STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

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Transmittal:

From:	Mark McMillan	
Date:	September 1, 2020	
Through:	Robert Bell, Director, Bureau of Policy & Planning	
To:	Jonathan Kinney, Deputy State Historic Preservation Officer	
Project:	State No.:	158-214
	F.A.P. No.:	TBD
	Project Title:	Rehabilitation of Saugatuck Swing Bridge #01349 Route 136 over Saugatuck River
	Town:	Westport
Subject:	§106 Evaluation of State Project #158-214	

Description of Activity

The Connecticut Department of Transportation (CTDOT) is currently evaluating a project that will address the structural and functional deficiencies of the Saugatuck River Swing Bridge in Westport. The bridge is also known as the "Bridge Street Bridge" and "William Cribari Bridge". For simplicity this document will reference its state inventory number. Bridge #01349 carries two lanes of State Route 136 (Bridge Street) traffic and a pedestrian sidewalk over the Saugatuck River. The center span of the bridge can be rotated 90 degrees into an open position to allow the passage of marine vehicles. Bridge #01349 was listed on the National Register of Historic Places in 1987. [1]

Because this project anticipates the use of both federal and state funding, it falls under the purview of the National Historic Preservation Act (NHPA). "Section 106" is the clause of the NHPA that mandates federal agencies to consider the effects of an undertaking on historic properties. The process of codified in 36 CFR 800.1-16, and often referred to colloquially as simply "Section 106".

Concurrent with the Section 106 evaluation, an Environmental Assessment / Environmental Impact Evaluation (EA / EIE) document is being prepared for State Project #158-214 to analyze the broader environmental impacts of four proposed project alternatives in accordance with the National Environmental Policy Act (NEPA) and the Connecticut Environmental Policy Act (CEPA).

[1] National Park Service, *Saugatuck River Bridge (NPS #87000126)*, listed February 12, 1987.

The EA/EIE will evaluate the impacts of the project on the man-made, social, and natural environments and will recommend the preferred alternative of action. It is considering five alternatives that consist of a "No Build/No Action" option and four "build" alternatives that will entail construction actions.

This document will evaluate the four build alternatives impacts specifically as they impact historic properties in accordance with the provisions of Section 106 of the National Historic Preservation Act. The information provided by this review process will complement other analyses that are being conducted under NEPA/CEPA.

Each of the five alternatives have been presented at a series of Project Advisory Committee (PAC) meetings held in Westport between July 2018 and May 2019. Among the stakeholders CTDOT invited representatives each of the nine Section 106 Consulting Parties to participate in the PAC meetings and provided input on both historic/cultural considerations as well as the environmental impacts as a whole.

Technical Review of Project

Bridge #01349 consists of a four span multi-girder steel superstructure carried on masonry abutments and three mid-river piers built of masonry or concrete (Image 1). Dimensionally, it is 287 feet long and 26'8" wide, which accommodates a 19'6" wide roadway with a lane of westbound and eastbound Route 136 traffic. On the north side of the bridge is a 4-foot wide wood and steel sidewalk.

The western half of the bridge is the 2-span swing portion, which is 145' in length and centered over a large pivot pier. The swing span is capable of rotating 90° relative to the alignment of Route 136, thereby providing an open passage for river traffic. Timber cribbing protects both the pivot pier and the western side of Pier 2 from damage from marine collisions. At 24'2", the cribbing is slightly wider than the cylindrical pivot pier. Lengthwise, its up- and downstream portions each extends 73' from the pier.

In its closed position, the ends of the swing span rest on the bridge's western abutment and a masonry pier (Pier 2) that supports the east end of the swing span. Pier 2 also supports the west end of the bridge's fixed section. This half of the bridge is 142' long and comprised of two continuous spans of steel girders. The east end of the fixed section is support on a masonry abutment and midspan there is a reinforced concrete pier (Pier 3) set on steel piles.

Bridge #01349 has undergone several alterations since it was originally built in 1884. In 1925 the bridge's original timber deck was replaced with an open steel grid. In 1951, the swing span's pivot pier was encased in concrete that was poured into a cylindrical form comprised of steel plates. Steel beams and new piles were added to the pivot pier and Pier 2 as a strengthening measure. Repair campaigns in 1968 and 1979 added reinforcing plates and connections to address load capacity deficiencies.

In 1991, State Project #158-150 performed a major rehabilitation to Bridge #01349 that reconfigured the floor system of the deck. A new steel girder system was installed to carry the live load of the bridge. Pier 3 was installed beneath the center of the fixed spans to support the new system and the original manually-operated swing mechanism was replaced with new electric-powered machinery. The trusses were reinstalled decorative elements to mitigate the impacts this project had on the historic bridge.

In 1987, the Saugatuck River Bridge was listed on the National Register of Historic Places in 1987 under Criterion A (Events) and Criterion C (Design). Like the current project, State Project #158-150 was the subject of a Section 106 evaluation with the United States Coast Guard as the lead federal agency. They determined that the 1991 project had an adverse effect finding on the historic bridge. However, the nature and extent of the impacts that caused adverse effect was not documented and the question of whether the bridge retained sufficient integrity to be eligible for the National Register of Historic Places was not addressed.

In 2017, CTDOT staff assessed the historic integrity of Bridge #01349 in order to establish a basis on which the current undertaking could be evaluated.[2] It recommended that Bridge #01349 retained sufficient integrity to still qualify for the National Register under Criterion A *(Events)*. Given the loss of its integrity of materials, design, and association, the bridge no longer retained sufficient integrity to qualify under Criterion C (*Design/Construction*). CTDOT sought comments from the CTSHPO and the Connecticut State Historic Preservation Review Board regarding this assessment.

Each of the nine entities that would later be recognized as Section106 Consulting Parties were sent copies of the integrity evaluation and given the opportunity to comment on the report. At the request of the Westport Historic District Commission, CTDOT staff presented the findings of the evaluation at a public meeting at Westport's Town Hall in July, 2017.

Throughout this process, CTDOT has been coordinating with the public and identifying stakeholders for both the NEPA/CEPA and Section 106 processes. The current project evolved from a Rehabilitation Feasibility Study conducted by CTDOT as State Project #158-212. In 2015 and 2016, the Department held public information meetings regarding the study and a public scoping meeting that outlined its findings and recommendations. In addition to these meetings, CTDOT launched a publicly accessible project website to provide information and updates, which it continues to maintain.[3]

In the course of this outreach, several entities requested that CTDOT recognize them as Consulting Parties to the Section 106 process. State Project #158-212 had no federal involvement which would trigger a Section 106 review.

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[2] Mark McMillan, *Evaluation of Integrity, Saugatuck River Swing Bridge #01349*, April 4, 2017.

[3] State Project #158-214: https://portal.ct.gov/DOT/Bridges/Project-Pages/Project-No-158214

When CTDOT initiated State Project #158-214 in 2017, they forwarded these requests to FHWA. After review, FWHA granted Section 106 Consulting Party status to each of the following entities that had requested it:

- The Coalition
- Preservation Connecticut
  (previously "Connecticut Trust for Historic Preservation")
- Green's Farms Association
- Historic Bridge Foundation
- historicbridges.org
- Residents of the Bridge Street Neighborhood
- Save Westport Now
- Westport Historic District Commission
- Westport Preservation Alliance

Alternatives Under Consideration

The purpose of the current project is to address the existing structural and functional deficiencies of Bridge #01349, to provide a structure that accommodates safe vehicular, bicycle, pedestrian, and marine travel, and is resilient to the changing shoreline climate and environmental conditions, and considered the historic character of the bridge.

Four alternatives are currently being evaluated as part of the development of the EA/EIE document. Each of the alternatives will be described here and evaluated with regard to their impacts specifically to historic properties.

Rehabilitation

The Rehabilitation alternative will make repairs that address the needs and deficiencies identified in the Rehabilitation Study Report. The majority of the bridge's existing historic and non-historic elements will be retained and repaired rather than replaced. Key elements of this alternative include:

- Widening the space between decorative trusses on the bridge
- Repairing existing damage to the trusses
- Installing structural repairs to Piers 2 and 3
- Installing water resistant mechanical equipment for opening/closing bridge
- Installing new roadway barriers to control traffic during bridge openings
- Lengthening the existing dedicated right turn lane (westbound Bridge Street turning onto northbound Riverside Avenue)

This alternative will widen the space between the truss frames from 21'3" to 25'3" (measured from the centerline of the individual lattice frames). The bridge's existing 9'9"-wide vehicle lanes will remain as they are currently configured. The additional 2-feet of width gained from widening will allow the trusses to be set back from the roadway and will accommodate crash-tested guiderails. The current configuration does not allow for any deflection of the guiderail when it is struck (Image 2).

Without space for deflection, the force of a vehicle strike is transferred directly to the trusses. This will address a safety deficiency of the bridge and protect the trusses from future damage by vehicle strikes. In addition to the horizontal widening, this alternative will increase the vertical clearance between the roadway and top of the truss to a minimum of 13'11" (Figures 2 and 3).

Conservation

The Conservation Alternative was put forth by some of the stakeholders at the Project Advisory Committee (PAC) meetings. The goal of this alternative is to install repairs that will return the bridge to the condition it was in 1993 at the conclusion of the last project. It features the same repair actions to the substructure and trusses as the Rehabilitation Alternative and includes the extension of the dedicated right turn lane from Bridge Street onto Riverside Avenue (Figure 4). Unlike the Rehabilitation option, the Conservation Alternative will not reconfigure the decorative trusses. Consequently, the guiderail system will be replaced in kind with metal beam rails attached directly to the trusses. The existing road barrier system and mechanical equipment with either be retained or, if necessary, replaced in kind.

On-Alignment Replacement

The On-Alignment Replacement alternative will install a new bridge at the same location as the existing. The replacement structure will be designed to carry two lanes of traffic, feature a pedestrian sidewalk, meet current design code, and be a moveable span that will facilitate marine traffic. It will be larger than the existing bridge, with an estimated width of 43'6" and minimum 16'3" vertical clearance (Figures 5, 6 & 9). The On-Alignment Replacement has not been developed to the point of specifying a particular movable bridge type or the exact appearance of the replacement structure. Examples of a swing bridge and bascule bridge were provided to the PAC for their consideration in evaluating the impacts of this alternative.

Off-Alignment Replacement

The Off-Alignment Replacement Alternative will install a new bridge to the north of the existing structure (Figures 7 and 8). Like the On-Alignment option, the replacement bridge will include a moveable span and will be designed to meet current guidelines. It will carry two vehicle lanes and a sidewalk. As with the On-Alignment Replacement and Rehabilitation Alternatives, the Off-Alignment Replacement will install crash-tested guiderails and road barriers to stop traffic when the bridge is open and extend the dedicated right-turn lane from Bridge Street onto Riverside Avenue.

During construction, traffic will continue to be carried by the existing bridge. Once the new bridge opens to traffic, Bridge #01349 will be removed. The Off-Alignment bridge will require a permanent reconfiguration of this segment of Route 136. While CTDOT owns parcels of land on both the northeast and northwest sides of the existing bridge, it is likely that additional rights-of-way impacts will be required.

Area of Potential Effects (APE)

The APE is the geographical space in which an undertaking may create changes to a historic property's character or use. This document developed an APE that encompasses all four alternatives under consideration (Figure 1). It is centered on Bridge #01349 and includes approximately 1,100 feet (0.2 miles) of Route 136 between Riverside Avenue at the west to Imperial Avenue to the east. A 250-foot wide buffer zone extends southward the bridge to accommodate construction activities. The APE extends 500-feet north of the bridge to encompass the buffer and the area needed for a temporary detour or permanent new bridge proposed under the various build alternatives. The up- and downstream areas also capture vantage points that may be indirectly impacted by changes in the visibility of and from the bridge.

There are 14 properties within the APE. CTDOT's cultural resources staff conducted preliminary research on each of the properties and found that 6 of the 14 are potentially eligible for the National Register of Historic Places.[4] An evaluation of each property will follow and the criteria of adverse effect will be applied to all of the historic properties within the APE.

Adverse effects result when an undertaking alters the qualities that make a property "historic". An adverse effect will change one or more of the aspects of a historic property's integrity (location, design, workmanship, materials, setting, association, and feeling), thereby weakening a property's connection to the past. Bridge #01349 was already been the subject of an adverse effect in 1991. While each property in the APE will be evaluated individually, a single recommendation of effect for the undertaking as a whole will be made for each alternative.

<u>Saugatuck River Bridge (Bridge #01349)</u>

The Saugatuck River Bridge was originally listed on the National Register of Historic Places in 1987 under Criterion A (Events) and Criterion C (Design). As an historic property, the bridge must retain sufficient integrity to convey these connections to the past. The 2017 evaluation found that Bridge #01349's integrity of material, design, and association had been diminished. If Bridge #01349 were to be nominated for the National Register in its current condition, it would lack these key aspects of integrity to be eligible under Criterion C. The bridge retains integrity of location, setting, and feeling to qualify under Criterion A.

Assuming that provisions to follow the Secretary of the Interior's *Guidelines for Treatment of Historic Properties* will be applied to each alternative, the actions proposed under the Conservation Alternative would have minimal impacts to the existing historic integrity of Bridge #01349.

