



D-0283-1
January 22, 2013

Mr. Michael Behrendt, AICP
Town of Durham
15 Newmarket Road
Durham, New Hampshire 03824

**Re: Madbury Commons, Golden Goose Properties –Design Review #1
17 & 21 Madbury Road, Tax Map 2, Lots 12-3 & 12-4
Durham, New Hampshire**

Dear Mr. Behrendt:

Tighe & Bond appreciates the opportunity to provide Design Review services for the Town. We have completed our initial review of the above referenced project and offer the following summary.

Project Understanding:

- Raze the existing multi-family site on Madbury Road known as "The Greens".
- Construct a mixed-use project for approximately 490 residents, with office, retail, and parking with multiple buildings.
- Connect the proposed drainage infrastructure to Pettee Brook and "restore" a section of Pettee Brook.

Information Reviewed:

- Site Plans prepared by MJS Engineering, PC dated January 15, 2014.
- Construction Management and Mitigation Plan prepared by MJS Engineering, PC dated January 14, 2014.
- Drainage Report prepared by MJS Engineering, PC, dated January 15, 2014

The following is a summary of our comments based on the Design Review performed and our meeting with MJS Engineering and Dave Cedarholm, P.E., Town Engineer on January 22, 2014.

General Comments:

1. The applicant will likely be required to file a Wetland permit with the NHDES for work within Pettee Brook and the adjacent wetlands. Work shown on the plans within jurisdictional wetlands includes the "rehabilitation" work shown on the Landscape Plan and the construction of the sewer main. The proposed bridge construction may require impacts to the wetlands as well (no details were provided for review).

2. The applicant will be required to file an Alteration of Terrain Permit with the NHDES.
3. The applicant will be required to file a Sewer Connection Permit with the NHDES.
4. The applicant will be required to file a Utility Connection Permit with the Town of Durham.
5. The amount of land disturbance will exceed one acre, therefore the owner and contractor will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and file a Notice of Intent (NOI) with the EPA.
6. We recommend a Truck Turning Plan be provided to confirm the ability of fire trucks to access the site, garbage trucks to access the dumpsters and utility vehicles to access the electrical transformer, etc.

Drainage Report Comments:

7. An updated Stormwater Checklist should be submitted as required.
8. An updated Operation and Maintenance Plan should be submitted for the stormwater system.
9. The drainage report should include calculations for the Water Quality Volume (WQV) and Ground Water Recharge Volume (GRV) to verify that the design meets these requirements.
10. There is no treatment being proposed for runoff from the building roofs. This should be addressed in the drainage design.
11. It should be clarified that the 2-year Channel Protection Volume requirements of the NHDES are being met for Point of Analysis #1.
12. The Site Specific Soil Survey (SSSS) map should be added to the Drainage Report and/or be added to the pre- and post-development watershed plans to verify the limits of soil types on-site.
13. The "draft" boring and test-pit information should be finalized. Also, information for boring #3 appears to be missing and should be included.
14. The numbering and descriptions of the watershed "nodes" in the pre-development HydroCAD model are not consistent and should be revised ("Node 1" description says "Sub-catchment 2", etc.).
15. The post-development "reaches" should be revised to be consistent with the pre-development reaches (i.e. eliminate "Reach #2" in the post-condition, or add it in the pre-condition) or the area associated with post-development watershed area "1L" should be eliminated from the study.
16. The 18" culvert to the north east of the project was modeled as a "pond" with storage thereby reducing stormwater flows. This should be revised in the model to be a "pond with insignificant storage" in case this area is ever filled (the "storage" in this location is partially located on the adjacent property).
17. The outlet pipe lengths modeled for proposed DMH #1 and the Outlet Control Structure of the stormwater pond should match the lengths shown on the plans.

