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March 15, 2022
VIA EMAIL

Ipswich Planning Board
Town Hall
25 Green Street
Ipswich, MA 01938

RE: 55 Waldingfield Road – Phase 1B
Site Plan Review & Special Permit Applications
2nd Drainage and Stormwater Management Review (Task 2)

Mr. Ethan Parsons and Planning Board Members:

As requested, I have continued a drainage and stormwater management review of the above referenced project. In response to the initial (Task 1) review dated January 21, 2022, I have received the following supplemental or revised plans and documents as prepared by Hancock Associates of Danvers, MA (unless otherwise noted).

- Copy of correspondence from Hancock Associates to the Ipswich Planning Board, dated March 4, 2022, regarding ‘Response to Drainage and Stormwater Management Review (Task 1).’
- “Permit Site Plan Phase 1B (to accompany a Great Estate Preservation Development Special Permit) 55 Waldingfield Road....” consisting of twelve (12) sheets, dated October 21, 2021, and revised to March 2, 2022.
- “Stormwater Report in Support of A Great Estate Preservation Development (GEPD) Special Permit for 55 Waldingfield Road Phase 1B...” dated October 2021, and revised to February 2022, including appendices for a Long Term Pollution Prevention Plan, a Construction Period Pollution Prevention Plan, and an Operation and Maintenance Plan.

At this time, the following additional comments and opinions are offered for your consideration relative to the proposed drainage design, stormwater management design and the MA DEP Stormwater Management Standards.

Stormwater Management, Drainage, and Grading:

1. The Proposed drainage area flowing into Rain Garden is significantly understated. The southern boundary does not account for flow that will enter the Rain Garden overland across the grass area north of the existing gate post and existing driveway. Revised calculations should be conducted for a more accurately mapped catchment area.
2. In the stormwater calculations, explain why the overflow spillway of the existing depression consists of a larger dimension in the proposed condition analysis than existing condition. No alteration of the area is indicated on the plans.

3. A Landscaping Plan has not been submitted. Specific landscaping of the Rain Garden (consistent with MA DEP Stormwater Handbook recommendations) should be provided to confirm compliance with DEP design guidelines.
4. With respect to the proposed storm drain system, the following revisions are suggested:
 - a. Downgradient of DMH A-2, increase the pipe size to 12 inches in improve pipe capacity below the manhole junction.
 - b. Reduce pipe slope upgradient of DMH A-5 to reduce flow velocity to appropriate levels.
 - c. Revise roof drain invert and pipe invert at the northerly side of the proposed building (i.e., an adverse pipe slope is currently indicated).
5. Provide the following additional information in the 'Rain Garden Detail' on plan sheet 7.
 - a. Expand the section to include the earthen embankment cross section of the Rain Garden.
 - b. Specify the top of the rain garden embankment elevation. An elevation one foot higher than the top of spillway crest is suggested.
 - c. Specify embankment fill material and impermeable core.
 - d. Correct the top of slope elevation specified adjacent to the forebay.
 - e. Correct the top of berm specified between the forebay and Rain Garden.
 - f. Correct the specified ESHWT elevation to be consistent with the soil test information contained on plan sheet 4.
6. Revise the 'Rain Garden Spillway Detail to reflect the geometry utilized in the calculations.
 - a. It should be noted that the construction specified in the proposed detail will allow spillway discharge at an elevation lower than the crest of the spillway (due to voids in the stone foundation material). This is inconsistent with the calculations and the cross sections should be revised to prohibit this type of flow by implementing a curbing or other type of impermeable cut-off wall.
7. The following minor items, drafting corrections, and typographical errors should be addressed:
 - a. The 'Soil Stabilizer' detail (plan sheet 6) should specify that the selected product be capable of supporting fire apparatus and all anticipated truck traffic loads at the site.
 - b. Contours 54 and 55 are incorrectly labelled in the westernmost parking row.
 - c. The bottom of Rain Garden elevation specified on plan sheet 4 is incorrect and should be revised.
 - d. Revise the 'Drain Cleanout' detail to specify a product that more closely resembles what is proposed on the plans.
 - e. The roof runoff note on plan sheet 4 should be revised to specify that all roof runoff shall be conveyed to the rain garden.
 - f. The note regarding potential use of cisterns to collect roof runoff (plan sheets 4 and 5) should be expanded to stipulate that excess/overflow runoff to the cisterns shall be conveyed to the Rain Garden (as assumed in the calculations).
 - g. As noted in the 'Task 1' review, in Appendix G of the Stormwater Report, the proposed site description refers to Phase 1B buildings on the western side of the property. As mapped, Phase 1B is on the eastern side of the property. This remains to be corrected
 - h. The revised drainage areas of proposed subcatchments PB-1 and PB-2 are incorrectly stated on page 8 of the Stormwater report (based on the calculations the revised areas should be 548,044 and 41,624 square feet, respectively).

DEP Stormwater Management Standards:

1. Standard 3 – As presented in the calculations, the rain garden drawdown time is calculated to be 161 hours, which is significantly greater than the maximum recommended value of 72 hours. Revisions should be conducted to reduce the drawdown time to an acceptable duration.

2. Standard 4 – As proposed on the plans, a peastone diaphragm is utilized to provide stormwater treatment for a portion of the southernmost driveway/parking area. Based on the proposed grading, this diaphragm will receive minimal runoff from the peastone area and will be ineffective as a pretreatment best management practice (BMP) as located.
 - a. Further revision to improve pretreatment of runoff from the peastone area is suggested. It is noted that only approximately 50 percent of the peastone area is calculated to flow to the rain garden. The remaining 50 percent of peastone should receive pretreatment from a BMP.
3. Standard 4 – As noted in prior reviews, the Long Term Pollution Prevention Plan (LTPPP) continues to be unsatisfactory with respect to the topics contained in the ‘Checklist for Stormwater Report.’ The document should be revised and reformatted as needed to address these topics.
4. Standard 9 – Certain elements of the drainage and stormwater management design have been omitted from the Operation and Maintenance Plan (O&M Plan). Revision of the document should be conducted to include narrative and inspection items for the following:
 - a. Inspection and Maintenance of the storm drain system, pipe outfall, and drain manholes.
 - b. Inspection and maintenance of the peastone diaphragm.

Please feel free to contact me if you have any questions or require any additional clarification of the above comments and opinions.

Very truly yours,

R.E. Puff

Robert E. Puff, Jr., PE

cc: C Wear, PE (via email)