The Rehabilitation Alternative will change the design and material integrity of the trusses. Widening this element will change their dimensions and new material will be introduced to span the gap between the top chords and the sides of the truss.

[4] Appendix A – Project Study Area and Preliminary Screening

Other new elements such as the crash compliant guiderail will introduce new visual elements to the bridge. These are reversible treatments that can be removed without affecting the remaining character defining features of the bridge. Under the Rehabilitation Alternative, the aspects of location and setting will be unchanged. These aspects were key to supporting the context of the bridge's role in the pattern of the development of Westport and Saugatuck (Criterion A). As such, the Rehabilitation alternative will potentially have *no adverse effect* on historic properties.

The actions of replacing the bridge proposed in the On-Alignment and Off-Alignment alternatives would both constitute an *adverse effect* to the bridge.

Bridge Street Historic District[5]

Added to the NRHP in 2018, the district is described as a cohesive example of an early 19th to mid-20th century residential neighborhood with a period of significance that spans from 1809-1945. The majority of the 22-½-acre district is located east of Imperial Avenue and outside of the project's APE.

The district includes Bridge #01349, citing its construction and the creation of Bridge Street as the reason the eastern bank of the Saugatuck developed as a residential neighborhood, rather than an industrial center like the western bank. Within the APE are two segments of stone walls that are identified as contributing elements of the district. Both walls are within the state-maintained road right of way of Route 136.

During the previous rehabilitation of Bridge #01349, the walls were protected by either the existing metal beam guiderails or temporary barriers installed along the detour route. Such protective measures could be used in the current project and thereby avoid impacts to these features. Each wall will be discussed in the following sections on 12 Bridge Street and 5 Imperial Landing. In addition to the bridge and walls that are within the state-owned right of way, there are three properties that are both the Bridge Street District and the project's APE.

Map C06 / Block 53 / Lot 000 *(Parcel AQ in Figure 1)*

Abutting the southeast corner of Bridge #01349 is a 0.04 acre vacant parcel that is situated between Route 136 and the river (Image 3). It is steeply sloped and predominantly covered in riprap. This property is not mentioned in the Bridge Street District and does not appear to be or contain historic properties.

Map C06 / Block 59 / Lot 000 *(Parcel AM in Figure 1)*

Abutting the northeast corner of Bridge #01349 is a 0.79 acre vacant parcel that is co-owned by the State of Connecticut and CTDOT (Image 4). Between 1991-1993, a temporary bridge was built on this parcel as part of the previous rehabilitation of Bridge #01349. The Bridge Street District nomination includes this parcel within its boundaries; however no historic properties have been identified in it nor is any justification given for its inclusion.

[5] National Parks Service, *Bridge Street Historic District (SG100002318),* listed April 19, 2018.

Under the current project, all four alternatives will impose rights of way impacts to this property. The Rehabilitation, Conservation, and On-Alignment Replacement alternatives will temporarily use this parcel during construction to provide a detour bridge and roadway, similar to the 1991 project. The Off-Alignment Replacement alternative will permanently install the new alignment of Route 136 through this parcel.

12 Bridge Street *(Parcel AR in Figure 1)*

Bordered by Route 136 to the north and the Saugatuck River to the south is a 0.49 acre parcel near the southeast corner of Bridge #01349. At its eastern end is a 1-story single family cottage that was built in 1932 (Image 5). The property is identified as the Anna E. Dolan House, a contributing element to the Bridge Street District. A 19th century stone wall abuts the north side of the property and terminates approximately 375 feet east of Bridge #01349 (Image 6).

There are no direct impacts to this property anticipated by any of the build alternatives of this project. While each of the alternatives will present temporary construction impacts such as noise or traffic backups, none of these will foreseeably have a lasting diminishment of the property's historic character.

5 Imperial Landing *(Parcel AN in Figure 1)*

This 0.53 acre parcel is located 375 feet northeast of the subject bridge. On it is a 1-¾ story single family residence that was built in 1984. The property is excluded from Bridge Street District but a portion of the 20th century stone wall abuts its property line (Image 7). The wall terminates 200 feet east of Bridge #01349 and is within the state road right of way. It is identified as part of the system of stone walls within the Bridge Street District. The property is not eligible for the National Register and none of the alternatives are anticipated to have a direct impact on this property or the stone wall.

9 Imperial Landing *(Parcel AL in Figure 1)*

Located 375 feet northeast of Bridge #01349 is a 2-¼ story single family residence that was built in 1984. The house is not visible from the river or Bridge Street because of a stand of trees that surrounds it (Image 3). Because the property is less than 50 years old, it is not eligible for the National Register. The APE extends into a portion of this property, but there are no direct or permanent indirect impacts anticipated by any of the four alternatives.

1 Bridge Street *(Parcel Q in Figure 1)*

Abutting the northwest corner of Bridge #01349 is a 0.16-acre vacant parcel that is owned by CTDOT (Image 8). Along its eastern border is a masonry retaining wall that is contiguous with the bridge abutments and continues northward along the west bank of the river (Image 9). The property was acquired by the State as part of the 1991 rehabilitation of Bridge #01349.

Prior to its acquisition, it was the site of a gas station. The station and four 3,000-gallon subterranean gasoline tanks were removed in preparation for the western approach of the detour bridge to be built.

Under the current project, this property will once again serve as a detour route for Route 136 and a temporary bridge during construction of the alternatives. The Off-Alignment Replacement will permanently reroute Route 136 through this parcel. Because it is already part of the state right of way, no acquisitions will be required.

518 Riverside Avenue *(Parcel M in Figure 1)*

At the northwest corner of the APE is a 1.45-acre parcel that features two commercial/office buildings (Image 10). The 2-story structures are clad in vertical wood siding and have hip roofs with monitors in their ridgelines. Each was built in 1998, but their design and red paint make them resemble a rustic barn structure. The 3,000 square foot parking area is accessed via driveways on Riverside Avenue and Franklin Street. Neither of the buildings on the property are 50 years old, which is typically one of the requirements for listing on the National Register.

521 Riverside Avenue *(Parcel N in Figure 1)*

At the northeast end of the APE is a 1.53 acre parcel whose eastern border is the bank of the Saugatuck River. The property features the 2-story, 14,500 square foot Saugatuck Rowing Club, which was built in 2000 (Image 11). The property includes 20,000 square feet of paved parking, a stone patio, and a pier and dock installed in the river. The north and south parking areas is each have their own driveways off Riverside Avenue that are connected by a single lane in front of the building.

530 Riverside Avenue *(Parcel O in Figure 1)*

On the west side of Riverside Avenue is a 0.31 acre parcel on which is a 2-story restaurant that was originally constructed in 1900 as residence. The building is set back from the street approximately 250 feet (Image 12). Abutting the sidewalk is a masonry wall that encloses an outdoor seating area. Property also features 6,000 square foot asphalt paved parking area which is accessed from Riverside Avenue via a driveway along the south side of the building and enclosed patio.

535 Riverside Avenue *(Parcel P in Figure 1)*

To the northwest of Bridge #01349 is a 0.44 acre parcel bordered by Riverside Avenue and the Saugatuck River. On it are two buildings that currently operate as restaurants. The southernmost of the two is a 2-story building that was built in 1875 as the Rufus Wakeman Mattress Factory. It has a rectangular plan and a gabled roof. The primary façade is three bays wide and the north and north facades are six bays wide. The only element that distinguishes the building as a manufactory is a Dutch door in the center bay of the second floor (Image 13). On the north side of the building is a covered patio that allows for outdoor dining.

Abutting the covered patio is a 1-story pizzeria (ca. 1900) that was originally constructed as part of the mattress business. It also has a rectangular footprint, gabled roof, and its primary façade faces Riverside Avenue. The property also features an 8-slip dock and 4,000 square foot gravel parking area between the buildings and the river. There are two driveways that connect Riverside Avenue and the parking lot: one is 40 feet north of the corner of Bridge Street and Riverside Avenue and the other is adjacent to the pizzeria building.

The age of the buildings and their past use as an early business in the Saugatuck neighborhood may merit consideration for the National Register. Rufus Wakeman was a prominent Westport citizen whose home (18 Bridge Street) is listed as a contributing element of the Bridge Street Historic District. Despite its proximity, this property is excluded from the historic district.

The detour bridge and relocation of Route 136 through 1 Bridge Street will displace the dock currently associated with this property. Moving the roadway closer to these buildings will introduce indirect impacts such as noise, and a change in light caused by traffic signals or headlights. For the Rehabilitation, Conservation, and On-Alignment alternatives, these impacts will be temporary and will cease when construction is completed.

The Off-Alignment alternative will permanently relocate this segment of Route 136 north of its current alignment. It will create the same indirect impacts caused by the detour bridge as described above; however, these impacts will be permanent.

540 Riverside Avenue *(Parcel R in Figure 1)*

On the west side of Riverside Avenue opposite Bridge Street is a 1.15 acre parcel with two structures. At the south is a 2-¼ story residential building (1900) that has been converted to a multi-tenant commercial use (Image 14). Set back 100 feet from the street is a 1-story restaurant that was built in 1997. The majority of the parcel is covered in asphalt and serves as parking which is accessed from driveways on Riverside Avenue opposite Bridge Street and on Ketchum Street.

545 Riverside Avenue *(Parcel S in Figure 1)*

Abutting the southwest corner of Bridge #01349 is a 0.45 acre parcel with an L-shaped multi-tenant commercial building that was built in 1962 (Image 15). Outwardly, the building appears to be a collection of distinct structures that form a continuous streetfront. Along the west bank of the river is a section that consists of an L-shaped 2-story segment that is 5 bays wide. Connected to it are 2 additions that are each 2-stories tall and 3 bays wide. The additions continue the same stained vertical wood siding and regularly spaced white 6 over 6 vinyl windows but are distinguished by their discontinuous roof ridgelines and slightly taller facades.

The east-west arm of the building has a 3-½ story, five bay volume with a gable roof at its center. It is connected to previously described northern wing by a 2-¼ story, 3-bay addition. Both sections are clad is white vinyl clapboard siding and their upper story windows feature decorative storm shutters.

Adjoining the west side of the 3-½ story section is a 2-story, 1-by addition with a flat roof. Finally, there is a 2-story, 3-bay section that abuts the sidewalk of Riverside Avenue. This section has brick cladding on its first story and stained vertical wood siding on second story and gabled façade. The property also includes a dock on the river and a paved parking area with driveways on Riverside Avenue and Bridge Street, the latter of which is 250 feet west of the bridge. The buildings have businesses that include a restaurant, liquor store, dry cleaners and donut shop. Although the building is over 50 years old, it does not appear to be eligible for the National Register.

554 Riverside Avenue *(Parcel T in Figure 1)*

At the corner of a Riverside Avenue and Ketchum Street is a 0.33 acre parcel with a 1-story gas / auto service station that was built in 1970. Also on the property is a canopy over the gas pumps and asphalt and concrete paving. The parking area is accessed via two driveways, each on Riverside Avenue. Although the property is 50 years old, it does not exhibit design characteristics or associations with people or events that would be historically significant.

555 Riverside Avenue *(Parcel U in Figure 1)*

Located in the southwest of the APE is a 0.26 acre parcel that features a 2-story brick firehouse (Image 16). The building was constructed in 1900, but the Saugatuck Fire Station has been at this location since 1832. It is set back approximately 25 feet from Riverside Avenue. Between the building and the river is a parking area that is accessed via a single driveway on the north side of the building.

The sediments on the west side of the Saugatuck are classified as Urban Land and Udorthent-Urban Land Complex. Predictive models find that these types of soils have low archaeological sensitivity. On the east they are comprised of Westbrook Mucky Peat and Agawam Fine Sandy Loam, which is categorized as unknown sensitivity. There are no known archaeological sites in or within ½ mile of the project's APE. No archaeological surveys have been completed within a mile of the APE.

Recommendation

State Project #158-214 is the subject to both an Environmental Assessment under NEPA and a Section 106 review under the National Historic Preservation Act. At this time, a preferred alternative has not yet been identified form among the four under consideration. In accordance with Section 106 of the National Historic Preservation Act, CTDOT offers the following recommendations of effect on historic properties caused by each the alternatives:

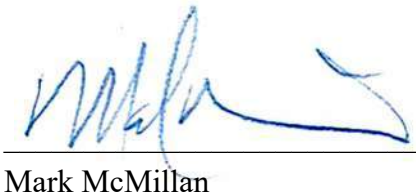
Construction of any of the four will create indirect impacts to the area such as noise, installation of a temporary detour, and disruption of normal traffic patterns on the road and river. However, these impacts are temporary and will not foreseeably impact the integrity of the historic properties identified within the APE.

Rehabilitation: Widening the trusses of Bridge #01349 will further diminish the integrity of design of the original trusses. It should be noted that the bridge's integrity of design and was already substantially compromised in 1991 when the trusses ceased to function as load-carrying elements. The wider deck will retain and reuse the existing top truss members but install new elements to span the additional 2-foot distance between the top assemblies and each side of the truss. It will introduce new materials and change the connections (workmanship) of the top and side elements; however, these connections were already reconfigured when the truss was dissembled and reinstalled as part of the 1991 project.

