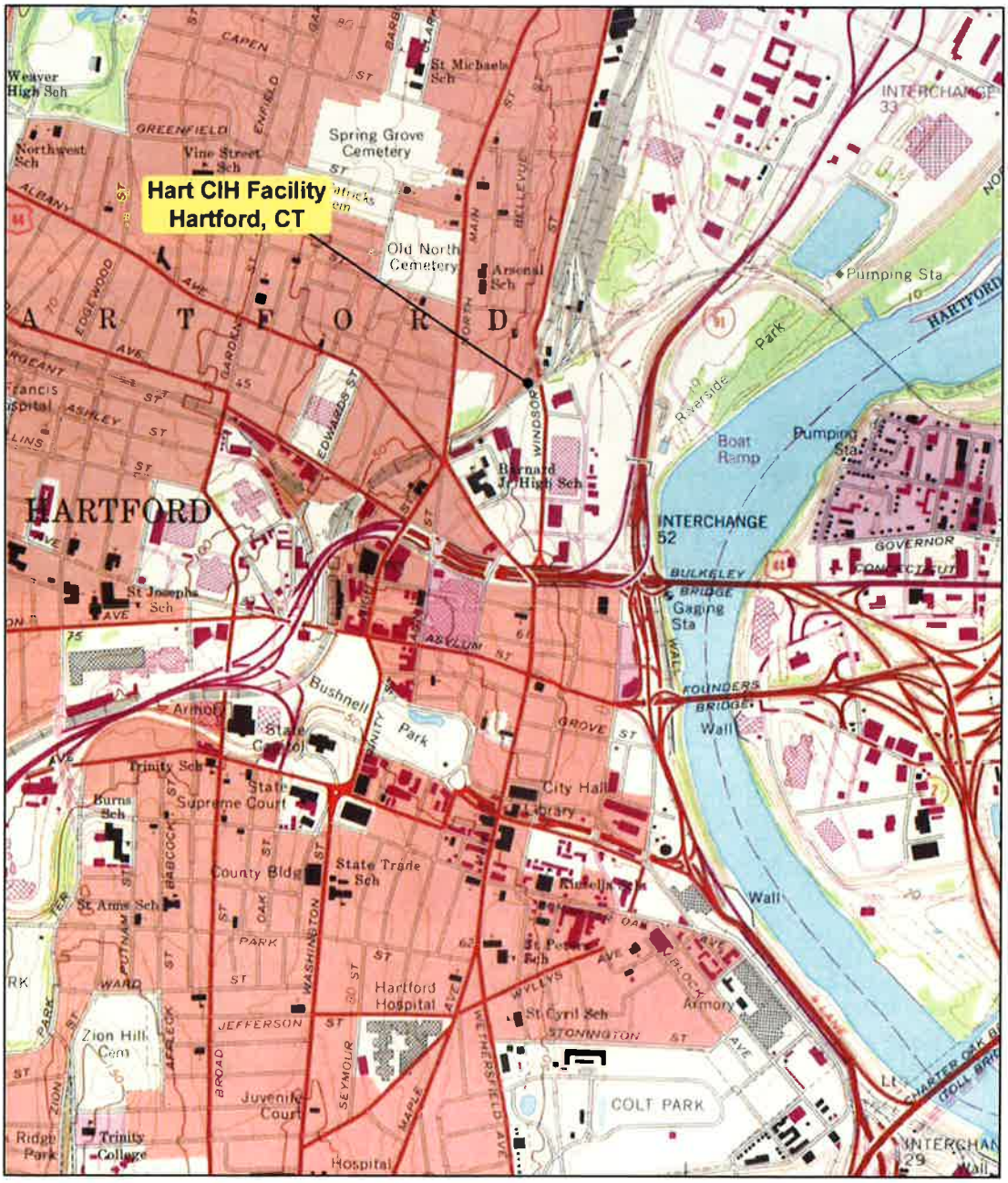


Figure 13: **Aerial view (Bing 3D™) showing location of Hart CIH facility.**

Figure 14: **Location of the Midland CIH facility, Hartford, plotted on the USGS Hartford North Quadrangle, scale 1:24000.**

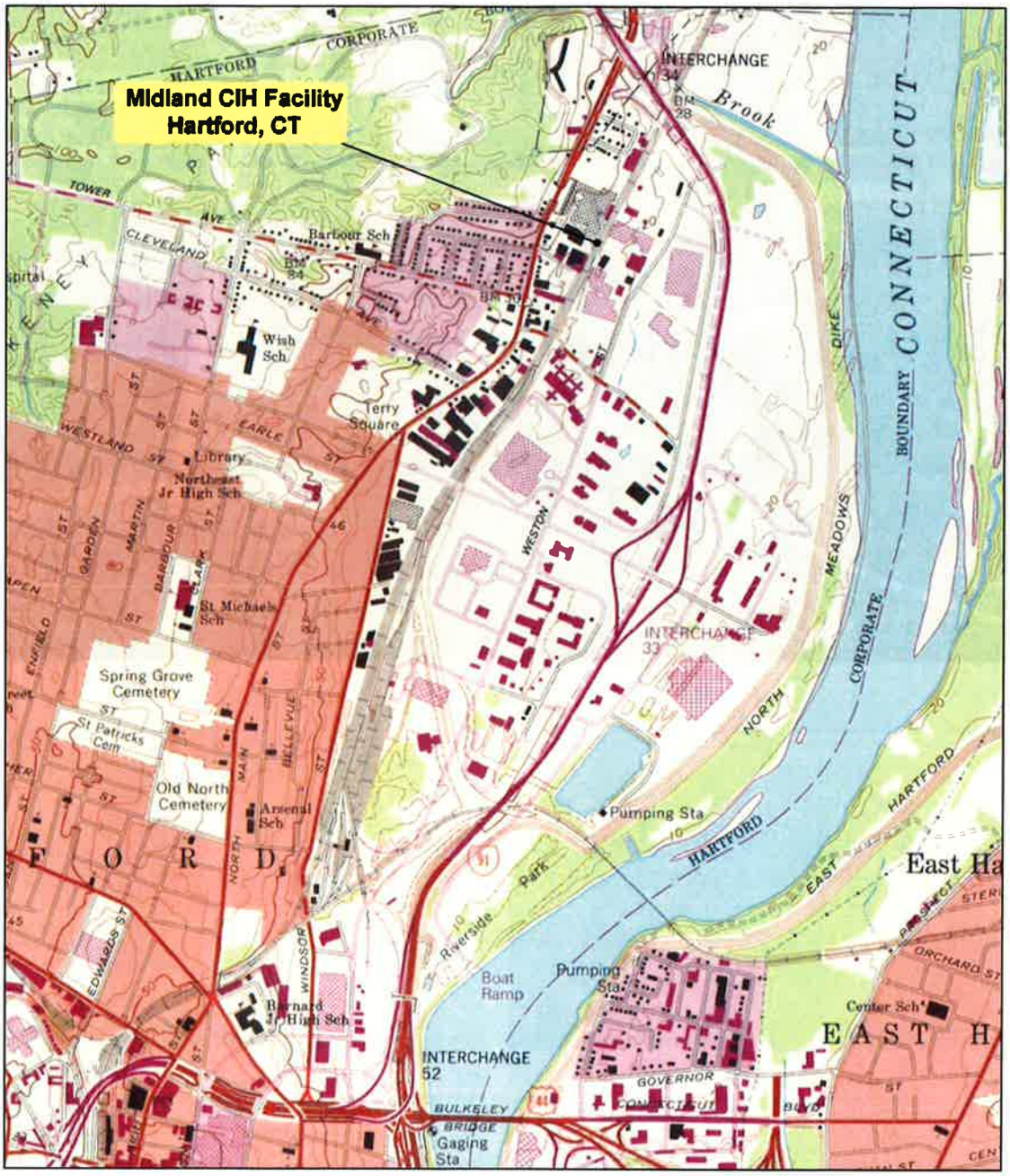


Figure 15: **Aerial view (Bing 3D™) showing location of Midland CIH facility.**

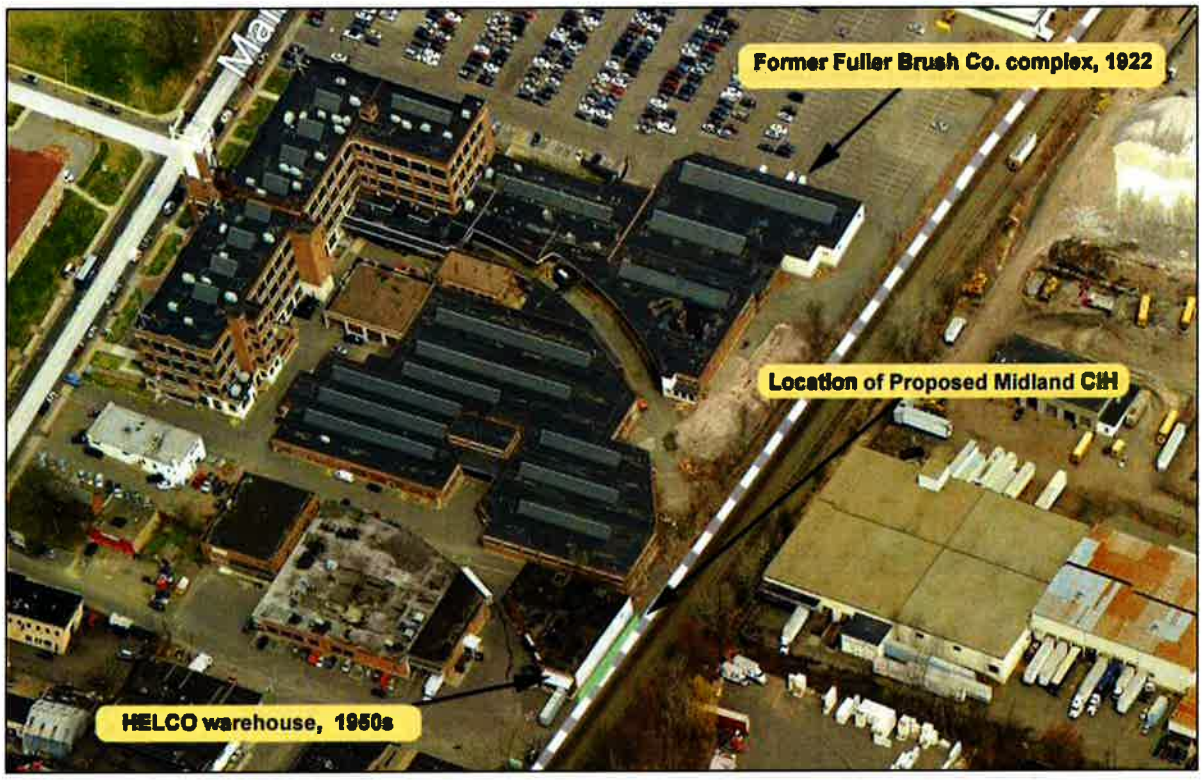


Figure 16: **Brick warehouse, 3476 Main Street, 1950s, built on property formerly owned by the Hartford Electric Light Company. Although more than 50 years old, the building probably does not rise to the level of eligibility for the National Register of Historic Places. The CIH facility will be located at the rear of this property within the railroad ROW and so will not be visible from a public road or from the front of the current business.**

Figure 17: **The former Fuller Brush Company complex, 3580 Main Street, Hartford, 1922, probably eligible for listing in the National Register of Historic Places, as seen from Main Street. The proposed Midland CIH facility will be located just south of the complex, within the railroad ROW, where it will have minimal visibility even from the rear of the complex, and no visibility from the front.**

D. Repair, reconstruction, and replacement of existing bridges and culverts

D.1 Identification of Historic Properties

For reasons of physical condition, track geometry, and drainage improvements, several bridges and culverts will need to be substantially modified or replaced. The Preliminary Technical Report recommended that 89 bridges and culverts within Phase 1, Phase 2, and Phase 3A be regarded as contributing components of the historic rail line. Appendix B reproduces the Historical Background section of the Preliminary Technical Report, which served to establish the historic context for evaluating the various components of the rail corridor.

Most of the contributing bridges and culverts along the line will not be adversely affected. Among these are a number of stone and brick structures that will have masonry repaired in accordance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation. Project specifications call for resetting stone in its original position, replacing missing stone or brick with matching materials, use of lime-based mortar, and repointing that matches the existing in terms of color, texture, and joint profile. Test sections are called for, which must be approved by construction management before the work proceeds. The specifications also call for concrete repairs that blend in with the existing concrete as closely as possible, and test sections will need approval. Consequently, it is recommended that the minor masonry repairs undertaken by the project not be regarded as adverse effects.

For some bridges, the only project action will be the introduction of modern safety railings that are required for the health and safety of trackside personnel. The design of the proposed open railings minimizes their visual impact: the 4'-high railings will be made of 1 ½" pipe forming two horizontal rails and uprights that are spaced 5' apart. The perceived visual mass of the proposed railing will be much less than a solid, slatted, latticed, or chain-link railing. The safety railings will have little or no physical effect on the historic bridges. Instead, they will be anchored to footings in the embankment, attached to structures associated with the track replacement, or installed as part of new retaining walls. In few cases, the railings will replace existing railings that were installed on the bridge later, outside of the period of significance. It is recommended that the installation of the safety railings not be regarded as adverse effects.

