9. Draft Section 4(f) Evaluation

9.1. Section 4(f) Protections and Definitions

This chapter presents the Draft Section 4(f) Evaluation for the Walk Bridge Replacement Project. Pursuant to Section 4(f) of the U.S. Department of Transportation (DOT) Act of 1966 (49 U.S.C. §303 and 23 U.S.C. §138), U.S. DOT agencies cannot approve the use of publicly owned parks and recreational areas of national, state, or local significance; publicly owned wildlife and waterfowl refuges of national, state, or local significance; or historic sites of national, state, or local significance regardless of ownership; unless:

- There is no feasible and prudent avoidance alternative to the use of the land; and
- The project includes all possible means to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use; or
- The use, including any measures to minimize harm (such as avoidance, minimization, or enhancement measures) will have a *de minimis* impact on the property.

In general, for transportation projects, a Section 4(f) "use" occurs when:

- Land from a Section 4(f) property is **permanently incorporated** into a transportation facility either by purchase or easement acquisition; or
- There is a **temporary occupancy** of land from a Section 4(f) property that is adverse in terms of the statute's preservation purpose as determined by the criteria set forth in 23 CFR §774.13(d); or
- Land from a Section 4(f) property is not incorporated into the project but the proximity effects of the project are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired (**constructive use** of the property as determined by the criteria set forth in 23 CFR §774.15).

In 2005, revision to the Section 4(f) regulations [Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)] allows U.S. DOT agencies to approve transportation projects once U.S. DOT determines that the use will involve a "*de minimis*" impact. A determination of *de minimis* impacts may be made for use of Section 4(f) property that is minor in nature, and requires agency coordination with the officials having jurisdiction over the 4(f) property and opportunities for public involvement. A *de minimis* impact is one that, taking into account avoidance, minimization, and mitigation, results in no adverse effects to the activities, features, or attributes qualifying a park, recreation area, or historic site for Section 4(f) protection.

This Section 4(f) evaluation includes a summary of the project purpose and need, a summary of the project alternatives analysis and determination of the alternative that causes the least overall harm, a description of the Section 4(f) resources in the project area that will be used, and identification of measures to minimize harm. Per the Section 4(f) regulations, if a feasible and prudent alternative exists that avoids all Section 4(f) resources, it must be selected. If no feasible and prudent avoidance alternative exists, only the alternative that causes the least overall harm and includes all possible planning to minimize harm to Section 4(f) property may be approved.

9.2. Project Purpose and Need/Background

9.2.1. Project Purpose and Need

The purpose of the Walk Bridge Replacement Project is to restore or replace the existing deteriorated bridge with a resilient bridge structure which will enhance the safety and reliability of rail service, offer operational flexibility and ease of maintenance, and provide for increased capacity and efficiencies of rail transportation along the New Haven Line/Northeast Corridor, while maintaining or improving navigational capacity and dependability for marine traffic in the Norwalk River.

Upgrades to the Walk Bridge, through rehabilitation or replacement, are needed to increase bridge reliability, incorporate bridge redundancy, and provide a sustainable bridge for significant weather events, thereby accommodating current and future rail and marine traffic. Specifically, the Connecticut Department of Transportation (CTDOT) and the Federal Transit Administration (FTA) are undertaking the project to address the following needs, or deficiencies, of the existing Walk Bridge:

- Structure Age and Deterioration
- Decreasing Reliability
- Lack of Resiliency
- Safety Standards
- Lack of Redundancy
- Limited Operational Flexibility
- Difficulty of Maintenance
- Reduced Rail Capacity and Efficiency
- Reduced Dependability and Capacity for Marine Traffic
- Lack of Sustainability

9.2.2. Background

Walk Bridge carries Amtrak[1] intercity and high-speed passenger service on the Northeast Corridor (NEC) and is also used for the New Haven Line (NHL) of Metro-North Railroad commuter service, in addition to freight service. Amtrak intercity and high speed passenger rail serves more intercity travelers within the Northeast than all airlines combined. According to a 2013 report, the NHL, one of three main lines of Metro-North, was the busiest single commuter rail line in the United States.[2] In 2014, the NHL had 39.61 million riders.[3] Walk Bridge is the northern boundary of the Norwalk Harbor, a major port with over 2,300 moorings and berthing spaces and between 2,000 to 3,000 commercial vessel trips per year to port facilities.

Walk Bridge, constructed in 1896, is a four-span swing bridge that carries four tracks spanning 564 feet over the Norwalk River, as shown in Figure 9-1, a photograph of the existing bridge. The fixed spans consist of eight 15-feet deep Warren trusses, two per track; and the swing span consists of three planes of

[1] National Railroad Passenger Corporation
[2] Northeast Corridor Infrastructure and Operations Advisory Commission, *Critical Infrastructure Needs on the Northeast Corridor*, January 2013.
[3] Metropolitan Transportation Authority, "2014 Ridership Report, Metro North Railroad Executive Summary," excerpt from Joint Metro-North and Long Island Committees, April 2015.

double intersection Warren trusses with stringers and floor beams. Power for the trains is supplied by an overhead contact system (OCS). High towers on both sides of the Norwalk River support overhead power transmission lines (Eversource Energy) and Metro-North power and communication lines.

The existing bridge is approximately 120 years old and the deteriorating condition of Walk Bridge has been extensively documented over the years.[4] A detailed fatigue analysis was completed in 2005, and it indicated that major portions of the bridge have exceeded their fatigue life and require replacement. In 2011, Walk Bridge failed 12 times out of 138 openings, and in 2013, the bridge failed 16 times out of 271 openings. Closing the bridge after a failure can take up to two hours. In May and June 2014, in two separate but similar incidents within a two-week time span, Walk Bridge failed to properly close, impacting thousands of passengers for extended periods of time. In an emergency action in July 2014, the United States Coast Guard (USCG) issued a temporary deviation from the Walk Bridge operating schedule to allow the bridge to open only after an eight-hour advance notice under a revised operating schedule.[5] Also in July 2014, the Commissioner of CTDOT issued an Emergency Declaration for Walk Bridge.[6]

Figure 9-1—View of Walk Bridge, looking northeast

A properly functioning Walk Bridge is important to both the local and regional economy. Walk Bridge is a vital link in the NEC, which connects Washington, DC to Boston, MA and includes major cities such as Philadelphia and New York City. Metro-North provides commuter rail service to New York City from Connecticut communities as far north as New Haven, Waterbury, and Danbury. According to the NEC Commission,[7] the NEC carries more than 700,000 passengers per day, including a workforce that

[4] Documentation of the deteriorating condition of Walk Bridge includes the Transportation Strategy Board, "Strategic Framework for Investing in Connecticut's Transportation Infrastructure: Economic Growth – Infrastructure Preservation – Sustainable Communities," January 2011; CTDOT, Accelerated Bridge Construction Study, March 2014 (draft).
[5] 79 Federal Register 41644 (July 17, 2014). The USCG has subsequently revised this schedule.
[6] CTDOT, *Emergency Declaration Railroad Swing Bridge No. 04288R, Norwalk, Connecticut*, July 8, 2014.
[7] NEC Commission. *Northeast Corridor Five-year Capital Plan, Fiscal Years 2016-2020*. April 2015

contributes $50 billion annually to the national gross domestic product. An unexpected loss of all NEC service for one day alone could cost the nation nearly $100 million in added highway congestion, productivity losses, and other transportation impacts.

9.3. Alternatives Analysis

CTDOT initially investigated more than 70 different design concepts within the following three groups of alternatives:

- The **No Build (No Action) Alternative** would continue the existing operations and maintenance of the historic swing (movable) bridge. Although the No Build would completely avoid the "use" of any Section 4(f) resources, it must be eliminated from further evaluation because it would not meet any project needs and would continue to result in unacceptable safety and operational problems. Therefore, the No Build is not a feasible and prudent avoidance alternative.
- The **Rehabilitation Alternative** would require rehabilitation or replacement of the existing Walk Bridge elements that would extend the bridge's design life by an additional 100 years, which is comparable to a new bridge's design life. To remedy corrosion, section loss and insufficient load ratings, all elements exhibiting minor section loss would be strengthened, and all elements exhibiting major section loss would be replaced. Although some swing span machinery has been replaced, the amounts of current and predicted deterioration and wear are an issue that can only be eliminated by replacement of all operation machinery. Additionally, a complete replacement of the obsolete electrical service would be necessary to improve its electrical rating.

