



BEALS + THOMAS

BEALS AND THOMAS, INC.
Reservoir Corporate Center
144 Turnpike Road
Southborough, MA 01772-2104

T 508.366.0560
F 508.366.4391
www.bealsandthomas.com
Regional Office: Plymouth, MA

September 18, 2018

Ms. Elizabeth Hughes, Town Planner
Concord Zoning Board of Appeals
141 Keyes Road
Concord, MA 01742

Via: Email to ehughes@concordma.gov and First Class Mail

Reference: Supplemental Review of Special Permit - Planned Residential Development
Concord Culinary Homes
430 Old Bedford Road
Concord, Massachusetts
B+T Project No. 3001.00

Dear Ms. Hughes and Members of the Board:

Beals and Thomas, Inc. (B+T) is pleased to assist the Town of Concord Zoning Board of Appeals (the ZBA) with the supplemental review of the proposed Special Permit of the proposed Planned Residential Development at 430 Old Bedford Road (the Project). Based on the documentation submitted by the Applicant, Concord Culinary Cottages, LLC, we understand that the Project, as proposed, consists of an eight (8) unit diverse residential project with shared open space and access from Old Bedford Road.

B+T previously issued a letter dated June 18, 2018 to the Concord ZBA that presented the results of our review of the initial documentation submitted by the Applicant. Please refer to the June 18, 2018 letter for background regarding the Project and a comprehensive summary of our initial comments. As a consequence of our initial comments, the Applicant has provided the supplemental documentation as listed herein.

The following supplemental documents were submitted by the Applicant and served as the basis for our supplemental review:

- Response to comments letter, dated August 23, 2018, prepared by Stamski and McNary, Inc. (8 pages)
- “*Stormwater Management Report*” dated April 27, 2018, revised thru August 3, 2018, prepared by Stamski and McNary, Inc. (172 pages)
- “*Concord Culinary Homes, A Planned Residential Development, Concord, Massachusetts*” dated April 27, 2018, revised thru August 3, 2018, prepared by Stamski and McNary, Inc. (8 sheets)
- “*Concord Culinary Homes, A Planned Residential Development, Concord, Massachusetts* Pre and Post development drainage plans, dated April 27, 2018, revised thru August 3, 2018 prepared by Stamski and McNary, Inc. (2 sheets)

- “*Stormwater Operation and Maintenance Manual*” dated April 27, 2018, revised thru August 3, 2018, prepared by Stamski and McNary, Inc. (8 pages)
- “*Concord Culinary Homes, A Planned Residential Development, Concord, Massachusetts – Site Development Plan*” dated April 27, 2018, prepared by Stamski and McNary, Inc. (1 sheet)

We have reviewed the supplemental documentation submitted by the Applicant with respect to the requirements of the MassDEP Stormwater Handbook (the Handbook); the Town of Concord Stormwater Regulations/Design & Construction Standards and Details (the Regulations); for compliance with the National Pollutant Elimination Discharge System (NPDES); and, particularly the comments presented in our review letter dated June 18, 2018.

Review Format:

In an effort to establish clarity for the Administrative Record, we have included the outstanding comments from our initial letter report dated June 18, 2018 followed by a summary of the Applicant’s responses in *italicized* font, followed by our current comment in **bold** font to document the status of our original comment.

Stormwater Design Review Comments:

1. In accordance with Section 2.1 of the Regulations, we note that the Site Development Plan (Sheet 5 of 8) is marked as “Progress Print” and is not endorsed by a Professional Engineer (PE) licensed in the Commonwealth of Massachusetts. We request that Applicant submit a finalized plan stamped and signed by a PE for the Administrative Record.

Applicant’s Response: The Site Development Plan (Sheet 5 of 8) is endorsed by a Professional Engineer (PE) licensed in the Commonwealth of Massachusetts.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

2. In accordance with Section 2.2.1.F of the Regulations, storm drain capacity calculations for the rain garden outlet have not been provided. We request that the Applicant provide the referenced calculations.

Applicant’s Response: Storm drain capacity calculations for the rain garden outlet are accounted for by Hydraflow Hydrographs 2007 when modeling the outlet structure.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

3. In accordance with Section 2.2.3.A of the Regulations, the existing conditions plan does not depict the location of the existing sewer service. Additionally, the groundwater depths at the executed test holes are not depicted on the plan as required. We request that the Applicant revise the existing conditions plan to reflect the requirements of the referenced Regulation.

Applicant's Response: The existing conditions plan now depicts the approximate location of the existing sewer service. Depth to groundwater has been included with all test pits on the existing conditions plan.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

4. In accordance with Section 2.2.3.C of the Regulations, the watershed maps do not include times of concentration for each sub watershed area. We request that the Applicant revise the watershed maps to reflect the requirements of the referenced Regulation.