The following are the bridges and culverts within the ROW that are 1) contributing components to the historical rail line (as identified in the Preliminary Technical Report) and 2) scheduled to be substantially modified or replaced:

- Culvert, MP 7.99, North Haven, ca. 1870 stone box culvert. The culvert will be extended to the east with a pre-cast structure. This action will obscure the original stone culvert and therefore represents a diminishment of the structure's integrity of design.
- Culvert, MP 12.91, Wallingford, ca. 1915, stone box culvert/rail-top. The culvert will be replaced with a 24" reinforced-concrete pipe.
- Culvert, MP 15.56, Wallingford, ca. 1870 stone box. A new concrete retaining wall (for a description see next section) will have about 6' of exposure (not including the height of the safety railing) above the culvert and will extend along the track in both directions for several hundred feet. The structure's current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.

- Route 150 Bridge, MP 15.66, Wallingford, ca. 1870 stone arch. A concrete retaining wall will be installed on the east side of the bridge, approximately 3' from the north end of the arched opening and 12' from the south end of the arch, and will extend for several hundred feet along the track. Although the retaining wall will not physically affect the historic stonework (it will be behind the plane of the existing spandrels), it will alter the structure's setting. Currently, the bridge appears as a stone arch set within a sloped stone rail embankment. The proposed retaining wall will appear as a strong modern visual element, thereby reducing the structure's integrity of setting.
- Culvert, MP 16.19, Wallingford, ca. 1900 brick arch. The culvert will be replaced with a 36" reinforced-concrete pipe.
- Gypsy Lane Bridge, MP 16.78, Meriden, 1909 I-beam. The east beams will be replaced with new beams so as to widen the bridge, and the existing east wing walls will be replaced. These changes will diminish the bridge's integrity of materials and design.
- Culvert, MP 16.84, Meriden, ca. 1900 brick arch. The culvert will be replaced with a 36" reinforced-concrete pipe.
- Culvert, MP 17.00, Meriden, ca. 1900 brick arch. The culvert will be replaced with a 48" reinforced-concrete pipe.
- Belcher Brook Bridge, MP 22.53, Berlin, ca. 1870 stone arch. The west side of the bridge will retain its current appearance, but the east side will be extended with a pre-cast concrete structure. The extension will obscure the original appearance of the east elevation of the bridge, introducing a modern element that will diminish the structure's integrity of design.
- Belcher Brook Bridge, MP 22.75, Berlin, ca. 1900 stone and brick arch. The west side of the bridge will retain its current appearance, but the east side will be extended with a pre-cast concrete structure. The extension will obscure the original appearance of the east elevation of the bridge, introducing a modern element that will diminish the structure's integrity of design.
- Culvert, MP 23.47, Berlin, ca.1870 stone box culvert. The structure will be replaced with a 36" reinforced-concrete pipe.
- Crooked Brook Bridge, MP 23.76, Meriden, ca.1870 stone arch. The bridge will be affected by a concrete retaining wall with 6' of exposure above the bridge, not counting the height of the safety railing. The wall will run several hundred feet along the track in each direction. The bridge's current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
- Culvert, MP 23.80, Berlin, ca.1870 stone box. Seven feet of concrete retaining wall (not including the height of the safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. The structure's current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
- Culvert, MP 24.53, Berlin, ca.1870 stone box. Five feet of concrete retaining wall (not including the height of the safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. The structure's current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a

strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.

- Hatchery Brook Bridge, MP 24.85, Berlin, ca. 1870 stone arch. Six feet of concrete retaining wall (not including the height of the safety railing) will be exposed above the bridge and will extend along the track in both directions for several hundred feet. The structure's current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
- Mattabesett River Bridge, MP 25.52, 1870, 8 spans, Berlin, stone arch. The ca. 1910 concrete ballast retainer will be replaced, requiring the removal of the original brownstone capstones. New walkways and railings will be attached to the replacement ballast retainer. These changes will keep most of the historic bridge intact but nevertheless result in some diminishment of the structure's integrity of materials and design.
- Willow Brook Bridge, MP 26.39, ca. 1870, Berlin, 4 spans, stone arch. The spandrels will be extended in concrete with precast units, requiring the removal of the original brownstone capstones. New walkways and railings will be attached to the concrete spandrel units. These changes will keep most of the historic bridge intact but nevertheless result in some diminishment of the structure's integrity of materials and design.
- Culvert, MP 27.66, ca. 1870 stone arch. New concrete retaining walls will stop immediately adjacent to the culvert, with about 5' of wall exposed; the walls will extend several hundred feet along the track. The structure's current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
- Webster Brook Bridge, MP 27.83, New Britain, 1872 stone arch. The current timber head wall on the west side will be replaced with a precast concrete headwall. The east side will be extended with an 84" concrete pipe. These changes will introduce modern elements that will compete with the historic elements, thereby resulting in some diminishment of the structure's integrity of design.
- Culvert, MP 28.35, New Britain, ca.1870 stone box culvert. The structure will be replaced with a 36" reinforced-concrete pipe.
- Webster Brook Bridge, MP 28.57, Newington, ca. 1915, rail-top. The existing rail-top will be replaced with a set of four reinforced-concrete pipes.
- Culvert, MP 30.43, concrete arch, ca. 1910. The west side will be terminated with a new head wall. The new head wall represents the introduction of a modern element that will result in some diminishment of the structure's integrity of design.
- Culvert, MP 30.44, Newington, ca.1910 iron pipe. The existing culvert will be extended to the east with a 36" iron pipe. The extension represents a modern element that will partly obscure the bridge's historic appearance, thereby somewhat diminishing its integrity of design. Also, concrete retaining walls will be installed immediately adjacent to the culvert, with 3-6' of exposure; the walls will extend several hundred feet along the track. The structure's current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.

- Newington River Bridge, MP 30.99, Newington, 1904, 2 spans, deck plate girder (east side) and concrete-encased I-beams (west side). The girder structure, the east side of the existing bridge and the only surviving part of the 1904 bridge, will be replaced with a new concrete structure.
- Main Street Tunnel, MP 37.03, Hartford, 1871, brownstone-faced brick-arch double railroad tunnel. The tunnel will not physically be impacted by the construction of a retaining-wall foundation for a proposed signal house on the west side of the tracks south of the tunnel, but it will be somewhat visually obscured by the new construction. The retaining wall will be located immediately adjacent to the tunnel's brownstone curving wing wall (see Figure 25 and the photograph in Appendix A). The retaining wall therefore represents a modern element that will diminish the structure's integrity of design and setting.
- Windsor Street Bridge (Rocco D. Pallotti Bridge), MP 37.35, Hartford, 1937, concrete-encased steel beams. The concrete encasing the beams will be removed and replaced in kind, and the parapets will be rebuilt with a design that is similar to (but not identical to) the existing pattern. The cumulative effect of the proposed work, while retaining much of the bridge's characteristic appearance, nevertheless represents some diminishment of the structure's integrity of materials.
- Bridge 40.90, MP 40.90, Windsor, 1874 stone arch. The existing stone wing walls and part of the existing spandrel walls (including the 1874 date stone) will be removed. A precast concrete box culvert will be inserted into the arch, and precast head walls installed. These changes will introduce modern elements that will obscure the structure's original appearance. Together with the removal of original masonry, the additions will diminish the bridge's integrity of materials and design.
- Culvert, MP 41.77, Windsor, ca. 1900 brick arch, to be replaced by a reinforced-concrete pipe culvert with precast headwalls.
- Batchelder Road Bridge, MP 42.65, Windsor, 1914 deck plate girder. The bridge will be replaced with a new structure.

Photographs and location maps for the above resources were included in the Preliminary Technical Report. Current photographs (August-September 2014) appear in Appendix A.

The bridge and culvert actions of this portion of the project were also reviewed for possible visual effects on the setting of nearby historic districts and individual historic properties. The culverts and most of the bridges are undergrade structures that have minimal visibility from adjacent properties and public rights-of-way, and many are located in relatively inaccessible wooded areas. Only one historic property was identified adjacent to or nearby the above bridge and culvert projects:

- Batchelder Road Bridge, MP 42.65, Windsor. Batchelder Road forms the southern boundary of the **Broad Street Green Historic District**, listed on the National Register of Historic Places in 1999. The main focus of the district is Broad Street (Route 159). The area immediately surrounding the bridge is wooded and so there will be minimal visibility from the historic district (see Figure 18).

D.2 Determination of Effects

Substantial alteration of the bridges and culverts identified above would constitute an Adverse Effect on the overall National Register-eligible historic rail line by diminishing the contribution that the components make to its historic character or by actually diminishing the number of components that contribute to its character. The rail line's ability to convey its significance would thereby be lessened. While other intact historic structures will allow the rail line to possess sufficient integrity of design, materials, setting, and association to continue to be eligible for the National Register after the completion of this project, ongoing losses of contributing components at some point in the future could conceivably so reduce the historic rail line's ability to convey its significance that it would no longer be eligible. Table 2 recapitulates the bridges and culverts, all of which are contributing components of the historic rail corridor, which will be adversely affected by the undertaking.

It is recommended that the effect of the Batchelder Road bridge project in Windsor (MP 42.65) on the Broad Street Green Historic District be regarded as No Adverse Effect.

D.3 Mitigation

Section 106 of the National Historic Preservation Act of 1966 requires that Federal agencies should make every effort to "avoid, minimize, or mitigate" adverse effects on eligible resources. The extensive engineering analysis undertaken for the project has concluded that no avoidance of these structures is possible within the overall parameters of improving the rail line. The bypass options that are sometimes available for preserving historic highway bridges in place are generally not available for railroad structures; the ROW has a fixed width and cannot accommodate an alignment that would allow parallel bypass of any historic structure. In many cases, the required roadbed width for the restoration of the second track can be accomplished only by extending the existing bridges and culverts in one direction. The engineering analysis has also resulted in proposed actions that minimize the effects on historic structures by leaving intact the ones that have acceptable load-bearing and condition characteristics; when possible, calling for repairs that would involve changes to the structures that do not diminish defining characteristics; and specifying reconstruction activities that, while impacting defining features, leaves intact some portion of the historic structure that would be lost in the case of total replacement.

Nevertheless, this set of project actions will result in adverse effects on a number of contributing components of the historic rail corridor. In accordance with the stipulation specified in the PA, it is recommended that recordation of the above-listed components within a documentation package that meets CTSHPO requirements for state-level documentation (Saunders and Moore 2007) serve as appropriate mitigation for the project's adverse effects.

Figure 18: **Location of Batchelder Road bridge project, MP 42.65 (arrow), Windsor, in relation to the Broad Street Green Historic District.**

Table 2:

Historic Bridges and Culverts Adversely Affected by Project Actions

Historic Resource	MP	Town	Description	Adverse Effect
Culvert	7.99	North Haven	Stone box culvert, ca. 1870	East-side extension; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	12.91	Wallingford	Stone box culvert/rail-top, ca. 1915	Replacement.
Culvert	15.56	Wallingford	Stone box culvert, ca. 1870	Retaining wall: 6' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Route 150 Bridge	15.66	Wallingford	Stone arch, ca. 1870	Retaining wall: on the east side of the bridge, the retaining wall will begin 3' from the north end of the arched opening and 12' from the south end and extend several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	16.19	Wallingford	Brick arch, ca. 1900	Replacement.
Gypsy Lane Bridge	16.78	Meriden	I-beam, 1909	East beams to be replaced to widen the bridge; existing east wing walls will be replaced. These changes will diminish the structure's integrity of design and materials.
Culvert	16.84	Meriden	Brick arch, ca. 1900	Replacement.
Culvert	17.00	Meriden	Brick arch, ca. 1900	Replacement.
Belcher Brook Bridge	22.53	Berlin	Stone arch, ca. 1870	East-side extension with pre-cast structure; this change will introduce a modern element that will diminish the structure's integrity of design.
Belcher Brook Bridge	22.75	Berlin	Stone and brick arch, ca.1900	East-side extension with pre-cast structure; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	23.47	Berlin	Stone box culvert, ca. 1870	Replacement.

Historic Resource	MP	Town	Description	Adverse Effect
Crooked Brook Bridge	23.76	Berlin	Stone arch, ca. 1870	Retaining wall: to begin at a point 10' above existing bridge and extend upward another 6' (not including safety railing); wall will run several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	23.80	Berlin	Stone box culvert, ca. 1870	Retaining wall: 7' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	24.53	Berlin	Stone box culvert, ca. 1870	Retaining wall: 5' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Hatchery Brook Bridge	24.85	Berlin	Stone arch, ca. 1870	Retaining wall: to begin at a point 6' above existing bridge and extend upward another 6' (not including safety railing); wall will run several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Mattabesset River Railroad Bridge	25.52	Berlin	Stone arch, 8 spans, 1870	Existing concrete ballast retainer (ca.1910) to be replaced, original brownstone capstones to be removed. These changes will diminish the structure's integrity of design and materials.
Willow Brook Bridge	26.39	Berlin	Stone arch, 4 spans, ca. 1870	Concrete spandrel extensions, original brownstone capstones to be removed. These changes will diminish the structure's integrity of design and materials.

Historic Resource	MP	Town	Description	Adverse Effect
Culvert	27.66	New Britain	Stone arch, ca. 1870	Retaining wall: the wall will stop immediately adjacent to the existing culvert, with about 5' of concrete wall exposed on either side, extending up and down the track for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Webster Brook Bridge	27.83	New Britain	Stone arch, 1872	East side to be extended with concrete pipe; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	28.35	New Britain	Stone box culvert, ca. 1870	Replacement.
Webster Brook Bridge	28.57	Newington	Rail-top, ca. 1915	Replacement.
Culvert	30.43	Newington	Concrete arch, ca. 1910	New head wall; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	30.44	Newington	Iron pipe, ca. 1870	East-side extension; this change will introduce a modern element that will diminish the structure's integrity of design and materials. Concrete retaining walls will immediately abut the culvert, with 3-6' of exposure. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Newington River Bridge	30.99	Newington	Deck plate girder, 1904; concrete-encased I-beams.	Replacement of the east-side 1904 girder structure, the only remaining relatively unaltered part. This change will diminish the structure's integrity of design and materials.
Main Street Tunnel	37.03	Hartford	Brick-arch double tunnel, 1871	Retaining wall for a signal building will be built up against the southwest curved wing wall of the tunnel, thereby obscuring the original brownstone from view. This will diminish the structure's integrity of design and setting.
Windsor Street Bridge	37.35	Hartford	Concrete-encased beams, 1937	Extensive repair and replacement of concrete, including parapets that will be similar to, but not identical to, the original. The cumulative effect of the rehabilitation actions will diminish the structure's integrity of materials.
Bridge 40.90	40.90	Windsor	Stone arch, 1874	Replacement.
Culvert	41.77	Windsor	Brick arch culvert, ca.1900	Replacement.

