October 22, 2015

Marcia Gasses
Town Planner and Land Use Administrator
Town of Barrington
PO Box 660
Barrington, NH 03825

Re: International Brotherhood of Electrical Workers
22 Old Concord Turnpike
Map 271, Lot 23
Engineering Review

Dear Ms. Gasses:

As requested, we have completed our review of the plans and materials for the above referenced project. The plan set consisted of 16 sheets with a September 9, 2015 date, with no revisions (Sheet 10 NHDOT Access Plan omitted). Also included for review were a Drainage Analysis, Sediment and Erosion Control Plan (dated September 9, 2015 with no revisions). The following were comments noted during the review:

PLANS

1. Pursuant to Article 3.5.1(1) existing and proposed spot elevations should be added to the plans. We recommend that, at a minimum, spot elevations be added to the corners of pavement, driveway apron, and accessible parking spaces to provide additional information for review and to facilitate proper construction. In accordance with Article 4.3.2, we recommend that spot elevations be shown at not more than 100 foot intervals along all drainage facilities and adjacent streets, and pursuant to Article 3.5.2(3) that spot elevations be added to the proposed swales.

2. Pursuant to Article 3.5.2(1), we recommend that proposed pipes should be labeled as having flat slopes to facilitate proper construction. Outlet erosion protection should be dimensioned in the detail. The supporting calculations should be added to the Drainage Analysis pursuant to Article 4.7.2(11).

3. We recommend that the Engineer check the numbering of pages, which shows Sheet 5 to be of 20 whereas the other sheets are of 16.

4. To meet the requirement of Article 3.5.5, we recommend that the existing water pipe be labeled on the plans.

5. The 50' wetland buffer line shown on the plans does not match the line type shown on the legend of Sheet 1 of 16.

6. Pavement section is minimal. We would recommend a minimum of 3" of pavement.

7. We have not reviewed sight distance, in that this will fall under the jurisdiction of NHDOT's driveway permit. However, in accordance with Article 4.8.2(1) we recommend that the NHDOT Driveway Permit number be added to the plans.

8. A detail for a Riprap Lined Channel is provided on Sheet 13 of 16, however no such channels are shown on the Grading Plan.

9. We recommend that dimensions be added to the plans and Pipe Outlet Protection detail to facilitate proper construction.

10. We recommend that a R7-8 sign be added to the plans for the easternmost accessible parking space in front of the building, and that the quantity of signs on Sheet 1 of 16 be updated accordingly. We also recommend that the R7-8a "Van Accessible" placard be added to one of the R7-8 signs adjacent to an 8' wide hatched space in accordance with Article 4.9.4(2).

11. The sign table on Sheet 1 of 16 does not match the signs in Detail C25 on Sheet 15 of 16. We recommend that the signs be coordinated between these locations, and that the signs shown on Detail C4 of Sheet 15 of 16 be updated to reflect the requirements of Article 4.9.4(2).

12. We recommend that the Engineer define the hatched area at the top of the underdrain trench detail.

13. The Grass Treatment Swale detail indicates that the width of the swale is noted on the plans. We recommend that this information be added to the Grading Plan.

14. Note 2 of the construction sequence on Sheet 12 of 16 appears to be incomplete.

15. We recommend that the State approval number for the sewage disposal system be added to the plat prior to final approval, in accordance with Article 4.6.

16. In accordance with Article 4.8.2(2), we recommend that the minimum driveway radii be upsized to a 25' radius. Note also that Article 4.9.5(1) requires an 30' maximum width for driveways, and an 11' minimum lane width. The design calls for two 10' wide exit lanes and a 12' entry lane, for a total width of 32'.

17. Article 4.8.2(3) requires a 150' separation between driveways on the same side of the street. However, it is noted that the proposed driveway is proposed to coincide with the existing driveway location.

18. Pursuant to Article 4.9.13(1), off-street parking facilities shall be limited to no more than 10% above the amount required. The limit in this case would be 21 spaces, and 62 spaces are proposed. We recommend that the applicant discuss the need for the additional parking with the Planning Board.

19. The surface covering in the rain garden is proposed to be 3" rounded river stone. The NH Stormwater Manual specifies 2-3" well-aged shredded bark mulch.

20. We recommend that the Engineer review Detail L9 on Sheet 16 of 16. Based on the 150 contour, it appears that the area is proposed to be slightly mounded, not depressed as illustrated in Detail L8, and as noted on the Grading Plan Sheet 5 of 20.

21. We recommend that the engineer review the constructability of the 4' wide berm of low permeability material shown in Detail R1 on Sheet 6 of 16. It appears that the lower portion of this berm will be constructed below the SHWT, which would necessitate dewatering for proper installation. We recommend that dewatering notes and other construction notes such as thickness of lifts be added to the detail.

22. Detail R3 on Sheet 6 of 16 shows a 15' wide spillway along the For-Bay, however the rock hatch and contours suggest the spillway is actually 30' +/- to the west. We recommend that the Engineer clarify the location of the spillway to facilitate proper construction.

23. We recommend a cutoff swale be added to the grading design upgradient of the rain garden to convey surface runoff into the For-Bay.

DRAINAGE ANALYSIS

24. The drainage calculations assume that all non-wetland soils are HSG A. However, Whitman very stony fine sandy loam (Wa) is HSG C. No NRCS backup was provided for Windsor loamy sand (WdA).

25. Test pit information was not provided for the rain garden.

26. In accordance with the design requirements in the NH Stormwater Manual, we recommend that the elevations of the rain garden be raised in order to provide either 1' of separation between the bottom of the practice and the Seasonal High Water Table (SHWT). Or alternatively, provide 1' of separation between the bottom of filter course material and SHWT, and twice the depth of filter course material recommended.

27. The rain garden spillway crest length is input as 20' in the drainage calculations, but is shown as 15' on the plans. This does not alter the calculations in that the stormwater does not reach the spillway elevation for the design storms analyzed.

Very truly yours,
DuBOIS & KING, INC.

Jeffrey Adler, P.E.
Senior Project Manager

DuBois & King inc.