Applicant's Response: The pre-development and post-development watershed maps include the time of concentration. Analyses points have been added to the revised pre and post-development drainage maps.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

5. In accordance with Section 2.2.3.E.5.b of the Regulations and Standard 3 of the Handbook, 72-hour drawdown calculations for the infiltrative BMPs do not appear to have been provided. We request the Applicant provide the referenced calculations.

Applicant's Response: 72-hour drawdown calculations are provided for all infiltrative BMPs within the recharge volume calculations.

Current B+T Response: We acknowledge the drawdown calculations provided; however, there appears to be an error within the calculations. The drawdown calculation formula is $\text{Time} = (\text{recharge volume}) / (\text{K} \times \text{bottom area})$. For example, for Subcatchment P2F the drawdown would appear to be 3.5 hrs (749 CF / (8.27 in/hr x 1 ft/12in x 306 SF)) and not the 0.23 hrs indicated. This discrepancy is consistent across all the drawdown calculations. Though all drawdown times fall well within the 72-hr maximum we request that the Applicant revise the calculations for the Administrative Record.

6. In accordance with Section 2.3.1.1.B of the Regulations, we request that the Applicant document that the rain garden outlet pipe has the required vertical separation from the proposed sewer alignment where they cross under the access drive.

Applicant's Response: 18" vertical separation cannot be achieved under the access drive between the drainage and sewer pipes. A sleeve is proposed around drainage pipes where the separation cannot be met as shown in the Drainage & Sewer Crossing Detail.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

7. In accordance with Section 2.3.1.2 of the Regulations, we request that the Applicant document that the rain garden outlet pipe has the required cover and slope.

Applicant's Response: The outlet pipe for the rain garden has a minimum 1' of cover between the proposed rain garden and the proposed level spreader. A minimum 1' of cover (excluding flexible pavement) is adequate to maintain the integrity of the pipe for traffic loads on an 8" ADS N-12 pipe per manufacturer loading charts. The slope of the overflow pipe is 0.5%, this meets the requirement of 0.5% as stated in Section 2.3.1.2.B.

Current B+T Response: We acknowledge the response provided by the Applicant. We concur with the Applicant that the pipe manufactures specifications only require 1-ft of cover. However, the referenced regulation states in part that a 3-ft minimum depth is required or as specified by the manufacturer's specification, whichever is greater. The 3-ft minimum depth would be greater in this case. Accordingly, should the Applicant request a waiver, it could be supported by the pipe manufacturer's specifications that indicate the proposed depth of cover would be adequate.

8. In accordance with Section 2.3.1.4.D.5 of the Regulations, we request that the Applicant document that drainage aggregate associated with infiltrative BMPs will be double washed stone.

Applicant's Response: All infiltration BMPs are now proposed with double washed stone.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

9. In accordance with Section 2.3.2.1 of the Regulations, we request that the Applicant document that the rain garden outlet pipe will have the required bedding material. We recommend that the Applicant provide a typical trench detail for the referenced infrastructure.

Applicant's Response: A pipe trench detail is now provided on the Construction Details Sheet (Sheet 6 of 8).

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

10. In accordance with Standard 3 of the Handbook, it does not appear that the required vertical separation of two (2) feet from the bottom of infiltrative BMPs to seasonal high groundwater elevation has been achieved. We request that the Applicant clarify the design intent of Drywells 1, 2 & 3 and the pervious paver section profiles to document the required separation to seasonal high groundwater elevation will be achieved.

Applicant's Response: All infiltration BMPs have the required vertical separation to ESHGW. The separation to ESHGW has been provided for each test pit on the post-development map to show the depth to groundwater across the site in relation to the location of the BMPs.

Current B+T Response: Based on the information provided it appears the proposed infiltrative BMPs do not have the vertical separation to groundwater indicated by the Applicant. Our review findings are as follows:

BMP	Groundwater Elevation	Bottom of System Elevation	Vertical Separation (ft)
Drywell 1	130.16	131.60	1.44
Drywell 2	132.17	133.20	1.03
Porous Paver (Unit 3)	132.16	133.34	1.18
Porous Paver (Unit 4)	132.33	133.34	1.01
Porous Paver (Unit 5)	131.16	132.84	1.68
Porous Paver (Unit 6)	131.58	132.34	0.76

For the porous pavers, the detail specifies a vertical profile of 32-inches when the depth to groundwater along the roadway ranges from 40 to 46-inches. Accordingly, we reiterate the intent of our previous comment and request the Applicant clarify the design intent of the referenced BMPs.