Historic Resource	MP	Town	Description	Adverse Effect
Batchelder Road Bridge	42.65	Windsor	Deck plate girder, 1914.	Replacement.

E. Construction of new retaining walls

In numerous places along the ROW, new retaining walls will be needed where the existing sloped stone and earth embankment cannot support a modern two-track line; this action will also serve to minimize effects on wetlands. In some cases, the retaining walls are needed to create a level site for the placement of signal houses. The walls will be constructed using pre-cast concrete horizontal lagging units between 8" H-section steel piles ("soldier piles;" see Figure 19). The walls vary in length between 30' to more than 1,200'. The exposed height varies from about 4' to 8'. Running along the top of the walls will be 4'-high safety railings formed from 1 ½" pipe, the same design used for bridges. Some portions of track will have retaining walls on both sides, others on only one.

E.1 Identification of Historic Properties

The visual effect of the retaining walls will be to substitute vertical concrete walls for sloped stone embankments. This project action has the potential to affect the settings of both historic properties within the ROW (largely culverts and bridges that are contributing components of the historic rail corridor—see preceding section) and the settings of adjacent or nearby historic districts and buildings. Table 3 lists the retaining walls and the historic properties that would be affected.

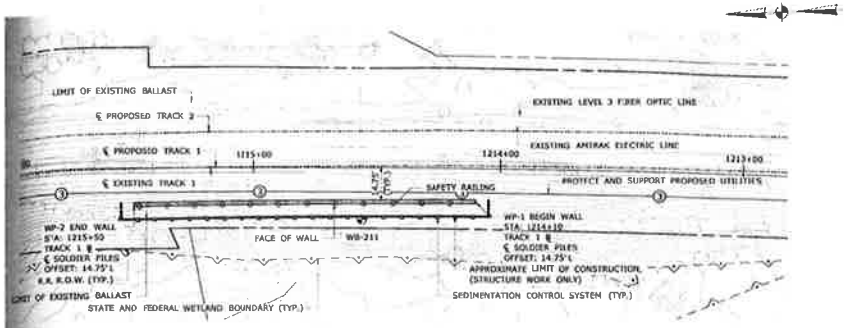
E.2 Determination of Effects

The effects of the retaining walls on the settings of historic bridges and culverts are accounted for in the preceding section. Indirect visual effects of the retaining walls on adjacent or nearby historic properties were evaluated as follows:

- Greek Revival-style House, ca. 1860, 532 Kensington Road, Berlin (Figures 20-22). Although identifiable as a mid-19th-century dwelling, the house has been substantially altered from its original appearance with vinyl siding, replacement windows, an added dormer, and an enclosed porch. The siding in particular appears to have resulted in the loss of architectural details, such as the gable finish, often matched boards in this style of house, and the cornice moldings on the entry portico. The house has a modern garage, and the overall neighborhood, probably once rural, has the character of a modern residential subdivision. Taken together, these changes have compromised the integrity of design, materials, and setting needed for National Register eligibility. The north end of the proposed 1,215'-long east-side retaining wall at MP 24.46 would be located directly east of the house; since the wall faces east, only the railing would be visible from this property.
- Clay Hill Historic District, Hartford. The 36'-long wall at MP 37.03, needed for a signal house, will be located below the grade of the surrounding historic district and so will have minimal visibility (the tracks at this location run through the Main Street Tunnel, well below street level). The portion of the historic district that immediately abuts the location of the proposed wall is currently in use as a lumber storage facility (see Figure 24); the proposed wall (and signal house) will have no incremental visual effect on the district as a whole. (The wall will affect the setting of the Main Street tunnel—see Figure 25 and previous section).

E.3 Mitigation

Other than the state-level documentation of affected historic bridges and culverts recommended in the preceding section, no mitigation is needed for the retaining-wall component of the undertaking.



PLAN

SCALE: 1" = 20'-0"

WORKING POINT COORDINATES		
WORKING POINT	NORTHING	EASTING
WP-1	780506.4E	995744.81
WP-2	780645.9E	995746.81

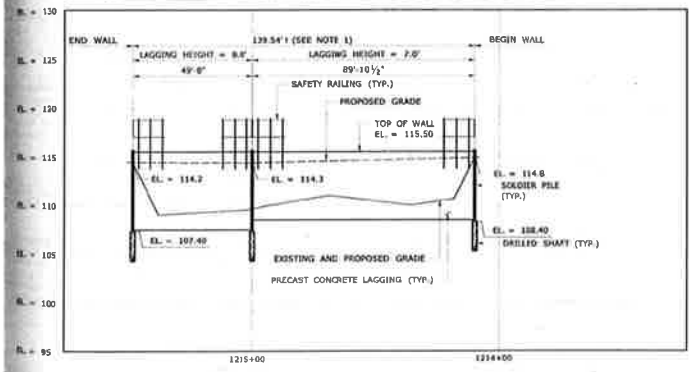
LEGEND

B.O. BORING LOCATION

NOTES:

1. HORIZONTAL MEASUREMENTS ARE ALONG ℄ OF PANEL.
2. SEE SUBSET 1B FOR BORINGS.

SOLDIER PILE DATA				
LAGGING HEIGHT	PILE SIZE	PILE SPACING (MAX.)	SHAFT DIAMETER	SHAFT LENGTH
7.0'	HP 14 X 73	10'-0" O.C.	24" MIN.	26'-0"
8.0'	HP 14 X 73	10'-0" O.C.	24" MIN.	29'-0"



ELEVATION

SCALE: 1" = 20'-0" (HORZ.) (TRACK 1 ℄)
1" = 4'-0" (VERT.)

ISSUED FOR CONSTRUCTION

REVISION DESCRIPTION	SHEET NO.	H. MARTINDALE / D. GEISSERT	SCALE AS NOTED	NEW HAVEN HARTFORD SPRINGFIELD RAIL PROGRAM PHASE 1 - MP 20 TO MP 31	BERLIN CONNECTICUT / MP 23.43W GENERAL PLAN	0170-3154 / BST-001 / 02.17.180

Figure 19:

Plan and Elevation of Typical Retaining Wall

Table 3:
Retaining Walls

Description	Mile Post	Town	Potential Historic Properties Adjacent or Nearby
Soldier pile, east side, 82' long, for signal house.	7.50	North Haven	None. The immediate area is wooded, with a self-storage facility to the west.
Soldier pile, west side, 36' long.	7.51	North Haven	None. The immediate area is wooded, with a self-storage facility to the west.
Soldier pile, east side, 132' long.	14.26	Wallingford	None. Surrounding area is characterized by large-scale modern commercial and industrial buildings.
Soldier pile, west side, 30' long.	14.44	Wallingford	None. Surrounding area is characterized by large-scale modern commercial and industrial buildings.
Soldier pile, east side, 300' long.	15.59	Wallingford	Route 150 Bridge, ca. 1870 stone arch; ca. 1870 stone box culvert (see preceding section). Otherwise, none: the surrounding area has modern commercial and industrial buildings, vacant land, and woods.
Soldier pile, east side, 696' long	15.72	Wallingford	Route 150 Bridge, ca. 1870 stone arch (see preceding section). Otherwise, none: the surrounding area is characterized by modern commercial and industrial buildings, vacant land, and woods.
Soldier pile, west side, 80' long.	16.40	Wallingford	None. The area is wooded on the east side, with modern commercial and industrial buildings on the west side.
Soldier pile, west side, 192' long.	16.54	Wallingford	None. The area is wooded on the east side, with modern commercial and industrial buildings on the west side.
Soldier pile, east side, 85' long, for signal house.	16.63	Meriden	None. The area is wooded on the east side, modern propane business and mobile-home park on the west side.
Soldier pile, west side, 24' long.	16.64	Meriden	None. The area is wooded on the east side, modern propane business and mobile-home park on the west side.
Soldier pile, east side, 1,215' long.	21.45	Meriden/Berlin	None. The area is wooded and borders Silver Lake.
Soldier pile, both sides, 200' long.	21.83	Berlin	None. The area is wooded and borders Silver Lake.
Soldier pile, east side, 322' long.	21.96	Berlin	None. The area is wooded and borders Silver Lake.
Soldier pile, west side, 745' long.	22.60	Berlin	None. The area is wooded.
Soldier pile, west side, 140' long.	23.43	Berlin	None. The area is wooded.
Soldier pile, both sides, 800' long	23.76	Berlin	Crooked Brook Bridge, ca. 1870 stone box culvert (see preceding section). Otherwise, none: the area is wooded.
Soldier pile, east side, 1,215' long	24.46	Berlin	Ca. 1870 stone box culvert (see preceding section); Greek Revival-style house, ca. 1860, 532 Kensington Road (recommended as Not Eligible--see Figure 20). The rest of the west side is wooded.

Figure 20: **Greek Revival-style house, ca. 1860, 532 Kensington Road, Berlin, facing the north end of a proposed retaining wall along the east side of the tracks. Because of the extent of changes, the house is not recommended as eligible for the National Register of Historic Places.**

Figure 21: **View of the location of the proposed retaining wall as seen from in front of the house at 532 Kensington Road, Berlin. The wall itself will not be visible because it is on the opposite side of the tracks, but the top of the safety railing will extend above track level.**

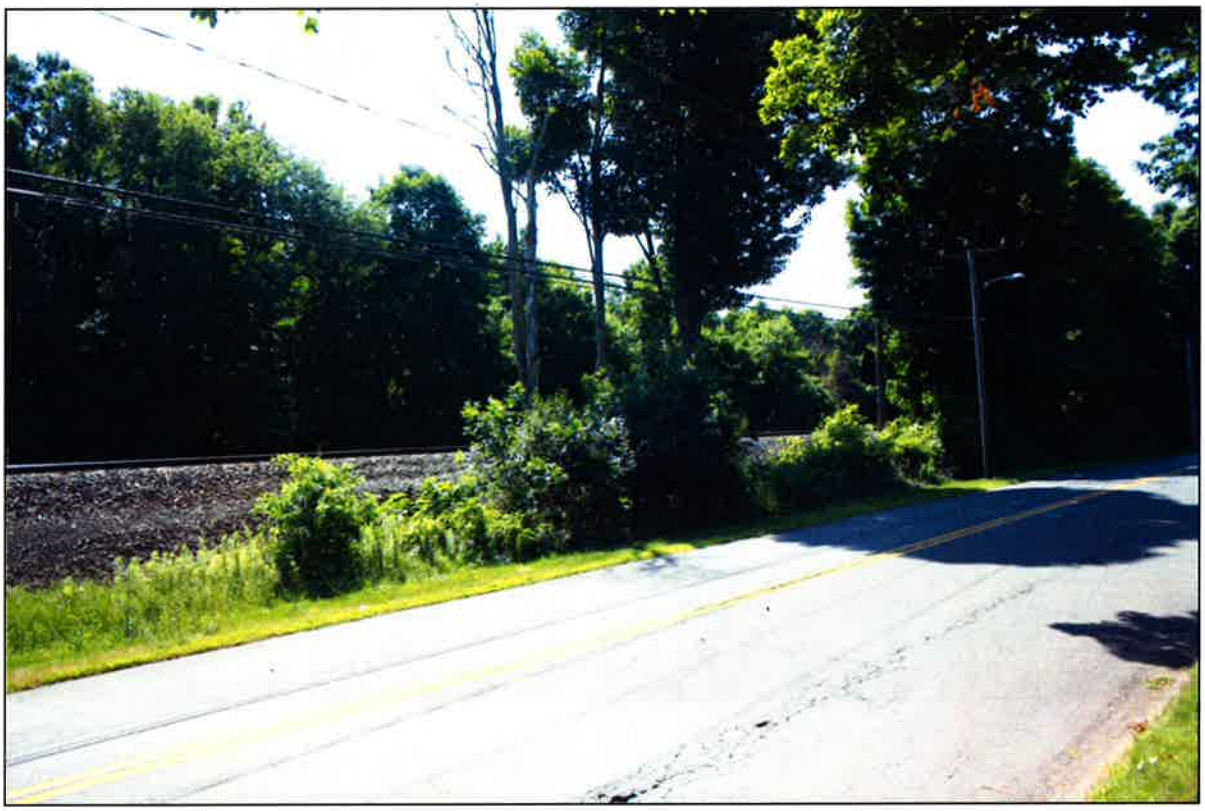


Figure 22: **Aerial view looking west (Bing 3D™), showing relation between house at 532 Kensington Road and proposed retaining wall on the opposite side of the railroad ROW.**

Figure 23: **Aerial view of the location of the proposed retaining wall, MP 37.03, in relation to the Clay Hill Historic District and the Main Street railroad tunnel.**