  Repairs or partial replacements have been accomplished over the past 10 years on fender systems as well as on some track, signal and communication systems. However, in order to extend their functionality in the long term, full replacement of the fenders and track, signal, and communication systems is warranted. Experience suggests that ongoing deterioration of the bridge and its associated systems would require remedial measures that the Connecticut State Historic Preservation Officer (CTSHPO) has in the past considered to be adverse effects, due to the necessary diminishment of the historic bridge's integrity of materials and design. The Rehabilitation Alternative would not meet the project needs nor can it be considered a feasible and prudent avoidance alternative.
- The **Replacement Alternative** would require demolition of the existing bridge and constructing a new bridge. Various types of bridges for the replacement alternative have been evaluated, including demolishing the existing bridge and constructing a new movable bridge, of either the bascule type or vertical lift type, on the same general alignment, or constructing a fixed bridge on the same general alignment. The fixed bridge options were not advanced for further consideration because they are not feasible and prudent alternatives; they would not meet purpose and need, or they would be up to three times as costly as the movable bridges, or they would entail considerable environmental impacts. The Replacement Alternative (Build Alternative) is discussed as one overall alternative for the purposes of this Section 4(f) Evaluation since for the movable bridge replacement type options, the "use" of the Section 4(f) resources would be the same.
- The **Build on New Location without Using the Historic Bridge Alternative** would require constructing a new bridge parallel to the existing bridge. Under this alternative the existing bridge would not be demolished; it would remain in place. This would require significant cost for continued maintenance and preservation of the existing bridge, in addition to the cost and maintenance of constructing and maintaining a new bridge. The existing bridge is already located at the only feasible and prudent alignment. In order to provide the same level of railroad service, the railroad tracks would need to be significantly reconfigured, which would cause much greater ROW impacts to both Section 4(f) properties and non-Section 4(f) properties. For these reasons, this is not a feasible and prudent avoidance alternative.

CTDOT held a public scoping meeting on February 24, 2015, an agency scoping meeting on March 5, 2015, and a public information meeting on May 11, 2016 to present and discuss bridge alternatives. With input from those meetings, CTDOT concluded that the evaluation of alternatives would focus on replacement of the bridge. Chapter 2 of the EA/EIE provides further details on the alternatives not advanced for further evaluation and on the proposed options evaluated in the EA/EIE.

Feasible and Prudent Avoidance Alternatives to Use of Section 4(f) Resources

Only the No Build Alternative would entirely avoid the Section 4(f) use of historic resources: the bridge/railroad and associated structures and closely adjoining industrial buildings and districts that developed as a result of the access provided by the railroad. The Rehabilitation Alternative is assumed to constitute an adverse effect, since it would alter significantly the historic integrity of the bridge. Neither the No Build Alternative nor the Rehabilitation Alternative would address the functionality and reliability of the navigational opening and rail link provided by the existing bridge. The Build on New Location without Using the Historic Bridge Alternative would avoid demolition of the existing bridge, however, would require significant additional Section 4(f) and non-Section 4(f) ROW. There are no feasible and prudent avoidance alternatives to the Replacement Alternative.

9.4. Use of Section 4(f) Resources

The following section describes existing parklands, public recreation areas, and historic/archaeological sites subject to protection under Section 4(f) and addresses potential impacts on those resources subject to Section 4(f) protection. There were no wildlife or waterfowl refuges identified within the project area.

9.4.1. Existing Parklands and Public Recreation Areas

Figure 9-2 shows Section 4(f) parklands and public recreation areas in the vicinity of Walk Bridge. This section describes the parklands and public recreation areas that will be used by the project.

In 1987, Connecticut enacted legislation to establish a state heritage park system.[8] State heritage parks were to be established as urban cultural parks "without boundaries" (unlike conventional state parks) that integrate historical sites and attractions with estuaries and other natural resources. Recent legislation enacted in 2014 streamlines the establishment of the State Heritage Parks statewide.[9]

Norwalk River Valley Trail and Adjoining Parks: The Norwalk River Valley Trail (NRVT) system aims to build 38 miles of multi-purpose trail and currently exists on both sides of the Norwalk River in the vicinity of Walk Bridge. Where it extends along the west side of the Norwalk River north of the Maritime Aquarium property, it includes the **Heritage Trail**. The City-owned **Norwalk Heritage Park** was created as part of the original State Heritage Trail project as a waterfront development project incorporating the city's maritime history and the city's aquarium and museums. North of the Maritime Aquarium and employee parking lot, it includes a pavilion, a pier that can be used by visitors for fishing on the water,[10] and educational signage. Further to the north, the NRVT has been dedicated as the Spc. Wilfredo Perez Trail in honor of a local serviceman and includes a memorial plaque where it extends north along North Water Street, across from the Maritime Yards development. **North Water Street Park** is located on the NRVT and is located the south of the Pavilion/Fishing Pier at Maritime Aquarium. It consists of a field along the river's edge that is used for passive recreation.

[8] Connecticut State Legislature, Public Act 87-340, *An Act Creating a Statewide Heritage Park System*, 1987, codified at CGS Sections 23-10h and 23-10i.
[9] Connecticut State Legislature, Public Act No. 14-43, *An Act Concerning the Heritage Parks Advisory Boards*, 2014.
[10] CT DEEP's Connecticut Coastal Access Guide refers to the park as "Maritime Aquarium Park" or "Maritime Aquarium Pavilion."

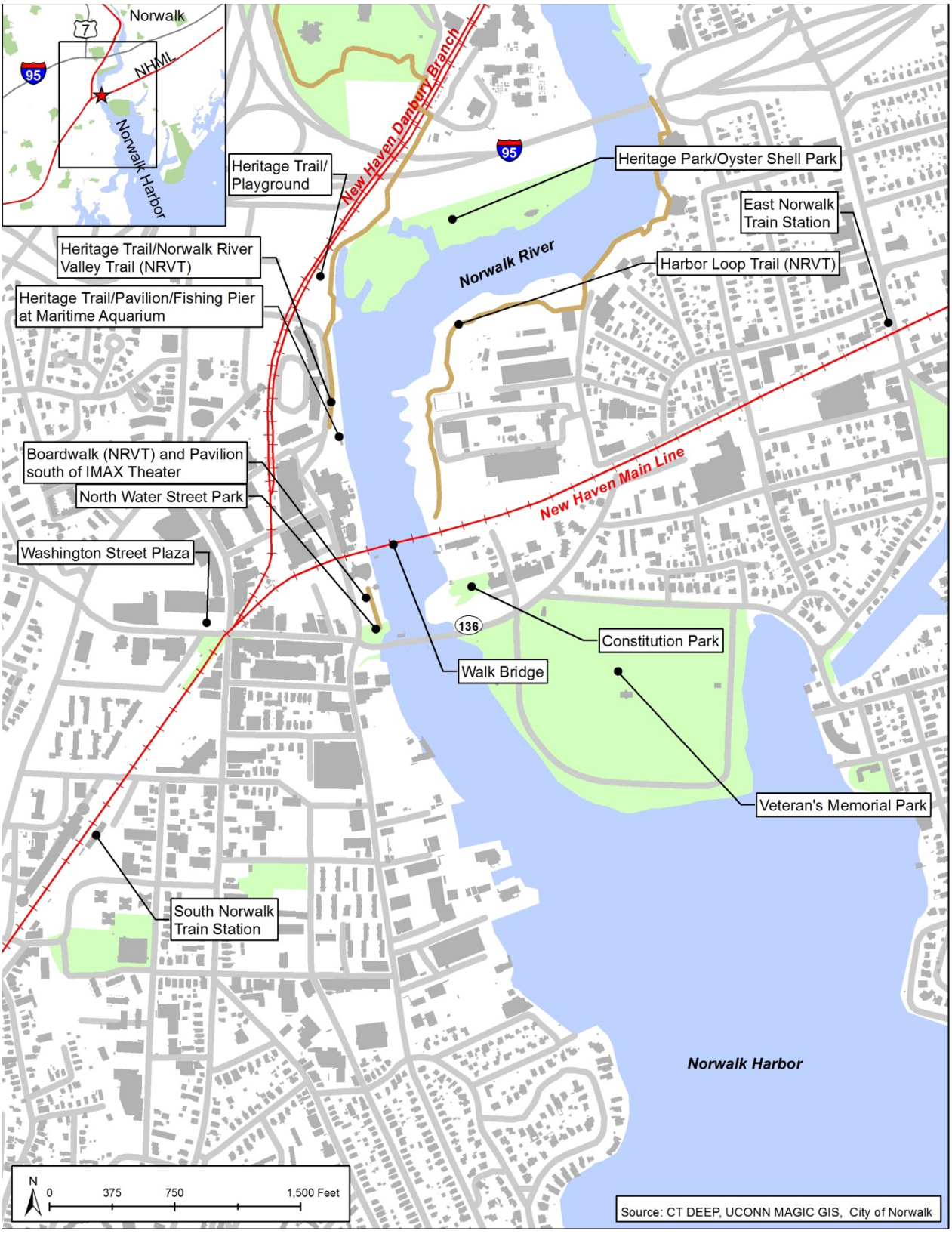

Figure 9-2—Section 4(f) Parklands and Public Recreation Areas in the Vicinity of Walk Bridge

Approximately 1,500 feet upstream from Walk Bridge, the **Heritage Trail/NRVT** park includes a playground and **Oyster Shell Park**. Oyster Shell Park, part of the original Heritage Park grant, consists of a waterfront park that includes a central plaza constructed on the site of a former landfill, and a series of trails that connect with the NRVT.

