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ENGINEERING • PLANNING • DEVELOPMENT • MANAGEMENT

322306P
December 12, 2013

Marcia Gasses
Town Planner
Town of Barrington
PO Box 660
Barrington, NH 03825

Re: Tropic Star Convenience
Route 125, Barrington, NH
Map 238, Lot 4
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 23 sheets with a January 3, 2012 date, last revised November 19, 2013. Also included for review were a Drainage Analysis, Sediment and Erosion Control Plan (dated January 3, 2012, last revised November 19, 2013) and response letter from Jones & Beach Engineers dated November 21, 2013. The following were comments noted during the review:

1. The cueing plan shows that 6 vehicles can be accommodated from the menu board without blocking any parking spaces. It appears that probably another 3 could be accommodated between the menu board and window. We previously noted that if it is intended to sell coffee at the drive-thru window, cueing of 10-15 vehicles (from the window) is common. We recommend that the drive-thru use be identified, and that a drive-thru lane of appropriate length be designed in a manner that does not conflict with parking or circulation patterns. (REPEAT COMMENT)

2. There are parking spaces in the front setback. (REPEAT COMMENT) In order to comply with Article 4.9.2.1, we recommend that these spaces be eliminated or relocated to another area of the site. The Applicant may also request a waiver of this requirement.

3. The sidewalk dimension is not labeled along the south side of the building, but the engineer states in the response letter that the dimension is 5.5'. We recommend that the dimension be adjusted to 8' to account for vehicle overhangs pursuant to Articles 4.9.2.4 and 4.9.5.4. (REPEAT COMMENT)

4. According to Article 4.9.13.1, the maximum allowable parking is 10% over the calculated value, which in this case is 40 spaces, for a maximum of 44 spaces. The Planning Board will need to consider their request for 58 spaces between the two lots where a maximum of 44 are allowed. It is noted that the convenience store/fast food alone requires 33 spaces, and 28 are provided exclusive of the spaces included in the parking easement to the grocery store. (REPEAT COMMENT)

5. The watershed plan has been updated to include additional analysis points, and shows an increase in runoff at Analysis Point #3, the southerly lot line of Lot 83. Based on the contours shown on the plans, it appears that this area actually drains to a catch basin located just to the northeast of the proposed driveway connection, behind the church. We recommend that the drainage calculations be updated to reflect this, and that the results be evaluated for conformity with Article 4.7.1.1.

6. We recommend that the location of Test Pit #4 be added to the plans.

7. The velocity requirements of Article 4.7.7.2 are not met by the proposed design. We recommend that the engineer make the appropriate revisions to the design, or request a waiver from the Planning Board.

8. Article 4.7.7.3 requires a 36" minimum depth of cover. We recommend that the design be checked and revised as necessary. Should waivers of this requirement be requested, we would recommend that the appropriate details be provided to show how shallow pipes will connect to precast structures. (REPEAT COMMENT) The engineer indicates that the slab top alternate will be utilized in shallow conditions, however, this does not accommodate all of the shallow conditions shown on the plan. The details call for an 8" grate, 2 courses (minimum) of brick, an 8" slab thickness, and a 4" joint between the precast sections. To maintain the integrity of the joint, a 6" depth is commonly assumed between the joint and top of pipe. Assuming the preceding, some of the pipes (for example, Catch Basin #14) have been designed in a manner that would require horizontal penetration of a portion of the 8" top slab (bottom of top slab el. ~204.4 and top of pipe el. ~204.5. We recommend that the engineer review the drainage system design in conjunction with the details, and make the appropriate revisions to achieve the requirements of Article 4.7.7.3. Should the applicant instead choose to request a waiver, we would recommend that the engineer supply the necessary details to facilitate proper construction.

9. The drainage trench detail does not meet the requirements of Article 4.7.7.4 for depth of cover, bedding and backfill materials, and excavation depth in ledge.

10. Catch basin detail should be amended to include a polyethylene liner downspout in accordance with Article 4.7.8. (REPEAT COMMENT) It is noted that an outlet hood (a.k.a snout) has been added, which is not required by the Town's regulations.

11. We recommend that the engineer review Detention System #1 in conjunction with landscape plantings. (REPEAT COMMENT) It appears that the root balls and future root growth could conflict with the drainage system.

12. The Grading and Drainage plan shows Detention System #2 as 7 36" pipes, 140' long, for a total of 980' of 36" pipe. The drainage calculations call for 56 36" pipes, 20' long for a total of 1,120' of 36" pipe. We recommend that the plans be modified to match the drainage calculations, and dimensions of the system be called out to facilitate proper construction.

13. We recommend that the engineer review the detail for DMH #1 & #9. When comparing the plans, details, and drainage calculations, several discrepancies were noted. Inverts, and structure numbers should be checked. It is also noted that the top of the weirs will be within the cone section, and the lengths should be adjusted accordingly in the drainage calculations.

14. We recommend that the engineer examine the grading design along the northerly lot line. We noted a 205 contour directly on the lot line. We further recommend that the landscape architect confirm that the specified plantings are suitable for the 2:1 slope. (REPEAT COMMENT) It is also noted that a sidewalk has been added in this area, which traverses the 2:1 slope. We would recommend that the grades be revised to something more reasonable, or that steps be incorporated into the design.

15. There appears to be a swale along the northern property line but there is no grading shown. (REPEAT COMMENT) The engineer states that there is no swale proposed, so we would therefore recommend that the flow arrows adjacent to Route 125 be deleted.

16. The lighting plan (sheet L1) is not stamped by an electrical engineer. (REPEAT COMMENT) The engineer points out that this has been discussed with the Board.

17. We recommend that a reduced-size site plan be attached to the Operation and Maintenance manual depicting the location and quantity of each component for use by personnel performing the inspections. (REPEAT COMMENT) The engineer has agreed to include the site plan set in the Operations and Maintenance manual.

Very truly yours,

DuBOIS & KING, INC.

Jeffrey Adler, P.E.
Senior Project Manager

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