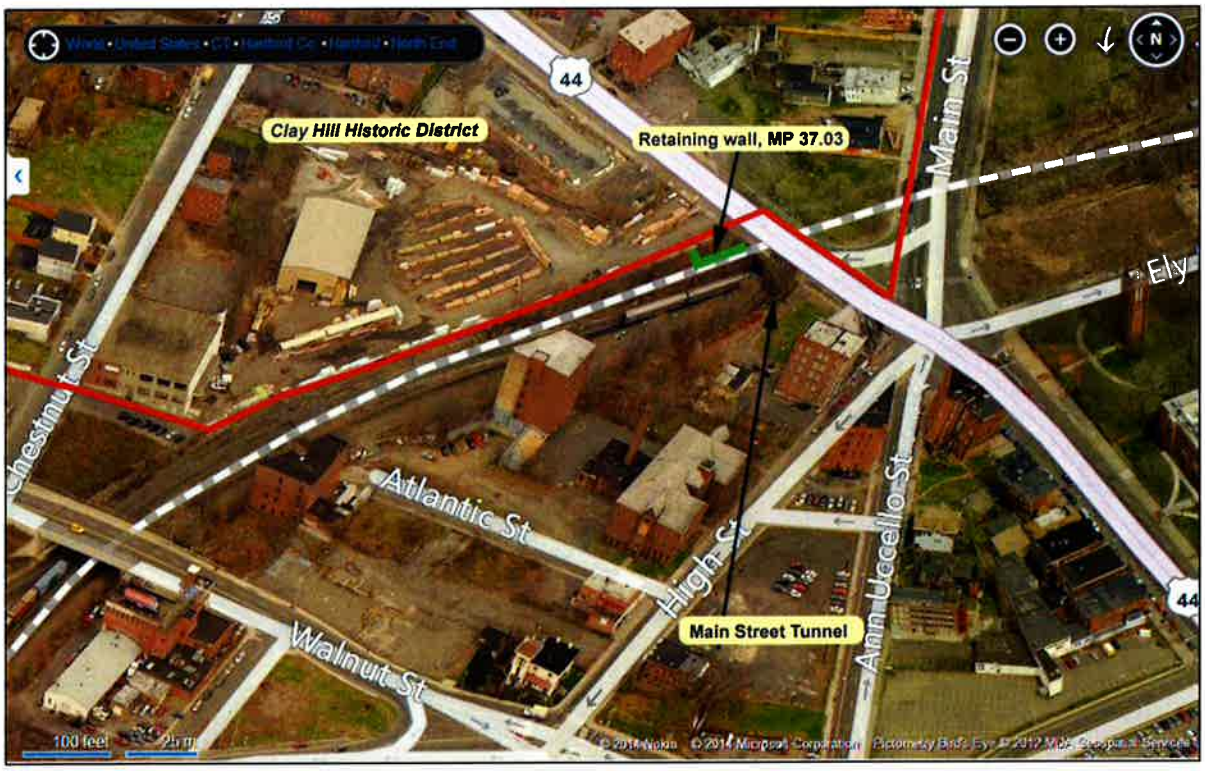
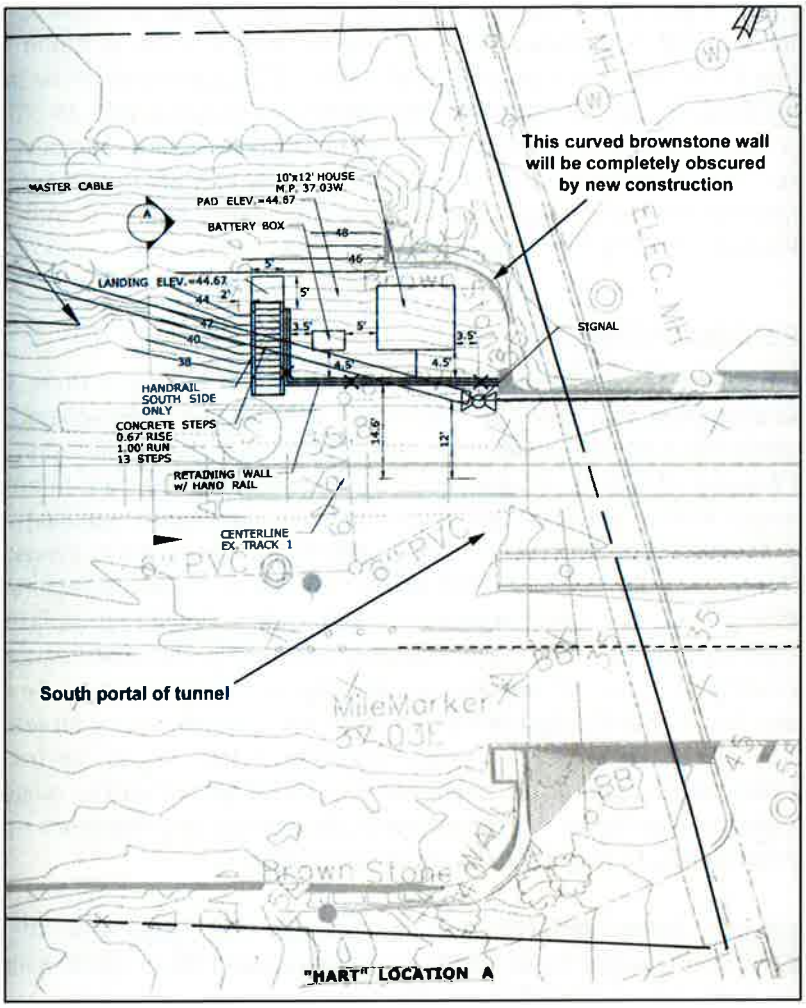


Figure 24: **View of the location of the retaining wall for the proposed signal house from the edge of the Clay Hill Historic District on Albany Avenue. Because of its depressed elevation, the railroad ROW is not visible from street level in the district (an Amtrak New Haven to Springfield train was passing by at the time the photograph was taken).**

Figure 25: **Plan for retaining-wall foundation for signal house adjacent to the Main Street railroad tunnel (Bridge No. 37.03); the retaining wall for the proposed signal house will be located adjacent to the brownstone wing wall seen at the far left in the photo.**



F. Improvements at Grade Crossings

The several grade crossings that will be improved as part of Phase 2 and Phase 3A are listed in Table 4. There are no grade-crossing improvements included as part of Phase 1; however, a crossing that was discussed in the Preliminary Technical Report, Norton Lane in Berlin (MP 22.04), will be discontinued. The Brooks Street crossing in Meriden (MP 18.75), just north of the proposed location for the new Meriden Station, and the Wilson Avenue crossing in Windsor (MP 39.85) will also be closed. Closure of the grade crossings involves removal of the highway paving, removal of gates, lights and other railroad equipment, and installation of concrete roadway barriers to prevent vehicles crossing the tracks. The work proposed for a typical grade crossing is shown as Figure 26. Aerial views for all grade crossings are included as Figures 27-33, Figure 35 and 36, and Figure 41-45.

F1. Identification of Historic Properties

All of the grade-crossing locations were checked to determine if there were any nearby or adjacent historic properties that could be affected by the crossing improvements. Table 4 indicates which crossing improvements have adjacent or nearby properties that are listed in or eligible for listing in the National Register of Historic Places. Most of the grade crossings are in areas characterized by modern commercial and/or industrial buildings and have no historic buildings nearby. The area surrounding the Cooper Street crossing in Meriden (MP 18.26, Figure 33) is almost entirely of modern construction, with the exception of a ca. 1900 house attached to a kielbasa factory. The house (Figure 34) has been altered from its original appearance with asphalt siding and replacement windows and lacks the necessary integrity of design and materials needed for National Register of Historic Places eligibility. A remnant of a historic factory complex, the former Connecticut Telephone and Electric Company complex, lies well to the east of the Britannia Street/North Colony Street crossing in Meriden (MP 19.42). Originally, this complex extended westward all the way to the tracks, but because of demolition and new construction, it no longer can be considered within the range of potential visual effects from the project (see Figure 41). Six of the grade-crossing improvements are adjacent to, or lie within, National Register-listed or potentially eligible properties:

- The Quinnipiac Street and Hall Avenue crossings (MP 12.60 and MP 12.65, Figure 29), Wallingford, are adjacent to the National Register-listed Wallingford Railroad Station, which abuts the east side of the railroad ROW between those two streets. In addition, there are numerous 19th- and early 20th-century commercial buildings in this area that, collectively, could be considered to constitute a locally significant historic district. Currently, both streets have lights and crossing gates.
- The Parker Street crossing in Wallingford (MP 13.05, Figure 30) lies east of the former Wilson Sewing Machine Company factory, a late-19th-century four-story brick industrial building that has been converted to residential use. This relatively well-preserved building has local historical significance because it calls to mind Wallingford's long history as an industrial center. Other properties nearby include the 19th-century Holy Trinity Catholic cemetery (cemeteries are not normally eligible for the National Register) and a row of highly altered 19th-century houses along North Cherry Street. Currently, Parker Street has both lights and crossing gates.
- The East Main Street crossing in Meriden (MP 18.58, Figure 35) is adjacent to the east edge of the Colony Street-West Main Street Historic District, listed in the National Register of Historic Places in 1987. The grade crossing project's northwest quadrant abuts the district. The other

quadrants reflect Meriden's late 20th-century urban renewal, in which large parts of the city's commercial core were leveled and replaced with widely spaced modern construction. This improvement also includes the railroad ROW's intersection with Hanover Street-South Colony Street. Currently, the crossing has gates and lights.

- The Cross Street crossing in Meriden (MP 18.87, Figures 36-40) has several former warehouse and industrial buildings dating to the late 19th century nearby; individually, some of these may have local historical significance in recalling Meriden's industrial heritage and therefore may be individually eligible for listing in the National Register of Historic Places. Because many of the buildings represent remnants of their original complexes, and others have been substantially altered, it is recommended that the historic district potential for the area surrounding the crossing be regarded as minimal. Two of the crossing's four quadrants are vacant lots and one has a substantially altered ca.1950 concrete-block building, further interrupting the continuity of any potential historic district. Because this crossing was not considered in the Preliminary Technical Report, an excerpt from the relevant USGS topographical quadrangle is supplied as a location map (Figure 37). The crossing currently has lights and a gate (the street is one-way).
- The Central Street crossing in Windsor (MP 42.92, Figure 45) lies within the Broad Street Green Historic District, listed in the National Register in 1999. Prior to that, two of the buildings in the district that are adjacent to the grade-crossing project, the Windsor Freight Station and the Windsor Passenger Station, were individually listed in the National Register. Currently, Central Street has both lights and crossing gates.

Photographs and location maps for all but the Cross Street crossing in Meriden were included with the Preliminary Technical Report. Comparable graphics for Cross Street are included herein as Figures 36-40.

F.2 Determination of Effects

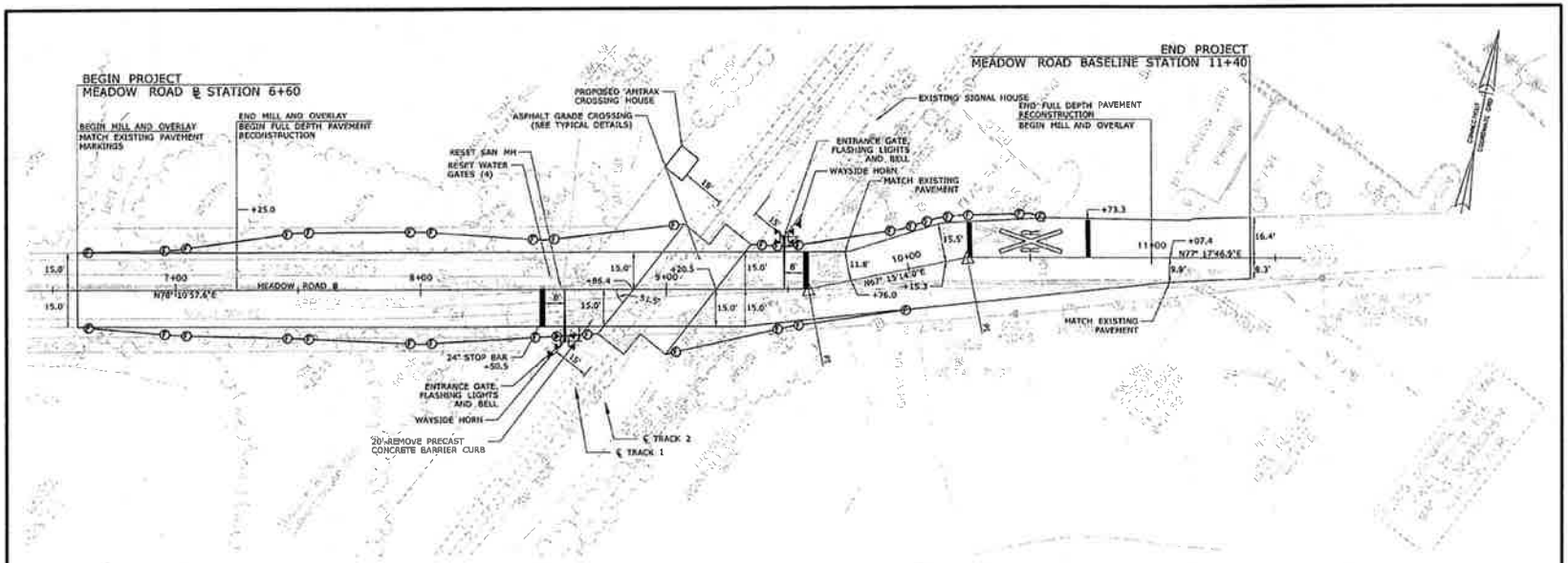
The work for the proposed grade-crossing improvements generally consists of road-side signage, pavement marking, wayside horns, and new trackside electrical-equipment enclosures. The electrical enclosures, typically 10' by 12' in plan, are generally replacements for existing enclosures and are not considered to fall within the category of a "large building or structure" that the PA cites as possibly creating a visual effect on adjacent or nearby historic properties (PA, page C-2). One crossing (North Plains Highway in Wallingford (MP 13.62) will have new curb islands between traffic lanes. Flashing lights and gates will generally replace the fixtures already in place, though some will be retained and others re-installed a short distance away from their current location.