The City's **Harbor Loop Trail, part of the NRVT system**, continues north along the opposite river bank where it extends through the WWTP property north of the bridge. This trail segment[11] runs north along the eastern bank of the river from Walk Bridge extending north beyond the I-95 Bridge.

Approximately, 1,000 feet west of the Walk Bridge, the **Washington Street Plaza** adjoins the rail corridor where it extends over the Washington Street and South Main Street intersection. The Washington Street Plaza, a hardscaped area with rows of trees on the north side of Washington Street, is considered to be a public park by the City of Norwalk. There will be no use of this resource, however, for this project.

Constitution Park: Approximately 450 feet south of Walk Bridge, Constitution Park, a small municipal park, occupies the eastern bank of the river northeast of the Stroffolino Bridge.

Veteran's Memorial Park: Veteran's Memorial Park occupies the southeast river bank, on the southeast side of the Stroffolino Bridge, approximately 900 feet downstream of Walk Bridge. Veteran's Memorial Park includes a public marina, boat launch site, a playground, ballfields, and a multi-use path overlooking Norwalk Harbor.

9.4.2. Impacts on Parklands and Public Recreation Areas

This section describes the Section 4(f) impact assessment and identifies potential impacts of the project on parklands and public recreation areas. Table 9-1 (located at the end of Section 9.4.2) summarizes the Section 4(f) uses of parklands and public recreation areas.

Criteria for Exceptions to Section 4(f) Use

Exceptions to Section 4(f) use include the following (under 23 CFR 774.13): temporary occupancy of land, and transportation enhancements/mitigation activities. For temporary occupancies of land that are so minimal as to not constitute a Section 4(f) use, the following conditions must be satisfied:

(1) The duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;

(2) The scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;

(3) There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;

(4) The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and

(5) There must be documented agreement of the officials with jurisdiction over the Section 4(f) resource regarding the above conditions.

[11] CT DEEP's Connecticut Coastal Access Guide refers to the trail here as known as the WWTP Waterfront Walkway.

Transportation enhancement projects and mitigation activities are also exempt from Section 4(f), where:

(1) The use of the Section 4(f) property is solely for the purpose of preserving or enhancing an activity, feature, or attribute that qualifies the property for Section 4(f) protection; and

(2) The officials with jurisdiction over the Section 4(f) resource agree in writing to the preceding.

Construction Period Impacts

A temporary construction staging area will be located on the grounds of the Norwalk Wastewater Treatment Plant (WWTP), and temporary construction activities may directly affect the Harbor Loop Trail where it extends through the WWTP property. Impacts on this section of the NRVT will be limited by the fact that the trail terminates at Walk Bridge as well as the temporary nature of the impact. Additionally, a small portion of the NRVT exists on the west side of the Norwalk River south of the Walk Bridge on a short segment of boardwalk. This area will be required temporarily for staging during construction. The trail terminates here on this side of the river and temporary impacts would not disrupt overall access or use of the NRVT. Since this portion of the NRVT terminates here, there will be no segmentation of the trail. The construction of the north-south pedestrian/bicycle connection at the southern end of the Harbor Loop Trail on the east side of the Norwalk River may also result in temporary impacts to this portion of the trail, but would not disrupt overall access since the trail terminates at the Walk Bridge on the east side of the river. Again, there will be no segmentation of the trail as the impacted portion is the terminus. Temporary impacts during construction to this trail qualify as an exception to Section 4(f) under 23 CFR 774.13.

Construction activities may result in temporary visual and noise impacts on users of the riverfront parks and trails, including the parks along the Heritage Trail/NRVT, and parks adjoining both the north and south sides of the Maritime Aquarium. However, the parks in the vicinity of the project are already subject to frequent, intermittent noise due to their proximity to the active rail line accommodating both passenger and freight traffic (approximately 155 trains per weekday), and ongoing construction activities from other downtown developments. Given the setting, nearby parks are not considered to be parks where quiet and serenity are important attributes. Therefore, project construction is not anticipated to result in a constructive use to adjoining parks and public recreation areas.

Permanent Impacts

In the Build Alternative, CTDOT will provide accommodations for a north-south pedestrian and bicycle connection to the Harbor Loop Trail on the east side of the river. This pedestrian/bicycle trail would connect to either Fort Point Street or Goldstein Place, or would continue south along the river to connect to Constitution Park. The latter option would involve impacts on Constitution Park, but would provide long-term recreational benefits, by connecting greenways along the river. The long-term recreation impacts of the project will be beneficial, by providing accommodations for a north-south pedestrian/bicycle connection with the Harbor Loop Trail on the east side of the Norwalk River. The project will help to complete the missing link in the NRVT/Harbor Loop Trail system at Walk Bridge, as shown in the Pedestrian and Bicycle Facilities section of Chapter 3 of the EA/EIE.

To mitigate for the loss of vegetated intertidal wetlands due to the Build Alternative, CTDOT will restore degraded tidal wetlands dominated by common reed (*Phragmites australis*), currently existing along the river and proximate to but outside of the project's immediate vicinity. CTDOT is evaluating potential sites for tidal wetland restoration, including sites that are located adjacent to or within the boundaries of Oyster Shell Park, and within Constitution Park and Veteran's Memorial Park, as discussed and shown in

the Tidal Wetlands section of Chapter 3 of the EA/EIE. Although all of these sites may not be used, all are listed in Table 9-1.

Both the NRVT/Harbor Loop Trail and wetlands restoration were envisioned as part of waterfront improvements in the City of Norwalk's Oyster Shell Park Master Plan.[12]

The Build Alternative's only direct impacts to public parks and recreation areas would be the result of this trail/wetland mitigation construction. It has been determined that these impacts would qualify as an exception to Section 4(f) use.

FTA has issued an exception to the Section 4(f) use, based on the temporary nature of impacts and the nature of the major components of the work that will affect publicly accessible trails and parks. Per the Section 4(f) regulations, this work qualifies for exceptions to Section 4(f) use for: (1) temporary occupancy that does not constitute use and (2) for transportation enhancements/mitigation. There would be temporary impacts associated with construction, but substantial long-term benefits would accrue with construction of the trail and wetlands restoration/mitigation areas.

CTDOT consulted with City officials in a working session held February 5, 2016; the session included representatives from the Recreation and Parks, Planning and Zoning, Economic Development, Redevelopment, and Engineering Departments. Subsequently, CTDOT continued consultation with the City of Norwalk Recreation and Parks Director to review and clarify the significance of City parks relative to Section 4(f) and to review the proposed work relative wetlands restoration and pedestrian trail construction. The City of Norwalk's written concurrence on exceptions to the Section 4(f) use is pending.

Table 9-1—Anticipated Project Impacts to Section 4(f) Parklands and Public Recreation Areas

Parkland and Public Recreation Areas	Section 4(f) Protection/Use	
	Protection	Use
Heritage Trail/Pavilion and Fishing Pier at Maritime Aquarium	Park/Recreation Area	Potential wetlands restoration/ Exception to Section 4(f) Use
Heritage Trail/Norwalk River Valley Trail	Park/Recreation Area	Potential wetlands restoration/ Exception to Section 4(f) Use
Heritage Trail/Oyster Shell Park	Park/Recreation Area	Potential wetlands restoration/ Exception to Section 4(f) Use
Norwalk River Valley Trail/Harbor Loop Trail	Park/Recreation Area	Temporary construction staging/ Exception to Section 4(f) Use
Constitution Park	Park/Recreation Area	Potential wetlands restoration/ Exception to Section 4(f) Use
Veteran's Memorial Park	Park/Recreation Area	Potential wetlands restoration/ Exception to Section 4(f) Use

9.4.3. Existing Historic and Archaeological Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470f), requires that federally funded or permitted projects take into account the effects of their undertakings on historic and archaeological resources listed in or eligible for listing in the National Register of Historic Places (NR). This section presents a description of above-ground (standing) historic resources within the project area and archaeological (subsurface) resources/areas of archaeological sensitivity.