These impacts will not foreseeably alter the aspects of the bridge's location and setting, which are key to bridge's associations with past events and the development of the Saugatuck community. The aspect of Feeling, or the bridge's ability to convey its sense of history to an observer is not substantially changed by the proposed alterations. As such, this alternative will result *no adverse effect* to either the Saugatuck Swing Bridge or the Bridge Street Historic District.

Conservation: This alternative will not substantially change the historic integrity of Bridge #01349 from its current condition. Aside from temporary indirect impacts of noise and detoured traffic, this alternative will not foreseeably affect the Bridge Street Historic District. As such, it will have *no adverse effect* on historic properties.

Both the On-Alignment and Off-Alignment Replacement Alternatives will remove the Bridge #01349 (Saugatuck Swing Bridge) from its historic location and alter its integrity of setting, materials, design, and association. These impacts will constitute an *adverse effect to historic properties*.



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Attached Documents:

☒ **Historic Review Map**

☒ **Supporting Documents**

- Appendix A – Cultural Resources Study
- Appendix B – Integrity Evaluation Letter (2017)

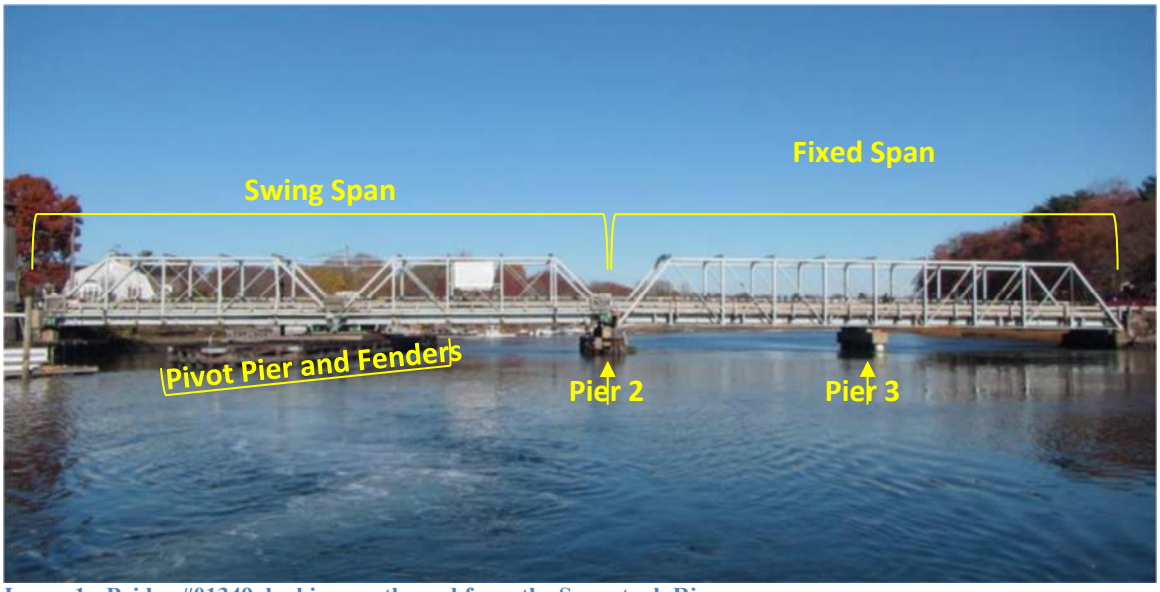


Image 1: Bridge #01349, looking northward from the Saugatuck River.

Image 2: Existing metal beam guiderail abutting the decorative trusses. When the guiderail is struck, the truss members restrict any deflection and the force of the impact is transferred to the truss.

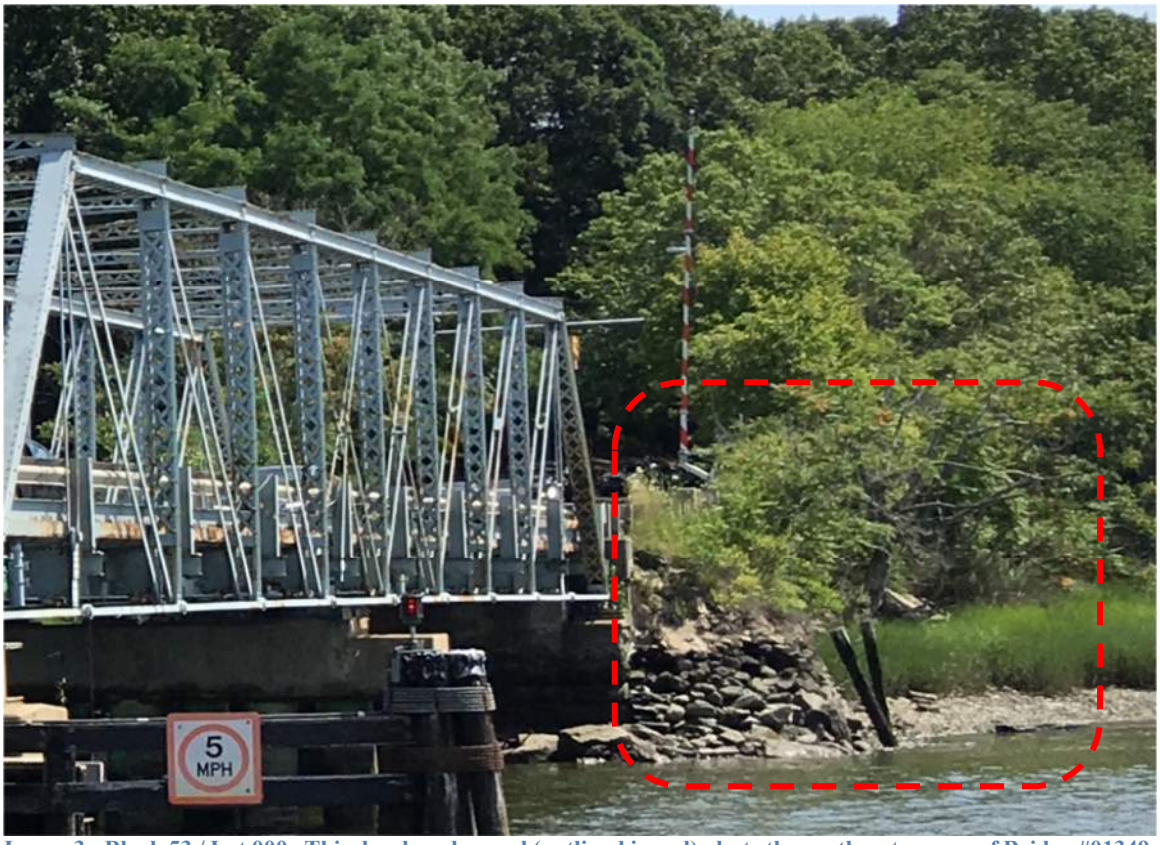


Image 3: Block 53 / Lot 000. This developed parcel (outlined in red) abuts the southeast corner of Bridge #01349.

Image 4: Block 59, Lot 000. This undeveloped parcel is owned by CTDOT. The house at 9 Imperial Landing is just visible through the trees during winter (red arrow). The rest of the year, the trees' foilage screens the homes to the northeast of the bridge from view.

Image 5: House at 12 Bridge Street, viewed from Route 136 looking westward.

Image 6: Stone wall on southern side of Route 136. This wall abuts the property line of 12 Bridge Street. The wall terminates 375 feet east of Bridge #01349, which is located beyond the curve in Route 136.

Image 7: Western terminus of stone wall that abuts the property at 5 Imperial Landing. The wall is within the existing road right of way.

Image 8: Block 59 / Lot 000 (grass covered area) at the northwest corner of Bridge #01349. This proeprty is owned by CTDOT and served as the approach for the detour bridge that was required for the previous rehabilitatoin in 1991.

Image 9: Masonry retaining wall on the west bank of the Saugatuck River, viewed from Bridge #01349.

Image 10: Old barns at 518 Riverside Avenue.

Image 11: Saugatuck Rowing Club at 521 Riverside Avenue.

Image 12: Restaurant at 530 Riverside Avenue.

Image 13: Restaurants at 535 Riverside Avenue. Each building was orignially constructed as part of the Rufus Wakeman Mattress Factory.

Image 14: House turned office at 540 Riverside (at left). The 1-story restaurant s visible in the background.

Image 15: Commerical building at 545 Riverside Avenue.

Image 16: Fire station at 555 Riverside Avenue.

Figure 1: Area of Potential Effect (APE) of Project #158-214 outlined in orange. Bridge #01349 is highlighted in red. The legend in the upper right corner identify the addresses or Block/Lot of the parcels within the project APE.

Figure 2: Conceptual rendering of Rehabilitation Alternative.

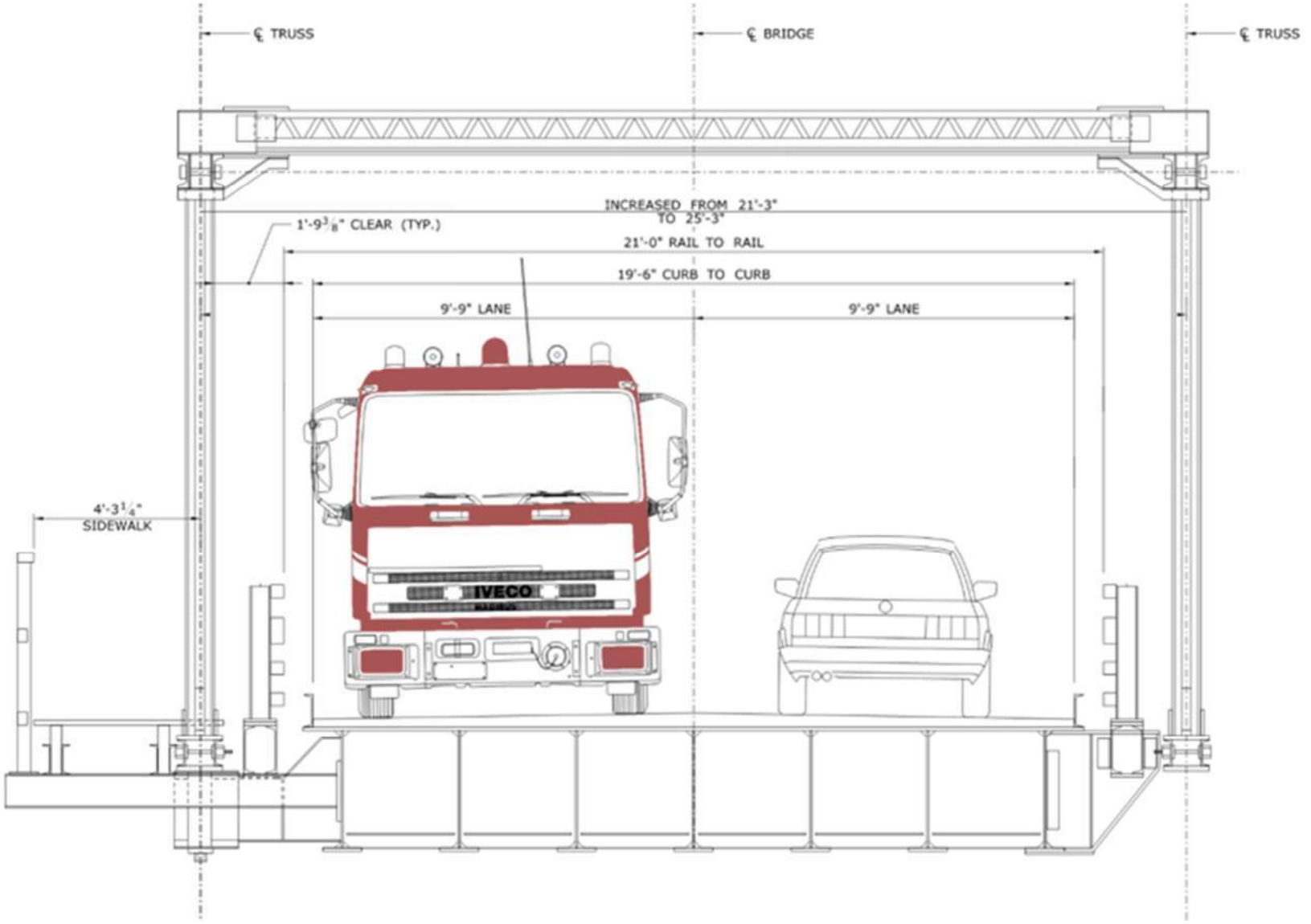


Figure 3: Section of Swing span showing dimensions of the Rehabilitation Alternative.

