Stream Crossing Standards Report

For

Tree House Brewery Co.

Phase 3A

Improvements

1 Community Place
Deerfield, MA

For:
Tree House Brewing Co.
129 Sturbridge Rd
Charlton, MA 01507

By:
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Existing Conditions

Tree House Brewing Company, Inc. ("Tree House") leases the former Channing L. Bete Company facility at One Community Place, South Deerfied, MA (the "Property"). The property size is approximately 41.6 acres and is comprised of seven parcels (tracts). The property resides between Route 5 & 10 and the Boston & Maine Railroad. A perennial stream enters the western side of the property via a culvert under Route 5 & 10 located to the northwest of the existing northern parking area. The perennial stream flows south through the western half of the property until it exits the property in the southwestern corner via another culvert under Route 5 & 10. The perennial stream has multiple existing crossings while it is on the property. There are two wood pedestrian foot bridges, and the driveway entrance crosses over the stream through culverts.

The existing footbridge that is being replaced as part of the Phase 3B improvements is located south of the driveway entrance connecting the main property to a small field between the stream and Route 5 & 10. The existing footbridge is a 16' long by 7.5' wide wooden bridge. The existing bridge sits on wooden piles driven into the ground. The existing bridge has an approximate 1 – 1.5' step to get onto the pedestrian bridge.

Wetland Resource conditions were flagged by Ward Smith of Wendell Wetland Services on April 28th, 30th and November 18th of 2021. Mr. Smith flagged the bank of the stream from where it entered the property to where the stream entered the wooden portion of the southwestern corner of the property. Mr. Smith also delineated any associated bordering vegetated wetlands associated with the stream.

