

HANCOCK ASSOCIATES

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#24679

May 3, 2022

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:

On behalf of Ora, Inc., Hancock Associates is pleased to respond to comments given by Robert Puff, P.E. in his 2nd drainage and stormwater management review dated March 15, 2022, for the above referenced project with respect to regulatory standards of the Planning Board and good engineering design practice for drainage and stormwater management facilities.

The following comments are offered in response to Robert Puff's letter.

Stormwater Management, Drainage, and Grading:

Peer review comment:

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.*

Hancock's response:

Site grading has been revised and the watershed boundary has been adjusted to show a more accurate watershed area.

Peer review comment:

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.*

Hancock's response:

This is a typographical error. The spillway dimensions have been revised in the proposed condition HydroCAD analysis.

Peer review comment:

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.*

Hancock's response:

A landscaping plan for the raingarden will be provided prior to final approval.

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Peer review comment:

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.

Hancock's response:

The pipe downgradient of DMH A-2 has been increased in size to 12 inches.

Peer review comment:

- b. Reduce pipe slope upgradient of DMH A-5 to reduce flow velocity to appropriate levels.

Hancock's response:

The inflowing pipe slope to DMH A-5 has been reduced.

Peer review comment:

- 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).

Hancock's response:

The pipe invert from the building has been revised.

Peer review comment:

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.

Hancock's response:

The Rain Garden detail has been updated in accordance with the comments above.

Peer review comment:

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.

Hancock's response:

A curbing line has been added to the spillway.

Peer review comment:

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.*

Hancock's response:

A note has been added to the soil stabilizer detail.

Peer review comment:

- b. *Contours 54 and 55 are incorrectly labelled in the westernmost parking row.*

Hancock's response:

The contours labels have been corrected.

Peer review comment:

- c. *The bottom of Rain Garden elevation specified on plan sheet 4 is incorrect and should be revised.*

Hancock's response:

Bottom of raingarden elevations has been corrected.

Peer review comment:

- d. *Revise the 'Drain Cleanout' detail to specify a product that more closely resembles what is proposed on the plans.*

Hancock's response:

The drain cleanout detail has been revised to reflect what is proposed on the plans.

Peer review comment:

- 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.*

Hancock's response:

The runoff note has been revised.

Peer review comment:

- 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).*

Hancock's response:

The cistern note has been revised.

Peer review comment:

- 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*

Hancock's response:

Appendix G has been corrected.

Peer review comment:

- 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).*

Hancock's response:

The areas have been corrected in the report.

DEP Stormwater Management Standards:

Peer review comment:

- 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.*

Hancock's response:

The rain garden layout has been revised to decrease drawdown time.

Peer review comment:

- 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.*

Hancock's response:

Additional Peastone diaphragms have been added to the plan.

Peer review comment:

- 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.*

Hancock's response:

As utilized in Phase 1A, the Phase 1B project incorporates an onsite natural catchment area on the east side of the site to provide water quality to runoff for approximately half of the peastone areas prior to discharge offsite. The natural catchment area provides a water quality volume well over 1-inch per area of peastone area that is directed to it. Also, stormwater will flow over 300 feet over the pasture area which should provide over 44% pretreatment prior to discharge to the Natural Catchment Area.

Peer review comment:

- 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.*

Hancock's response:

The LTPPP has been reformatted revised to cover all topics in the checklist for stormwater report.

Peer review comment:

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.*

Hancock's response:

The operation and maintenance plan has been revised to include these topics.

We look forward to discussing these issues at the next Planning Board hearing.

Sincerely,

HANCOCK ASSOCIATES on behalf of Ora, Inc.

A handwritten signature in blue ink, appearing to read "C. E. Wear, III".

Charles E. Wear, III, P.E.
Engineering Manager/Senior Project Manager

cc: Robert Puff, P.E.