Reconstruction of existing roadways and sidewalks will be needed to match the elevation of the tracks, in some cases requiring a small amount of fill.

It is recommended that all these grade-crossing improvement actions be regarded as having minimal incremental visual effect on adjacent or nearby historic resources, compared with the gates, flashing lights, signage, and pavement markings that are already in place. The slight elevation changes in the roadways and sidewalks needed to effect a level crossing are also expected to have minimal visual impact on surrounding historic resources. Findings of No Adverse Effect are recommended for all grade-crossing components of the project.

F.3 Mitigation

No mitigative actions are needed for grade-crossing actions.



BITUMINOUS CONCRETE LIP CURB

STATION	OFFSET	STATION	OFFSET	RADIUS	LENGTH
7+00.0	15.1'LT	7+53.0	16.0'LT	-	53.0
7+53.0	16.0'LT	8+25.2	16.0'LT	-	72.2
8+25.2	16.0'LT	8+66.0	16.0'LT	-	39.7
9+60.0	16.0'LT	9+79.1	16.0'LT	616 0'	19.6
9+79.1	16.0' LT	10+55.4	16.0'LT	-	76.3
10+55.4	16.0'LT	10+70.4	30.8'LT	15.0'	23.3
10+70.4	30.8'LT	10+70.5	33.7'LT	-	2.9
11+17.9	26.5'LT	11+13.8	28.6'LT	-	4.6
11+13.8	28.6'LT	11+08.0	24.3'LT	4	8.8
11+08.0	24.3'LT	11+17.9	16.0'LT	10	14.0
11+17.9	16.0'LT	11+60	16.0'LT	-	42.1
7+00.0	15.1'RT	7+53.0	16.0'RT	-	53.0
7+53.0	16.0'RT	8+23.0	16.0'RT	-	70.0

PI STATION 9+58.41
N 854,590.39
E 1,026,113.79

PI STATION 10+24.33
N 854,615.88
E 1,026,174.58

NOTES:

ALL PAVEMENT MARKINGS ARE REFLECTORIZED.

ALL EXISTING CANTILEVERS/GATES/FLASHING LIGHTS TO BE REMOVED AND REPLACED WITH NEW CROSSING WARNING EQUIPMENT AS SHOWN.

Figure 26:

Typical Grade-Crossing Improvements

PHASE 3A NORTH 60% SUBMISSION 6-2-14

REV	DATE	REVISION DESCRIPTION	SHEET NO.

SCALE IN FEET
0 20 40
SCALE 1"=20'

AMTRAK

HNTB Corporation Engineers Architects Planners

NEW HAVEN HARTFORD SPRINGFIELD RAIL PROGRAM
PHASE 3A NORTH - MP 39 TO MP 43

WINDSOR CONNECTICUT

MEADOW ROAD MP-39.70 GRADE CROSSING PLAN

0170-3156

CSM-101

Table 4:
Phase 2 and Phase 3 Grade Crossing Improvements

Crossing	Mile Post	Town	Improvements	Nearby or Adjacent Historic Properties
Toelles Road	10.57	Wallingford	Roadway reconstruction, signage, pavement marking, existing gates and flashing lights to remain (one relocated), new electrical enclosure	None. The area is one of modern light-industrial buildings and parking lots. See Figure 27.
Ward Street	12.31	Wallingford	Roadway and sidewalk reconstruction, signage, pavement marking, flashing lights and bell, gates, new electrical enclosure.	None. The area includes modern commercial buildings, drive-in restaurant, garages. See Figure 28.
Quinnipiac Street	12.60	Wallingford	Roadway and sidewalk reconstruction, signage, pavement marking, wayside horns, flashing lights, gates.	Wallingford Station (NR listed); potential historic district around station. See Figure 29.
Hall Avenue	12.65	Wallingford	Roadway reconstruction, signage, pavement marking, existing gates and flashing lights to be relocated, new electrical enclosure	Wallingford Station (NR listed); potential historic district around station. See Figure 29.
Parker Street	13.05	Wallingford	Roadway and sidewalk reconstruction, signage, pavement marking, wayside horns, flashing lights, gates, new electrical enclosure.	Wilson Sewing Machine Co. Factory (NR eligible). See Figure 30.
North Plains Highway	13.62	Wallingford	Roadway reconstruction, curb islands, signage, pavement marking, wayside horns, flashing lights, gates, new electrical enclosure.	None. The area is one of modern commercial buildings and surface parking. See Figure 31.
Pent Highway	14.41	Wallingford	Roadway reconstruction, signage, pavement markings, wayside horns, existing lights and gates to remain (one relocated), new electrical enclosure.	None. The area is one of modern industrial and commercial buildings, surface parking, and a mobile-home park. See Figure 32.
Cooper Street	18.26	Meriden	Signage, pavement marking, new pedestrian gates, existing gates and lights to remain, wayside horns, new electrical enclosure.	None. Other than one highly altered ca.1900 house near the northeast quadrant, the vicinity consists entirely of modern industrial and commercial buildings. See Figures 33 and 34.

East Main Street	18.58	Meriden	Signage, pavement markings, new pedestrian gates, wayside horns.	Colony Street-West Main Street Historic District (NR-listed). See Figure 35.
Cross Street	18.87	Meriden	Signage, pavement marking, new pedestrian gates, existing gates and lights to remain, wayside horns, new electrical enclosure.	Industrial/warehouse buildings, 19th and early 20th centuries. See Figures 38-40.
Britannia Street/ North Colony Street	19.42	Meriden	Signage, pavement markings, gates, flashing lights, wayside horns, new electrical enclosure.	None. Immediate area consists of modern commercial and industrial buildings; remnant of former Connecticut Telephone and Electric Company factory is located well to the east. See Figure 41.
Meadow Road	39.70	Windsor	Roadway reconstruction, signage, pavement marking, wayside horn, flashing lights, gates, new electrical enclosure.	None. The area consists of modern light-industrial buildings. See Figure 42.
East Barber Street	40.16	Windsor	Roadway and sidewalk reconstruction, signage, pavement marking, wayside horns, flashing lights, gates.	None. This end of East Barber Street consists of modern residential and commercial buildings. See Figure 43.
Island Road	42.27	Windsor	Roadway and sidewalk reconstruction, signage, pavement marking, wayside horns, flashing lights, gates.	None. The area is mostly wooded, with two modern buildings associated with the Loomis-Chaffee School nearby. See Figure 44.
Central Street	42.92	Windsor	Roadway and sidewalk reconstruction, signage, pavement marking, flashing lights and bell, gates, new electrical enclosure.	Broad Street Green Historic District, Windsor Passenger Station, Windsor Freight Station (all NR-listed). See Figure 45.

Figure 27: Aerial view of the Toelles Road grade crossing, Wallingford (Bing 3D™).

Figure 28: **Aerial view of the Ward Street grade crossing, Wallingford (Bing 3D™).**

Figure 29: **Aerial view of the Quinnipiac Street and Hall Avenue grade crossings, Wallingford (Bing 3D™).**

Figure 30: **Aerial view of the Parker Street grade crossing, Wallingford (Bing 3D™).**

Figure 31: **Aerial view of the North Plains Highway grade crossing, Wallingford (Bing 3D™).**

Figure 32: **Aerial view of the Pent Highway grade crossing, Wallingford (Bing 3D™).**

Figure 33: Aerial view of the Cooper Street grade crossing, Meriden (Bing 3D™).

Figure 34: **Ca. 1900 house, 11 Cooper Street, attached to kielbasa factory. The house is not recommended as eligible for listing in the National Register of Historic Places.**

Figure 35: **Aerial view of the East Main Street grade crossing, Meriden (Bing 3D™).**

Figure 36: **Aerial view of the Cross Street grade crossing, Meriden (Bing 3D™).**

Figure 37: **Location of potentially locally significant historic industrial/warehouse buildings in the vicinity of Cross Street, shown on USGS Meriden Quadrangle, scale 1:24000.**

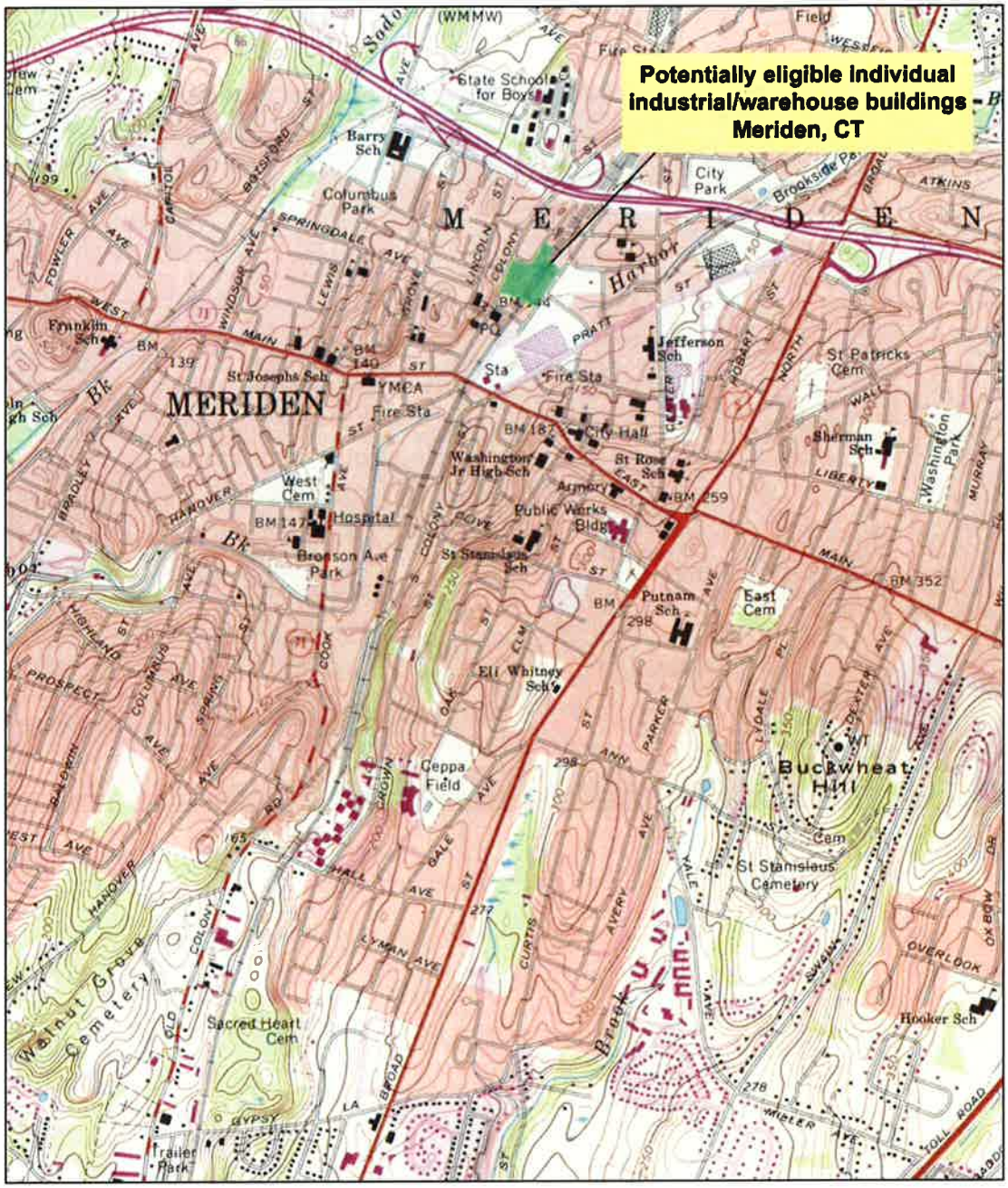


Figure 38: **Current Cross Street grade crossing, looking southwest; multi-story brick building in the background at left was formerly part of the Merriam-Forbes brass foundry complex. Although individual former industrial buildings may be eligible for the National Register, the historic-district potential of the area itself is low.**

Figure 39: **Current Cross Street grade crossing, looking northwest; the brick buildings beyond the vacant lot that abuts the crossing were formerly associated with the International Silver Company.**

Figure 40: **Current Cross Street grade crossing, looking east; the brick building on the left was formerly (ca.1900) a box factory, the building on the right is a ca.1950 concrete-block warehouse.**