18. The inverts in "Reach #1" are not consistent with the existing elevations and should be revised.

19. A base flow in "Reach #2" should be considered.

Construction Management and Mitigation Plan (CMMP)

20. A Memorandum of Understanding (MOU) or similar agreement between the Town and the developer is recommended for any work within the Madbury Road right-of-way (ROW) including the reconstruction of the sidewalk. We recommend the same type of agreement be used for work related to the bridges, sewer main, and Pettee Brook "Rehabilitation" on the Town owned land and within the municipal parking lot.

21. Due to the site constraints deliveries to the site may be required to occur within the Madbury Road ROW. We recommend that weekly meetings be held between the Town, developer and contractors to determine deliveries to the site and review traffic mitigation measures as required.

22. A Construction Sequencing Plan should be developed to protect the porous pavement and porous paver section and subsoil during construction. Due to the limited space on-site it is anticipated that this area will be trafficked during construction. Therefore we recommend post-construction soil testing be performed to ensure that the sand "filter course" and stone courses maintain the infiltration capabilities assumed in the design.

23. There are multiple references to "Pro Con" in the CMMP. Unless this is the contractor for the project this should be revised or a note added that the CMMP will be revised once the actual contractor is selected.

24. Due to the proximity of the property to Pettee Brook, we recommend that all stockpiles, concrete washout areas, chemicals, fertilizers, hazardous materials, etc. be located as far from the brook as possible and at a minimum of 50-feet away. Language should be added to the CMMP to indicate this.

Site Plans

Existing Conditions Plan

25. The Existing Conditions Plan should be stamped by the surveyor that prepared the plan.

Site Plan – Sheet C-1

26. The proposed retaining wall at the southeast corner of the property appears to be within the Madbury Road ROW. The Town should determine if this is allowed, and if not, the plans should be revised.

27. Easements may be required for the proposed pedestrian bridges over Pettee Brook and should be determined by the Town. Easements may also be required for the drainage rip-rap proposed on the Town property adjacent to Pettee Brook.

28. It appears an easement will be required from the property on Tax Map 2, Lot 12-2 for the construction and maintenance of the stormwater swale at the northeast of the site.



29. There is currently no snow storage shown for the site. Snow storage locations should be shown and/or a note added to the plans that states that excess snow should be removed from the site.
30. We recommend the addition of signage for the porous pavement and porous paver areas that states the appropriate winter salting and sanding practices.
31. The owner of record for tax map 2, lot 12-3 is not consistent with that shown on the Cover Sheet and should be revised (or the Cover Sheet should be revised).
32. ADA detectable warning strips are recommended at all tip-down ramps, especially those that abut vehicular travel ways. Striped crosswalks are also recommended across the proposed driveways.
33. Additional notes should be added to the plan to clarify the limits of the 4" and 6" curb.
34. There is no wetland line or floodplain line shown to the west of Pettee Brook. These lines should be added to determine what, if any, impacts to the wetlands and floodplain will be required for construction of the pedestrian bridges and associated abutments, etc.
35. It does not appear that there is sufficient access to the proposed transformer. The utility company should be contacted to confirm if the proposed transformer location is acceptable.

Utilities, Grading, Drainage and Erosion Control Plan – Sheet C-2

36. Proper access to the proposed "stormwater pond" should be provided for maintenance. The location of this access way should be coordinated with the DPW.
37. Details of the proposed bridge construction should be provided prior to construction to verify that all components are outside the 100-year flood plain. As shown the proposed top elevation of the bridges appear to be above the flood elevation however, it cannot be verified if the abutments, piers, or beams will be above the flood elevation or outside the floodplain.
38. The proposed sawcut line shall be revised to extend around the proposed utilities in the existing pavement in Madbury Road.
39. A legend should be added to the plan that includes the proposed grades and all proposed utilities.
40. Appropriate notations should be added for the proposed gas line.
41. The proposed 6" roof drain near the proposed loading dock should have rip-rap or other erosion protection placed at the outlet.
42. There is a length and slope being proposed for DMH #1. This should be removed.
43. The berm width at the stormwater outlet pond is minimal (2 feet wide in places) and should be increased.
44. The rip-rap spillway in the stormwater pond should be extended below the permanent pool to avoid erosion.
45. The Outlet Control Structure in the stormwater pond should be moved to the west to ensure proper cover of the outlet pipe.

