

RJO'CONNELL & ASSOCIATES, INC.

CIVIL ENGINEERS, SURVEYORS & LAND PLANNERS

80 Montvale Ave., Suite 201
phone 781-279-0180

Stoneham, MA 02180
fax 781-279-0173

March 11, 2020

Bernard Cahill
Shrewsbury Planning Board
100 Maple Avenue
Shrewsbury, MA 01545

Regarding: Edgemere Crossing at Flint Pond
Site Plan Approval Modification
Stormwater Information and Responses to Graves Engineering, Inc.
Letter Dated December 26, 2019
Permit Number: Site Plan Approval No. SPA-02a-2020
Special Permits No. SPA-02b-2020

Dear Mr. Cahill:

In conjunction, with the preparation of the final plans pursuant to the above referenced project and consistent with the further development of the residential programming, the updated plans will demonstrate modifications from the plans referred to in the Approvals but which the Applicant believes are minor in nature. The further developments relate to minor modification of the most easterly and southerly nodes of the residential component of Edgemere Crossing at Flint Pond. We have also incorporated the updated residential footprints for the four building types.

As part of the revised residential layouts along the easterly and southerly portions of the site, please find the following updated stormwater/drainage information:

- Figure 5 – Permitted On-Site Watershed Plan
- Figure 5 – Proposed On-Site Watershed Plan
- Subcatchment 6 HydroCAD Model
- Subcatchment 7 HydroCAD Model
- Subcatchment 6 Pipe Calculation
- Subcatchment 7 Pipe Calculations

In summary, the peak rates at discharge points 3 and 4 from all four storm events analyzed have either decreased or remained the same and are consistent with the approvals. Please refer to the Peak Flow Summary Table below for details.

PEAK FLOW SUMMARY TABLE FOR DESIGN POINTS 3 & 4

<u>Description</u>	<u>Storm Event</u>			
	<u>2-Yr</u>	<u>10-Yr</u>	<u>25-Yr</u>	<u>100-Yr</u>
<u>Discharge Point 3 (DP-3)</u>				
Existing	1.5	7.2	13.4	28.0
Permitted	1.0	5.9	10.9	23.1
Proposed	1.0	5.6	10.4	22.0
<u>Discharge Point 4 (DP-4)</u>				
Existing	1.6	9.7	19.3	43.0
Permitted	1.2	7.1	13.6	35.7
Proposed	1.1	7.1	13.6	34.7

Footnote:

1. It is important to note that Watershed Areas (PR2-1 & PR4-1) have been reduced, therefore the peak flows will also be reduced slightly and have not been reanalyzed accordingly.

RJ O’Connell & Associates, Inc. is also in receipt of the peer review comments by Graves Engineering, Inc. dated December 26, 2019 for the above referenced project. We have reviewed the comments listed below with the associated responses in red.

Rules and Regulations Special Permit and Site Plan Review

2. *On Sheet C-2B, the southernly set of two handicap parking spaces at the 24,250 square-foot retail building needs more information to show proper grading (2% maximum in any direction). (§IV.1.g.19)*

Acknowledged. Proposed spot elevations were provided at the handicap parking spaces; the grades are less than 2%. The 24,250-sf building and associated parking are were reconfigured; two smaller buildings are proposed. The design engineer should recheck the four proposed spot elevations at the handicap spaces nearest the 4,000-sf building. The spot elevation show a level area; a grade of approximately 1% should be provided for drainage.

Response: Spot grades at the 4,000 SF building handicap spaces have been added to provide a grade of 2% (max) and positive drainage to parking lot catch basins.

Hydrology & Stormwater Management Review

11. *On Sheets C-2A – C-2E, the discharge culvert pipes' diameters and slopes for Basins 1 – 5 and Basin 7 are inconsistent with what was modeled in HydroCAD. This information needs to be consistent.*

The outlet pipe diameter for infiltration basin 4 is not consistent between the plans and hydrological computations. The 24" diameter outlet pipe of the infiltration basin 7 is too steep; water velocities will be excessive. The outlet control structure detail on C-7 needs to clarify that infiltration Basin 5 has 3 outlet control structures.

