

June 5, 2018

Wetland Restoration Plan

Stream Crossing #3

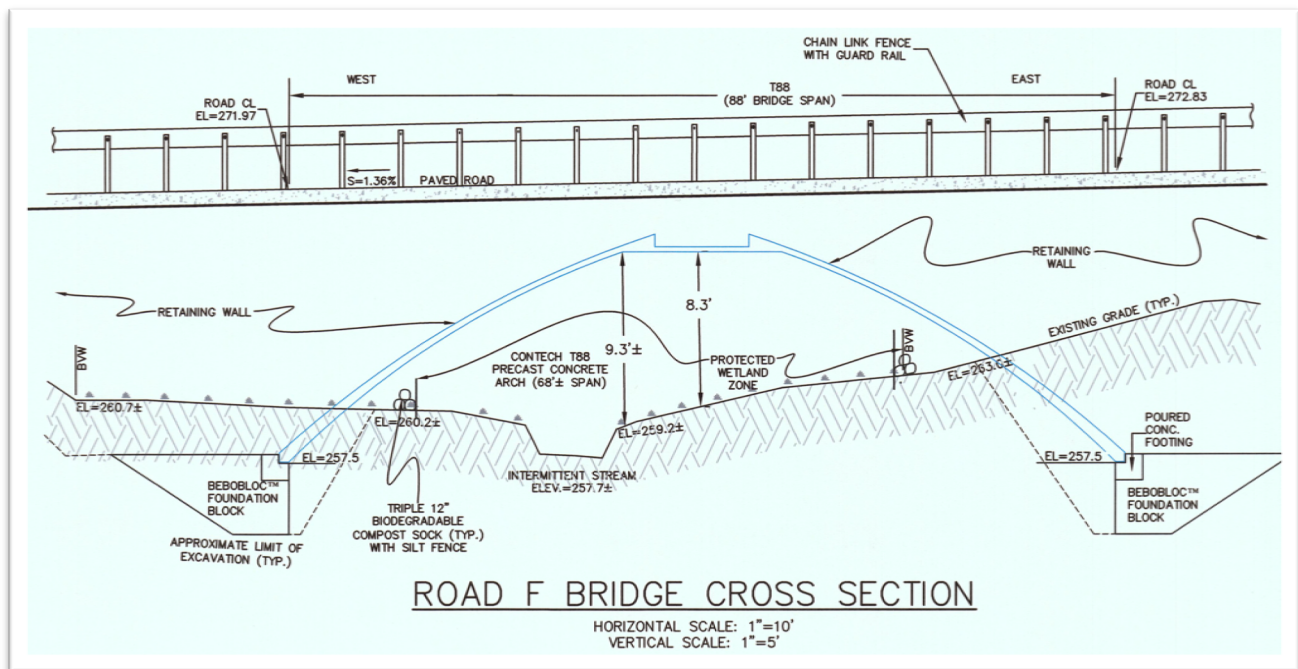
Timber Crest Estates Development
Medway, MA

Submitted to:
Medway Conservation Commission

Prepared for:
Timber Crest Estates LLC

Introduction

On behalf of the applicant, Timber Crest Estates LLC, Goddard Consulting, LLC is pleased to submit this Wetland Restoration Plan for the construction of "Wetland Crossing #3" of the Timber Crest Estates development in Medway, MA. This crossing is located on Road F, 800 feet west of Holliston Street (see Sheet #23 of the plan set dated 5/31/18). The crossing will consist of a precast concrete arch with a 68-foot span over an intermittent stream (see detail below). The crossing will require the temporary and permanent alteration of Bordering Vegetated Wetland (BVW) totaling 2,972 s.f. (1,207 s.f. permanent fill, 898 s.f. temporary disturbance, to be restored, and 837 s.f. permanent due to shading) and the alteration of 270 square feet of Land Under Waterbodies (LUW) (due to shading).



Existing habitat at the crossing location consists of an approximately 10-12 feet wide channel, with a mostly barren mucky substrate. A few cardinal flower plants grow within the stream bed in summer, and the banks are lined with sweet pepperbush, winterberry and cinnamon fern. The BVW, wider on the west side of the crossing, contains a forested wetland habitat dominated by red maple trees, sweet pepperbush shrubs and cinnamon ferns. There are two dead standing trees in the impact area, along with numerous rotting logs and a few boulders.

Wetland Restoration Procedure

1. **Supervision:** All work shall be supervised by a qualified wetland scientist with a minimum of five years' experience. The supervisor shall submit monitoring reports to the Conservation Commission as described below. Reports shall contain details of all work performed and photographs of completed conditions.

2. Timing: Work within the BVW shall take place during low- to no-flow conditions, which is typically between July 1 and September 30.
 - a. If any flow is encountered, provide a temporary sand bag dam or pump system upstream to divert stream around construction area.
 - b. Provide dewatering basin if pumping is required.
3. Survey: Field stake limit of work as shown on the project site plans.
4. Photograph Pre-Construction Conditions: Supervising Scientist shall take detailed photographic and/or video documentation of pre-existing plant and wildlife habitat conditions. This will aid in the restoration of pre-existing wildlife habitat conditions within the BVW after installation of the crossing and roadway.
5. Erosion Control Barrier (ECB): Place ECB (staked siltation fence and mulch sock, or similar invasive-free barrier) upstream and downstream of crossing location, as shown in the project site plans. This will remain in place and be maintained until the areas are completely stabilized.
6. Remove any potential wildlife habitat features: This includes two large standing dead trees, boulders or large rotting logs. These features should be stockpiled nearby for later replacement within the BVW.
7. Initiate Bridge Construction Sequence: Perform the span and retaining wall installation in accordance with Steps 2-9 of "Bridge Construction Sequence" from Detail Sheet #42 of the plans dated 5/31/18 (shown below).