46. The northern portion of the "plunge pool" should be graded level so that water leaving the pool does not re-concentrate immediately downstream.
47. A note should be added for the contractor to install erosion control blankets on all slopes steeper than 3:1 (see grading at proposed stairways to bridges, etc.).
48. Stationing should be added along the sewer line so that it matches up to the plan and profile on Sheet C-6.
49. The sewer inverts at the buildings should be shown on the plans.
50. Sewer cleanouts are recommended within 3 feet of the proposed building connections (one of the clean-outs could be eliminated if the sewer service was to tie directly into the proposed manhole).
51. The sewer main slope and/or inverts should be revised to provide additional cover under Pettee Brook (it appears less than 2 feet is provided now).
52. Note #6 should be revised to indicate inspections are required after 0.25 inches of rain.
53. The water main design should be revised to eliminate the dead-end as proposed.
54. The proposed water main sizes and type of pipe should be shown on the plans.
55. It appears a retaining wall is being proposed on the adjacent property to the northeast (Lot 12-3). This should be clarified on the plans.
56. A drip-strip detail should be provided for the proposed drip-strip as noted on the plan.

Demolition Plan – Sheet C-3

57. The construction fence is proposed outside the property limits. Temporary construction easements may be required for this.

Construction Details – Sheet C-4

58. The stormwater inspection notes should be revised to indicate inspections are required after 0.25 inches of rain.

Construction Details – Sheet C-5

59. The proposed "Micro Pool Extended Detention Pond Profile" detail should be revised so that the elevation of the spillway from the sediment forebay to the permanent pool matches the grading plan (elevation 49.5).
60. The "Stormwater Maintenance Pond" Note #6 indicates access to be from Lot 12-10. Based on our meeting on January 22, 2014, we understand that the final access location is still being worked on and will be reviewed by the DPW for acceptance.
61. We recommend increasing the rip-rap size of the spillways to 6" (d50) minimum.

Construction Details – Sheet C-8

62. The "Porous Pavement Parking Lot Cross Section" detail should be revised to show a 6" underdrain as specified on the grading plans (versus 4" shown on the detail).

Also, the type of porous pavement being used should be specified (e.g. PG76-22, etc.).

Construction Details – Sheet C-9

63. The "Boulevard Cross-section" detail and "Porous Concrete Paver Cross Section" detail should be revised so that the under drain sizes match those specified on the Grading Plan and Details, Sheet C-11.
64. We recommend providing a specification for the filter course section of the porous pavement (modified NHDOT 304.1).
65. We recommend all curb be supported by poured in place concrete (front and back).
66. The "Observation Well" detail shows them up against curb, however this is not what is shown on the Grading Plan and should be revised.
67. Based on the discussion at our January 22, 2014 meeting the impermeable geo-textile fabrics proposed below the porous pavement and paver sections will be replaced with a suitable permeable barrier (e.g. non-woven geotextile fabric, etc.).
68. The use of a non-woven geo-textile fabric being used on the sides of the porous pavement and paver sections should be clarified.

Construction Details – Sheet C-11

69. The clay berms being proposed within the gravel reservoirs should be wrapped in non-woven geotextile fabric to prevent migration of fines into the gravel.
70. A detail should be provided for the drain line as it passes through the clay barriers (anti-seep collars, etc.).

Landscape Plan – Sheet L-1

71. Additional construction details and limits of work should be provided for work within Pettee Brook and the surrounding wetlands. Details should include, but not be limited to, bank stabilization, coir logs, etc. The NHDES will likely require these as part of the wetland permitting process.

If you have any questions or need additional information please feel free to contact me at 603-433-8818 or jimpersechino@tighebond.com

Very truly yours,

TIGHE & BOND, INC.



Joseph Persechino, P.E.
Project Manager

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