WILTON PUBLIC WORKS DEPARTMENT

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TOWN HALL ANNEX 238 Danbury Road Wilton, Connecticut 06897

#### Lovers Lane Bridge Reconstruction Update January 26, 2021

This is written to provide an update to the Reconstruction of Lovers Lane Bridge

#### Currently:

The Town has been coordinating with the State Department of Transportation and Clough Harbour Associates (CHA) Engineers to conduct Preliminary Design for the replacement of the Bridge.

A virtual public informational meeting was conducted on October 15, 2020. The link to the recording of the meeting is <u>https://youtu.be/k37ZjtBfB24</u>.

A virtual meeting was also conducted with the Architectural Review Board on November 5<sup>th</sup>, 2020. The video recording can be found through the link: <u>Village District Design</u> <u>Advisory Committee / Architectural Review Board Minutes Forthcoming | Wilton CT</u>

The Town of Wilton, State Department of Transportation, and CHA Engineers are currently in the process of coordinating with Fuss & O'Neil Consultants to determine a scope of services to advance the Preliminary Design to Semi-Final and Final Design. Fuss & O'Neill will continue design services for the project while CHA Engineers will remain as 3<sup>rd</sup> Party reviewer of the design. <u>We anticipate starting Semi-final design in February 2021.</u>

The preliminary design features that will be made part of the Semi-Final Design will include, but are not limited to the following:

- 1. Bridge curb to curb width will be 22 feet.
- 2. End Blocks will be faced with true stone veneer. Type of stone will be determined as part of Semi-final design. Refer to picture #1 below.
- 3. Wing walls will be faced with true stone veneer. Type of stone will be determined as part of Semi-Final design. Refer to picture #1 below.

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- 4. Implement open metal rails on the topside of the bridge to allow maximum view of the river. Type of railing must meet required vehicle ratings. Exact type of metal rail will be determined during Semi-final design phase. Refer to picture 2 below.
- 5. Implement steel-backed, timber guide rails along the approaches. (Refer to picture #3 below). Rustic metal beam rail may be used. This will be finalized as part of during Semi-final Design.
- 6. The east side of the proposed bridge will align with the east side of the existing bridge to the greatest extent possible with the potential use of a temporary bridge. A temporary bridge is proposed to avoid shifting the east side of the new bridge upstream by 6 feet.
- 7. Limit the impacts to the abutting properties adjacent to the bridge. Restoration plan will be developed during Semi-final Design.
- 8. Minimize clearing of existing trees. Exact trees proposed to be removed will be determined during Semi-final design.
- 9. Determine the extent of wall replacement on the north east side of Bridge. Stone veneer will be used. Type of stone will be determined during Semi-final design.
- 10. Determine extent of property acquisitions for temporary and permanent easements.
- 11. Town and Police Department will look at measures to reduce traffic speed on Lovers Lane.
- 12. Complete Design to about 90%.
- 13. Formal permit process will begin.
- 14. Other various items will be finalized.
- 15. The Town, State and CHA reviewed the concept of potentially utilizing an arch panel facade under the bridge. Please refer to the attached "Arch Panel Façade Feasibility Study" by CHA. At this time, the Town will not pursue Arch Panel Façade. The reasons The Town will not pursue precast arch panels for the bridges include, but are not limited to:
  - a) Based on the layout of the bridge configuration, the Arch would be a "dummy" arch panel instead of a true Arch.

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- b) Based on the weight of concrete and stone veneer on the "dummy" arch panels, they will be subject to greater risk of damage from water conveyance under the bridge along Comstock Brook. (Please refer to picture #4 – this picture depicts damage to another Bridge utilizing precast "dummy" arch panels).
- c) The potential use of "dummy" precast arch panels are most suitable with 32" high closed concrete railings for connection strength purposes. Since, its most desirable to have an open rail system over the bridge, connection to the bridge is problematic. Causing greater risk of not having enough strength to withstand potential damage.
- d) Since the use of these potential arch panels are for non-structural purposes, any cosmetic damage to these panels would most likely remain as is. Replacing the panels to repair them would not be of high priority as the Town will be focusing on continued structural improvements to the other Town wide Bridges.
- e) It shall also be noted that the existing ledge under the north side of the bridge will remain to the greatest extent possible. Because of this, the space under the arch panel would not be symmetrical.
- f) The State informed the Town that the precast arch panels will not be reimbursed as part of the Grant.

It is anticipated that Semi-Final Design Phase will continue through until fall of 2021.

It is also anticipated that Final Design will follow through mid 2022. With construction to start either fall of 2022 or spring 2023. The Final Design Phase will include, but are not limited to:

1) Finalize design, finalize permits approvals, finalize technical and bid specifications, finalize easement acquisitions, etc.

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Below are photos of different bridges depicting various features as referenced above. Please refer to the photos and the description above each.

Picture #1 – This picture depicts End Block and Wing Wall with Stone veneer. Type of stone to be used for Lovers Lane Bridge will be determined during Semifinal design.



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Picture #2 – This picture depicts Open Metal railings for the top side of the Bridge



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Picture #3 – This picture depicts steel backed timber guiderail potentially for the Bridge approaches.