[12] City of Norwalk, Oyster Shell Park Master Plan, prepared for the City of Norwalk by BSC Group, May 17, 2006. Accessed November 9, 2015. http://ct-norwalk.civicplus.com/DocumentCenter/Home/View/1659.

Above-Ground Historic Resources

Listed, eligible, and potentially eligible historic resources fall into two categories: those that are railroad-related, chiefly parts of the existing railroad infrastructure; and those that are non-rail-related but adjacent to the Area of Potential Effect (APE).

Rail Line and Related Structures

The railroad structures in the project area are part of a linear district along the rail line between the New York/Connecticut border and New Haven Line (formerly known as the New York, New Haven, & Hartford Railroad). This linear railroad district and the railroad structures in the project area that are contributing elements to this and other districts are described as follows. NR-listed, eligible, and potentially eligible railroad-related historic structures located in the APE include the following resources shown in Figure 9-3.

New Haven Railroad Line and Catenary System: The New Haven Line has long been regarded as an important historic resource that includes a pioneering electrification system, numerous early railroad bridges, and historic trackside passenger stations, freight houses, and interlocking towers. The line was documented by the Historic American Engineering Record (HAER) in 1977 (HAER No. CT-11), and the line's signalization system was documented in 1982 (HAER No. CT-8). That same year, the American Society of Mechanical Engineers designated the electrification of the line a National Historic Engineering Landmark.[13] CTSHPO determined that the electrification of the line from New Haven to New York was eligible for listing in the NR (following the same boundaries as the HAER documentation). A report on the New Haven Railroad catenary system, prepared for CTDOT in 2000, recommended listing of the electrification of the line from New Haven to New York (Stewart 2000) under Criterion C. Because of the importance of the N Y, NH & H RR in the transportation history of Connecticut, and the impact of the railroad on the economic and social history of the communities it served, the overall rail line is eligible under Criterion A (broad patterns of history). The overall rail line is also eligible under Criterion C (example of a type, period, or method of construction) because of its pioneering electrification system and because collectively the various components of the line illustrate the railroad-engineering practices of the 19th and early 20th centuries. This approach, considering the entire rail line as a single National Register-eligible property (specifically as a linear historic district), is consistent with the approach taken by federal and state agencies in the New Haven-Hartford-Springfield Rail Corridor improvement project (Federal Railroad Administration 2012, Stipulation 13[14]) and other Connecticut projects involving historic rail lines.

Norwalk River Railroad Bridge (Walk Bridge): Walk Bridge was listed in the NR in 1987 as one of several significant movable railroad bridges along the Northeast Corridor in Connecticut.[15] In addition to its design significance as an example of period engineering (NR Criterion C), the bridge is important in Connecticut's transportation history because of the role of the NY, NH & H Railroad in consolidating rail service in the state (NR Criterion A). Walk Bridge is a deck-truss, rim-bearing swing bridge that carries four tracks of Metro-North between New Haven and New York, Amtrak passenger trains on the Boston/New York/Washington corridor, and freight trains operated by the Providence & Worcester Railroad. It was built in 1896 by the Pennsylvania Steel Company's Bridge and Construction Department

[13] Not an official government designation.

[14] Federal Railroad Administration, *Programmatic Agreement Among the Federal Rail Administration, 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 in August 2012. Online at http://www.nhhsrail.com/pdfs/ea/nhhs_pa.pdf, accessed March 30, 2016.

[15] United States Department of Interior, National Park Service. National Register of Historic Places Inventory – Nomination Form. "Movable Railroad Bridges on the Northeast Corridor in Connecticut Thematic Resource." Received April 28, 1987. Date Entered June 12, 1987.

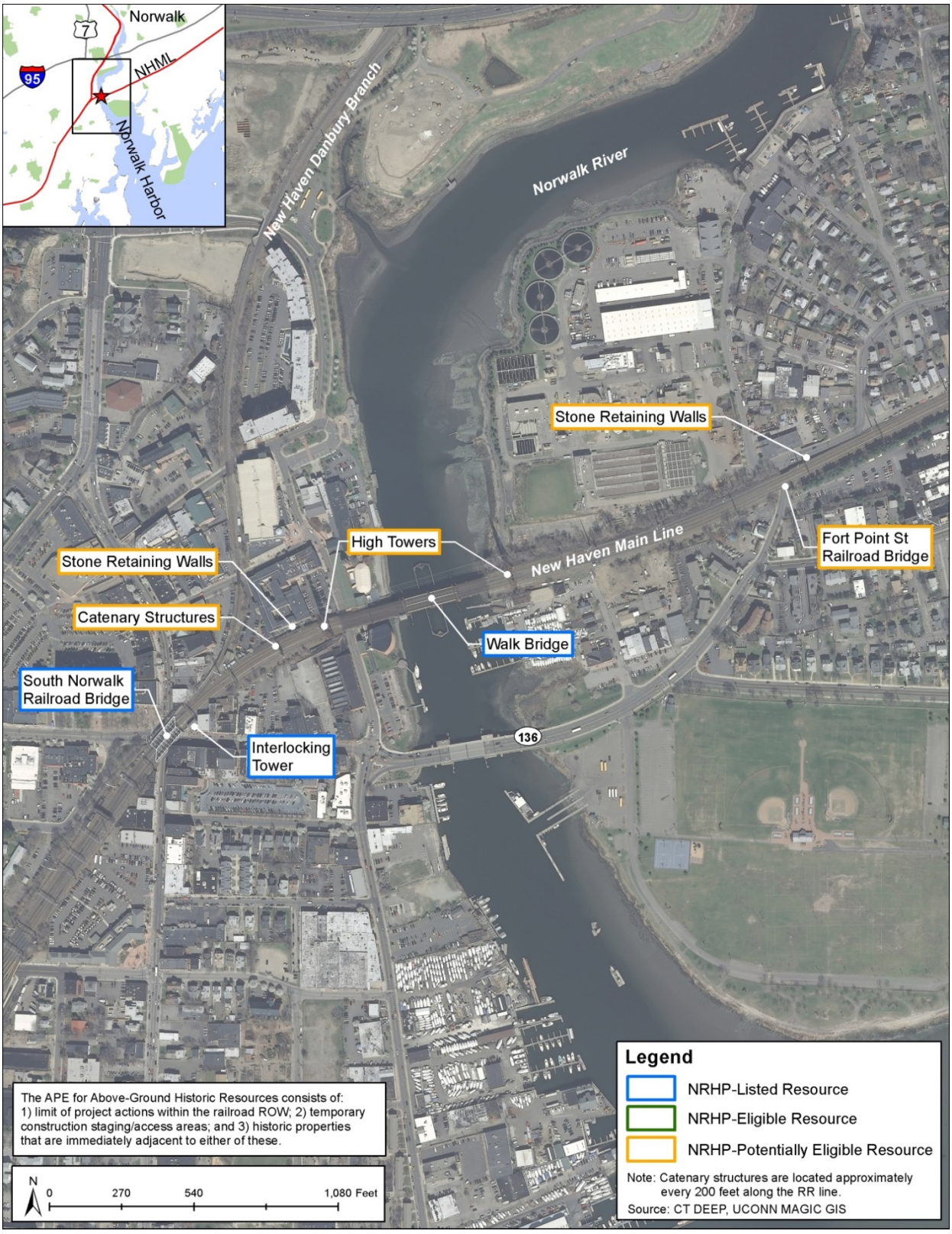

Figure 9-3–Railroad-Related Historic Structures in the APE

as part of the four-tracking and elevation of the NHL. This is the earliest movable bridge on the NEC, and it is the only rim-bearing, deck-truss swing bridge. The bridge consists of a steel superstructure and stone masonry piers and abutments. From east to west, the bridge includes two fixed deck-truss spans, each 120 feet, the 202-foot-long swing span, and another 120-foot fixed deck-truss span. The bridge is particularly notable for its swing-span mechanism, which utilizes a series of 96 rollers, set into a steel track atop a drum on the center pier, in order to operate the movable span. The bridge includes the approach span over North Water Street and two other approach spans.

High Towers and Catenary Support Structures: The electrification of the line was completed in 1914. In addition to numerous catenary support structures, most of which are original to the electrification, the system includes two high steel-lattice towers on both sides of the river to carry transmission lines over the channel. The Engineering Significance Statement for the bridge[16] does not explicitly address the catenary support structures and the two high transmission towers. However, these components are potentially eligible for the NR as contributing elements of the overall rail line as a linear historic resource (NR Criteria A and C). Moreover, in reviewing another project affecting overhead catenary electrification features, CTSHPO noted that the extant catenary system is an integral component of the country's first large-scale electrification of a main line railroad right-of-way and has found the New Haven Railroad Electrification and Catenary System to be a NR eligible entity.[17] The high towers and catenary support structures could also be considered contributing elements to that entity.