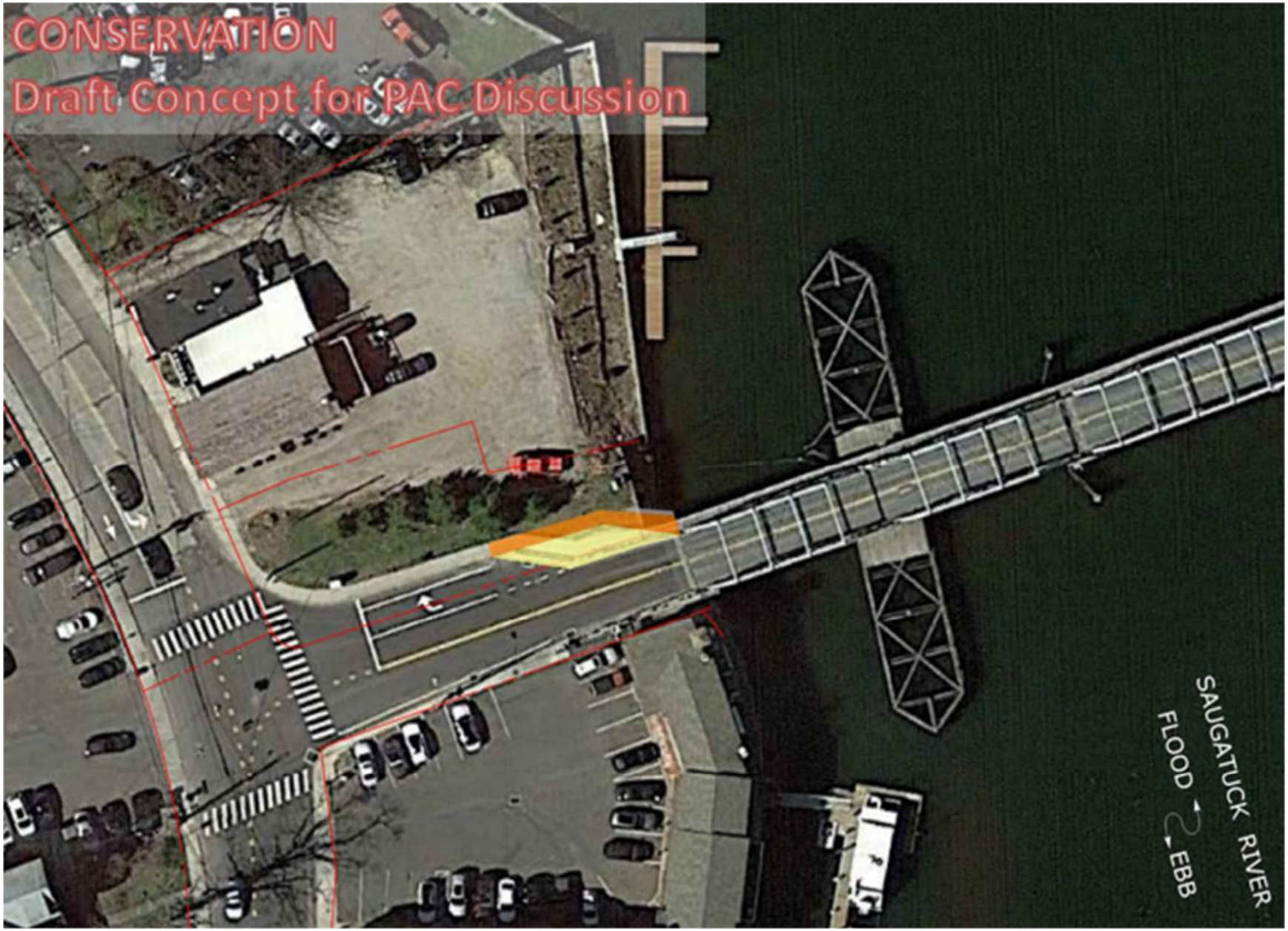


Figure 4: The Conservation Alternative will not substantially change the bridge. Included in this Alternative is extending the dedicated right-turn lane from Route 136 onto Riverside Avenue.

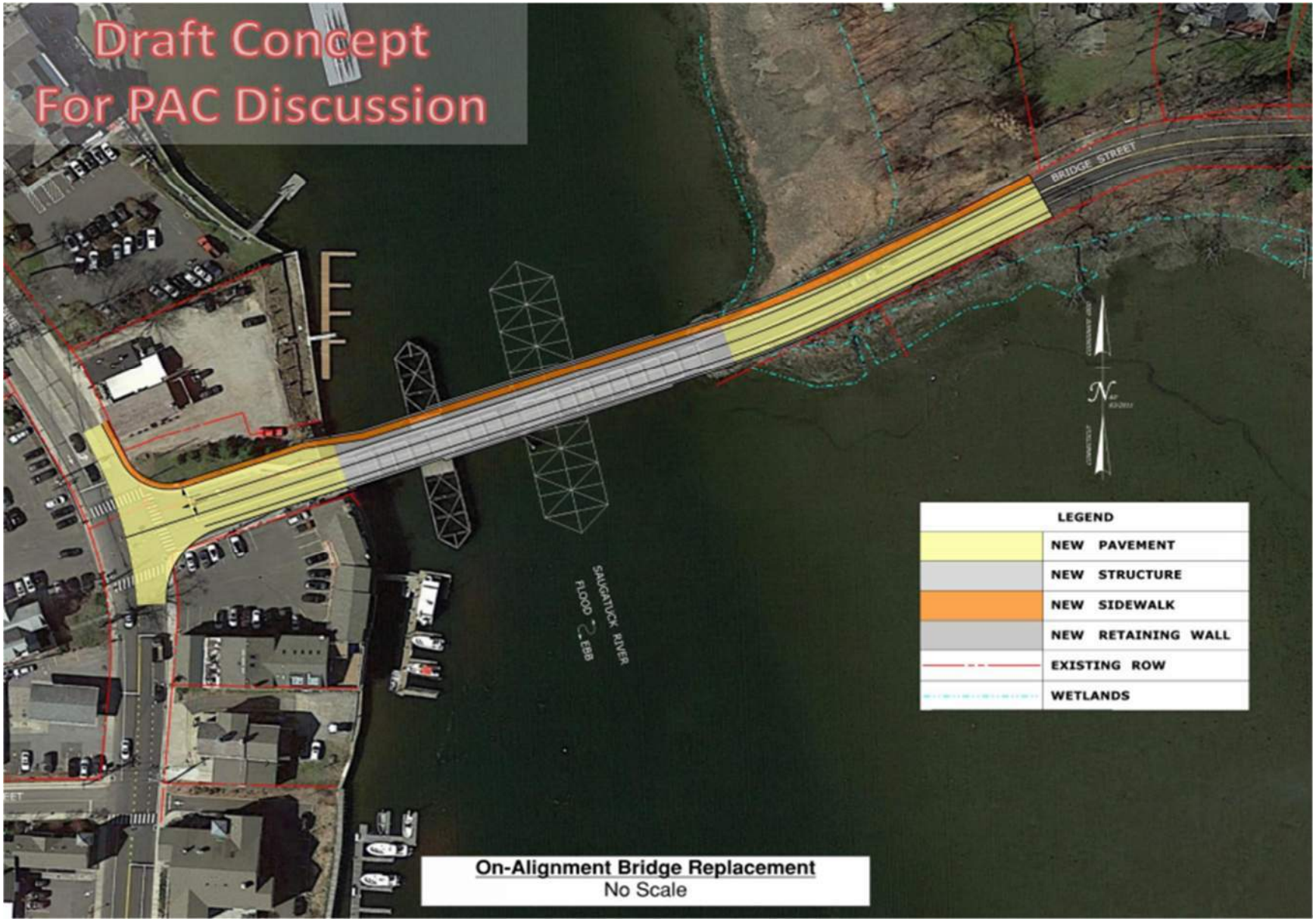


Figure 5: Conceptual plan of Rehabilitation Alternative.

Figure 6: Conceptual rendering of the On-Alignment Replacement Alternative.

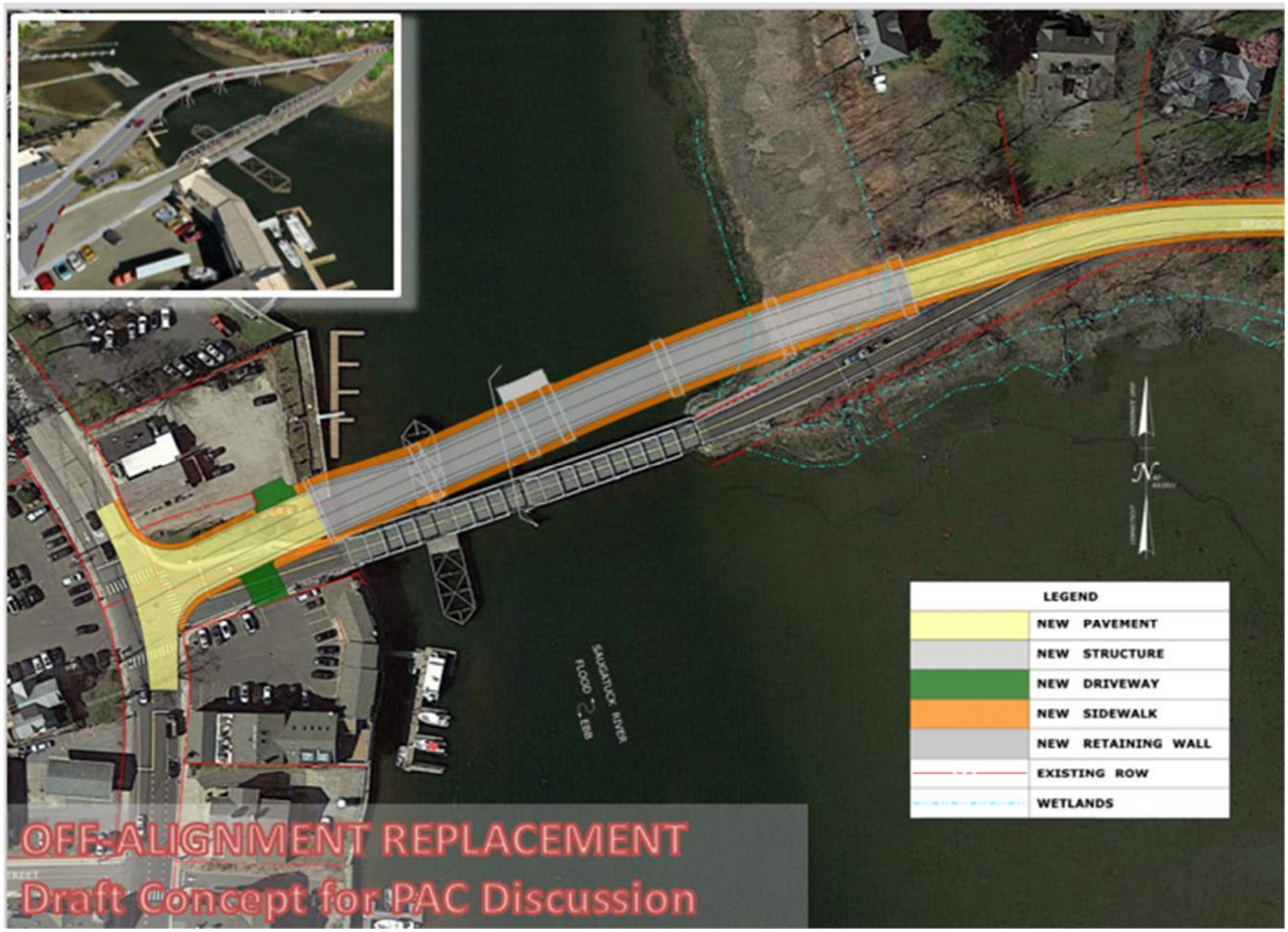


Figure 7: Conceptual plan of Off-Alignment Replacement Alternative. The inset image shows the detour bridge required by the other three alternatives.

Figure 8: Conceptual rendering of the Off-Alignment Replacement Alternative.

