

October 4, 2021

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Town of Belmont Planning Board
Attn. Mr. Robert Hummel, Senior Planner
Homer Municipal Building
19 Moore Street, 2nd Floor
Belmont, Massachusetts 02478

**RE: Olmsted Road – McLean Hospital Zone 3
Supplemental Stormwater Peer Review**

Dear Planning Board Members:

BSC Group has completed its review of supplemental information on the stormwater management design relative to the Site Plan Application for a proposed residential development to be located within McLean Hospital Zone 3 at a site located on Olmsted Road in Belmont, Massachusetts. This letter report summarizes our findings and presents comments and questions that we have formed as a result of the review. It is based upon our comments previously submitted to you in a letter dated August 6, 2021, as well as a letter dated September 23, 2021 from Mr. Curtis R. Quitzau, P.E. of VHB and the supplemental information submitted with the VHB letter.

BASIS OF REVIEW

As part of our supplemental peer review, BSC reviewed the following documents:

- Letter from Mr. Curtis R. Quitzau, P.E. of VHB to Dominic Rinaldi, P.E., LEED AP BD+C of BSC Group, dated September 23, 2021, Re: Olmsted Road – McLean Hospital Zone 3, Stormwater Peer Review,
- *Stormwater Report, The Residences at Bel Mont, Olmsted Drive, Belmont, MA*, Vanasse Hangen Brustlin, Inc. (VHB), dated April 16, 2021, Revised September 23, 2021,
- *Site Plans, The Residences at Bel Mont, McLean District Zone III, Olmsted Drive, Belmont, MA*, prepared by Vanasse Hangen Brustlin, Inc. (VHB), dated September 23, 2021.

For clarity, for each of our original August 6, 2021 comments, we have restated the comment in standard text, restated the Applicant's response in italics, and summarized our review on the response in bold. Please note that items that conclude with "We consider this item closed" are not intended to represent completion to the satisfaction of the Board or other Town departments, but are items that require no further direct response from the Applicant to the peer reviewer.

REVIEW COMMENTS

1. BSC is in receipt of several comments from abutters regarding stormwater on the site and existing flooding issues. Of specific concern are abutter statements that the existing conditions as shown on the design plans does not match the actual conditions on site. The

Engineers
Environmental
Scientists
Custom Software
Developers
Landscape
Architects
Planners
Surveyors



plans indicate that existing conditions are from *Existing Conditions Plan of Land* dated May 27, 2016, prepared by VHB. Have any efforts been made to verify the site conditions match the 2016 survey? Has any site work occurred since the 2016 survey that may have altered the existing conditions and effected stormwater?

The existing conditions drainage patterns have been field verified. The survey plan was originally completed in 2016 and was field verified as current on April 13, 2021 and is dated as such.

The Applicant has verified that the existing conditions have been verified and the Site Plans include notes requiring the contractor to verify existing conditions before performing work and to notify the engineer in writing of any discrepancies prior to performing work in those areas. These conform to standard engineering design practices. We consider this item closed.

2. Near the intersection of Olmstead Drive and Driveway #1, there appear to be two existing catch basins connected to a drain manhole with an outlet pipe that does not appear to connect to a drainage system or discharge anywhere. We request the Applicant clarify the condition of this stormwater system and if it needs to be revised in anyway due to the proposed Project.

Based on construction plans for the Olmsted Road Access Drive, it appears that as proposed, the manhole with no outlet is a Stormceptor, with the outlet pipe hidden when the cover was opened.

While the existing conditions confirmation and requirements referenced in Comment 1 above generally addresses this condition, we recommend notes be added to the plan identifying this specific condition. The note should also require field verification of the connection point by the contractor to ensure that this portion of the existing storm drainage system is not negatively impacted by the construction.

3. We request the Applicant clarify the connection to the existing stormwater management system in Olmstead Drive west of Building 7 and any revisions to the existing stormwater system required to make this connection while maintaining functionality of the existing system.

The plans have revised to clarify changes to the existing drainage in Olmstead Drive West of Building 7.

The Site Plans have been revised to show the revisions needed to connect the new stormwater management system while maintaining the existing system in this location. We consider this item closed.

4. The Applicant should justify modeling the site as all Hydrologic Soil Type A. NRCS classifies the site soils with Hydrologic Soil Group A and D as indicated on Figure 2, Existing Drainage Conditions Plan and Figure 3, Proposed Drainage Conditions Plan.