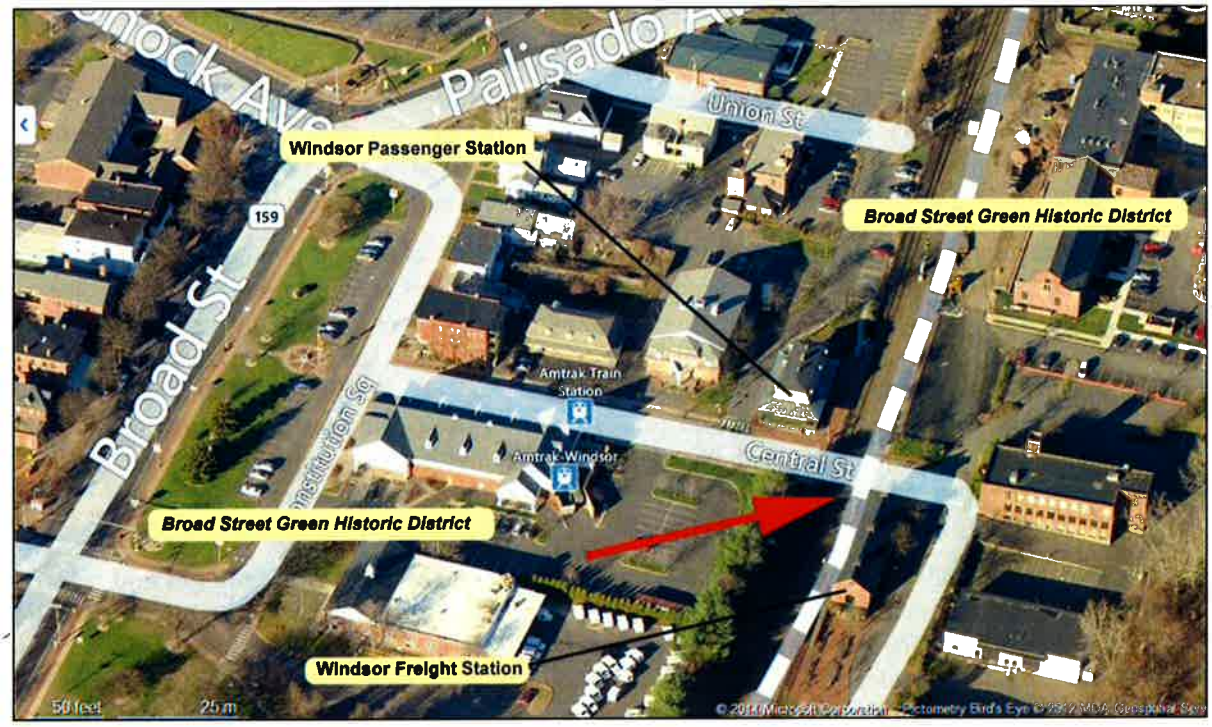
Figure 41: **Aerial view of the Britannia Street/North Colony Street grade crossing, Meriden (Bing 3D™).**

Figure 42: **Aerial view of the Meadow Road grade crossing, Windsor (Bing 3D™).**

Figure 43: **Aerial view of the East Barber Street grade crossing, Windsor (Bing 3D™).**

Figure 44: **Aerial view of the Island Road grade crossing, Windsor (Bing 3D™).**

Figure 45: **Aerial view of the Central Street grade crossing, Windsor (Bing 3D).**



IV. Conclusion

This Technical Report accounts for all listed, eligible, or potentially eligible historic architectural properties that could be affected by the project actions of Phase 1, Phase 2, and Phase 3A of the New Haven-Hartford-Springfield Rail Program:

- The proposed **double-tracking** and **drainage** improvements will take place entirely within the existing ROW and will not involve any new construction that could result in indirect visual effects on nearby historic architectural properties. The existing track and other ROW features are not considered historic, since they date from the reconstruction of the line in the 1980s. Since no historic architectural properties are affected, no mitigative actions are needed.

- **Replacement of the signaling system** will require small signal houses like those already in place along the line; these are not considered to fall within the category of a "large building or structure" that the PA cites as possibly creating a visual effect on adjacent or nearby historic properties. Also needed are central instrument house (CIH) facilities that will have a larger building, free-standing electrical components, and a fenced-in enclosure. The location of one CIH facility was found to be adjacent to a National Register-listed historic district and another was found to abut a National Register-eligible former factory complex. In neither case, however, were the indirect visual effects of CIH construction characterized as adverse effects. Since no historic architectural properties are affected, no mitigative actions are needed.

- The project will require the repair, reconstruction, or replacement of 29 **bridges and culverts** that were identified as contributing components of the historic rail corridor. Ten are outright replacements. The others involve repair of the stone and brick masonry, extension of the structure on one side, or replacement/modification of one side in order to achieve the required width for the upgraded tracks. It is recommended that these project actions be regarded as adverse effects, but that written and photographic documentation of the structures be considered appropriate mitigation.

- Nearly all of the proposed **retaining walls** will be in areas that are either wooded and undeveloped or else densely built up with modern commercial and industrial buildings. One listed historic district immediately abuts the location of a retaining wall, but there is expected to be minimal visibility because the tracks run substantially below street level at that point. The chief effects of the retaining-wall component of the project occur where the walls come close to historic bridges and culverts; the retaining walls will substantially change the setting of the structures, thereby resulting in an adverse effect. All of the structures affected by retaining walls are included in the Treatment Plan cited above.

- Several listed or eligible historic properties are adjacent to the location of proposed **grade-crossing** upgrades. However, the replacement of existing lights, gates, signage, and pavement markings with improved components will not result in any incremental visual effect over what is already in place.

V. References

Clouette, Bruce, Mary G. Harper, and Timothy Ives

2012 *New Haven-Hartford-Springfield Rail Project, Technical Report on Cultural Resources (Phase IA Cultural Resources Survey), Connecticut State Project No. 170-2296.* Storrs, CT: Archaeological and Historical Services, Inc.

Federal Railroad Administration

2012 "Programmatic Agreement among the Federal Railroad Administration, the Federal Transit Administration, The Connecticut State Historic Preservation Office, the Massachusetts State Historic Preservation Office, and the Connecticut Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the New Haven – Hartford – Springfield High-Speed Intercity Passenger Rail Project." Executed on August 9, 2012.

Saunders, Cece, and Robert Moore

2007 *Documentation Standards for Connecticut's Cultural Resources.* Rev. ed. Hartford, CT: Connecticut State Historic Preservation Office.

Appendix A:

Adversely Affected Bridges and Culverts

All photographs were taken by AHS, Inc. in August and September of 2014.

Culvert
Milepost 7.99
North Haven

Stone box culvert, ca. 1870

East elevation, camera facing southwest.

Culvert
Milepost 12.91
Wallingford

Stone box culvert/rail-top, ca. 1915

East elevation, camera facing southwest.

Culvert
Milepost 15.56
Wallingford

Stone box culvert, ca. 1870

West elevation, camera facing east.

Route 150 Bridge
Milepost 15.66
Wallingford

Stone arch, ca. 1870

West elevation, camera facing south.

Culvert
Milepost 16.19
Wallingford

Brick arch, ca. 1900

East elevation, camera facing northwest.

Gypsy Lane Bridge
Milepost 16.78
Meriden

I-beam, 1909

East elevation, camera facing west.

Culvert
Milepost 16.84
Meriden

Brick arch, ca. 1900

West elevation, camera facing east.

Culvert
Milepost 17.00
Meriden

Brick arch, ca. 1900

East elevation, camera facing northwest.

Belcher Brook Bridge
Milepost 22.53
Berlin

Stone arch, ca. 1870

East elevation, camera facing west.

Belcher Brook Bridge
Milepost 22.75
Berlin

Stone and brick arch, ca.1900

East elevation, camera facing northwest.

Culvert
Milepost 23.47
Berlin

Stone box culvert, ca. 1870

East elevation, camera facing northwest.

Crooked Brook Bridge
Milepost 23.76
Berlin

Stone arch, ca. 1870

East elevation, camera facing northwest.

Culvert
Milepost 23.80
Berlin

Stone box culvert, ca. 1870

East elevation, camera facing west.

Culvert
Milepost 24.53
Berlin

Stone box culvert, ca. 1870

East elevation, camera facing west.

Hatchery Brook Bridge
Milepost 24.85
Berlin

Stone arch, ca. 1870

East elevation, camera facing west.

Mattabesset River Railroad Bridge
Milepost 25.52
Berlin

Stone arch, 8 spans, 1870

West elevation, camera facing northeast.

Willow Brook Bridge
Milepost 26.39
Berlin

Stone arch, 4 spans, ca. 1870

East elevation, camera facing west.

Culvert
Milepost 27.66
New Britain

Stone arch, ca. 1870

East elevation, camera facing west.

Webster Brook Bridge
Milepost 27.83
New Britain

Stone arch, 1872

East elevation, camera facing west.

Culvert
Milepost 28.35
New Britain

Stone box culvert, ca. 1870

East elevation, camera facing southwest.

Webster Brook Bridge
Milepost 28.57
Newington

Rail-top, ca. 1915

Underside, showing bottom of rails spanning stone side walls, camera facing west.

Culvert
Milepost 30.43
Newington

Concrete arch, ca. 1910

East elevation, camera facing northwest.

Culvert
Milepost 30.44
Newington

Iron pipe, ca. 1870

East elevation, camera facing northwest.

Newington River Bridge
Milepost 30.99
Newington

Deck plate girder, 1904; concrete-encased I-beams.

West side of girder span, camera facing southwest.

Main Street Tunnel
Milepost 37.03
Hartford

Brick-arch double tunnel, 1871

South portal, camera facing north.

Windsor Street Bridge
Milepost 37.35
Hartford

Concrete-encased beams, 1937

East elevation, camera facing west.

Bridge 40.90
Milepost 40.90
Windsor

Stone arch, 1874

East elevation, camera facing southwest.

Culvert
Milepost 41.77
Windsor

Brick arch culvert (stone spandrels), ca.1900

East elevation, camera facing northwest.

Batchelder Road Bridge
Milepost 42.65
Windsor

Deck plate girder, 1914

West elevation, camera facing east.

Appendix B:

Historical Background of the New Haven to Springfield Rail Line

(from the *Preliminary Technical Report*, Clouette et al., 2012)

Historical Background of the New Haven to Springfield Rail Line

The Connecticut River towns were first settled by the English in the mid-1630s, with Springfield remaining within the Massachusetts Bay Colony and Windsor, Hartford, and Wethersfield forming the nucleus of the Connecticut Colony. New Haven was settled shortly thereafter, in 1638, and remained a separate colony until it was joined with the Connecticut Colony in 1664. These early towns extended over large geographic areas and were primarily agricultural in character, with small commercial enterprises occurring only at the core of settlement. Agricultural and extractive products such as lumber were the mainstay of the region's trade for many years, helping Springfield, Hartford, and New Haven to grow as commercial centers for the products of the hinterland, as well as serving as administrative and judicial centers. Over the years, new towns were set off from the original towns: Wallingford from New Haven in 1670, Enfield from Springfield in 1683 (annexed to Connecticut in 1749), East Windsor from Windsor in 1768, Longmeadow from Springfield in 1783, Berlin from Wethersfield (and parts of Farmington and Middletown) in 1785, Hamden and North Haven from New Haven in 1786, West Hartford from Hartford and Windsor Locks from Windsor in 1854, and Newington from Wethersfield in 1871. Some of these towns subsequently gave birth to additional towns: Meriden was part of Wallingford until 1806, and New Britain was incorporated from Berlin in 1850.

In the late 18th and early 19th centuries, the towns along what would become the New Haven-Hartford-Springfield rail corridor began to be transformed by industrial development. New Haven was an early focus of carriage-building, Berlin pioneered with tinware and other sheet-metal products, and America's first industrial-scale silverware and silver-plate enterprises appeared in Hartford, Meriden, and Wallingford. Textile manufacture, in the form of specialized woolen goods, began on a large scale in Thompsonville (Enfield) after changes in the tariff laws in the 1820s. The manufacture of firearms, machine tools, and cast and stamped hardware of every description soon defined a major metalworking sector extending from Springfield through Hartford all the way to New Haven.

It is doubtful that the tremendous industrial expansion that characterized the corridor beginning in the second half of the 19th century, and the accompanying commercial and residential growth that extended well through the 20th century, would have occurred at the scale it did without the construction of exceptional access to the nation's railroad network. Or, from another point of view, it is doubtful that one of the region's earliest rail lines would have been built to connect New Haven, Hartford, and Springfield had not these cities already established themselves as commercial and industrial centers. Industry, urban growth, and railroad development were tightly bound up in a symbiotic relationship that defies simple linear cause-and-effect explanation.

The rail line between New Haven and Hartford was the most important of several lines chartered by the State of Connecticut in the early 1830s. Jointly promoted by the mercantile interests of those two cities, who were often rivals but saw a common benefit to a rail line linking the Connecticut River and Long Island Sound, the Hartford & New Haven Railroad was chartered in 1833 and laid out by the noted engineer Alexander Twining. The Depression of 1837 caused construction to halt, but by 1838 the track had been built through Meriden, arriving in Hartford a year later. From the beginning, the proponents had envisioned the line running through to Springfield, and in December 1844, the Springfield extension went into service. For the first few years, the line ended at the water in New Haven, obliging passengers to transfer to steamboats for the subsequent journey to New York City. In 1848, another railroad, the New York & New Haven, completed its service between those two cities. For more than 40 years, the corridor served as the only all-rail route between Boston and New York; it was not until 1889

that a somewhat faster all-rail shoreline route was completed, challenging the New Haven-Hartford-Springfield corridor as southern New England's main passenger artery.

In addition to the passenger and freight business generated by the communities along its route, the corridor benefited from numerous intersecting rail lines. In the late 1840s and early 1850s, an east-west line from Providence to Waterbury was completed, running parallel to the corridor for several miles through Hartford and Newington. The Hartford, Providence, and Fishkill Railroad later came under the control of the Boston, Hartford & Erie and then the New York & New England railroads. Other intersecting lines were built by proponents from cities that had been left out of the initial round of railroad construction: Middletown interests built a branch that connected their city with the corridor in 1848, and New Britain followed suit in 1865; both branches were operated by and eventually controlled by the Hartford & New Haven. In 1869, the Connecticut Western was begun to link Hartford with communities in Connecticut's Litchfield Hills.

In 1872, the New York & New Haven and the Hartford & New Haven merged to form the New York, New Haven & Hartford Railroad, establishing the company that would dominate transportation in southern New England until the Penn Central merger of 1968. Popularly known as the New Haven or the Consolidated, the line built little additional track, but through leases and acquisitions came to monopolize not only rail transportation in the region but steamboat service and, eventually, streetcars and buses as well.