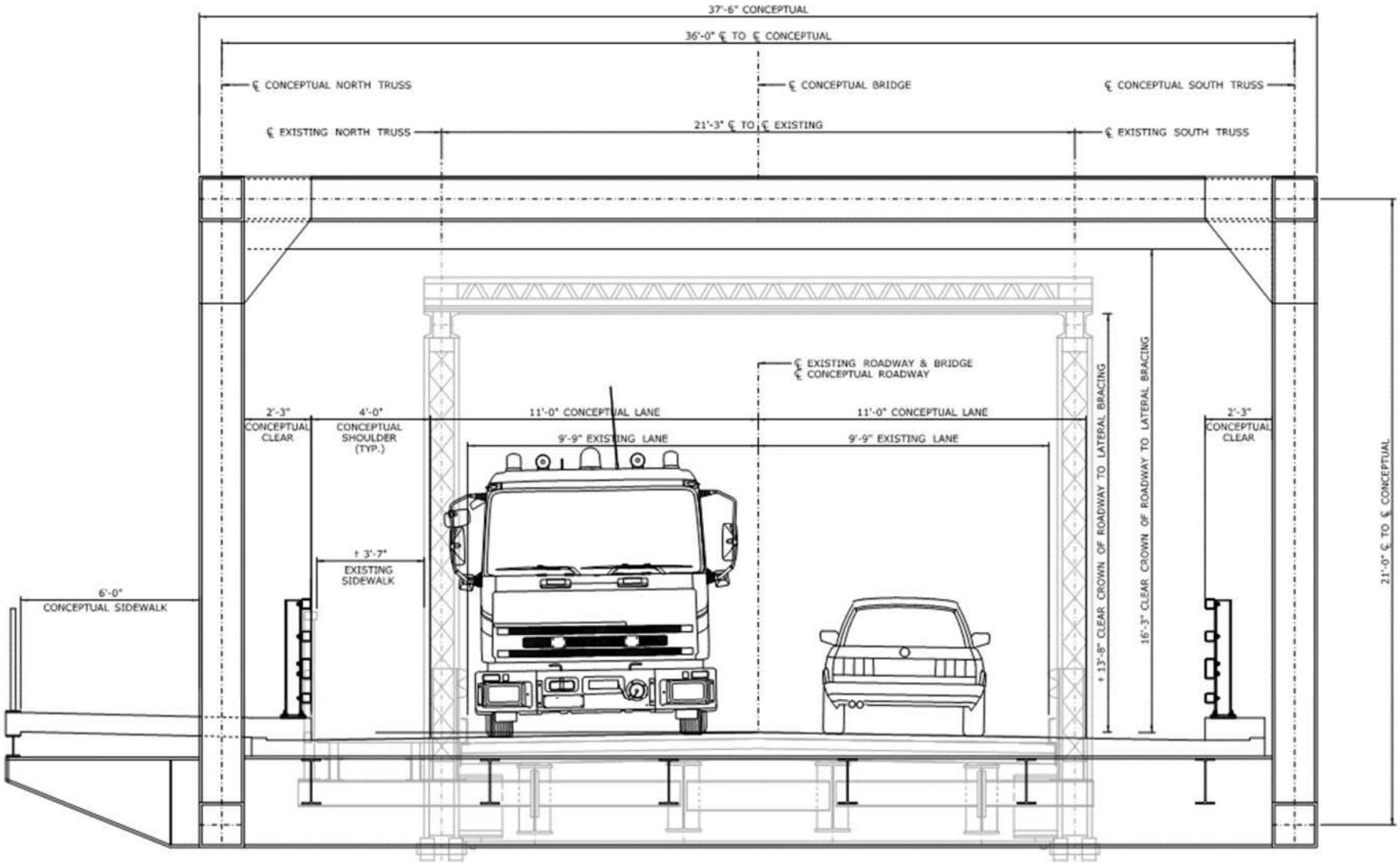


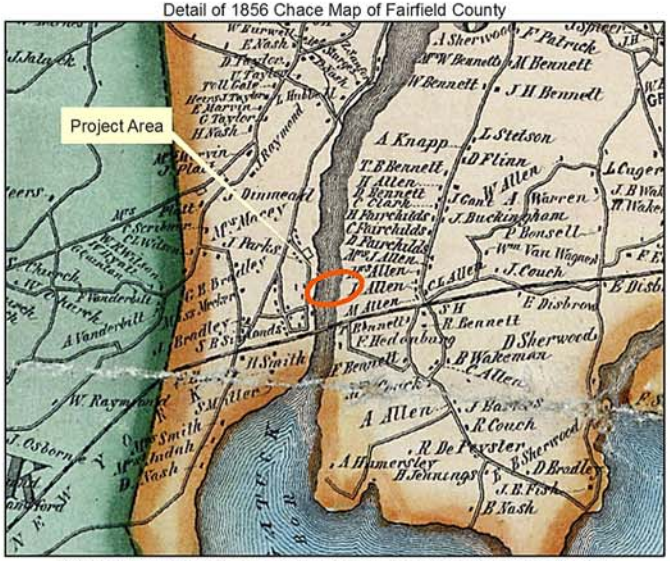
Figure 9: Conceptual section of replacement bridge superimposed on a section of the existing Bridge #01349 (shown in light grey).

CONCEPTUAL THROUGH TRUSS SWING BRIDGE - WEST ELEVATION SECTION

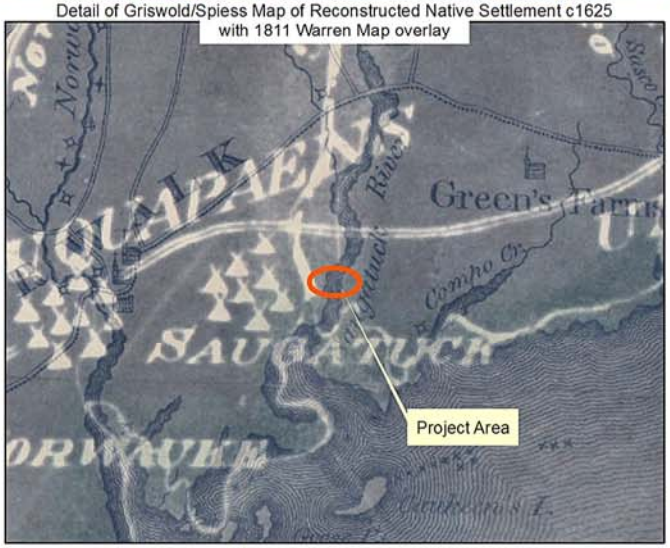
NOTE: THE BRIDGE SHOWN IN THIS CONCEPT IS ONE OF SEVERAL STRUCTURE TYPES THAT CAN BE CONSIDERED FOR THIS CROSSING. THE LOCATION OF CONCEPTUAL BRIDGE WITH RESPECT TO THE EXISTING BRIDGE IS DEPICTED FROM THE DRIVER'S PERSPECTIVE BY MATCHING THE ROADWAY CENTERLINES.

Detail of 2019 Aerial Photography

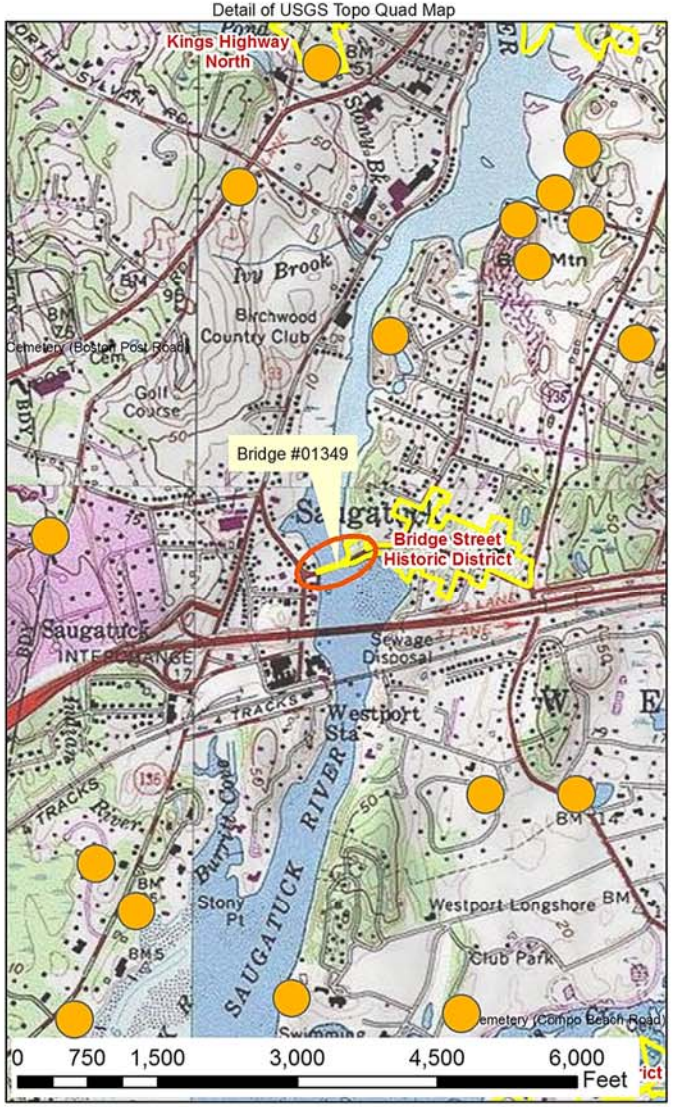
Detail of 1856 Chace Map of Fairfield County



Detail of Griswold/Spiess Map of Reconstructed Native Settlement c1625 with 1811 Warren Map overlay



Detail of USGS Topo Quad Map



Office of Environmental Planning
Environmental Review - Historical and Archaeological Resources

State Project No. 158-214
F.I.D.#: TBD
Bridge #01349 Rehabilitation
Route 136 over Saugatuck River
Westport

Predicted Archaeological Soil Sensitivity
- High
- Moderate
- Variable
- Low
- Poor
- Unknown

Historic District

Cemetery/ 4(f) Resource

Approximate Location of Archaeological Site
- Historic
- Pre-Contact
- Unknown

March 1, 2019

APPENDIX A – Cultural Resources Study Area

In establishing an Area of Potential Effects (APE), a broad study area was initially examined. The study area extends ¼-mile and is roughly bounded to the north by the bend in the Saugatuck River and to the south by I-95. It includes properties on the east and west sides of the river that are within the viewshed of the bridge (Figure 1). The viewshed is constrained by the bend in the river to the north and natural landforms to the east (Figure 2). In addition to limiting potential visual impacts caused by the project, the landforms limit other indirect impacts such as noise and vibration.

Within the study area are 52 properties, the majority of which are privately-owned residential or business properties. There are also a few municipally- or state-owned parcels such as vacant conservation areas and road right-of-way. These properties underwent an initial screening to identify historic properties that may be impacted by the project (Table 1). The properties that were located within the project APE are examined in depth in the §106 recommendation letter.

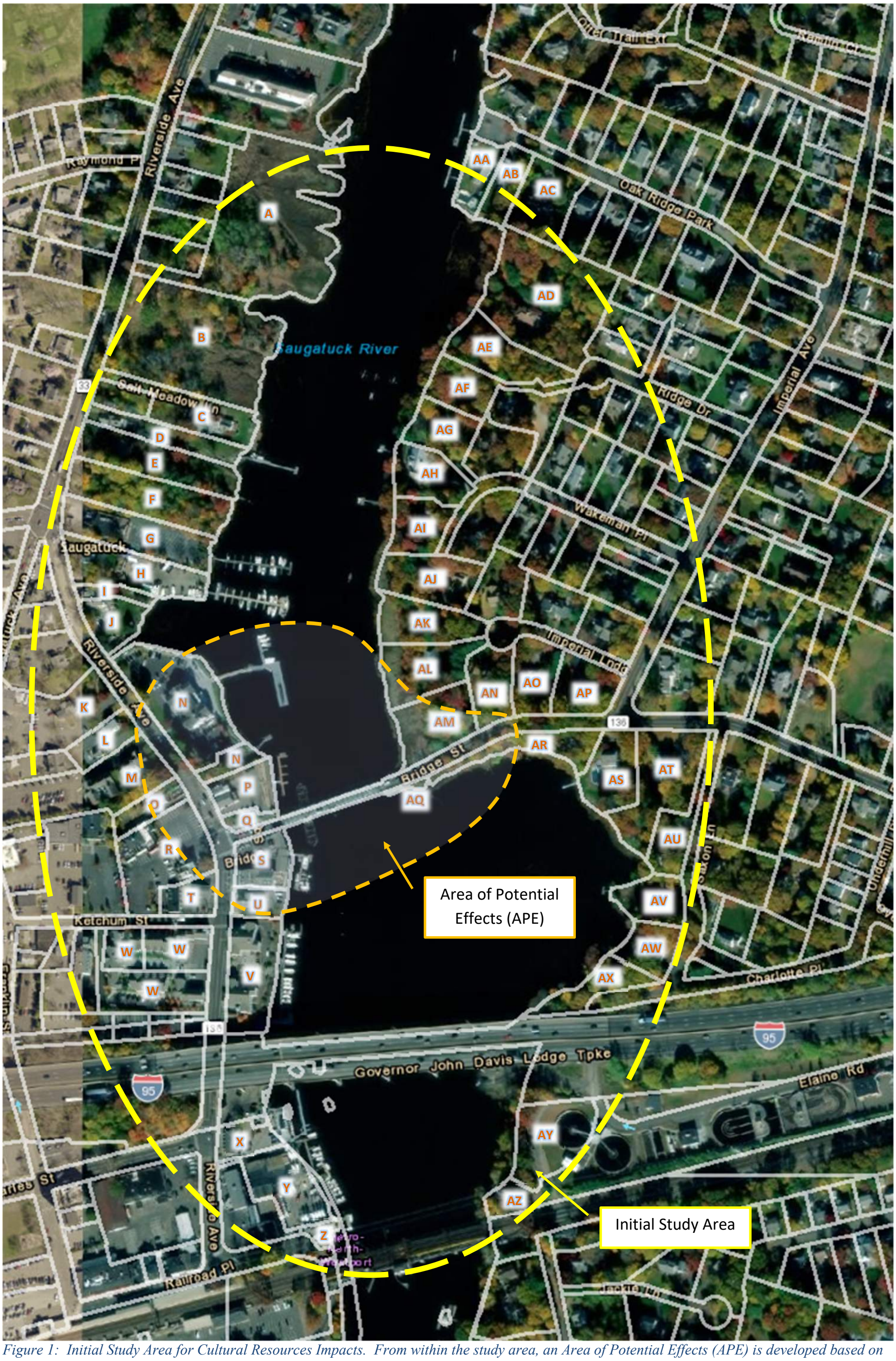


Figure 1: Initial Study Area for Cultural Resources Impacts. From within the study area, an Area of Potential Effects (APE) is developed based on the limits of probable impacts that will be foreseeably created by any one of the four alternatives under consideration.