Northeast Geotechnical, Inc. performed soils exploration and permeability testing within the footprints of proposed stormwater management systems and provided results in a Subsurface Exploration and Borehole Permeability Testing Report dated June 18, 2021. The results of the explorations indicate that the existing soils are not consistent with NRCS soils mapping. Four of the six permeability results indicate the infiltration rates less than the minimum 0.17 inch/hour requirement in the Stormwater Handbook. Based on guidance provided in the Part 630 Hydrology National Engineering Handbook, Chapter 7, Hydrologic Soils Group prepared by USDA and NRCS and the on-site permeability



testing results, VHB has revised the existing and proposed drainage models to utilize an HSG C.

Based on the Northeast Geotechnical, Inc. report included in the Stormwater Report, we agree with the revised models utilizing HSG C soils for the entire property. We consider this item closed.

5. Test borings were conducted in April 2000 and have been used by the Applicant to establish soil type and groundwater elevation. It is unclear if any of these boring locations are within the infiltration areas shown on the Grading and Drainage Plans. It is recommended that these boring locations be added to the plans. Additionally, soil evaluations should be conducted at the location of all proposed infiltration BMP's to confirm soil texture classification and estimated seasonal high groundwater in accordance with the Handbook. The Stormwater Report states an assumed infiltration rate of 1.02 in/hr, consistent with HSG B soil sandy loam, which should be confirmed on-site for each proposed infiltration BMP. The Applicant is proposing additional test pits within BMP areas be conducted prior to construction. We recommend that these test pits be performed prior to approval by the Board due to the significant revisions to the stormwater management systems that could be required if actual soil and groundwater conditions differ significantly from assumed conditions.

Supplement soils testing has been conducted in the areas of proposed stormwater management systems and the test pit and boring locations have been added to the plans.

Test pit information including estimated seasonal high groundwater elevations have been provided. Please see comments below for additional discussion regarding infiltration rates. We consider this item closed.

6. Table 3, Peak Discharge Rates, Design Point 3 to Intermittent Steam, shows that the existing and proposed discharge rates for the 25-year rainfall match at 1.6 cfs. However, the existing HydroCAD Summary for Design Point 3 shows a peak flow of 1.58 cfs and the proposed HydroCAD summary for Design Point 3 shows a peak flow of 1.61 cfs. The proposed runoff rates for this storm should be revised such that the proposed discharge rate does not exceed the existing discharge rate for Standard 2 of the Mass DEP Stormwater Management Standards.

Table 3 has been updated with peak rates consistent with HydroCAD.

The peak discharge rates in Table 3 match the rates determined in the HydroCAD. We consider this item closed.

7. In order to confirm recharge volumes provided, the Applicant should provide stage-area-storage tables from HydroCAD with lowest outlet elevation identified.

Geotechnical test results indicate the site has poorly draining soils which make infiltration difficult to achieve and unreliable for stormwater management. Due to the poor soil conditions, infiltration is not proposed.

As the BMP's in question are no longer infiltration BMP's, this comment is no longer applicable. We consider this item closed.

8. As not all runoff is directed to infiltration BMP's, an adjusted required recharge volume must be provided in accordance with Volume 3, Chapter 1 of the Handbook.

Due to poor soil conditions, infiltration is not proposed. Therefore, an area adjustment calculation is not required.



As the project is no longer providing infiltration, the comment is no longer applicable. We consider this item closed.

9. Per the Handbook, infiltration trenches shall be located a minimum distance of 20 feet from building foundations. The proposed infiltration trenches for Buildings 7, 8, 9 appear to be within this setback.

Due to poor soil conditions, infiltration is not proposed. Therefore, setbacks are not an issue.

As the infiltration trenches are no longer proposed, this comment is no longer applicable. We consider this item closed.

10. The TSS removal calculation worksheet provided for Drainage Areas PR-1, PR-6, and PR-7 states that the proposed water quality units will achieve a TSS removal rating of 90%. This is a significant increase in TSS removal compared to the Water Quality Unit provided for Drainage Areas PR-5 and PR-7. Justification should be provided for the TSS removal rates stated.

TSS removal calculations have been updated and additional justification for removal percentages are included in Appendix D.