Stone Retaining Walls (Fort Point and North Water Streets): In the early 1890s, the four-tracking and elevation of the main line required lengthy cut-stone retaining walls for much of the railroad's right-of-way as it passed above city streets. The walls are found throughout the line, but the most notable examples within the APE can be found on Fort Point Street and west of the western approach span over North Water Street. These structures are potentially eligible for the NR as contributing resources to the potential linear historic district embracing the overall rail line (NR Criteria A and C).

Fort Point Street Railroad Bridge: The Fort Point Street Bridge dates from 1941, when the railroad replaced an earlier plate-girder at the site. It consists of a series of built-up steel beams spanning stone abutments that continue into the adjacent retaining walls for the elevated tracks. The stone abutments date from the reconstruction of the rail line in the 1890s. The bridge is a contributing resource to the eligible linear historic district (NR Criteria A and C).

South Norwalk Railroad Bridge over Washington and South Main Streets: This pin-connected steel-truss bridge was built in 1896 to carry four tracks over the intersection of Washington and South Main streets in South Norwalk. The abutment walls and stepped wing walls are built of quarry-faced granite blocks. This structure was listed in the NR as part of the South Main and Washington Streets Historic District and was the subject of HAER documentation (HAER No. CT-168). It is notable as an example of the work of the Berlin Iron Bridge Company, Connecticut's only large-scale 19th-century bridge fabricator. In addition to being a contributing resource of the listed historic district, the bridge is also a contributing resource to an eligible linear historic district embracing the entire New York to New Haven rail line under NR Criteria A and C.

Interlocking Tower: The interlocking tower controlled the juncture of the NY, NH & H main line and the Danbury & Norwalk branch line that led north to Danbury. In 1895, as part of the raising of the tracks of the main line, the tower was raised two stories. It is a rare survivor of its type, since it retains all of the original levers and switches, which were manually operated. This structure was listed in the NR as part of

[16] Stewart, Robert, *Engineering Significance Statement: Walk Bridge (No. 41.47) (Bridge No. 4288R), 1999*. Westport, CT: Historical Perspectives, Inc.

[17] Maddox, Dawn, Letter of Dawn Maddox, Deputy State Historic Preservation Officer, to Mark D. Neri, CTDOT Rail Operations, regarding Milford to West Haven catenary replacement project, November 22, 1999.

the South Main and Washington Streets Historic District. It also contributes to the overall significance of the rail line as an eligible linear historic district (NR Criteria A and C). Currently it is occupied as a historical site, the South Norwalk (SONO) Switch Tower Museum.

Adjacent Historic Resources That Are Not Directly Rail-Related

A number of listed, eligible, or potentially eligible historic-resource properties that are not rail-related are located in the project APE. These resources are shown in Figure 9-4. The adjacent historic resources all have important historical associations with the rail line. The industries in the area prospered in part because good rail transportation was available close by (both the Norwalk Lock Company and the Norwalk Iron Works at one time had dedicated sidings). The commercial and institutional buildings that came to dominate the streetscapes of South Norwalk located there largely because of its status as an important rail junction.

Industrial Buildings Historic District, North Water Street, South Norwalk (Norwalk Iron Works and Norwalk Lock Company Buildings). West of Walk Bridge and immediately north of the railroad right-of-way are two 19th-century brick factory complexes. The former Norwalk Lock Company buildings have been converted to office use, and the former Norwalk Iron Works complex has been incorporated into the Maritime Aquarium at Norwalk. Together these resources constitute a small, potentially-eligible historic district that recalls the important role of industry in Norwalk's economic history (NR Criterion A). In addition to their location adjacent to the railroad tracks, the two properties have historical associations with the railroad. The Norwalk Lock Company property was individually determined eligible for the NR by CTSHPO in 2000.

South Main and Washington Streets Historic District, South Norwalk. This NR-listed district is a T-shaped area of commercial buildings dating from the last quarter of the 19th century and the early years of the 20th century. As a whole, resources in the district are well-preserved examples of particular types of commercial architecture (NR Criterion C). They also represent Norwalk's economic and civic development and South Norwalk's role in particular as a harbor, railroad junction, and industrial center, which led to commercial expansion in the post-Civil War era (NR Criterion A). The railroad bisects the district; Walk Bridge, catenary support structures, and high towers are visible from a number of vantage points within the district. The district also includes as contributing components two rail-related structures, the Interlocking Tower and the South Norwalk Railroad Bridge over the intersection of South Main and Washington Streets.

Addition to the South Main and Washington Streets Historic District. The South Main and Washington Streets Historic District could logically be expanded to include three two- to three-story brick commercial buildings on Water Street: 50 Water Street (circa 1900), 68 Water Street (circa 1910), and 53 Water Street (1853) (NR Criteria A and C).

Liberty Square Historic District, East Norwalk. This row of late 19th-century and early 20th-century commercial buildings, two and three stories high, is a vestige of the continuation of South Norwalk's Washington Street commercial district into East Norwalk. This area is a potential NR-eligible district that would be significant on the local level because of its architectural qualities (NR Criterion C) and because of its historical associations with a late 19th-century period of economic expansion (NR Criterion A).

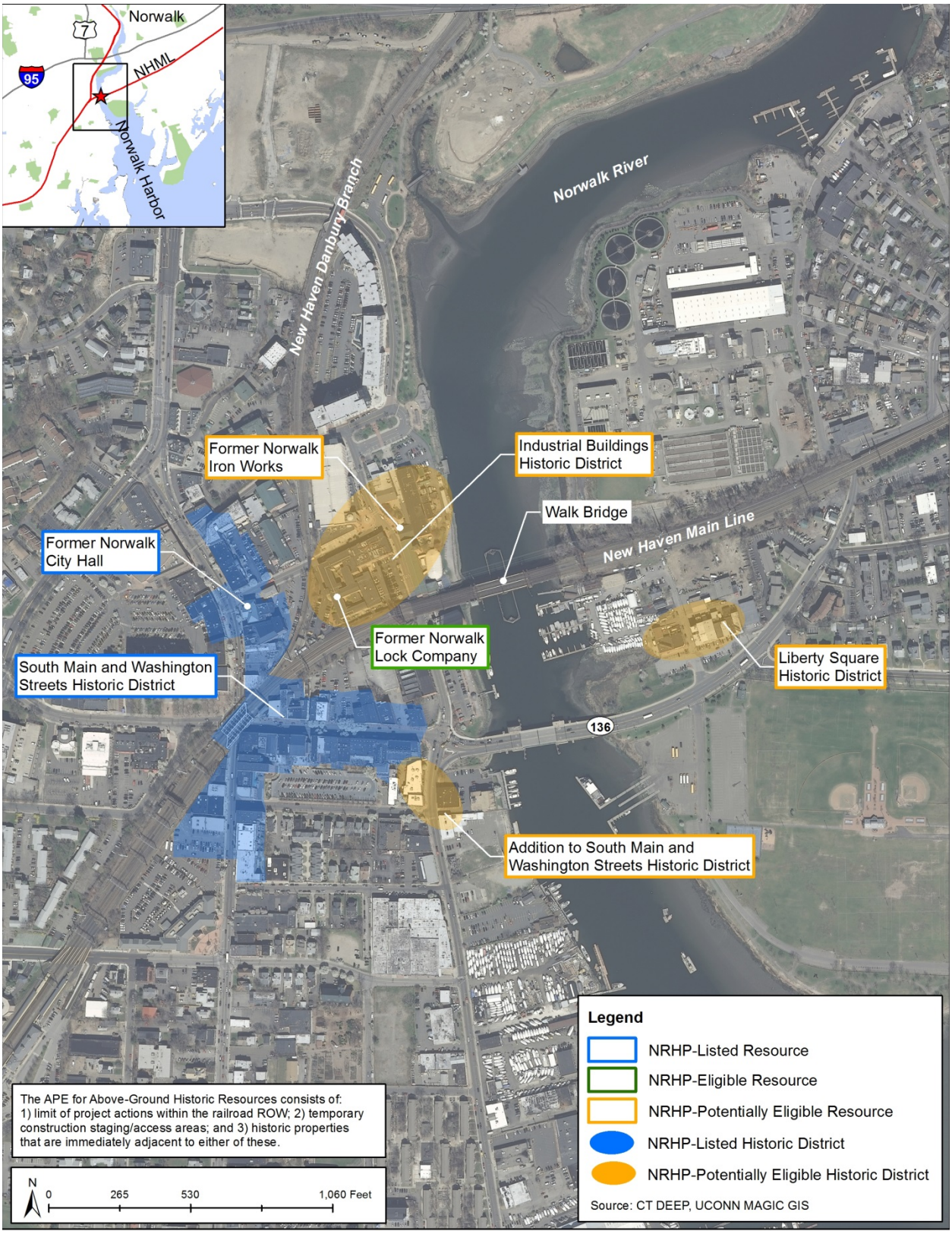

Figure 9-4–Standing Historic Properties in the APE That Are Not Directly Rail-Related

Archaeological Resources

An archaeological sensitivity assessment (Phase IA) was undertaken of the terrestrial, intertidal and underwater areas that will be affected by the project to identify existing archaeological resources and assess the potential for undiscovered archaeological (i.e., subsurface) resources that may be present within the APE. No subsurface testing was initially conducted due to of the large scale of the project, the potential for changes in the early design phases, and difficulty in manual testing (prior to construction) in this urbanized environment. Additional archaeological work is ongoing, and Phase IB testing is being conducted to confirm whether buried archaeological sites are actually present within the APE.