Table 1: Properties within the Initial Study Area

ID	Address	Year Built	Description	Notes
A	407 Riverside Ave	--	Town of Westport / Open Space on River 3.32 acre municipal land, vacant	Not NRHP-Eligible
B	427 Riverside Ave	--	Town of Westport, 2.6 acre municipal land, vacant	Not NRHP-Eligible
C	435 Riverside Ave	1930	1-¾ story single family residence, 0.67acre	
D	443 Riverside Ave	1860	2-story single family residence, 2 sheds, dock/pier, 0.49 acre	
E	447 Riverside Ave	1880	1-¼ story single family residence shed, poultry house, dock/pier, 1.0 acre	
F	455 Riverside Ave	1890	2-story multi-family residence	
G	465 Riverside Ave	1974	1-story VFW Lodge	Not NRHP-eligible
H	471 Riverside Ave	1850	1-¾ story single family residence	Possibly, 50+ year
I	481 Riverside Ave	1890	1-¾ story single family residence	Possibly, 50+ year
J	485 Riverside Ave	1890	2-story single family residence	Possibly, 50+ year
K	500 Riverside Ave	1860 1860	2-¼ story multi-family residence 1-½ story single family residence	Possibly, 50+ year
L	512 Riverside Ave	1930	3-story residential/commercial building	Possibly, 50+ year
M	518 Riverside Ave	1998	2-story office building	No
N	521 Riverside Ave	2000	2-story club/lodge (Saugatuck Rowing Club)	No
O	530 Riverside Ave	1900	2-story restaurant	Possibly, 50+ year
P	535 Riverside Ave	1875	2-story restaurant	Possibly
Q	1 Bridge Street	--	Vacant 0.16 parcel owned by CTDOT Northwest abutter of Bridge #01349	No
R	540 Riverside Ave	1900 1997	2-¼ story commercial building 1-story restaurant	Possibly
S	545 Riverside Ave	1962	2-story commercial building	Possibly
T	554 Riverside Ave	1970	1-story service station	No
U	555 Riverside Ave	1900	2-story fire station	Possibly
V	575 Riverside Ave	2010	2-story office/apartments	Not NRHP-eligible
W	580 Riverside Ave	2013 2013 2013 2013 2013	2-story stores/apartments 2-story stores/apartments 2-½ story apartments (5 units) 3-story apartments (7 units) 2-½ story apartments (5 units)	Not NRHP-eligible
X	601 Riverside Ave	1940 1953	1-¾ story office/commercial building (8 units) 1-story restaurant 10,400 sf paved parking, 9-slip boat dock, 0.37 acres	
Y	609 Riverside Ave	1900	1-story commercial service shop, 2 boat houses, 10,000 paved parking, 13-slip dock, 0.81 acre	
Z	2 Railroad Place	1900	2-story professional building, highly altered, 5,000 sf paved parking, 17 slip dock/pier, 0.09 acre	

ID	Address	Year Built	Description	Notes
AA	25 Oak Ridge Park	2019	2-story single family residence cabana, inground pool, dock/pier, shed	Not NRHP-eligible
AB	23 Oak Ridge Park	1949 2016	2-story single family residence 2-story single family residence, 0.34 acre	
AC	21 Oak Ridge Park	1988	2-story single family residence 0.69 acre, in-ground pool	Not NRHP-eligible
AD	20 Ridge Drive	1900	3-story single family residence 1.99ac, in ground pool	
AE	24 Ridge Drive	--	0.73 acre vacant parcel	Not NRHP-eligible
AF	0 Ridge Drive Block 012 / Lot 000	--	Aspetuck Land Trust, Inc., 0.5 acre vacant parcel	Not NRHP-eligible
AG	Block 78 / Lot 000	--	Aspetuck Land Trust Inc., aka Hemlock Kettle, 0.5 acre vacant parcel	Not NRHP-eligible
AH	22 Wakeman Place	1960 2016	1-½ story single family residence 2-story single family residence Above ground pool, dock/pier, 0.61 acre	
AI	24 Wakeman Place	1930	1-story single family residence, dock/pier, 0.51 acre	
AJ	17 Wakeman Place	1900	2-story single family residence, 0.71 acre	
AK	8 Imperial Landing	1984	2-¼ story single family residence	Not NRHP-eligible
AL	9 Imperial Landing	1984	2-½ story single family residence	Not NRHP-eligible
AM	0 Bridge Street *Map 059 / Lot 000*	--	Vacant 0.79 acre parcel owned by CTDOT Northeast abutter of Bridge #01349 *Located within Bridge Street Historic District*	Yes
AN	5 Imperial Landing	1984	1-¾ story single family residence	Not NRHP-eligible
AO	3 Imperial Landing	1986	2-story single family residence	Not NRHP-eligible
AP	1 Imperial Landing	1985	2-story single family residence	Not NRHP-eligible
AQ	Block 053 / Lot 000	--	Vacant 0.04 acre parcel, southeast abutter of bridge *Located within Bridge Street Historic District (?)*	Yes
AR	12 Bridge Street	1932	1-story cottage *Located within Bridge Street Historic District*	Yes
AS	14 Bridge Street	1920	2-story single family residence	Possibly
AT	16 Bridge Street	1875	2-story single family residence, 1.12 acre *Located within Bridge Street District*	Yes
AU	1 Saxon Lane	1879	2-story single family residence, garage w/ loft, 0.5 acre	Possibly?
AV	8 Saxon Lane	1950 1950	1-¾ story 2-family home 1-story studio shed, 0.32 acre	
AW	10 Saxon Lane	1928	1 ½ story 2-family home, 0.44 acre	
AX	Block 046 / Lot 000	--	State of CT, DEEP, 0.27 acre vacant parcel	Not NRHP-eligible
AY	0 Saxon Lane Block 005 / Lot 000	--	Town of Westport / Rendoor Pk-Saxon Lane 1.0 acre vacant parcel	Not NRHP-eligible
AZ	4 Elaine Road	1960 1989	Town of Westport Treatment Plant 1-story industrial building, 4.42 acre	Not NRHP-eligible

* Properties that are shaded in grey are outside the Area of Potential Effects (APE).

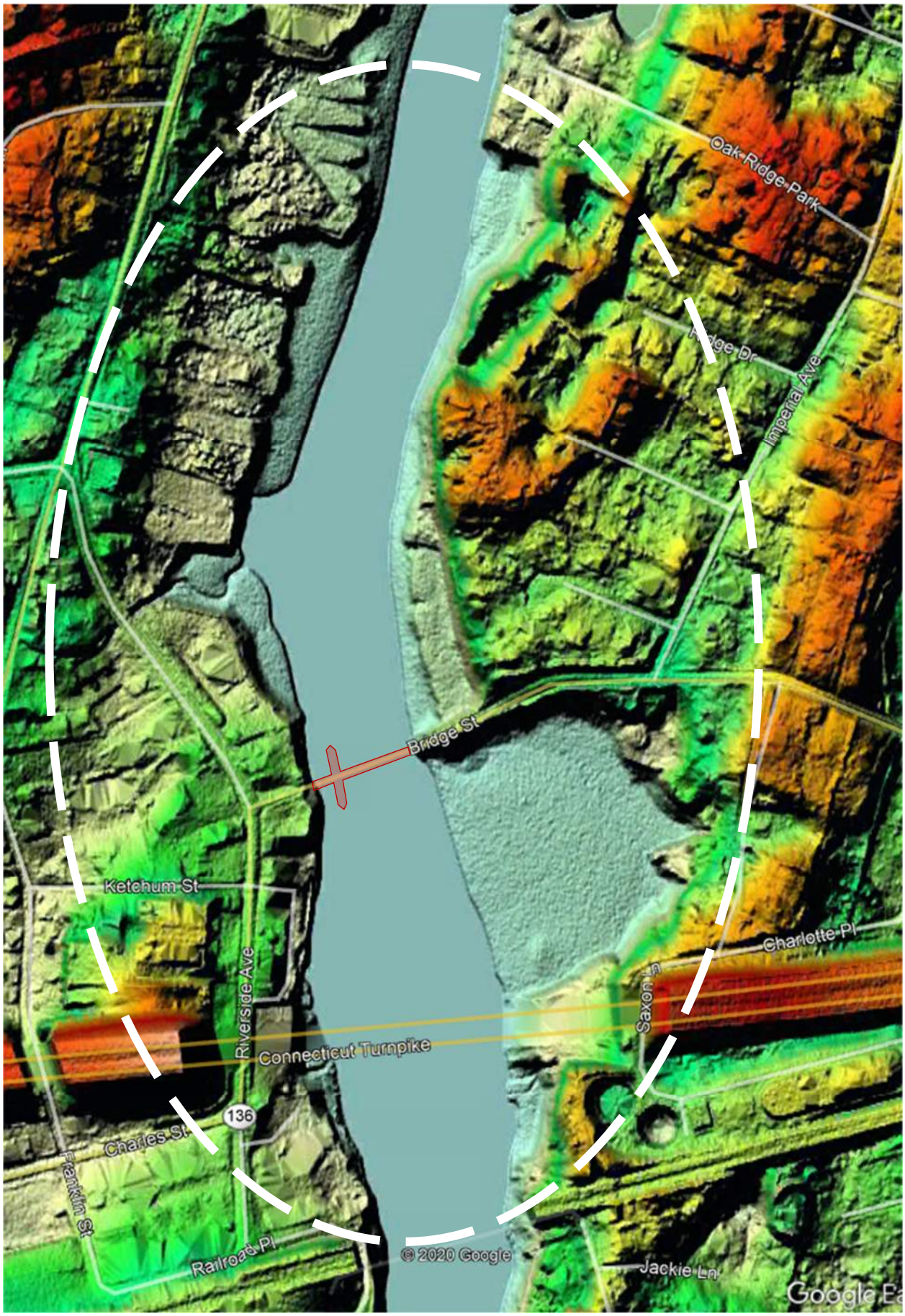


Figure 2: LiDAR view of the topography of the study area (outlined in white). Areas shaded in red indicate landforms (hills/ridges) that limit the visibility of and from Bridge #01349.

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Evaluation of Integrity for Historic Properties

Author: Mark McMillan **Date: April 28, 2017**

Resource: **Saugatuck River Swing Bridge #01349**
Route 136 over Saugatuck River
Westport

Cause for Assessment

The Connecticut Department of Transportation (CTDOT) has recently completed a Rehabilitation Feasibility Study of the Saugatuck River Swing Bridge (Bridge #01349) in Westport. The report assesses the current condition of the bridge and explores alternatives for rehabilitating the structure. CTDOT anticipates that work will be required to maintain the bridge and that this work will entail federal funding and/or permitting.

Such federal involvement constitutes an undertaking, which brings the project under the purview of Section 106 of the National Historic Preservation Act of 1966 (NHPA) and the National Environmental Policy Act (NEPA). Respectively, these Acts require the lead federal agency to consider the impacts of an undertaking on historic properties (NHPA) and to balance the needs of infrastructure, social, and economic improvements with the impacts that such improvements cause to the environment (NEPA). Like air, water, and endangered species, historic resources are considered elements of the environment under NEPA.

In 1987, the Saugatuck River Swing Bridge (Bridge #01349) was listed on the National Register of Historic Places as a significant example of a moveable bridge type.[1] In 1991, the bridge underwent a major rehabilitation which altered its design and replaced major elements such as the operating machinery and superstructure deck. Although strategies to retain the character-defining features of the bridge were incorporated into the rehabilitation, the undertaking was determined by the US Coast Guard and State Historic Preservation Officer (CTSHPO) to have an Adverse Effect to Historic Properties.

No documentation of the structure's historic integrity was performed after the 1991 Adverse Effect determination was made. In anticipation of future rehabilitation work, CTDOT's Office of Environmental Planning (OEP) has resolved to examine Bridge #01349's historic integrity, as defined by the National Parks Service. This documentation will provide a basis upon which future Section 106 review impacts will be evaluated.

[1] National Park Service, *Saugatuck River Bridge (NPS #87000126)*, listed February 12, 1987.

Resource Description

The Saugatuck River Swing Bridge – also known as the "Bridge Street Bridge" and "William Cribari Bridge" and hereafter referred to as Bridge #01349 – was constructed in 1884. It consists of a four span multi-girder steel superstructure carried on masonry abutments and mid-river piers of both masonry and concrete (Image 1). Dimensionally, the bridge is 26'8" wide, which accommodates a 19'6" wide roadway of two lanes of opposing traffic and a 4-foot wide sidewalk cantilevered off the structure's north side.

