



35 VETERAN'S DRIVE
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October 9, 2017

Attn: Nick Nelson
Interfluve
20 Concord Avenue
Cambridge, MA 02138

RE: Suncook River Mitigation Project

Dear Nick,

The following is our Construction Sequencing Plan for the Suncook River Mitigation Project:

Second Riffle Site & Avulsion Site

1. Prior to the commencement of work operations the location of all utilities will be verified.
2. Cut trees and clear vegetation within the limits of disturbance as required for access and to prepare the site for earthwork operations and sheet pile installation. The cut material is to be processed onsite into a shredded bark mulch material and removed from the site. Stumps along the river bank are to be left in place for stabilization until construction begins.
3. Install erosion control measures per plan and specification: silt fence and stabilized construction entrances.
4. Construct temporary access roads to work areas, staging areas and crane pads as follows:
 - Strip and stockpile topsoil from cornfields, cleared vegetated areas and grass areas as necessary. Topsoil from cornfields to be stockpiled separately.
 - Lay down filter fabric in stripped areas as needed.
 - Install approximately 6" to 8" of crushed gravel over the filter fabric, grade and compact.

Second Riffle Site

1. Construction operations to begin on the east bank of the river, working from upstream and proceeding downstream starting at the existing Route 4 bridge abutment.

2. Set out 200 linear feet of 6' deep in-stream siltation barrier to isolate the work area. A 10' deep siltation may be required if the depth of the river exceeds 7'. The barrier is to be moved downstream as work progresses. A 10' deep in-stream siltation barrier will be installed in the area of the deep pool below the riffle until all bank treatments are complete on both sides of the river.
3. Remove the stumps left from cleared trees along the bank.
4. Excavate river bank back to grade required for bank treatment. Excavated material will be used as common fill in this work area or transported to the Avulsion Site to be used for fill. All material will be transported via Route 4 to Black Hall Road, we will not be constructing a temporary access road and bridge between the sites.
5. Install geotextile fabric and rip rap per the bank treatment typical sections and to the elevations and grades shown on the construction sections and grading plan. Fabric and rip rap placement to occur immediately after excavation.
6. Installation of the geotextile fabric and rip rap to be stopped just short of the area of the sheet pile installation to allow for that operation to occur.
7. Fabric encapsulated soil lift(s) to be installed upon completion of the rip rap installation. FES lifts to be installed per the details and typical embankment sections and to the elevations shown on the construction sections.
8. Relocate operations to the west bank of the river, working from upstream and proceeding downstream beginning at the Route 4 bridge abutment.
9. In-stream siltation barrier to be relocated to the west bank of the river. Siltation barrier and stump removal operations will proceed in the same fashion as the east bank.
10. Where required per Bank Treatment II, crushed stone material shall be placed within the river to the water line and common fill installed on top to achieve subgrade for the rip rap.
11. Excavate river bank back to grade required for Bank Treatment I. Excavated material to be used as common fill in this work area or transported to the avulsion site to be used for fill.
12. Install geotextile fabric and rip rap per the bank treatment typical sections and to the elevations and grades shown on the construction sections and grading plan. Fabric and rip rap placement to occur immediately after excavation or fill placement.
13. Fabric encapsulated soil lift(s) to be installed upon completion of the rip rap installation. FES lifts to be installed per the details and typical embankment sections and to the elevations shown on the construction sections.
14. Place type IV rip rap into the deep pool area utilizing access ramps as needed. We do not anticipate constructing the temporary low water crossing. Access ramps to be removed upon completion of the deep pool rip rap installation.
15. Complete bank treatments on each side of the river after sheet pile installation and rip-rap installation at the deep pool is complete. Geotextile fabric will be cut as needed to fit around the sheet piling and a geotextile fabric patch will be applied to cover the cut fabric. The patch will extend a minimum of 1 foot over the cut and at least 1 foot up the sheet pile wall. Rip rap will be carefully placed so as not to damage the sheet pile wall or displace the fabric patch.
16. Place salvaged topsoil where indicated on the plans.
17. Seed planting treatment area #1 with New England Conservation seed mix and seed planting treatment area #2 with New England Wet Seed Mix.