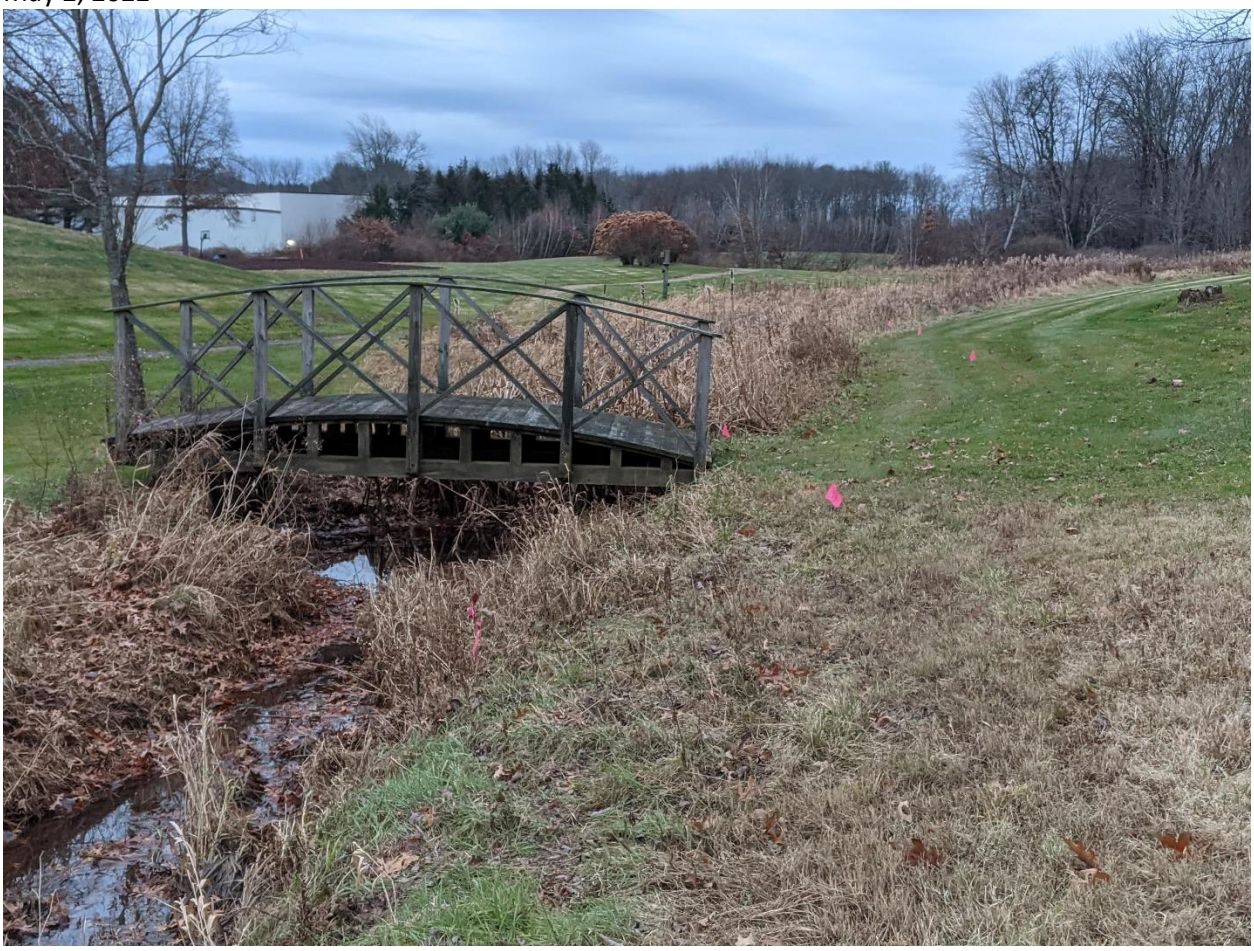

Photo 1: Looking downstream at existing footbridge to be replaced.

Proposed Design

The proposed replacement bridge consists of a 22’ long by 6’ wide pedestrian bridge. The replacement bridge will rest on concrete abutments and wing walls. A proposed trail will be graded to the elevation of the proposed bridge deck to provide a streamline connection.

Proposed Resource Area Impacts Associated with Bridge Replacement

Permanent BVW Impacts:	402 S.F.
Temporary BVW Impacts:	210 S.F.
Permanent Bank Impacts:	0 L.F.
Temporary Bank Impacts:	49 L.F.
Permanent LUW Impacts:	0 S.F.
Temporary LUW Impacts:	35 S.F.

The resource area impacts are a result of the construction and grading of the abutments and walking path/trail.

Stream Crossing Standards:

Standard 1: Spans (Bridges, 3-sided box culverts, or arches) that preserve the natural stream channel are strongly preferred

Standard 1 is met. The replacement of the exiting pedestrian crossing will be a wooden bridge with the length of 22'.

Standard 2: If a culvert, then it should be embedded a minimum of 2 feet and at least 25 percent for round culverts

Standard 2 is not applicable. The proposed replacement stream crossing is a bridge.

Standard 3: Spans channel width (a minimum of 1.2 times the bank-full width)

Standard 3 is met. The delineated bank width of the upstream channel is approximately 14.5'. Standard 3 requires at minimum a span of 17.4' to meet the standard. The proposed open span of the bridge is 20' and therefore Standard 3 is met.

Standard 4: Natural bottom substrate within the structure

Standard 4 is met. The proposed crossing will be a bridge and therefore will have a natural bottom of the substrate.

Standard 5: Designed with appropriate bed forms

Standard 5 is met. The proposed bridge will have a natural bottom.

Standard 6: Openness > 0.82 feet

Standard 6 is met. The bottom of the proposed bridge be raised approximately 2' above the existing grade. This will meet this standard as seen by the calculation below. The proposed bridge will be 6' in width.

$$20\ L.F. \times 2\ Ft = 40\ Ft^2$$
$$40\ Ft^2\ \div 6\ Ft = 6.666\ Ft\ > 0.82\ Ft$$

Standard 7: Banks should be present on each side of the stream matching the horizontal profile of the existing stream banks

Standard 7 is met. The proposed construction will re-establish the stream banks to match the existing conditions.