The emerging monopoly of the New Haven Railroad caused some business leaders to try to circumvent it with competing rail lines. Meriden manufacturers built lines to Cromwell and Waterbury in 1883 and 1888, where they would connect with lines still independent of the New Haven. However, the Cromwell end came under the New Haven's control in 1887 and the Waterbury junction and the rest of the Meriden branch in 1898. A similar course ensued when the Connecticut Central (Springfield and New London in Massachusetts) attempted to build a parallel line from Springfield to East Hartford in 1876. After only a few years of independent operation, it came under the control of the New York & New England, and then in 1898, it was merged into the New Haven system. Known as the Armory Branch, part of the now-abandoned line runs through the proposed site of the Springfield layover/maintenance facility. By 1900, the New Haven controlled virtually all the rail traffic in Connecticut, Rhode Island, and southern Massachusetts.

In the 20th century, the rail corridor continued as a vital transportation artery, particularly during the two world wars, when industrial production in the many manufacturing centers along the route reached new peaks. Major new stations were built at New Haven and Springfield, and the right-of-way was improved with new, mostly reinforced-concrete bridges. The line was signalized in 1915 with lighted semaphore signals; these were replaced after World War II with "searchlight" signals in which revolving red, yellow, and green lenses indicated track conditions ahead.

After World War II, the corridor experienced intensive suburban development. In addition to numerous new residential neighborhoods outside of the established centers, the period saw industries move away from the rail line to suburban locations served only by highways. The railroad's freight and passenger revenue steadily declined, as people traveled more by automobile and industries received raw materials and shipped products by truck. The New Haven-to-Hartford Wilbur Cross Parkway (Route 15) represented the first round of highway competition in the 1940s, with Interstate 91 completely paralleling the rail corridor in the late 1960s.

The New Haven Railroad was reorganized in 1968 as part of the Penn Central merger of the Pennsylvania and New York Central railroads. Merging three railroads at or near bankruptcy did not create an economically viable entity. Penn Central's non-commuter passenger operations, including service along the corridor, were assumed by the National Railroad Passenger Corporation (Amtrak) in 1971, followed by the establishment of the Consolidated Rail Corporation (Conrail) in 1976 to provide freight service to the customers of Penn Central and other freight railroads in the Northeast and Midwest.

In the late 1980s, Amtrak converted long sections of the New Haven-Hartford-Springfield rail corridor to single-track operation. In addition to removing the second track, the work involved rebuilding the track embankment, installing welded rail, and re-signaling the line with the present trackside signals.

Archaeological and Historical Services, Inc.

New Haven – Hartford – Springfield High-Speed Rail Project

Archaeological and Historical Resources Memorandum

Action: Rehabilitation of Creamery Brook Culvert (MP 42.64), Windsor

Update: At the time of the DEIS, there were no rehabilitation plans for this structure. Since then, it has become apparent that the culvert will need attention to address structural deficiencies. An oval-section plastic pipe liner will be installed in the barrel of the culvert, thereby hiding the existing stone and brick masonry from view. In addition, it will be necessary to replace the stone east headwall with a new concrete headwall. The current brick arch headwall on the west side will be retained.

NR Eligibility: The preliminary technical report identified this culvert as a contributing structure to the overall historic rail corridor. The culvert consists of two parts, a stone box portion, probably ca. 1870, on the east end and a brick arch portion, probably a ca.1900 extension, on the west end.

Effect: It is recommended that the proposed work be regarded as an Adverse Effect because 1) the pipe liner will diminish the structure's integrity of design and 2) the rebuilt east headwall will diminish its integrity of design and materials. Appropriate mitigation for the adverse effect would be to include the culvert in the state-level documentation being undertaken for other affected structures.

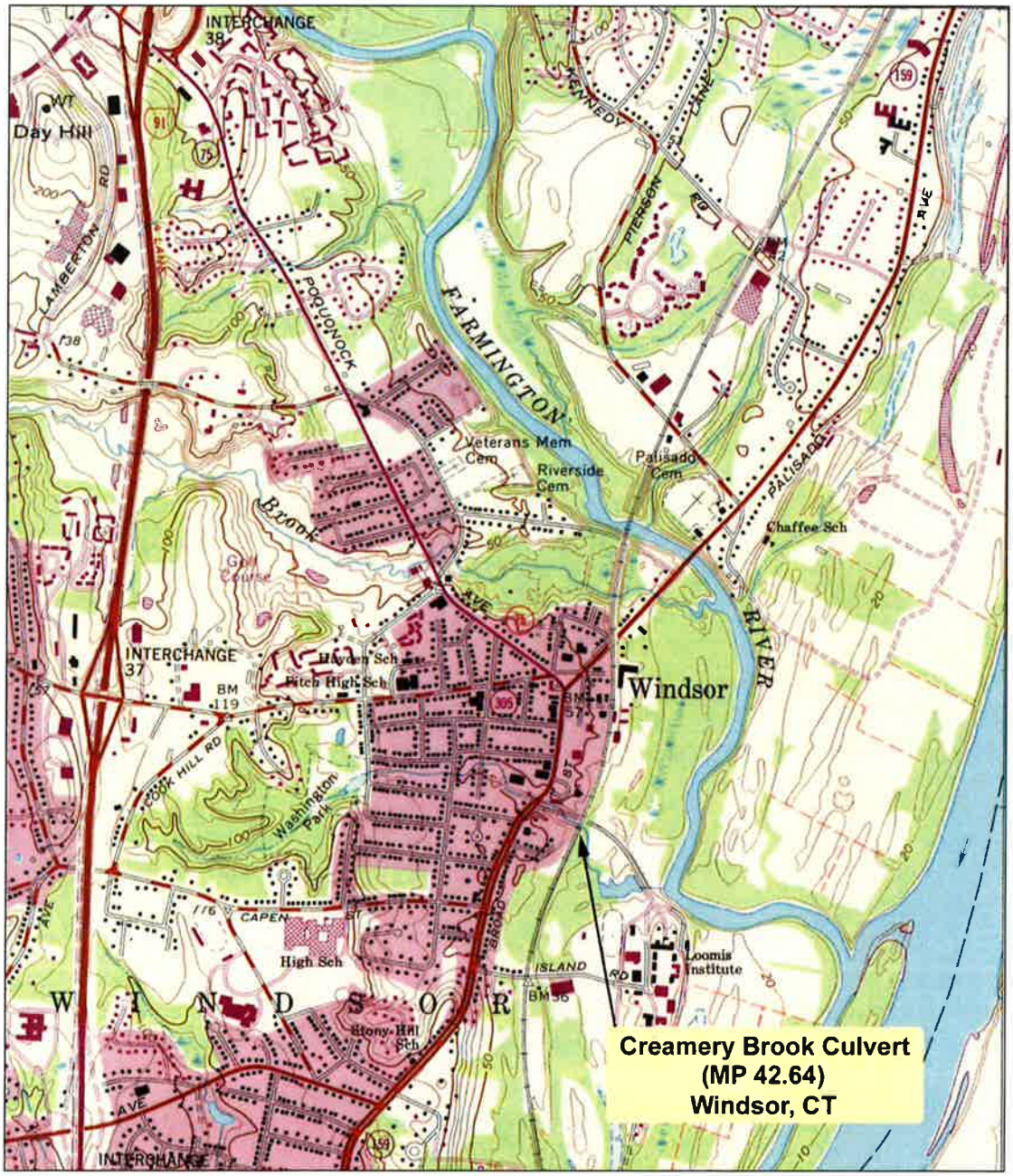
East side of culvert, a ca.1870 stone box, camera facing northwest.

Creamery Brook Culvert (MP 42.64), Windsor (continued):

West side of culvert, a ca.1900 brick arch, camera facing east.

Creamery Brook Culvert (MP 42.64), Windsor (continued):

Location of culvert shown on the USGS Hartford North Quadrangle:



MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL RAILROAD ADMINISTRATION,
THE CONNECTICUT DEPARTMENT OF TRANSPORTATION,
THE CONNECTICUT STATE HISTORIC PRESERVATION OFFICE,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE
NEW HAVEN-HARTFORD-SPRINGFIELD RAIL PROGRAM
PHASE 1 – MILE POST 20 TO MILE POST 31
PHASE 2 – MILE POST 0 TO MILE POST 20 and MILE POST 31 to MILE POST 37
PHASE 3A – MILE POST 37 to MILE POST 43

WHEREAS, the Connecticut Department of Transportation (CTDOT), an agency of the State of Connecticut, proposes a series of improvements to the New Haven-Hartford-Springfield railroad line between Mile Post 0 and Mile Post 43, known as Phase I, Phase 2, and Phase 3A of the New Haven-Hartford-Springfield Rail Program (the Undertaking); and

WHEREAS, the Federal Railroad Administration (FRA) is providing funding for the Undertaking through a grant to CTDOT under its High Speed Intercity Passenger Rail Program, making it subject to the provisions of Section 106 of the National Historic Preservation Act of 1966 (NHPA) and its implementing regulations, 36 C.F.R. part 800; and

WHEREAS, on August 9, 2012, FRA, the Federal Transit Administration, the Connecticut State Historic Preservation Office (CTSHPO), the Massachusetts State Historic Preservation Office, and CTDOT executed a Programmatic Agreement (PA) regarding the New Haven-Hartford-Springfield High-Speed Intercity Passenger Rail Project, of which the Undertaking is a component; and

WHEREAS, in accordance with the PA (Stipulation VI.B.3), CTDOT has prepared Technical Reports for historic architectural properties and archaeological resources affected by the Undertaking, which have been reviewed and approved by FRA and CTSHPO; and

WHEREAS, the Technical Report—Historic Architectural Properties identified adverse effects to properties that are listed in or eligible for listing in the National Register of Historic Places; and

WHEREAS, in accordance with the PA (Stipulation VIII.B.), CTDOT has prepared a Treatment Plan for historic architectural properties adversely affected by the Undertaking that has been reviewed and approved by FRA and CTSHPO and which is incorporated into this Memorandum of Agreement (MOA) as Attachment A; and

WHEREAS, the public has had an opportunity to express its views on the Treatment Plan; and

WHEREAS, FRA has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effects on historic properties that were identified in the Technical Report and has invited the ACHP to participate in this MOA;

NOW, THEREFORE, the FRA, CTDOT, CTSHPO and ACHP agree that the Undertaking shall be implemented with the following stipulations to ensure that effects to historic properties are taken into account:

STIPULATIONS

1. CTDOT shall ensure that the historic structures, namely bridges and culverts, that will be adversely affected by the Undertaking, as identified in the Treatment Plan, are recorded with written and photographic documentation according to the standards of CTSHPO for state-level documentation. The total of 29 adversely affected resources will be recorded in a single comprehensive document that will include a detailed historic context for the resources, a written description of each resource, and captioned photographs that show every relevant aspect of each resource, along with appropriate location maps and photograph keys. CTDOT will submit the photographic documentation to FRA and CTSHPO for review and approval prior to the start of construction. This stipulation is in addition to the following corridor-level mitigation measures enumerated in the PA: museum-quality publicly-accessible signage/exhibits at all affected station locations, Historic American Building Survey documentation of historic passenger stations in the case of adverse effects, Historic American Engineering Record documentation of the Farmington River Bridge in the case of an adverse effect, and donation of historic engineering materials to railroad preservation groups.

2. This MOA includes by reference the stipulations in the PA regarding discoveries, unanticipated adverse effects, unanticipated damage, confidentiality, human remains, curation, and documentation standards. The PA is included in this MOA as Attachment B.

3. Administrative stipulations

A. Dispute Resolution

Should any signatory to this MOA object within thirty (30) days to any action proposed or any document provided for review pursuant to this MOA, FRA shall consult with the objecting signatory to resolve the objection. If FRA determines that the objection cannot be resolved with fifteen (15) days, FRA shall forward all documentation regarding the dispute, including FRA's proposed resolution, to the ACHP, with copies to all signatories to this MOA. ACHP shall provide FRA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FRA shall prepare a written response that takes into account any timely advice or comments from the signatories and provide them with a copy of the written response. FRA will then implement its final decision.

B. Timely Review

Materials provided by CTDOT to FRA and CTSHPO under Stipulations 1 and 2 shall be reviewed in a timely fashion by FRA and CTSHPO. FRA and CTSHPO will provide CTDOT with written requests for revision and any other comments within thirty (30) days of receiving a draft document. CTDOT will revise the document accordingly and re-submit it to FRA and CTSHPO for approval. Disputes regarding revisions shall be resolved as in paragraph 4.A. If no response is received within the 30-day period, the document will be considered to be approved by the nonresponding party.

C. Amendment

Any signatory to this MOA may request by means of a written notification to all signatories that it be amended, whereupon the signatories will consult to consider such amendment. The amendment will go into effect only upon written concurrence of all signatories.

D. Effective Date

This MOA, inclusive of all attachments, shall take effect following execution by all the signatories.

E. Termination

If FRA determines that it cannot implement the terms of this MOA, or if CTSHPO determines that the MOA is not being properly implemented, either of these signatories may propose that the MOA be terminated. The signatory proposing termination shall notify the other parties to the MOA explaining the reasons for termination and affording the other parties at least thirty (30) days notice to consult and seek alternatives to termination. At that time, the parties shall consult.

i. Should such consultation fail, either FRA or CTSHPO may terminate this MOA by so notifying the other parties.

ii. In the event of termination, FHWA shall either consult in accordance with 36 CFR §800.6 to develop and execute a new MOA, or request ACHP to comment pursuant to 36 CFR §800.7.

F. Duration

This MOA shall remain in effect for the duration of the undertaking or for ten years, whichever occurs first.

Execution of this Memorandum of Agreement by FRA, CTDOT, and CTSHPO and implementation of its terms evidence that FRA has taken into account the effects of the Undertaking on historic properties.