A combination of geoprobe investigation, machine-assisted and manual testing, and archaeological monitoring are being employed for terrestrial parcels to determine whether potentially significant archaeological resources have survived. A combination of vibracores and hand cores are being employed to determine whether potentially significant submerged archaeological resources have survived in intertidal and underwater portions of the APE.

9.4.4. Impacts on Historic and Archaeological Resources

This section presents an assessment of the proposed Walk Bridge Replacement Project's potential impacts under Section 4(f) and Section 106 on cultural resources, including above-ground resources and archaeologically sensitive areas. Table 9-2 (located at the end of Section 9.4.4) presents a summary of the Section 4(f) uses of cultural resources.

Criteria for Determining Section 4(f) Use

Under Section 4(f), use of a historic property occurs when the property is permanently incorporated into the transportation facility or when there is a temporary occupancy that is adverse under Section 4(f). In addition, a constructive use of a Section 4(f) resource (23 CFR 774.15) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished.

FTA has determined that a constructive use occurs in the following situations: when the projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f); when the proximity of the proposed project substantially impairs aesthetic features or attributes of a property protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the property; when the project results in a restriction of access which substantially diminishes the utility of a significant publicly owned park, recreation area, or a historic site; or when the vibration impact from construction or operation of the project substantially impairs the use of a Section 4(f) property, such as projected vibration levels that are great enough to physically damage an historic building or substantially diminish the utility of the building, unless the damage is repaired and fully restored consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

FTA has reviewed the following situations and determined that a constructive use of a resource does not occur when:

- Compliance with the requirements of 36 CFR 800.5 for proximity impacts of the proposed action, on a site listed on or eligible for the National Register, results in an agreement of "no historic properties affected" or "no adverse effect;" or

- The projected operational noise levels of the proposed transit project do not exceed the noise impact criteria for a Section 4(f) activity in the FTA Guidelines For Transit Noise And Vibration Impact Assessment; or

- The projected noise levels exceed the relevant threshold in the preceding paragraph of this section because of high existing noise, but the increase in the projected noise levels if the proposed project is constructed, when compared with the projected noise levels if the project is not built, is barely perceptible (3 dBA or less); or

- Overall (combined) proximity impacts caused by a proposed project do not substantially impair the activities, features, or attributes that qualify a property for protection under Section 4(f); or

- Proximity impacts will be mitigated to a condition equivalent to, or better than, that which would occur if the project were not built, as determined after consultation with the official(s) with jurisdiction;

- Change in accessibility will not substantially diminish the utilization of the Section 4(f) property; or

- Vibration levels from project construction activities are mitigated, through advance planning and monitoring of the activities, to levels that do not cause a substantial impairment of protected activities, features, or attributes of the Section 4(f) property.

Construction Period Impacts

Construction-vehicle traffic is not expected to generate vibration levels that would be damage-causing. However, other construction-period vibration impacts could affect buildings that are not in good structural condition. There is a potential for vibration from construction equipment to exceed FTA criteria for vibration for building damage, depending on the location, equipment, and building type. Many of the historic buildings that abut the project area are well over 100 years old, and they may not have the same physical resistance to vibration as modern buildings. Many of the historic buildings adjacent to the track are classified as buildings extremely susceptible to building damage under the FTA Construction Vibration Damage Criteria. These historic buildings include:

- The Interlocking Tower (SONO Switch Tower Museum), the former Norwalk City Hall, and other historic buildings on the north side of Washington Street in the South Main and Washington Streets Historic District;

- The two former factory complexes (Norwalk Lock Company and Norwalk Iron Works) north of the railroad ROW on North Water Street;

- The circa 1910 commercial building at 68 Water Street, which is adjacent to a construction staging/access area; and

- The buildings that make up the potential Liberty Square Historic District, on the east side of the Norwalk River, which is adjacent to a construction staging/access area.

The potential for construction-period impacts to archaeological resources is presented in the Cultural Resources section in Chapter 3 of the EA/EIE, since there is no meaningful distinction in terms of temporary versus permanent impacts with regard to disturbance of significant archaeological remains.

CTDOT will incorporate the following protective measures during project construction as appropriate to prevent/address potential damage to historic buildings and to avoid a Section 4(f) constructive use:

- Conducting pre-construction inspections of building elements susceptible to damage,
- Documenting the buildings' pre-existing states;
- Conducting condition assessments by a structural engineer;
- Establishing vibration limits;
- Developing a vibration monitoring program;
- Real-time monitoring of vibration levels may be required during construction;
- Conducting post-construction surveys;
- Establishing dedicated truck routes that would keep construction trucks from residential areas;
- Phasing construction activities that create vibration so the multiple sources of vibration do not occur at the same time; and
- Updating the public regarding proposed construction schedules, especially identifying activities known to be a source of vibration.

CTDOT will coordinate with adjacent property owners to establish protocols for conducting pre-construction and construction survey and monitoring activities, as required.

Above-Ground Historic Resources – Permanent Use

The project will affect historic railroad structures in the APE that are listed in, eligible for listing in, or likely eligible for listing in the NR. The following project actions are expected to result in effects on historic resources:

- **Removal and replacement of the Norwalk River Railroad Bridge (Walk Bridge) and Fort Point Street Railroad Bridge:** The Build Alternative will result in the loss of existing Walk Bridge as a NR-listed resource and therefore result in an **adverse effect** to historic properties. The Build Alternative will include the replacement of the existing railroad bridge over Fort Point Street. Because it is a contributing component of the overall rail line as a NR-eligible linear resource, the bridge's replacement will be an **adverse effect** under Section 106. Replacement of these historic bridges would constitute a **Section 4(f) use**.
- **Removal of the High Towers and Removal/Replacement of the Catenary Support Structures:** The Build Alternative will remove the high steel lattice towers on either side of the river that carry transmission lines over the channel. Because the towers represent contributing components of the overall rail line as a NR-eligible linear resource, removal of the towers will result in an **adverse effect** under Section 106. The catenary support structures also contribute to the significance of the overall rail line as a NR-eligible linear resource; removal of the structures will result in an **adverse effect** under Section 106. Removal of the high towers and catenary support structures would constitute a **Section 4(f) use**. Replacement of the catenary system is included in the Build Alternative. Replacement of the utility functions currently existing on the high towers is a separate, independent project being performed by Eversource Energy.
- **Removal of Stone Retaining Walls and Construction of New Retaining Walls:** The project will require the replacement of the circa 1896 stone retaining walls west of Water Street and near the Fort

Point Street Railroad Bridge. These walls represent contributing components of the overall rail line as a NR-eligible linear resource; the removal of the walls will result in an **adverse effect**. Removal and replacement of the stone walls would constitute a **Section 4(f) use**.

- **Industrial Buildings Historic District (including Former Norwalk Ironworks/current Maritime Aquarium and Lock Building):** The project will require a permanent easement for access from the Former Norwalk Ironworks/current Maritime Aquarium. This easement will be for access in order to maintain the Norwalk River Railroad Bridge. Use of this resource cannot be avoided since its proximity to the bridge will allow access for maintenance and construction when required. No permanent impacts are anticipated to the Lock Building. Any impacts to the Lock Building are discussed below in the section regarding temporary use.
- **South Norwalk Railroad Bridge over Washington and South Main Streets.** The project's actions within the railroad ROW will begin at the end of the bridge with minor changes to the track geometry. These minor changes will have **no adverse effect** on the bridge itself or its overall setting, and **no Section 4(f) use** would occur.

Above-Ground Resources - Temporary Use

Creation and use of temporary construction staging/access areas could directly affect cultural resources that are not rail-related. The following paragraphs present a summary of recommended findings of effects of the project on NR listed, eligible, and potentially eligible properties that are not rail-related under Section 106.