The western half of the bridge is the swing span, which is 145' in length and centered over a large pivot pier. As the name implies, the swing span is capable of turning 90° to the path of Route 136, thereby opening the river to boat traffic. In 1950, the masonry pivot pier was encased in concrete that was poured into a cylindrical form comprised of steel plates. This was installed as a repair and strengthening measure. Surrounding the pivot pier is timber cribbing set on wood piles that protect the pier from ice floes and maritime collision damage. At 24'2", the cribbing is slightly wider than the cylindrical pivot pier. Lengthwise, its up- and downstream portions each extends 73' from the pier.

The western end of the swing span is supported by a masonry abutment when the bridge is closed. A masonry pier (Pier 2) supports the east end of the swing pier as well as the west end of the fixed span. Pier 2 is also protected by timber cribbing, though this consists of a single wall on the western side of the pier.

The eastern half of the bridge is 142' long and is comprised of two continuous spans that make up the fixed section. The spans are supported by Pier 2 and a masonry abutment at its eastern end. Prior to the 1991 rehabilitation of the bridge, the fixed portion was a single span structure. A reinforced concrete pier was installed at the midpoint of the new structure to support the ends of the two new spans. In addition to the replacement of the bridge deck, the pivot pier and Pier 2 were rehabilitated by introducing new pilings and replacing deteriorated timber cribbing.

The three original Pratt trusses that had carried the live load of the bridge prior to 1991 were rehabilitated as decorative elements on top of the new platform superstructure. In order to attach the trusses to the new deck, the center portion of the truss floor beams were removed, leaving only a 2' stub (Image 2). Today the trusses support their own weight, but no longer bear any of the loads of the bridge.

The trusses retain their original configuration and thereby impose the same geometric constrictions as they did pre-rehabilitation. There is an average vertical clearance of 13'7" between the roadway and the lower chords of the portal trusses. Although these dimensions did not meet 1991 code, a design exception was made to allow for the retention of these character-defining elements. An electrical junction box attached to one of the upper chords of the swing span further reduces the vertical clearance. The bridge currently has a posted limit height of 12'7".

Methodology

In considering the integrity of the Saugatuck River Swing Bridge, the staff of CTDOT's Office of Environmental Planning (OEP) consulted the following resources:

- National Historic Preservation Act (NHPA) of 1966, as amended
- National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation* (1995)
- "The *Secretary's Standards* Interpreted for Bridge Repair, Rehabilitation, and Replacement Situations" adapted from Miller, A.B., K.M. Clark, and M.C. Grimes. 2001. *A Management Plan for Historic Bridges in Virginia VTRC 01-R11* (2001). This document is attached as Appendix A.
- National Register Nomination Form (NRP #87000126) for *Saugatuck River Swing Bridge* (1987)
- Parsons Brinkerhoff and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types, NCHRP Project 25-25, Task 15*, National Cooperative Highway Research Program, (October 2005)
- Historic American Engineering Record (HAER) No. CT-46 *Saugatuck River Bridge (Connecticut Bridge No. 01349)*
- Historic Resource Consultants, *Connecticut Historic Bridge Inventory Final Report: Preservation Plan*, State of Connecticut Department of Transportation (May 1991)
- *Local Historic District Designation, Saugatuck River Swing Bridge, Westport, CT* (2016)
- Close, Jensen & Miller, P.C., *Rehabilitation Study Report, Bridge #01349, Route 136 over Saugatuck River, Westport, CT*, (June 2016)
- Original drawings, as-built drawings, and specifications from the 1991 and 1993 rehabilitations

In addition to these resources, staff from the Office of Environmental Planning, in conjunction with CTDOT maintenance engineering staff performed on-site evaluations of the bridge and its surroundings.

Integrity

In order to be listed on the National Register of Historic Places (NRHP), a property must not only meet certain criteria of historic significance, but it must also retain sufficient integrity to convey this significance. In his assessment of the bridge, the author of the 1987 NRHP nomination of the Saugatuck Swing Bridge identified the original construction – 1884 – as the period of significance for the bridge. He acknowledged that repairs and alterations had altered the bridge from the structure it had been in 1884, but noted that the repairs had not compromised the bridge's visual or functional integrity. The major alterations were not highly visible and were "an unobtrusive way of allowing the members to continue in their original function."[2]

Following its listing, Bridge #01349 underwent rehabilitation in 1991 and again in 1993 (Figure 1).

[2] NR Inventory Form, Item 7, Page 2.

The major changes of these campaigns included:

- Replacement of the floor system within the fixed and swing trusses
- Rehabilitation of the original wrought iron trusses
- Replacement of the operating machinery of the swing span
- Installation of a new pile foundation within the pivot pier
- Repairs of the existing masonry piers
- Installation of a new reinforced concrete pier beneath the fixed span

As evidenced by the Adverse Effect determination made in 1991, these alterations to the bridge resulted in the diminishment of one or more the bridge's historic Integrity: The National Park Service defined seven aspects of integrity: Location; Design; Setting; Materials; Workmanship; Feeling; and Association.[3]

Location

During the 1991 rehabilitation, repairs to the bridge abutments and pivot pier were completed *in situ*. The bridge superstructure removed from its position over the river. Rehabilitation of trusses and minor alterations were installed off-alignment. Following the repairs, the trusses were returned to their original location and installed on the bridge's new superstructure. Despite this process of removal and replacement, the Location aspect of Bridge #01349's integrity remains intact. It has not significantly changed since the completion of the 1991/1993 construction projects.

Design

Bridge #01349 was originally designed as a pin-connected wrought iron Pratt truss structure (Image 3). It was designed by Cornelius Van Ness Kittredge of the Central Bridge Works of Buffalo, New York (later the Union Bridge Company). The engineering innovation required to design a moveable structure is one of the defining features of the bridge's historic significance (Criterion C). At the time of its NRHP nomination, it was the only such State-maintained bridge in Connecticut that was still manually operated.

In its original design, a series of beams were pin-connected to the Pratt trusses that supported their weight. The deck that carried travelers over the bridge was originally constructed of wood and built over the beams (Image 4). The wood deck was replaced in 1952 by a steel grid "singing" deck that was carried on the original beams. In 1991, a rigid platform was installed that supports the deck and loads above it. It replaced the trusses' function of bearing the loads of the bridge. In terms of Design integrity, "a truss should still function as a truss".[4] While Bridge #01349's trusses retain their pre-construction appearance, they no longer perform the function for which they were made.

In 1991, new electric motors and jacks were installed that allow the bridge to be automatically opened and closed. In response to the public input, the new machinery included the means to operate the span manually. In practice, such an opening has not occurred. The overall Design integrity of the bridge has been diminished.

[3] 36 CFR Part 800.5(a)(1)

[4] NCHRP Project 25-25, Task 15, Context, 1-8

Setting

Within Bridge #01349's Setting is the Saugatuck River, a railroad line, and the neighborhood of Saugatuck village. These elements provide the context of the natural and human forces that resulted in a moveable span bridge being built at this location. Setting is a critical aspect of the bridge's historic significance in the role it played in the development of Westport and Saugatuck (Criterion A).

In the early 19th century, the villages of Westport and Saugatuck were evolving from an agriculture-based economy to a mercantile center. With its access to Long Island Sound, the Saugatuck River provided an efficient means of transporting goods. Docks and storehouses to receive these goods were built along the river. With the rise of this new economy, demands for more efficient travel beyond the river also increased.

In 1848, the newly constructed New York / New Haven & Hartford railroad line opened a station on the east side the Saugatuck River (near the north end of E. Ferry Lane) which further increased demands for a means of crossing the Saugatuck to reach the station. At that time, the only means of doing so were by ferry or by travelling over a mile north to use a toll bridge/toll road near the center of Westport. Roadways connecting Westport and Saugatuck with the outlying areas of Connecticut were improved, but the challenge of crossing the Saugatuck remained.

Despite controversy between the town center in Westport and the village of Saugatuck, a bridge near the railroad line in the Saugatuck village area was desired. Because river traffic remained a strong economic driver in this area, such a bridge would have to be capable of crossing the river without interfering with marine travel. In 1869, a wooden moveable type bridge was constructed at the current alignment of Bridge #01349. Within a decade of its construction, this bridge was on the verge of collapse due to deterioration caused by an invasive mollusk that burrows into its wood members.

In 1884, the Saugatuck Swing Bridge was opened on the same alignment as its short-lived wooden bridge. To prevent a repeated loss from the wood borers, Bridge #01349 was an iron structure built on masonry. Its span that was capable of moving to accommodate traffic both over the river and travelling along it. Ironically, by 1884 the need for river traffic was waning. This was due to an onion blight which affected the area's mainstay agricultural export and because of the improved overland road and railways.

> *"The decline in river traffic probably accounts for the survival of the bridge: it is unlikely that strong and ascendant maritime interests would have tolerated for very long the slow, awkward hard operation of the swing span."* (NR Form, Item 8)

The neighborhoods on either side of the Saugatuck River developed with distinctive characters. The eastern bank developed as residential parcels while the western bank saw more commercial and industrial development. Despite these changes to individual properties over time, the general character of "closely spaced commercial buildings on the west bank, and more widely spaced residences to the east" has remained unchanged.

The Saugatuck River retains elements of commerce as seen in the Marina located northwest of the bridge. It is also used by the local rowing club. The former of these two still requires a moveable span bridge in order to facilitate its business. To the extent that Saugatuck still retains ties to its development based on the river, the bridge retains its integrity of Setting.

Materials

Along with Design, Material integrity is an important quality for properties that are significant under Criterion C (Design/Construction). This aspect is critical in providing insight to the technology and resources make up the bridge.

The original material palette consisted of metal, stone, and wood. Certain elements such as wood, can be expected to be more ephemeral in nature. The iron and masonry components are expected to have a longer useable lifespan and their retention or loss is more critical to the Material integrity of the bridge.

Iron / Steel

The archaic use of wrought and cast iron in the trusses is significant to the overall historic nature of the bridge. The 1991 construction documents specifically identify procedures for retaining the original pin-connected trusses. During the rehabilitation, the trusses were removed with minimal disassembly (Image 5). The project drawings and specifications call out the procedures and quantities for straightening 13 truss chords that had been deformed or damage.[5] There are no provisions or quantities for replacing any elements of the trusses.

The original stringers (floor beams) were cut and bolted to the new girders, which run parallel to the roadway (Image 6). The cross braces beneath the bridge appear to be original features. During the field examination of the bridge conducted for this report, it was noted that the looped end of the cross braces appear to be wrought iron forged elements. Also, the bracing are connected with cast iron turnbuckles that are stamped, "EdgeMoor, Pat Jan 18th 1881" (Image 7). The Edge Moor Ironworks Company was based in Delaware and operated under that name until they were purchased by the American Bridge company in 1900.

Wood

Originally, the travelling surface of the bridge was composed of wood planking 4x12 wood stringers covered by 3" wood decking. It was also used as cribbing that supported the piers below the riverbed. By its nature, the wood required continual maintenance and cyclical replacement until it was replaced with a steel grill deck in 1951 (Image 8). At present, the bridge sidewalk is only element still constructed of wood. It was fully replaced in 1991 and has likely been the subject of partial replacement since that time as maintenance requires.

Masonry

The abutments and piers are constructed of Stony Creek granite. At present, only the masonry of the east and west abutments is visible (Image 9). When the granite of the pivot pier required stabilization and strengthening in 1952, the original masonry was encased in concrete (Image 10). During that same campaign, Pier 2 was strengthened by introducing new reinforced concrete pilings around the pier. The new pilings supported steel beams that carry part of the load of Pier 2. Although the masonry is still visible, it is almost completely obscured by the pilings, a concrete cap over the top of the beams and the wood protective cribbing (Image 11).

[5] CTDOT, Drawings for *Project No. 158-150 Town of Westport Reconstruction of Bridge No. 01349* (10/20/1989).

Operating Machinery

New operating machinery was installed as part of the 1991 rehabilitation. The original gears and rollers that turn the swing span and the jacks that allow the deck to move vertically into alignment with the approach roadways were replaced. The electric motors and jacks introduce new visual elements that were not part of the original design (Image 12). These features are small in size relative to the overall structure. The historic appearance of the bridge is not significantly altered by the new machinery.

While these remain largely intact, the original masonry has been obscured or encased by concrete. The original operating machinery is an important character-defining element of a moveable span structure (NCHRP). The loss of these elements detracts from the authenticity and Material integrity of the bridge. The overall Material integrity of the bridge is compromised.

Workmanship

The uniform, engineered nature of a bridge structure offers few examples of individual craftsmanship. This quality can best be appreciated in the tooling and placement of the masonry and the riveted connections of the individual members of the trusses (Image 13). While neither is a strong example of individual workmanship, they do reflect the technology and craftsmanship of their era.

Perhaps the strongest case for workmanship is the manual operation of the span. The bridge was notable as being the last of its type in Connecticut. Today, it is still possible to operate the swing span by hand. However, aside from periodic testing of the manual machinery and training personnel to use it, such an operation has not occurred since the reopening in 1991.

Feeling

Feeling is defined as a property's ability to convey its sense of history. It is a quality that is difficult to quantify because it is based on individual perception. Objectively, Bridge #01349's overall appearance as an archaic structure supports the bridge's Feeling. Its apparent age, appearance and longevity in the community anchors it as a long-standing element of the town's history (Criterion A).