CONCRETE ARCH DESIGN NOTES

1. STRUCTURAL ENGINEERED PLANS & DETAILS TO BE PROVIDED PRIOR TO CONSTRUCTION.
2. ALL UNSUITABLE MATERIAL SUCH AS ORGANIC LAYERS SHALL BE REMOVED BENEATH FOOTINGS.
3. EXISTING STREAM BED TO REMAIN UNDISTURBED.
4. OPTIMUM STANDARDS PER MASSACHUSETTS STREAM CROSSING GUIDELINES;
 - CLEAR HEIGHT=6' DESIRED (9'+ PROVIDED)
 - OPENNESS RATIO = (CROSS SECTIONAL AREA) / LENGTH ≥ 1.64
= APPROX. 310 S.F / 36' = 8.61 (AREA WITHIN BVW ONLY)
 - MIN. SPAN= 1.2 X BANKFULL WIDTH = 1.2 X 11'* = 13.2' (CLEAR SPAN IS 68')
 - * AVERAGE WIDTH OF TOP OF BANK.

BRIDGE CONSTRUCTION SEQUENCE

AS ROAD CONSTRUCTION PROGRESSES TOWARD BOTH SIDES OF WETLAND CROSSING #3 FROM HOLLISTON STREET AND 13 FAIRWAY LANE, BRIDGE CONSTRUCTION SHALL COMMENCE. THE BRIDGE ABUTMENTS SHOULD BE INSTALLED DURING THE LOW FLOW PERIOD (APPROXIMATELY JUNE TO OCTOBER). OWNER/CONTRACTOR MUST NOTIFY CONSERVATION COMMISSION 1 WEEK IN ADVANCE OF PROPOSED COMMENCEMENT TO ENSURE SUITABLE CONDITIONS ARE PRESENT AND SHALL FOLLOW THIS CONSTRUCTION SEQUENCE AS CLOSELY AS POSSIBLE.

1. LIMITS OF CLEARING TO BE MARKED ACROSS WETLANDS & STREAM
2. BETWEEN FILTERMITT WORK LIMITS, TREES SHALL BE CUT MANUALLY USING CHAIN SAWS (NO HEAVY EQUIPMENT ALLOWED). BRANCHES TO BE LIMBED AND LOGS TO BE CUT TO SHORT LENGTHS FOR REMOVAL BY HAND OR WINCH TO UPLAND.
3. INSTALL FILTERMITT PER PLANS (NO HEAVY EQUIPMENT IS ALLOWED TO WORK IN UNPROTECTED BORDERING VEGETATED WETLANDS OR TO CROSS THE STREAM.
4. CLEAR AND GRUB STUMPS & UNSUITABLE SOILS. NO STOCKPILES ALLOWED WITHIN 50' OF WETLANDS.
5. EXCAVATE AND CONSTRUCT BEBOBLOC FOUNDATION AND POURED CONCRETE FOOTINGS PER STRUCTURAL DESIGN PLANS. WORK TO BE CONDUCTED FROM UPLAND SIDES OF SILT FENCE WORK LIMITS, TO PROTECT BVW AND STREAM.
6. CONCRETE ARCHES AND RETAINING WALLS TO BE INSTALLED WITH CRANES SET IN UPLAND AREAS, PER STRUCTURAL DESIGN PLANS AND MANUFACTURERS REQUIREMENTS.
7. BACKFILL ARCH AND RETAINING WALLS.
8. INSTALL UTILITIES AND ROADWAY WITH GUARDRAIL.
9. EXISTING GRADE AND VEGETATION WITHIN DISTURBED BORDERING VEGETATED WETLAND TO BE RESTORED POST-CONSTRUCTION. (REFER TO RESTORATION PLAN BY GODDARD CONSULTING)

8. Restore Temporary BVW Alteration Area: Following span and retaining wall installation, restore temporary work area between the silt fence and the retaining walls by seeding with New England Wetmix or equivalent native seed mix.
9. Restore Stockpiled Wildlife Habitat Features: Place cut pieces of two large dead trees plus boulders or any other stockpiled wildlife habitat features on the ground randomly in the undisturbed portions of the adjacent BVW.
10. Complete roadway: Following the completion of wildlife habitat and BVW restoration, complete the roadway with final grading, curbing, and paving.
11. Restoration Monitoring: Annual monitoring reports shall be prepared for the restoration area by a qualified wetland scientist for a period of 2 additional years after installation. This monitoring program will consist of a once-annual inspection, during spring or other time of year when the stream is flowing and vegetation is growing. Monitoring reports shall be submitted to the Commission by November 30th of each year. Monitoring reports shall describe, using narrative and color photographs, the physical characteristics of the restoration area with respect to flow characteristics,

wildlife habitat features, soil characteristics, and survival of vegetation from the seed mix.