- **Industrial Buildings Historic District (including Former Norwalk Ironworks/current Maritime Aquarium and Lock Building).**

  The parking areas of the former Norwalk Lock complex at 18 Marshall Street will be used for temporary construction staging/access areas. The structure itself will not be impacted. **This activity will not be considered to have an adverse effect,** provided that no physical damage occurs as a result of the preparation and use of the temporary construction staging/access areas**.** The use of the parking areas during construction is not expected to disrupt the utilization of the Norwalk Ironworks/current Maritime Aquarium and the Lock Building. Additionally, CTDOT will employ protective measures to minimize impacts to buildings. Accordingly, **the temporary use of the parking lot will qualify as an exception to Section 4(f) use.**

- **South Main and Washington Streets Historic District:** The project has the potential to affect the district because of the temporary construction staging/access area that will extend into the district north of Washington Street. Most of the access area is located in a strip of undeveloped land at the rear of the buildings; however, the area also includes the footprint of the interlocking tower (Switch Tower Museum). Provided no physical damage to any of the district's buildings occurs as a result of the preparation and use of the temporary construction staging/access area, **this activity will not be considered to have an adverse effect**. The project is not anticipated to impact the utilization of the SONO Switch Tower Museum. Additionally, CTDOT will employ protective measures to minimize impacts to properties during construction. Accordingly, **the temporary nature of the impacts to this parcel will qualify as an exception to Section 4(f) use.**
- **Addition to South Main and Washington Streets Historic District.** The South Main and Washington Streets Historic District could reasonably be enlarged to include additional commercial buildings at the north end of Water Street. One of these buildings, 68 Washington Street, a circa 1910 yellow-brick commercial building, is adjacent to a temporary construction staging/access area. The use of the adjacent property for construction staging and access will not use this parcel or affect the

utilization of 68 Washington Street during construction. Additionally, CTDOT will employ protective measures to minimize impacts to properties during construction. Accordingly, **there will not be a Section 4(f) use**.

- **Liberty Square Historic District.** This potentially eligible historic district is adjacent to a temporary construction staging/access area. Provided no physical damage to any of the district's buildings occurs as a result of the preparation and use of the temporary construction staging/access area, **this activity will not be considered to have an adverse effect.** The temporary construction/access area adjacent to the historic district will not affect the utilization of the district's buildings during construction. Additionally, CTDOT will employ protective measures to minimize impacts to properties during construction. Accordingly, **there will not be a Section 4(f) use.**

The options for the Build Alternative would be similar in their effects on standing historic properties. Operational noise from the railroad tracks will not result in long-term noise impacts or discernible increases. With regard to visual effects, the design for the elements of the replacement bridge will be as visually compatible as possible with the character of these adjacent historic properties. To date, CTDOT has sponsored two design charrettes in Norwalk with project historic stakeholders to identify historic stakeholder concerns and solicit historic stakeholder input on key design elements of the replacement bridge. CTDOT will continue to work with the historic stakeholders through the preparation and finalization of the EA/EIE and preliminary design.

Archaeological Resources

Section 4(f) protection only extends to those archaeological resources that are considered important for preservation in place. It is not anticipated that archaeological resources will be found that qualify for protection under Section 4(f). If this does occur, Section 4(f) will be addressed separately for archaeological resources (through a revision to the Section 4(f) Evaluation). An Archaeological Treatment Plan incorporated into the project's Memorandum of Agreement (MOA) presents a methodology for further archaeological Phase IB and Phase II testing, and if required, data recovery.

Table 9-2—Anticipated Project Impacts to Section 4(f) Historic Resources

Historic Sites/Districts	Protection	Project Impact and Section 106 Effect/Section 4(f) Use
Norwalk River Railroad Bridge (Walk Bridge)	National Register (NR) Listed	To be replaced: **Section 106 Adverse Effect/Section 4(f) Use**
High Towers	Contributing to a NR Eligible Linear Historic District	To be removed: **Section 106 Adverse Effect/Section 4(f) Use**
Catenary Support Structures	Contributing to a NR Eligible Linear Historic District	Some or all of the existing catenary support structures will be removed: **Section 106 Adverse Effect/Section 4(f) Use**
Stone Retaining Walls	Contributing to a NR Eligible Linear Historic District	To be removed: **Section 106 Adverse Effect/Section 4(f) Use**
Fort Point Street Railroad Bridge	Contributing to a NR Eligible Linear Historic District	To be removed: **Section 106 Adverse Effect/Section 4(f) Use**

Table 9-2—Anticipated Project Impacts to Section 4(f) Historic Resources

Historic Sites/Districts	Protection	Project Impact and Section 106 Effect/Section 4(f) Use
Industrial Buildings Historic District	Potentially Eligible for NR	Removal of the historic bridge, visual impact on the setting of the potentially eligible historic district**: Section 106 Indirect (Visual) Adverse Effect/ 2. Permanent easement is required from the Norwalk Iron Works which is a contributing resource to the District.**
Former Norwalk Iron Works (Maritime Aquarium)[a]	Potentially Eligible for NR	1. Removal of the historic bridge, visual impact on the setting of the potentially eligible historic district**: Section 106 Indirect (Visual) Adverse Effect/ 2. Permanent easement is required for access for maintenance and construction. Section 4(f) Use**
Norwalk Lock Company[b]	NR Eligible	1. Removal of the historic bridge, visual impact on the setting of the potentially eligible historic district**: Indirect (Visual) Adverse Effect,** and 2. Temporary use of parking areas for construction staging/access area: **No Adverse Effect conditional upon no damage / Section 4(f) Exception**
South Main and Washington Streets Historic District (Including Boundary Increases)	NR Listed	1. Removal/replacement of bridge and high towers will have a visual impact on the district's setting: **Indirect (Visual) Adverse Effect** and 2. Construction staging/access area along the edge of the district on the north side of Washington Street: **No Adverse Effect conditional upon no damage/ No Section 4(f) Use**
Addition to South Main and Washington Streets Historic District	Potentially Eligible for NR	Building at 68 Water Street is adjacent to construction staging/access area: **No Adverse Effect conditional upon no damage/ No Section 4(f) Use**
Liberty Square Historic District	Potentially Eligible for NR	Adjacent to construction staging/access area: **No Adverse Effect conditional upon no damage/ No Section 4(f) Use**
Interlocking Tower (Switch Tower Museum)	Contributing to a NR listed Historic District	Use of parcel for construction staging / access area. **No Adverse Effect conditional upon no damage / Section 4(f) Exception**

Notes:
a. Because it is now part of the Maritime Aquarium complex, which includes substantial new construction, the portion remaining from the former Iron Works would probably only be considered eligible as part of a historic district.
b. The Norwalk Lock Company complex has been determined individually eligible; it also contributes to a potentially eligible historic district.
c. Individually listed and also a contributing building within the South Main and Washington Streets Historic District.

9.5. Measures to Minimize Harm

This section identifies measures that CTDOT will implement to minimize harm to Section 4(f) resources, in addition to the construction period protective measures identified in Section 9.4.

CTDOT will consider incorporating protective measures during project construction to reduce impacts on Section 4(f) parks, public recreation areas and historic buildings, including:

- Using temporary noise barriers between noise-sensitive receptors and noisy stationary equipment;
- Establishing dedicated truck routes that would keep construction trucks from parks and recreational facilities and historic properties;
- Scheduling noisy operations to be performed simultaneously, the slightly louder noise levels will be offset by less exposure to the public; and
- Updating the public regarding proposed construction schedules, noisy activities, and nighttime work.

9.5.1. Parklands and Public Recreation Areas

Provision of a north-south pedestrian/bicycle connection on the east side of the Norwalk River will be incorporated into the Build Alternative as a mitigation measure, and will represent an improvement over existing conditions. Wetlands restoration within some of the parklands along the river was identified in and is consistent with the City's Master Plan for Oyster Shell Park, and will represent a project benefit. CTDOT will coordinate with the City of Norwalk regarding plans for trail and wetland restoration improvements within City parks for consistency with the City's plans.

Temporary use of the WWTP and construction of the trail connection along the east river bank will affect the southernmost section of Harbor Loop Trail, but the trail will be restored upon completion of construction.

The design of the bridge and abutments, and other elements, will be performed in coordination with CTSHPO, the City of Norwalk, and other stakeholders to minimize aesthetic impacts to the extent possible. Measures such as treatments of retaining walls and abutments and landscaping will be considered during final design to improve the appearance of the new bridge and project site.

CTDOT has conducted consultation with the City of Norwalk, and will continue coordination regarding the temporary use of City-owned property, including parks or trails, during construction. Temporary park impacts will be mitigated to the extent possible by minimizing impacts from noise, as described in Chapter 5 in the EA/EIE and in the following sections.