Association

Association is the direct link between the historic property and the events, persons, or ideas that define its historic significance. Bridge #01349 significance is derived from it being an example of a particular moment in bridge technology and construction and also for it's role in the development of the Town of Westport and village of Saugatuck (Criteria C & A, respectively). The diminishment of Design and Material integrity that has occurred since 1884 weakens the integrity of Association with Bridge #01349's significance as an engineering innovation.

The Association with past events and the development of the town is bolstered by the integrity of the Setting, Location, and Feeling. In this regard, the Association aspect as it relates to Criterion A remains intact. The State Historic Preservation Officer has informed CTDOT that a nomination for a Bridge Street NRHP Historic District is underway. This proposed district will include Bridge #01349 and bolster the structure's Association with the town's history.

Conclusion

The OEP staff recognizes the importance of this bridge to the community as well as the efforts to preserve its historic appearance in the 1991/1993 rehabilitation efforts. This commitment speaks to the local support of historic Feeling integrity for the bridge. The aspects of Location and Setting also remain relatively intact and convey the role Bridge #01349 played in the pattern of history of Westport and Saugatuck (Criterion A).

The aspects of integrity that are most important in considering the bridge's engineering and construction significance (Criterion C) have been compromised by alterations since 1991. There is little individual Workmanship evident in the structure aside from its archaic riveted connections or dressed stone substructure. The Design, Material, and Association integrity of the bridge are diminished by alterations that relieve the trusses of their function as load bearing elements; the replacement of the original operating machinery, and changes to the substructure that obscure the original masonry.

This report documents the state of the character defining historic features of the bridge prior to any future actions that may further impact the integrity and historic significant of Bridge #01349.

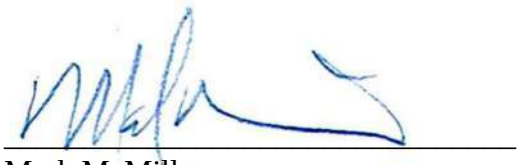


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Image 1: Southern face of Bridge #01349, viewed from I-95.

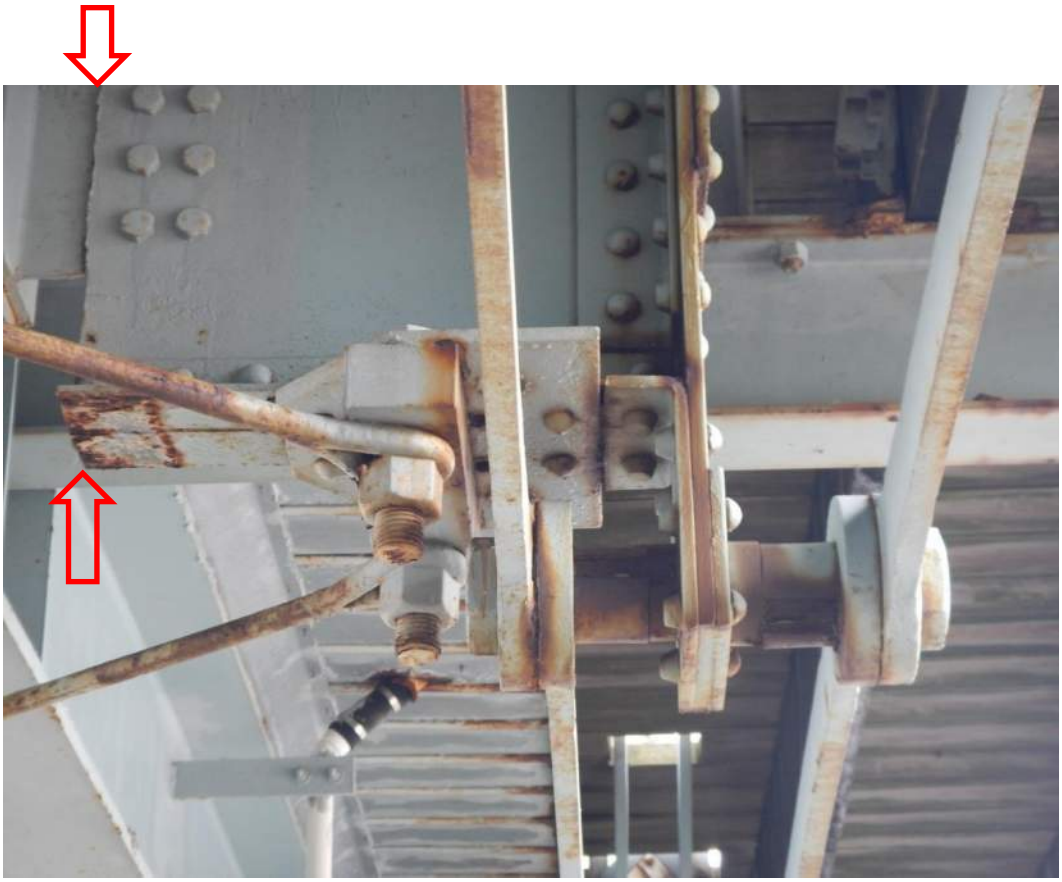

Image 2: Attachment point of the original truss to the new steel superstructure. All but the outer18-24" of the floor beams were removed and then bolted to the new superstructure beams (red arrows indicate the cut line).

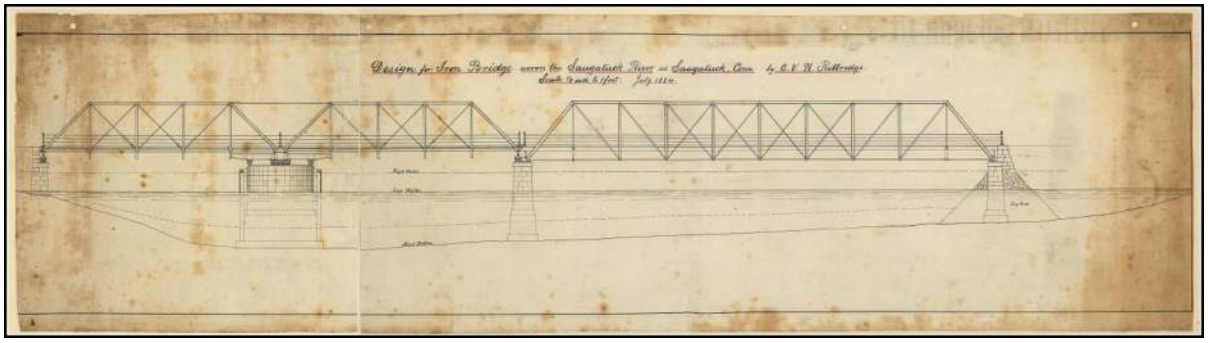

Image 3: "Design for Iron Bridge across the Saugatuck River at Saugatuck, Conn." (July 1884). The elevation is an early design drawing of Bridge #01349 and shows the three-span Pratt Truss superstructure, masonry abutments, center pivot and fixed piers.

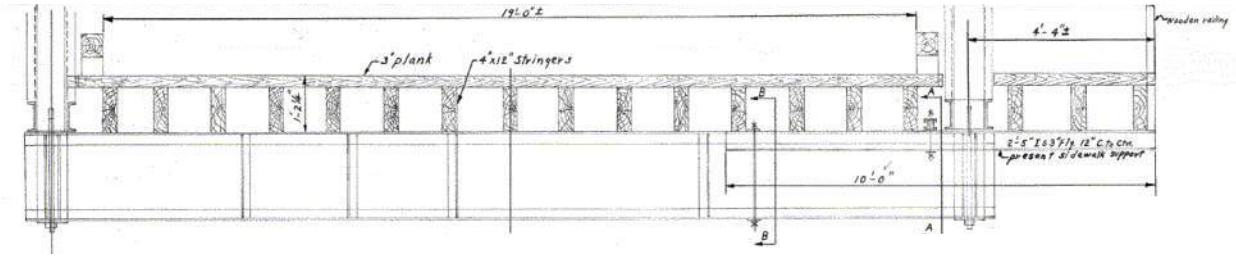

Image 4: Cross section of the original wood deck of Bridge #01349. This was replaced by a steel "singing" deck in 1952. *Image Courtesy of CTDOT State Project #158-0050, Sheet 3 of 4; (11/6/1948).*

Image 5: View of Bridge #01349 from the temporary bridge installed to carry Route 136 during the 1991 rehabilitation. Note that the trusses have been moved from their original locations intact and are staged on the approach roadway (red arrow).

Image 6: The original beams of the truss were oriented perpendicular to the roadway. In 1991, they were cut and attached to the new superstructure beams (outlined in red), which are oriented parallel to the roadway.

Image 7: Cast iron turnbuckle bearing the label "EdgeMoor – Pat *[Patent]* Jan 18th 1881"

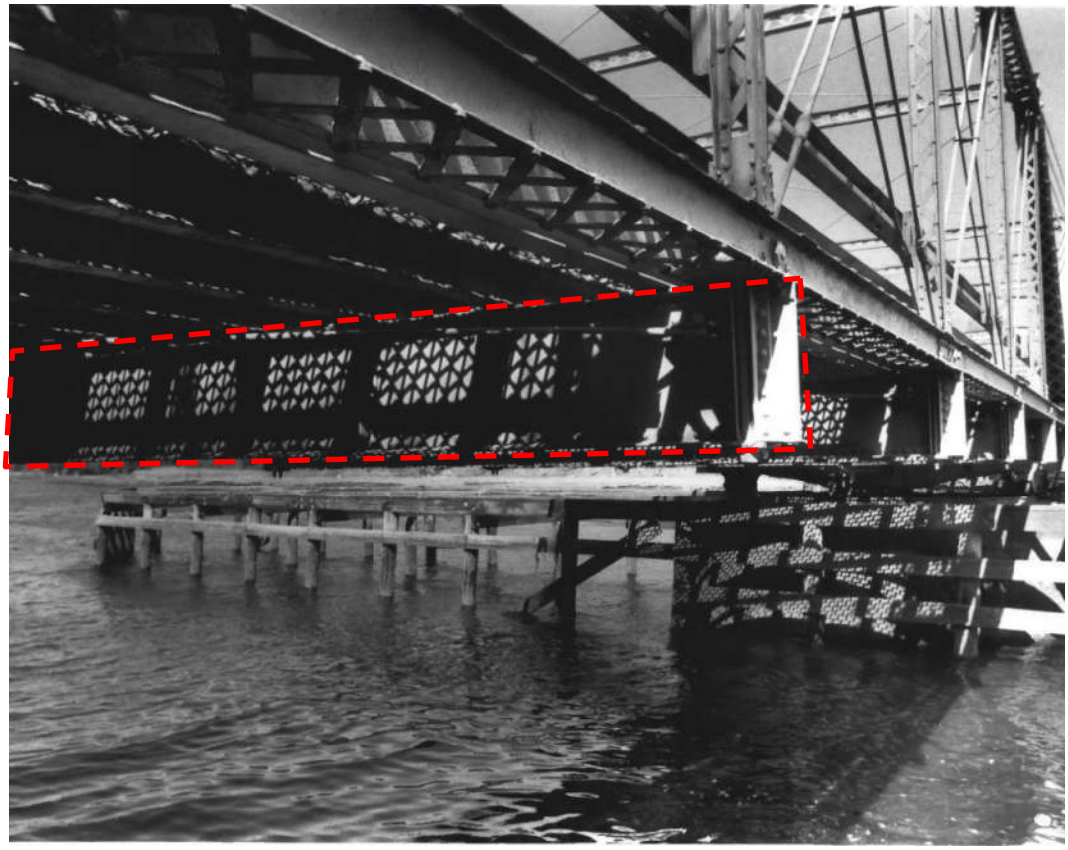

Image 8: Steel grid "singing" deck of the bridge prior to the 1991 rehabilitation. In addition to distinctive sound this type of deck makes, it also allows light to filter through the driving surface of the bridge to the substructure and water. Note that the girders are oriented perpendicular to the roadway (outlined). *Photography Courtesy of National Park Service (NR Nomination Form).*

Image 9: Western abutment of Bridge #01349. The original ashlar masonry is visible. Reinforced concrete was introduced on top of the abutment in 1993 to raise the bridge clearance above the water and facilitate river traffic. The outriggers and catwalk allow access to the screw jacks that raise and lower the swing span when it is operated.

Image 10: Detail of pivot pier. In 1952, the original masonry pier was encased in a sheet metal form which was filled with concrete.

Image 11: Eastern face of Pier 2. The original masonry is outlined in red. It is obscured by modern pilings, a concrete cap and the timber cribbing that protects the western wide of the pier. The detail in the upper right corner has been enhanced to highlight the masonry in the shadows.

Image 12: The south side of the swing span now features an electric motor at the screw jacks (left photo) and at the center of the swing span (right photo, outlined) that are responsible for opening and closing the span. This is a minor change in the appearance of the bridge.

Image 13: There are a few locations where the original rivets have been replaced with bolts (see inset). However, almost all of the original rivets remain intact.

Following Bridge #01349's listing on the National Register of Historic Places, several alterations were made to the structure. Every element of the bridge has been altered from its original construction. The wrought iron trusses retain their original appearance, but not their function as load-bearing elements that support the live loads of the bridge.