Federal Railroad Administration

_____ Date: _____
David Valenstein, Division Chief, Environmental & Corridor Planning

Connecticut Department of Transportation

_____ Date: _____
Thomas Maziarz, Bureau Chief, Policy and Planning

Connecticut State Historic Preservation Office

_____ Date: _____
Daniel T. Forrest, State Historic Preservation Officer

Advisory Council on Historic Preservation

_____ Date: _____
Xxxxxxxxx, Title

New Haven-Hartford-Springfield Rail Program

Phase 1: Mile Post 20 to Mile Post 31
Phase 2: Mile Post 0 to Mile Post 20 and Mile Post 31 to Mile Post 37
Phase 3A: Mile Post 37 to Mile Post 43

Hamden, North Haven, Wallingford, Meriden, Berlin, New Britain, Newington, West Hartford, Hartford and Windsor, Connecticut

State Project Nos. 0170-2296, 0170-3154, 0170-3155, and 0170-3156

Treatment Plan: Historic Architectural Properties

Prepared by

Archaeological and Historical Services, Inc.
55 Middle Turnpike
Storrs, Connecticut 06268

under contract with

Parsons Brinckerhoff
655 Winding Brook Drive
Glastonbury, CT 06033

for submission to

The Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06111

and

The U.S. Department of Transportation
Federal Railroad Administration

February 2, 2015

Table of Contents

Tables:

I. Introduction

The Connecticut Department of Transportation (CTDOT) is planning a series of improvements to the railroad line between New Haven, Connecticut, and the Massachusetts State Line. The line is owned by the National Railroad Passenger Corporation (Amtrak) and primarily serves Amtrak's intercity passenger service between the Northeast Corridor along Connecticut's shoreline and Springfield, Massachusetts. The track improvements will take place in a series of phases, along with site-specific projects at several station locations.

The Federal Railroad Administration (FRA) is providing funding for the project under its High Speed Intercity Passenger Rail Program. Therefore, the project is subject to the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 C.F.R. part 800, which require that federal agencies take into account the effects on historic properties of projects that they fund, license, or otherwise approve. Historic properties are defined as buildings, structures, objects, districts, and sites that are listed in, or eligible for listing in, the National Register of Historic Places.

On August 9, 2012, FRA, CTDOT, the Connecticut State Historic Preservation Office (CTSHPO) and other parties executed a Programmatic Agreement (PA) regarding the New Haven-Hartford-Springfield High-Speed Intercity Passenger Rail Project (FRA 2012), of which the resources identified in this Treatment Plan are components. Pursuant to the provisions of the PA and to mitigate adverse effects under Section 106, this document presents a Treatment Plan for historic properties that will be adversely affected by Phase 1, Phase 2, and Phase 3A of the project. These effects were identified in a Technical Report on historic architectural properties that was prepared for the three phases of the project (Archaeological and Historical Services 2015). These three project phases are described in more detail in the PA and the Environmental Assessment prepared pursuant to the National Environmental Policy Act (FRA 2012). Information about the New Haven-Hartford-Springfield Rail Program is also available on-line at http://www.nhhsrail.com.

The actions identified in this treatment plan are in addition to the corridor-level mitigation measures stipulated in the PA, which include:

- Museum-quality publicly-accessible signage/exhibits at all affected station locations;
- Historic American Building Survey documentation of historic passenger stations in the case of adverse effects;
- Historic American Engineering Record documentation of the Farmington River Bridge in the case of an adverse effect; and
- Donation of historic engineering materials to railroad preservation groups.

II. Resources Covered by This Treatment Plan

The affected resources identified in the Technical Report are all contributing components of the historic New Haven-Hartford-Springfield rail line, which is a linear historic district that FRA, in consultation with CTSHPO, determined eligible for listing in the National Register during the Section 106 process for this railroad improvement project. These resources, which are a total of 29 bridges and culverts dating from the reconstruction of the line ca. 1870 to ca. 1930, are listed in Table 1. These structures must be repaired, reconstructed, or replaced in order to accomplish a variety of infrastructure improvements to address safety, more efficient and frequent service, engineering requirements, and technological changes in the rail corridor. In addition to the direct physical effects to bridges and culverts, several of these resources will be visually affected by the construction of new retaining walls.

III. Treatment Plan

Because the proposed project actions will necessarily alter the design, materials, workmanship, and/or setting of the bridges and culverts in Table 1, the Section 106 consulting parties agree that these structures will be recorded with written and photographic documentation to the standards of the CTSHPO. The standards for such documentation are contained in Saunders and Moore (2007). Specifically, the photographic requirements are as follows:

- Minimum resolution of digital images is 1200 by 1600 pixels.
- Digital files to be uncompressed .TIF, minimum 300 dpi, 24-bit RGB or 32-bit CMYK format.
- Digital prints, 5"-by-7" format, to be produced using National Park Service-approved printer, printer inks, and photographic paper.
- Prints to be labeled in soft pencil with the name of the resource and photograph number and placed in similarly labeled acid-free sleeves.
- Digital files to be named according to CTSHPO-approved naming conventions.
- Digital files to be submitted on CD-ROM/DVD-ROM.
- Index to photographs, including caption, direction, date, photographer, and photograph number, printed on acid-free archival paper.
- Graphic key, with scale and north arrow, showing positions from which the photographs were taken, printed on acid-free archival paper.

The written requirements specify the following:

- One-page documentation title page.
- Narrative text, including project identification, descriptions of resource(s), statement of methodology, statement of historical significance, and bibliography.
- Acid-free archival paper for all written text.

The preceding requirements will be implemented by Qualified Individuals, as defined in the PA, as follows:

- Undertake background research in 1) historic bridge lists to get additional information, such as the name of the fabricator in the case of a metal-girder bridge; 2) annual reports of the New York, New Haven, and Hartford Railroad to obtain information about the circumstances of the resource's construction; 3) annual reports of the Connecticut Railroad Commissioners for similar contextual information; and 4) published histories of the New York, New Haven, and Hartford Railroad.
- For major structures, consult likely repositories of historical photographs, such as the railroad collections at the Dodd Research Center at the University of Connecticut, Storrs, and local historical societies.
- For major structures, obtain as-built and as-modified engineering drawings from CTDOT; reproduce selected relevant drawings for the documentation as 11"-by-17" figures.
- Field measurement of resources should include overall length, span length, overall height, distance above feature crossed, and width across the railroad right-of-way (taken from plans or aerial photographs if not readily measurable).
- Photographic coverage should include both elevations, preferably from more than one angle; underside of structure; close-ups of masonry type(s) if relevant; close-ups of details such as date-stones and builder's plates or commemorative plaques; and ornamental details, if any. Track-level photographs will be needed except in the case of culverts with substantial overburden, for which a track-level view would be only marginally relevant.

An example of state-level documentation of an historic rail line is that prepared for a two-mile portion of the former Canal Line in Southington, Connecticut (Clouette 2009). This documentation was produced for the Town of Southington in 2009, accepted by the CTSHPO, and deposited in the Connecticut Historic Preservation Collection at the Dodd Center, University of Connecticut, as a permanent archival record of the bridges, culverts, and other historic resources along the line.

A single documentation package for the 29 adversely affected resources will be prepared. The bridges and culverts all share a single historic context, so there is no need to duplicate the historic-context statement for several individual documentations. More importantly, preparing the documentation for all the resources as a single document has the advantage of allowing the resources to be readily compared with one another, highlighting similarities and differences. A single document would be more convenient for anyone consulting it at the designated depository (Dodd Research Center at the University of Connecticut, Storrs, CT), and it would provide a framework for adding documentation of additional resources of this type should doing so become necessary in the future.

Table 1:

Historic Bridges and Culverts Adversely Affected by Project Actions

Historic Resource	MP	Town	Description	Adverse Effect
Culvert	7.99	North Haven	Stone box culvert, ca. 1870	East-side extension; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	12.91	Wallingford	Stone box culvert/rail-top, ca. 1915	Replacement.
Culvert	15.56	Wallingford	Stone box culvert, ca. 1870	Retaining wall: 6' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Route 150 Bridge	15.66	Wallingford	Stone arch, ca. 1870	Retaining wall: on the east side of the bridge, the retaining wall will begin 3' from the north end of the arched opening and 12' from the south end and extend several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	16.19	Wallingford	Brick arch, ca. 1900	Replacement.
Gypsy Lane Bridge	16.78	Meriden	I-beam, 1909	East beams to be replaced to widen the bridge; existing east wing walls will be replaced. These changes will diminish the structure's integrity of design and materials.
Culvert	16.84	Meriden	Brick arch, ca. 1900	Replacement.
Culvert	17.00	Meriden	Brick arch, ca. 1900	Replacement.
Belcher Brook Bridge	22.53	Berlin	Stone arch, ca. 1870	East-side extension with pre-cast structure; this change will introduce a modern element that will diminish the structure's integrity of design.
Belcher Brook Bridge	22.75	Berlin	Stone and brick arch, ca.1900	East-side extension with pre-cast structure; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	23.47	Berlin	Stone box culvert, ca. 1870	Replacement.

Historic Resource	MP	Town	Description	Adverse Effect
Crooked Brook Bridge	23.76	Berlin	Stone arch, ca. 1870	Retaining wall: to begin at a point 10' above existing bridge and extend upward another 6' (not including safety railing); wall will run several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	23.80	Berlin	Stone box culvert, ca. 1870	Retaining wall: 7' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Culvert	24.53	Berlin	Stone box culvert, ca. 1870	Retaining wall: 5' of concrete wall (not including safety railing) will be exposed above the culvert and will extend along the track in both directions for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Hatchery Brook Bridge	24.85	Berlin	Stone arch, ca. 1870	Retaining wall: to begin at a point 6' above existing bridge and extend upward another 6' (not including safety railing); wall will run several hundred feet along the track in each direction. Current setting (a stone arch set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Mattabesset River Railroad Bridge	25.52	Berlin	Stone arch, 8 spans, 1870	Existing concrete ballast retainer (ca.1910) to be replaced, original brownstone capstones to be removed. These changes will diminish the structure's integrity of design and materials.
Willow Brook Bridge	26.39	Berlin	Stone arch, 4 spans, ca. 1870	Concrete spandrel extensions, original brownstone capstones to be removed. These changes will diminish the structure's integrity of design and materials.

Historic Resource	MP	Town	Description	Adverse Effect
Culvert	27.66	New Britain	Stone arch, ca. 1870	Retaining wall: the wall will stop immediately adjacent to the existing culvert, with about 5' of concrete wall exposed on either side, extending up and down the track for several hundred feet. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Webster Brook Bridge	27.83	New Britain	Stone arch, 1872	East side to be extended with concrete pipe; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	28.35	New Britain	Stone box culvert, ca. 1870	Replacement.
Webster Brook Bridge	28.57	Newington	Rail-top, ca. 1915	Replacement.
Culvert	30.43	Newington	Concrete arch, ca. 1910	New head wall; this change will introduce a modern element that will diminish the structure's integrity of design.
Culvert	30.44	Newington	Iron pipe, ca. 1870	East-side extension; this change will introduce a modern element that will diminish the structure's integrity of design and materials. Concrete retaining walls will immediately abut the culvert, with 3-6' of exposure. Current setting (a stone culvert set into a sloped stone rail embankment) will be altered to one in which the new concrete wall is a strong, if not dominant, visual element, resulting in a diminishment of the structure's integrity of setting.
Newington River Bridge	30.99	Newington	Deck plate girder, 1904; concrete-encased I-beams.	Replacement of the east-side 1904 girder structure, the only remaining relatively unaltered part. This change will diminish the structure's integrity of design and materials.
Main Street Tunnel	37.03	Hartford	Brick-arch double tunnel, 1871	Retaining wall for a signal building will be built up against the southwest curved wing wall of the tunnel, thereby obscuring the original brownstone from view. This will diminish the structure's integrity of design and setting.
Windsor Street Bridge	37.35	Hartford	Concrete-encased beams, 1937	Extensive repair and replacement of concrete, including parapets that will be similar to, but not identical to, the original. The cumulative effect of the rehabilitation actions will diminish the structure's integrity of materials.
Bridge 40.90	40.90	Windsor	Stone arch, 1874	Replacement.
Culvert	41.77	Windsor	Brick arch culvert, ca.1900	Replacement.
Batchelder Road Bridge	42.65	Windsor	Deck plate girder, 1914.	Replacement.

IV. References

Archaeological and Historical Services, Inc.

2015 *Technical Report: Historic Architectural Properties, New Haven-Hartford-Springfield Rail Program, Phase 1: Mile Post 20 to Mile Post 31, Phase 2: Mile Post 0 to Mile Post 20 and Mile Post 31 to Mile Post 37, Phase 3A: Mile Post 37 to Mile Post 43, Hamden, North Haven, Wallingford, Meriden, Berlin, New Britain, Newington, West Hartford, Hartford and Windsor, Connecticut.* Storrs, CT.

Clouette, Bruce

2009 *Historical and Photographic Documentation: Canal Line Railroad, Southington/Cheshire Town Line to West Main Street, Plantsville, Southington, Connecticut.* Storrs, CT: Archaeological and Historical Services, Inc.

Federal Railroad Administration

2012 "Programmatic Agreement among the Federal Railroad Administration, the Federal Transit Administration, The Connecticut State Historic Preservation Office, the Massachusetts State Historic Preservation Office, and the Connecticut Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the New Haven – Hartford – Springfield High-Speed Intercity Passenger Rail Project." Executed on August 9, 2012.

Federal Railroad Administration

2012 "Environmental Assessment for the New Haven-Hartford-Springfield Line High Speed Intercity Passenger Rail Project."

Saunders, Cece, and Robert Moore

2007 *Documentation Standards for Connecticut's Cultural Resources.* Rev. ed. Hartford, CT: Connecticut State Historic Preservation Office.