9.5.2. Historic and Archaeological Resources

Above-Ground Historic Resources

Adverse effects to above-ground resources will be mitigated through measures agreed upon during ongoing agency consultation. Stakeholder groups involved in consultation include the Norwalk Historical Commission, Norwalk Preservation Trust, Norwalk Historical Society, and the SONO Switch Tower Museum, as well as the Tribal Historic Preservation Offices (THPO) of the Mashantucket Pequot Tribal Nation and the Mohegan Tribe. A Draft Memorandum of Agreement (MOA) has been developed among FTA, CTDOT and CTSHPO regarding the Walk Bridge Replacement Project (contained in Appendix 1 of the EA/EIE). The MOA will be finalized following historic stakeholder and public review of the document. The final MOA will be approved by the signatory and concurring agencies.

Potential mitigation measures for this project include the following:

- **Pre-construction documentation of historic resources that will be lost:** Existing documentation prepared separately for Walk Bridge and the catenary structures will be reviewed and supplemented

as appropriate, in coordination with FTA and CTSHPO. Written and photographic documentation will be prepared for other historic structures: high towers, stone retaining walls, interlocking tower (SONO Switch Tower Museum), Fort Point Street Railroad Bridge, and any historic trackside features. The documentation will include context views that incorporate the former Norwalk Lock Company buildings, the former Norwalk Iron Works buildings, and buildings of the South Main and Washington Streets Historic District.

- **Designs for new elements that will be visually compatible with adjacent historic properties:** Project designs will be developed to be compatible to the extent possible with the cultural and historic setting.
- **Reuse of stone to face new walls and/or bridge abutments and other salvage materials:** Consideration will be given to reuse stone removed from stone-faced walls and abutments in the new project design elements. In addition, CTDOT shall solicit interest in obtaining salvaged materials, such as catenary structures, to be used by organizations stipulated in the MOA for public education purposes.
- **Preparation of a Public Education Plan:** CTDOT will prepare a public education plan that that will incorporate at least three of the following activities: markers and other outdoor interpretive installations; school curriculum materials; walking tour guides, brochures, and other publications; web site (s); and local museum/library exhibits. The public-education plan may include other activities of a similar nature to substitute for the activities identified herein.

Archaeological Resources

In the event that archaeological resources are found that qualify for protection under Section 4(f), CTDOT will conduct a separate assessment. Mitigation measures will be refined once the types and significance of archaeological resources in the APE are known and the project impacts to those resources are defined. Stipulations in the MOA regarding historic properties include the implementation of an Archaeological Treatment Plan (Appendix A) that presents procedures for archaeological testing and data recovery to address project impacts to under-ground resources.

9.5.3. Least Overall Harm

The Replacement Alternative (Build Alternative) is discussed as one overall alternative for the purposes of this Section 4(f) Evaluation since, for the movable bridge replacement type options, the "use" of the Section 4(f) resources would be the same. The three build alternatives that have been carried through to the EA for analysis are a Bascule Bridge, a Short Span Vertical Lift Bridge, and a Long Span Vertical Lift Bridge; these are all movable bridge types. After much coordination and analysis, the Long Span Vertical Lift option has been identified as the preferred alternative. Below, these various options within the Build Alternative are discussed in terms of least overall harm per 23 CFR 774.3.

1. *The ability to mitigate adverse impacts to each Section (f) property (Including any measures that result in benefits to the property).* All three options within the Build Alternative would require the same mitigation measures since they would require use of the same use of Section 4(f) resources.

2. *The relative severities of remaining harm after mitigation, to the protected activities, attributes, or features that qualify each property for Section 4(f) protection.* All three options within the Build Alternative would require the same mitigation measures since they would require use of the same use of Section 4(f) resources.

3. *The relative significance of each Section 4(f) property.* All three options within the Build Alternative would require identical use of Section 4(f) resources; therefore the significance is the same for all options within the Build Alternative.

4. *The views of the officials with jurisdiction over each Section 4(f) property.* Any impacts to public park/recreation land qualify as Section 4(f) exceptions, therefore we will focus on the views of the officials with jurisdiction over any historic resources being used – the CTSHPO. CTSHPO has entered into a Memorandum of Agreement with the CTDOT and FTA regarding the mitigation measures to be incorporated due to the adverse effects to cultural resources from the Build Alternative. These mitigation measures would be similar for any of the three build alternatives. It should be noted, that there has been extensive coordination with the Norwalk Historical Commission and the Norwalk Historical Society and both feel that a potential advantage of a Vertical Lift Option is that it would reintroduce a prominent vertical element since the existing high towers must be removed.

5. *The degree to which each alternative meets the purpose and need.* After extensive analysis and evaluation, it has been determined in the EA that the preferred alternative – the Long Span Vertical Lift Bridge would best meet the purpose and need of the project. In addition to considering the project purpose and need, this was determined by considering engineering, constructability, potential impacts to rail and navigation traffic, estimated costs, and potential environmental impacts.

6. *After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f).* The anticipated environmental impacts of the three Build options are comparable; however there are considerable benefits to selecting the Long Span Vertical Lift Option. The Vertical Lift Option would have a much less significant impact on rail transportation since there would be a much shorter overall construction period and a shorter time for track outages. Regarding marine traffic, construction of the Long Span Vertical Lift Option would allow the contractor more flexibility during construction and one channel would remain open for marine traffic. Vertical restrictions would also occur for as few as 16 months, which is 18-24 months shorter than the other two build options. There are considerable advantages for engineering, constructability, and community disruption associated with the Long Span Vertical Lift Option compared to the other two build alternatives.

7. *Substantial differences in costs among the alternatives.* The estimated costs for the Long Span Vertical Lift Option are higher than the other two build options. At an estimated construction cost between $365 million and $415 million, this option would cost about 12 percent more than the Short Span Vertical Lift Option ($325 million -$375 million) and about 10 percent more than the Bascule Option ($330 million to $380 million). It has been determined however, that the Long Span Vertical Lift Option's shorter construction duration, reduced disruption to rail traffic along the NEC and navigation traffic on the Norwalk River, and reduced adverse impacts to the community, outweigh the additional costs associated with the Long Span Vertical Lift Option.

Based on the evaluation of the above factors, it has been determined that the Long Span Vertical Lift Option is the option within the Build Alternative that causes the least overall harm.

9.6. Summary and Conclusions

The anticipated impacts to parks and recreation areas will qualify for exceptions to Section 4(f) use, as the work will involve either transportation enhancements/wetlands restoration or temporary occupancy. This work will include construction of the bicycle/pedestrian connection under Walk Bridge, providing a missing link in the NRVT, as well as wetlands restoration, envisioned as part of the parkland improvements identified in the City's Oyster Shell Master Plan. Construction staging on the WWTP property will also affect the south end of the existing Harbor Loop Trail, where the trail will be

constructed to extend under Walk Bridge. The NRVT will be used for construction staging on the western side of the Norwalk River, south of the Walk Bridge. These impacts represent temporary impacts and qualify as exceptions to Section 4(f) use.

Removal of the NR-listed historic swing-span bridge and the overhead catenary system and high towers of Walk Bridge will constitute adverse effects under Section 106 and a use under Section 4(f). Removal of the stone retaining walls and Fort Point Street Bridge also will constitute adverse effects under Section 106 and uses under Section 4(f). Pursuant to Section 106, it was determined that the project will produce an indirect (visual) adverse effect on the Industrial Buildings Historic District, including both the Former Norwalk Iron Works (Maritime Aquarium) and the Norwalk Lock Company, and on the South Main and Washington Streets Historic District. A permanent access easement will be required from the Norwalk Iron Works (Maritime Aquarium), which will constitute a Section 4(f) use of this property. Construction activities will be in close proximity to these properties, as well as to a potentially eligible historic district and historic district addition, the Addition to South Main and Washington Streets Historic District and the Liberty Square Historic District. Proximity to construction activities will result in a conditional Section 106 No Adverse Effect finding, but will not result in a Section 4(f) use.

All possible minimization measures have been explored and the MOA identifies mitigation measures for impacts on historic and archaeological resources, including documentation for historic resources that will be lost and design of new elements to be compatible to the extent possible with the historic setting. Protective measures implemented during the construction period will include pre-construction inspections, establishment of vibration limits and vibration monitoring, and post-construction surveys to prevent/minimize vibration impacts and damage to adjoining historic buildings and properties.

In conclusion, based on the evaluation of the No Build Alternative and Rehabilitation Alternative, FTA has determined that there are no feasible and prudent alternatives to the replacement of the Walk Bridge and the associated use of Section 4(f) resources. This alternative must be selected in order to meet the purpose and need of the project.