Second Riffle Site – Sheet Pile Installation

1. Refer to the Sheet Pile Installation Submittal from H.B. Fleming Inc. for details specific to sheet pile installation operations.
2. Due to the lake drawdowns/dam releases and the expected impact to the water level of the Suncook River sheet pile installation will begin on the west side of the river and proceed from the bank westward.
3. Upon completion of the west side sheet pile installation the operation will be moved the east side of the river beginning in the wetland area and will proceed west towards the river.
4. If required during the excavation in the wetland area, dewatering will be achieved through the use of a submersible pump discharging into a sediment bag. Filled sediment bag to be removed and disposed offsite.
5. Upon completion of the sheet pile installation the crane pads and portions of the access roads will be removed to the extent possible to the extent possible with no construction materials discernable upon the finished grade. Access will need to be maintained to the wetland area until plantings are installed.

Avulsion Site

1. A second crew will commence construction operations at the same time as the work at the second riffle site. Construction operations will begin at the upstream portion of the work area and proceed downstream.
2. A portion of the downed trees and woody vegetation shall be stockpiled and placed on top of the fill area upon completion the remainder will be shredded into mulch and removed from the site.
3. Cut the top of existing steep bank back and fill as necessary to create access to the upstream portion of the work area.
4. Install the river diversion check dam where shown on the plans using bulk bags, plastic, and small sand bags per the detail in the plan set to divert the water flow away from the work area.
5. Install 10' deep in-stream siltation barriers at the downstream end of the site where shown on the plans and in the SWPPP to separate the active flow from the work area once the diversion dam has been installed.
6. Excavate the river bank at the northern end of the work area as required to meet the elevations shown on the construction sections. Suitable excavated material to be used as fill within the avulsion work area. Invasive material as identified by the Engineer and surrounding soil to be separated out from the fill material and not re-used.

7. Commence fill operations and grade the lifts in a manner as to ensure sheet drainage away from the proposed rip rap bank and back towards the existing river bank to prevent contamination of the stone and river. Any surface water collected from storm events will then be directed to the southern end of the work area, and as needed pass through a stone check dam(s) prior to discharge in front of the in-stream siltation barrier. Stone check dams shall be installed per the BMP details in the SWPPP and located as needed or as directed by the engineer. The need for stone check dams and the locations of will vary as fill operations proceed.
8. Installation of the type III rip rap will occur in sequence and coordinated with the fill operations. Install geotextile fabric, type III rip rap embankment treatments and buttresses per the typical sections and to the elevations and grades shown on the construction sections and the grading plan.
9. As fill operations proceed the drainage swale will be formed per typical detail and graded to the elevations shown on the drainage swale profile. Upon completion Line swale with geotextile fabric and place 12" of very course crushed stone.
10. Fabric encapsulated soil lift(s) to be installed upon completion of the rip rap installation. FES lifts to be installed per the details and typical embankment sections and to the elevations shown on the construction sections.
11. Place topsoil to the grades shown on the drawings across the top of the fill area and rip rap buttress as shown on the construction section and to the extents as directed.
12. Seed planting treatment area #3 with New England Conservation seed mix.

Second Riffle Site & Avulsion Site

1. Remove crushed gravels and filter fabric from the areas utilized for staging areas and temporary access roads to the extent possible with no construction materials discernable upon the finished grade. Depending on site conditions encountered and the extent of operations completed this season, minimal temporary access may need to remain until spring for access to plantings areas etc. The extent, location and materials of the access will be assessed, coordinated and determined with all parties towards the completion of this seasons operations.
2. Topsoil cornfields with stockpiled material to extent possible with no construction materials discernable upon the finished grade.
3. General project clean up and demobilization for the winter.
4. At the earliest opportunity as allowed by the specifications in the spring, install planting treatments with specified materials where shown on the plans.
5. In accordance to the specifications seed and/or reseed planting treatment areas as necessary.
6. Remove crushed gravel and filter fabric from the remainder of the temporary access roads if any materials have been left in place for access.
7. Finish placing topsoil in the cornfields and restore impacted properties to pre-project conditions.