

AMORY ENGINEERS, P.C.

WATER WORKS • WATER RESOURCES • CIVIL WORKS

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October 16, 2019

Hingham Planning Board
210 Central Street
Hingham, MA 02043

Subject: 23 Baker Hill Drive, Special Permit – Site Plan

Dear Planning Board Members:

This is to advise that we have reviewed the following documents prepared by Merrill Engineers and Land Surveyors (Merrill) pertaining to the proposed pool and patio at the subject site:

- Site Plan (1 sheet), revised October 15, 2019
- Site Plan Narrative, revised October 15, 2019
- Long Term Operation and Maintenance Plan/Pollution Prevention Plan, dated September 25, 2019
- Application for Site Plan Approval

The purpose of our review has been to evaluate conformance with Hingham Zoning By-Laws (ZBL), and good engineering practice.

Background

The 2.09-acre parcel at 23 Baker Hill Drive is located within the Residence A zoning district. It is currently developed with a single-family dwelling with attached garage, patios, walks, paved driveway, landscaping and grass areas. An access and utility easement containing a 20-foot wide paved driveway/roadway traverses across the east and south portions of the property.

The proposal calls for installation of an in-ground swimming pool and spa with new patios around them and an addition to the existing deck. A six foot high fence is proposed to enclose the proposed improvements. To mitigate stormwater runoff, a slotted drain and area drain inlets are proposed within the new patios. The drains would discharge to a subsurface infiltration system consisting of plastic chambers surrounded by crushed stone. Overflow from the infiltration system will discharge through areas drains to the down-gradient lawn surface. Proposed erosion controls will consist of a 12-inch diameter silt sock along the down-gradient perimeter of the work.

Comments

1. We had reviewed a previous version of the Site Plan (dated September 26, 2019) and emailed Mr. Edward Cullen, P.E. of Merrill to inquire about the drainage calculations/HydroCAD file. Mr. Cullen provided the HydroCAD file and through emails¹ and telephone conversations Mr. Cullen modified the drainage design to address our comments. The modified design added two chambers to the infiltration system which results in the system mitigating increases in stormwater runoff from all storm events up to and including the 100-year event.
2. Should the Board approve the project we recommend a condition requiring ongoing maintenance of the drainage system in accordance with the Long Term Operation and Maintenance Plan/Pollution Prevention Plan (O&M), dated September 25, 2019.

We believe that the proposed drainage system, as specified on the Site Plan, along with compliance with the O&M plan will result in a site that is in compliance with the Massachusetts Stormwater Standards. We also believe that the proposed erosion controls shown and detailed on the Site Plan along with implementation of the Erosion Control Notes & Sequencing outlined on the Site Plan will adequately mitigate potential erosion of the site during construction activities.

Please give us a call should you have any question.

Very truly yours,

AMORY ENGINEERS, P.C.

By:



Patrick G. Brennan, P.E.



PGB
enc.

¹ Copy of emails attached.

23 Baker Hill Lane, Hingham

Edward Cullen <ecullen@merrillinc.com>

Tue, Oct 15, 2019 at 4:02 PM

To: Pat Brennan <pbrennan@amoryengineers.com>

Cc: Mary Savage-Dunham <dunhamm@hingham-ma.gov>, "Robertson, Sherry" <robertsons@hingham-ma.gov>

Pat

I have made the requested changes, and have included the revised site plan and narrative.

Mary

I can stamp the revised site plan and submit them tomorrow, but I wanted to know is there anything else I need to do before the meeting.

Thank you

Edward Cullen, P.E.

Project Manager

427 Columbia Road, Hanover, MA 02339 / T:
(781) 826-9200
26 Union Street, Plymouth MA 02360 / T: (508)
746-6060**merrillinc.com****From:** Pat Brennan <pbrennan@amoryengineers.com>**Sent:** Tuesday, October 15, 2019 1:40 PM**To:** Edward Cullen <ecullen@merrillinc.com>**Cc:** Mary Savage-Dunham <dunhamm@hingham-ma.gov>; Robertson, Sherry <robertsons@hingham-ma.gov>**Subject:** Re: 23 Baker Hill Lane, Hingham

Ed,

The 8 chambers are still not modeled correctly (you are using the full prismatic volume of the stone and forgot about the voids). Please see the attached - I corrected it in pond 5P. When you finalize the design I suggest you include a summary table of the rates and volumes so that the Planning Board has it to look at.

Pat

Patrick G. Brennan, P.E.
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On Tue, Oct 15, 2019 at 1:32 PM Edward Cullen <ecullen@merrillinc.com> wrote:

Pat

Thanks for the quick response on your comments.

I changed the outlet invert to 139.5 and the outlet pipe from a 6" to a 4", this reduced the proposed flow to less than the existing flow on all storms including the 100 yr storm.

So instead of trying to recharge all of the smaller storms and letting the larger storms overflow, I designed the outlet to release a small amount in

the storms greater than the 5-yr storm, and still significantly reduce the flow compared to the existing flow.

Let me know if you would like a chart summarizing the reduction in flows.

Thanks

Edward Cullen, P.E.

Project Manager



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From: Pat Brennan <pbrennan@amoryengineers.com>
Sent: Tuesday, October 15, 2019 12:47 PM
To: Edward Cullen <ecullen@merrillinc.com>
Cc: Mary Savage-Dunham <dunhamm@hingham-ma.gov>; Robertson, Sherry <robertsons@hingham-ma.gov>
Subject: Re: [23 Baker Hill Lane](#), Hingham

Edward,

Your storage volume calculation is off. You will need a minimum of 15 chambers to achieve the 25-year storm attenuation. I've attached a revised HydroCAD file. You'll also note that I added an existing node so that I could see what the difference in runoff for the 100-year storm is between existing and proposed - you need 16 chambers to mitigate the increase.

Also, what is the arc that comes off the north corner of the patio and appears to stretch into the adjacent property? (Your 16.3' dimension is pointing to it).

Pat

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On Tue, Oct 15, 2019 at 11:29 AM Edward Cullen <ecullen@merrillinc.com> wrote:

Pat

I have attached the hydrocad that I used for the sizing of the underground infiltration chambers.

Please let me know if you need anything else.

Thanks

Edward Cullen, P.E.

Project Manager



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From: Pat Brennan <pbrennan@amoryengineers.com>

Sent: Tuesday, October 15, 2019 10:14 AM

To: Edward Cullen <ecullen@merrillinc.com>

Cc: Mary Savage-Dunham <dunhamm@hingham-ma.gov>; Robertson, Sherry <robertsons@hingham-ma.gov>

Subject: 23 Baker Hill Lane, Hingham

Edward,

In the narrative for the subject project it is stated that the drainage system is designed to recharge all storms smaller than the 25-year storm and larger storms will overflow. Would you send me calculations that document this? Alternatively, if the analysis was done with HydroCAD you can send me the file and I can review that.

Thank you,


Pat Brennan

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3 attachments

 **19-216 revised-10-15-19.hcp**
4K

 **19-216 Narrative-rev10-15-19.pdf**
115K

 **19-216-rev10-15-19.pdf**
692K