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April 15, 2021

Hingham Conservation Commission
210 Central Street
Hingham, MA 02043

Subject: **South Shore Country Club Maintenance Facility, 274 South Street**

Dear Commissioners:

In response to Ms. Fournier's request, we have reviewed the following documents, prepared by Pare Corporation (Pare) related to the Notice of Intent application submitted for the subject project:

- Notice of Intent with transmittal letter dated March 8, 2021
- Site Plan – South Shore Country Club Maintenance Facility (14 sheets), revised March 22, 2021
- Stormwater Management Report, dated March 2021¹
- Response to Comments letter, dated March 22, 2021

The purpose of our review has been to evaluate conformance with the Hingham Wetlands Protection Bylaw, Wetlands Regulations, MA Wetlands Protection Act, MassDEP Stormwater Management Standards (SMS) and good engineering practice. The focus of our review is stormwater management and erosion control.

Background

The project site is located at the northwest portion of the 154.2± acre South Shore Country Club property. The project site/proposed limit of work encompasses about 1.23 acres of the property. Currently, the project site contains an existing maintenance building, several storage containers, material storage areas and paved and gravel cart paths driveways and parking areas. There are bordering vegetated wetlands (BVW) associated with an intermittent stream and drainage ditches along the south and west of the project site. The proposed limit of work contains about 17,522 square feet (s.f.) of buffer to the BVW, with about 1,774 s.f. within fifty feet of the BVW and about 15,748 s.f. between fifty and one hundred feet from the BVW. There are currently no stormwater best management practices (BMP's) within the limit of work except for a catch basin that captures runoff from the entrance drive and a larger paved parking area up gradient of the proposed limit of work. The catch basin discharges to the intermittent stream thorough a ten inch concrete pipe. Runoff from the limit of work currently flows overland to the BVW and intermittent stream.

¹ There is not a revised date on the report but it is a revised report (161 total pages vs. 119 in the original report).

The proposal calls for demolition of the existing building, removal of the storage containers, construction of three new buildings, materials storage area, site grading and new paved cart paths, driveways and parking areas. The proposed stormwater system would include catch basins, manholes, proprietary treatment units, sediment forebay and bioretention area. The existing catch basin would also be replaced under the proposal and a proprietary treatment unit would be installed in the discharge line to improve water quality. Proposed sediment and erosion controls would include a stabilized construction entrance, silt sacks in catch basins and a perimeter barrier consisting of compost filter sock backed up with silt fence.

Comments

1. Four test pits have been excavated on site with two in the vicinity of the proposed bioretention area (TP-1 and TP-2). The test pit log indicates that ground grade at TP-1 was at El. 22.9 and seasonal high groundwater was found at a depth of 35 inches, or EL. 19.98. The bioretention area design is based on providing two feet of separation from seasonal high groundwater and the Bioretention Detail on Sheet C5.1 indicates that seasonal high groundwater is at El. 19.5. The bottom of the bioretention area is proposed at El. 21.5, however, it should be at El. 21.98 to provide the required two feet of separation.
2. Test pits TP-1 and TP-2 in the vicinity of the bioretention area indicate soil textures below the top and subsoil to vary from loamy and silty sand to coarse sand. The infiltration rate through the bioretention area used in the HydroCAD model is the rate associated with sand (8.27 in./hr.). The rate should be based on the less permeable (most restrictive) material (loamy sand) which has an infiltration rate of 2.41 in./hr.
3. The bioretention area and sediment forebay should be modeled as separate ponds. The current HydroCAD model has the entire bottom area of the combined sediment forebay and bioretention area as infiltrating. Sediment forebays are not supposed to recharge groundwater (infiltrate). In addition to modeling the forebay and bioretention area as separate ponds, the sediment forebay should be designed to have a semi-impervious bottom. In our experience twelve inches or more of loam/topsoil provides the semi-impervious material.
4. The bioretention soil mixture should include 40% sand, 20-30% topsoil and 30-40% compost in accordance with the MassDEP SMS. The compost is the material that treats the stormwater and only 3-5% is specified on the plans.
5. The landscaping plans show proposed trees on the berm around the perimeter of the bioretention area. Trees should not be planted on the berm as they may compromise the integrity of the berm as they grow and establish root systems (an uprooted tree can create a hole through the berm). We recommend only grasses on the berm.
6. The stormwater flow to the catch basin that will be replaced is much greater than the catch basin can convey. The calculations show that a puddle forms around the catch basin during the 1-year storm and greater. The HydroCAD model is set up with an overflow

from the catch basin over a 100 foot long weir and then across the grass to the wetland. There will not be a 100 foot long weir and overflow from the catch basin will concentrate, likely forming a channel that will be susceptible to erosion. We recommend a grass lined swale, with check dams, from the catch basin to the discharge location of the overflow pipe from the bioretention area. The swale and check dams should be designed to reduce velocity and prevent scour. We also recommend that the catch basin have a double grate so that it can pass additional flow.

7. All impervious surfaces are modeled as pavement in the HydroCAD models. The models should separate roof impervious from the pavement impervious area so that the required water quality volume may be accurately calculated (roof impervious is considered clean runoff and is not required to be treated). We recommend that all proposed pavement tributary to the bioretention area be included in the required WQV calculation to improve the overall quality of stormwater runoff.
8. The Stormwater Operation and Maintenance Plan – Long Term Pollution Prevention Plan (LTPPP) included in the Stormwater Management Report includes generic/sample checklists for stormwater basins and bioretention areas from the Rhode Island Stormwater Design and Installation Standards Manual. The LTPPP should include an inspection log/checklist that is prepared specifically for this project and the BMP's proposed (deep sump catch basins, proprietary treatment units, sediment forebay, bioretention area, riprap outlet, etc.).
9. Under Standard 8 in the MassDEP Checklist for Stormwater Report the box is checked indicating that a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan is included in the Stormwater Report. However, there is no such plan included in the Stormwater Management Report.
10. There is a Precast Concrete Oil Water Separator detail on Sheet C5.3. We assume this is the detail for the deep sump catch basins. The detail shows a hood but it is not specified. We recommend The Eliminator, Snout or similar plastic hood. The detail should also specify a catch basin frame and grate and we recommend the Massachusetts Municipal Standard square hole grate¹ rather than the bar grate specified.
11. The overflow outlet from the bioretention area discharges through a flared end section (FES). There is no specification for the FES but we assume that it is meant to be high-density polyethylene (HDPE) since the drain pipe is proposed to be HDPE. For durability we recommend the FES to be reinforced concrete (HDPE pipe can be mortared into a reinforced concrete FES).
12. We note that the Construction Entrance Protection Stone Stabilization Pad detail on Sheet C5.1 specifies the minimum length and width of the construction entrance to be 75 feet and 30 feet, respectively. The Demolition Plan shows the entrance to be 50 feet by 25 feet, which are standard dimensions for a stabilized construction entrance.

¹ East Jordan Iron Works Model OMA552000075.

13. We recommend a Cape Cod berm around the west edge of the proposed paved area to prevent contaminants from flowing off the pavement into the wetland resource areas. The attached sketch shows the recommended locations of Cape Cod berm.

Please give us a call should you have any question.



Very truly yours,

AMORY ENGINEERS, P.C.

By:

A handwritten signature in blue ink that reads "Patrick G. Brennan".

Patrick G. Brennan, P.E.

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enc.