Response: The outlet pipe from Basin 4 has been updated on the plans to be consistent with the hydrological computations. The 24" diameter outlet pipe from Infiltration Basin 7 has been modified by adding a manhole to allow for a flatter pipe slope and lower flow velocity. A note has been added to the outlet control structure detail on sheet C-7 to clearly identify that Infiltration Basin 5 has 3 outlet control structures. See basin 4 HydroCad node summary.

12. *GEI has no issues with the pipe sizing calculations.*

GEI has no issues with the pipe sizing calculations except that on page 4 the computation need to include the flow from catch basins CB4-8 and CB-4-9 to flared end section FES4-1.

Response: Flow from CB-4-8 AND CB-4-9 has been added to the pipe sizing calculation on page 4. See attached pipe calculations.

21. *On Sheet C-7, the construction detail for the drain manhole needs to include an invert channel.*

Response: The Town Engineer and the DPW Superintendent have stated no invert channels in drain manholes will be required as they will be privately owned and maintained.

Additional Comments, December 26, 2019

30. *On sheet C-7, the Outlet Control Structure construction detail needs to be revised to identify Infiltration Basin 5 will have three (3) outlet control structures each with a 36" wide x 6" high orifice*

Response: A note has been added to the Outlet Control Structure detail on sheet C-7 to clearly identify that Basin 5 has three (3) outlet control structures.

31. *The flared end section invert elevations need to be labeled for the infiltration basin outlet pipes.*

Response: Inverts have been added to flared end sections for all infiltration basins outlet pipes.

32. The slope of the 24” diameter outlet pipe from OCS5-3 (Infiltration Basin 5) appears to be too steep and the slope of the 24” diameter outlet pipe from the Infiltration Basin 7 is too steep; water velocities will be excessive. The slopes need to be revised.

Response: Drain manhole (DMH-05-3) has been added and the outlet pipe invert set at elevation 361.00 to provide an 0.8% slope to reduce flow velocity. The 24” diameter outlet pipe from Infiltration Basin 7 has been adjusted to allow a 2% slope to provide lower flow velocity.

33. On sheets C-2A and C-2B the elevations are missing from the plan on manhole between OCS5-3 and FES W2-3.

Response: A label with rim and invert elevations has been added to drain manhole DMH-05-3 between OCS5-3 and FES W2-3.

34. The drainage structures identified as CB4-8, CB4-9, and DMH4-4 in the rational method calculations need to be labeled on plans.

Response: The drainage structures CB4-8, CB4-9, and DMH4-4 have been labeled on plans.

35. On Sheet C-2C a catch basin south of the residential dwellings need elevation information and a label.

Response: The rim and invert elevations for catch basin CB6-6 has been labeled on the plans south of the dwelling units on Sheet C-2C.

36. On sheet C-2D the pipe diameters need to be labeled for the drainage pipes between DMH5-23 and DMH5-25

Response: The pipe diameter has been labeled on the drain line between DMH5-23 and DMH5-25 on sheet C-2D.

37. It is not clear what the purpose is for the 6” CPP drain-pipe system located west of the supermarket. The design engineer should explain.

Response: The purpose of the 6” CPP drain-pipe system is to collect and infiltrate water from snow melt. Additional water, unable to be infiltrated, is collected and is treated by a water quality unit and infiltration basin prior to discharging to Flint Pond.

38. Upon further review, the “V-shaped swale in the “Drainage Channel” construction detail on Sheet C-7 should be revised to a flat bottom or parabolic cross section to avoid the potential for scour/erosion that would occur at the invert of the “V” cross section.

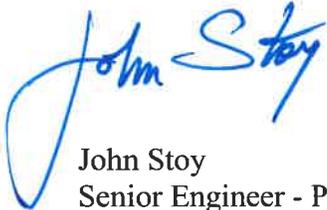
Response: The “V-shaped” swale in the Drainage Channel construction detail on sheet C-7 has been revised to a parabolic cross section to avoid scour/erosion to the invert.

Upon your review, we would be happy to meet at your convenience accordingly.
As always please call me if you have any questions or comments at 781-279-0180.

Sincerely,
RJO'CONNELL & ASSOCIATES



Roy Smith
Vice President



John Stoy
Senior Engineer - PE

cc: Jim Lamp
Carmine Tomas
Chuck Morneau
Michael Buckley
Mark Donahue
Jake Upton