11. In accordance with Standards 3 and 4 of the Handbook, the Applicant has provided recharge volume and water quality volume calculations; however, it is unclear how the Applicant derived the impervious area quantity used in each calculation. Impervious area breakdowns do not appear to be represented in the hydraulic modeling as is typical. These impervious areas are also utilized in the infiltration trench calculations provided. We request that the Applicant clearly document the corresponding impervious areas used in each of the referenced calculations.

Applicant's Response: The areas going to each BMP have been broken up into individual subcatchments and described in the drainage narrative. The impervious area breakdown provided in the recharge volume and water quality volume calculations for each BMP is documented on the TR55 calculations. Revised post development drainage maps are included.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

12. The pre- and post-development drainage areas do not coincide based on the hydraulic modeling provided. We request the Applicant clarify the noted inconsistency and revise the documentation as applicable.

Applicant's Response: The post-development drainage areas have been broken down further per comment 11 and the drainage narrative has been rewritten accordingly.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

13. The Infiltration Trench calculation for the pervious pavers associated with Subcatchment P2C uses a rainfall amount for a 100-yr storm event that is inconsistent with all other Infiltration Trench calculations. We request that the Applicant clarify the intent of this calculation and revise it accordingly.

Applicant's Response: The runoff for the 100-year 24-hour storm event on all Pervious Pavers Calculations and Infiltration Trench Calculations is calculated using Table 2-1 from TR55 and is shown on worksheet 2 for subcatchment P2C.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

14. The design intent for the drywells is inconsistent within the plan set. The notations on the Site Development Plan (Sheet 5 of 8) do not reflect those on the Construction Detail Sheet (Sheet 7 of 8) relative to the unit models being proposed. We request that the Applicant clarify the noted discrepancy and revise the plans accordingly.

Applicant's Response: The notations on the Site Development Plan (Sheet 5 of 8) reflect their corresponding unit models as shown on the Construction Detail Sheet (Sheet 7 of 8).

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

15. In accordance with Standard 10 of the Handbook, we request that the Applicant provide an executed illicit discharge statement prior the discharge of stormwater from the site.

Applicant's Response: A statement is included in the Operation and Maintenance Manual regarding illicit discharges.

Current B+T Response: We acknowledge the inclusion of the referenced statement into the O&M plan; however, it is not executed by the responsible party. We recommend as a condition of approval that a fully executed illicit discharge statement be provided prior to construction.

16. On page 3 of the DEP Stormwater Checklist the Applicant indicates that impervious area of the site has been reduced. We request that the Applicant clarify this statement as the site impervious area has increased in the proposed post-development condition.

Applicant's Response: The DEP Stormwater Checklist has been revised to indicate that impervious area of the site has not been reduced.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

NPDES Compliance Review Comments:

1. The narrative provided by the Applicant in support of compliance with Standard 1 of the Handbook states that there is no work within 50-ft of the on-site wetlands. However, there appears to be site grading within the 50-ft buffer zone south of Unit #1. We request that the Applicant clarify this statement and document that no work is being proposed within the referenced buffer zone.

Applicant's Response: The proposed grading has been removed from the 50' Buffer Zone to the Bordering Vegetated Wetland. There is no longer any work proposed within the 50' Buffer Zone.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

2. The Applicant acknowledges that a NPDES Construction General Permit compliant SWPPP document has not been provided with the current submission before the ZBA. We recommend that a SWPPP be provided prior to construction for adequate time to review to confirm compliance with all state and local requirements.

Applicant's Response: A SWPPP shall be provided prior to construction with adequate time to review to confirm compliance with all state and local requirements.

Current B+T Response: We reiterate the intent of previous comment pending the submission of the SWPPP. We recommend that the SWPPP being provided prior to construction be made a condition of approval.

Ms. Elizabeth Hughes, Town Planner
Concord Zoning Board of Appeals
September 18, 2018
Page 8

- Note #8 of the Stormwater Pollution Prevention Plan (Sheet 8 of 8) references a drainage structure silt sack detail that does not appear to have been provided with the plan submission. We request that the Applicant provide the referenced detail.

Applicant's Response: An inlet protection detail has been provided on the revised plan.

Current B+T Response: This comment has been adequately addressed by the Applicant. No further action is required.

We thank you for the opportunity to assist the Town of Concord with the review of this Project. Should you have any questions, please do not hesitate to contact our office.

Very truly yours,

BEALS AND THOMAS, INC.



Matthew Cote, P.E.
Senior Civil Engineer

MC/ej/aak/300100LT002