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Picture #4 – This picture depicts a Bridge on the Merit Parkway with damaged "Dummy" Arch Panel. This damage was caused by a vehicle. Based on potential debris within the Comstock Brook and/or other Flood forces, this potential issue has a high risk of occuring on Lovers Lane Bridge if arch panels are installed.





#### Arch Panel Façade Feasibility Study

#### Introduction

Clough Harbour and Associates (CHA) is the Consultant Liaison Engineer (CLE) to the Connecticut Department of Transportation (CTDOT/Department) for the replacement of Bridge No. 04975 carrying Lovers Lave over Comstock Brook in the Town of Wilton, Connecticut. On November 5th, 2020, Marc Byrnes from CTDOT and Tom Lopata from CHA met with Frank Smeriglio, Assistant Director of Public Works and Town Engineer and the Wilton Architectural Review Board to discuss the bridge replacement project. CHA briefly explained the deficiencies with the current bridge and presented schematic drawings for the preliminary design of the proposed structure. The new bridge features a longer 43' span with a superstructure, comprising of 15" deep prestressed concrete deck units and a 6" cast-in-place concrete deck slab, supported by concrete abutments founded on bedrock. The proposed bridge allows for the passage of both the 100-year and the 500-year storm water surface elevations.

At the meeting, the Board was particularly interested in the aesthetics of the new bridge, which showcased open metal bridge railing atop concrete curbing and concrete formliner end blocks simulating stone masonry at all four corners of the bridge. CHA noted that real stone masonry could be used in lieu of the concrete form lining. The Board requested that real stone masonry be utilized at this site in lieu of formlined concrete. The Department presented additional photos of other bridges to the Board that featured similar aesthetics, including a bridge with stone masonry arch façade. The Board asked if the proposed Lovers Lane bridge could also feature such a façade. This memorandum details CHA's findings on the feasibility of incorporating a stone masonry arch panel façade onto the Lovers Lane bridge.

#### Façade Installation

A typical installation of a precast concrete panel with grouted stone masonry attached to the fascia of a bridge structure is shown in Figure 1. Due to the weight associated with both the concrete panel and stone masonry and for better load distribution, the façade is generally attached over a large concrete surface area. As seen in Figure 1, the façade for this bridge is attached to both the approximately 32" high concrete parapet and the top of a 24" thick box culvert. In the case of the Lovers Lane bridge (see Figures 2 and 3), the façade would need to be supported by the shallower 15" deck unit along with the deck slab and curbing, due to the use of an open metal bridge system instead of a concrete parapet.

#### Pros & Cons

Providing an arch façade that would feature real stone masonry would be an improvement in aesthetics, as the entire exterior of the bridge would have the same stone pattern as the abutments and wingwalls below it, without having the juxtaposition of a visible concrete superstructure below the stone masonry end blocks. More importantly, the historical characteristics a stone arch elicits would fit better with the neighborhood surrounding Lovers Lane.

However, there are several drawbacks to installing such a façade:

(1) A "dummy" precast concrete panel would need to first be attached to the bridge fascia that would allow for a mortar bed to be placed prior to manually setting in place the individual stones.



Construction of an intricate stone masonry façade, especially over the brook, is anticipated to be labor intensive and is estimated to add approximately \$30,000 to the overall construction cost.

- (2) This type of facade installation is best suited for a concrete parapet system that provides a larger/taller surface area for attachment and better distribution of loads. The currently proposed bridge shown in Figure 3 only features short concrete curbing and open metal bridge rail, which do not provide adequate room to support the panel and would therefore require careful detailing and pre-installing a large number of inserts within the shallow 15" deep prestressed concrete deck units to attach the façade. While this may be feasible, it may not be desirable as the deck units already include prestressed and regular reinforcement that are tightly confined.
- (3) The bridge is located within the limits of a low point on the roadway, a sharp turn along Lovers Lane and is heavily obscured by nearby vegetation. There are no sidewalks present along Lovers Lane and the Merwin Meadows Park north of the bridge is mostly accessed by vehicles. Given these conditions, the arch façade is not easily seen, and therefore its full value may never become realized as it will not be visible to the community.
- (4) The arch panel would extend below the low chord of the bridge thereby potentially impacting the passage of the 500-year storm at the bridge corners. With the ever-increasing rise in storm frequencies, the 500-year storm events could become more frequent in the future.
- (5) Maintenance and repairs to the façade will be the responsibility of the Town. These repairs would generally be difficult to perform especially due to its location over the brook. While a properly designed and constructed façade should perform well, there will always exist a possibility of a large storm carrying debris downstream and dislodging sections of the panel.

CHA and CTDOT defer to the Town of Wilton to decide on whether an arch panel façade is to be incorporated into the Lovers Lane bridge.





Figure 1 – Typical details for attaching arch panel façade to bridge with concrete parapet



Figure 2 – East Elevation of Lovers Lane Bridge with proposed arch panel façade





Figure 3 – Proposed bridge curb and open metal rail detail for Lovers Lane bridge