TSS removal calculations have been revised appropriately. We consider this item closed.

11. The TSS removal calculation worksheet provided for Drainage Area PR-5 and PR-7 states pre-treatment as deep sump hooded catch basin to water quality unit prior to infiltration. However, surface parking area runoff to Infiltration System-1 and 3 is routed by catch basins only.

TSS removal calculations have been updated in Appendix D. The catch basin structures on the plans in Drainage Areas PR-5 and PR-7 are labeled as water quality inlets.

TSS removal calculations have been revised appropriately. We consider this item closed.

12. For the Phosphorous Removal Calculations provided in Appendix F, Phosphorous Loading, the hydrologic soil type for the pervious surfaces is shown as HSG B. However, hydrologic modeling for the site uses a HSG rating of A. Justification should be given for the assigned different soil groups.

An updated phosphorus removal calculation is included in Appendix F.

The phosphorous removal calculations have been revised to use HSG C soils, which conforms to the additional soils testing that was performed on site and summarized in the Northeast Geotechnical, Inc. report included in the Stormwater Report. We consider this item closed.

13. The bottom elevation of infiltration trench 4P is set at 169.00 and groundwater in this location is assumed to be elevation 167.00. This separation to groundwater is less than 4 feet and a mounding analysis is required in accordance with Volume 3, Chapter 1 of the Handbook.

Due to poor soil conditions, infiltration is not proposed. Therefore, a mounding analysis is not required.

As the infiltration trench is no longer proposed, this comment is no longer applicable. We consider this item closed.



14. The Long-Term Pollution Prevention Plan references an “attached Snow Storage Plan” which is not provided. We recommend snow storage areas be shown on the Project’s site plans as well as an attachment to the Long-Term Pollution Prevention Plan.

A Snow Storage Plan is included in Appendix D.

The plan has been included in the Stormwater Report. We consider this item closed.

15. We recommend dimensions for stone rip-rap protection at flared end sections be added to the applicable detail.

Dimensions of the rip-rap has been added to the Flared End Section with Stone Protection detail.

The applicable information has been added to the detail. We consider this item closed.

16. The information provided on the Outlet Structure Chart for the *Outlet Control Structure with Weir (OCS)* detail on Sheet C9.03 does not match the information in HydroCAD for Inf-1 and Inf-2. The detail should be updated to match the design.

The Outlet Control Structure with Weir detail is no longer required and has been removed from the detail sheet.

As the OCS is no longer proposed, this comment is no longer applicable. We consider this item closed.

17. Per Town of Belmont Stormwater Management and Erosion Control Rules and Regulations, Impact on Streams, Wetlands or Storm Sewers (Bylaw Section F.4(d)), *If the discharge is to the MS4, the Stormwater Management and Erosion Control Plan must include a certification that the discharge meets Massachusetts Surface Water Quality Standards and any applicable approved Total Maximum Daily Load (TMDL) waste load allocation is included in the Report.* Certification should be provided per the Town Rules and Regulations.

The Local Municipal Rules and Regulations section the Stormwater Report identifies how the project meets each requirement of the Town of Belmont Stormwater Management and Erosion Control Rules and Regulations,

The Stormwater Report addresses the Design Criteria detailed in the Stormwater Management and Erosion Control Rules and Regulations. We consider this item closed.

ADDITIONAL REVIEW COMMENT, 10/4/21

18. Based on the additional soils testing that was performed on site and summarized in the Northeast Geotechnical, Inc. report included in the Stormwater Report, the project only needs to meet Stormwater Standard 3 to the maximum extent practicable as a site comprised of HSG C and D soils. As such, the project has been revised to not include any infiltration. However, soil test pit/boring B-2, northeast of Building 200 showed an in-situ infiltration rate of approximately 1.28 in/hr. In order to provide some, minimal infiltration to groundwater, we request the Applicant explore installing some type of infiltration BMP in this area.

Upon receipt of any additional information requested above and any responses to comments from the Applicant, BSC Group will update this letter report for the Board. Please feel free to



contact me at (617) 896-4386 or drinaldi@bscgroup.com should you have any questions on the information in this report.

Sincerely,
BSC Group, Inc.

Dominic Rinaldi, P.E., LEED AP BD+C
Senior Associate

cc: Mike Santos, BSC
Chris Thomas, BSC