

January 22, 2021

Jenny Raitt, Director
Department of Planning and Community Development
Town of Arlington
50 Pleasant Street
Arlington, Massachusetts 02476

RE: Response 1 to Peer Review Comments – Stormwater Management
Thorndike Place Comprehensive Permit Application

Dear Ms. Raitt:

On behalf of the Applicant, Arlington Land Realty LLC, BSC Group, Inc. (BSC) is pleased to provide the following written responses to peer review comments as well as the attached supplemental and revised design documents for the Thorndike Place residential project on Dorothy Road in Arlington, Massachusetts. This letter responds to comments provided by BETA Group, Inc. (BETA) in a letter to you dated November 20, 2020 as well as comments provided by Mr. Wayne Chouinard, Town Engineer in a memorandum to you dated December 4, 2020. Please note that this letter is only responding to comments from both parties regarding stormwater management for the project. Other elements of the project for which BETA and/or Mr. Chouinard provided comments will be addressed under separate cover. The section headings and comment numbers below correspond to the original November 20, 2020 comments from BETA followed by the December 4, 2020 memorandum from Mr. Chouinard. For clarity, we have repeated original comments in standard text and then provided a summary of our response in italics.

Site Plans

1. The proposed erosion control barrier is shown on the Site Preparation plan only.

Recommendation: The applicant should also show the erosion control barrier on the Layout, Grading and Utility Plans.

Response: The erosion control barriers have been added to the Layout, Grading, and Utility Plans. The revised Grading & Drainage Plan is enclosed. The other plans will be submitted under separate cover.

4. General – The applicant proposes to provide stormwater detention/retention on the building roof. The applicant should provide design plans/calcs of the proposed building roof (when developed) for review by an architect and/or structural engineer.

Response: Runoff calculations have been revised to include discharge from the roof detention system in all storms analyzed. This overflow will be at a controlled rate and will flow into the underground infiltration system in the parking lot west of the building. The detailed design of the rooftop detention will be provided as the architectural and plumbing construction plans are developed. In addition, approximately 9,000 square feet

Engineers

Environmental
Scientists

Custom Software
Developers

Landscape
Architects

Planners

Surveyors



of the southeast corner of the building roof will discharge directly to the surface through a roof drain. Please see the enclosed, revised Stormwater Report for additional information and calculations.

5. The applicant proposed a subsurface “Stormtrap” infiltration chamber system on the west side of the project site. The proposed system is located directly on top of an existing 14-inch sewer line. This presents a potential issue regarding accessing the existing sewer line for future maintenance or repair requirements.

Recommendation: The Applicant should confirm with the Arlington Public Works and/or Sewer Department that the proposed location of the infiltration system is acceptable.

Response: The system in question has been relocated south of the sewer line to allow Town access should it be needed. Please refer to the enclosed revised Grading & Drainage Plan.

6. Grading and Drainage Plan – The proposed 15-inch drainpipe from OCS-1 to FES-1 has minimal cover.

Recommendation: The applicant should revise the proposed grading in this area to provide adequate cover over the proposed drain.

Response: This pipe has been reduced in size to 12-inch HDPE and the grading as proposed provides sufficient cover. Please see the enclosed revised Grading & Drainage Plan.

9. Civil and Landscape Details (sheet 1) – The applicant has provided a Silt fence with Haybales erosion control barrier detail.

Recommendation: The applicant should utilize an 18-inch diameter compost-filled silt sock with silt fence in lieu of staked haybales for erosion control measures.

Response: The perimeter erosion controls have been revised as recommended and are shown on the enclosed revised Site Preparation Plan and Grading & Drainage Plan. A detail of the 18-inch diameter compost-filled silt sock with silt fence has been added to the enclosed Civil and Landscape Details (Sheet C-200).

10. The applicant should provide a detail of the proposed Outlet Control Structures #1 and #2. Also, the applicant should review OCS-2 as it appears that the structure is too shallow to be constructed as shown.

Response: The revised stormwater management system only includes one outlet control structure (OCS, previously designated at OCS-2), as shown on the revised Grading & Drainage Plan. This structure is a 6-foot diameter manhole with an outlet pipe higher than the inlet pipe. A detail has been added to the enclosed Civil & Landscape Details Sheet C-203...

12. Recommend the applicant confirm that any footing of the proposed retaining wall near the driveway garage entrance will not conflict with the existing drainage pipe located in the same area.

Response: The garage ramp retaining wall and associated grading have been revised to eliminate any potential conflict with the existing drainage pipe and is shown on the revised Grading & Drainage Plan.



Stormwater Management

14. The Applicant should provide onsite soil exploration / test pit data for review, specifically within the footprints of the two proposed subsurface infiltration chamber systems. The test pit data is required at a minimum to determine the seasonal high groundwater elevations within the project limits.

Response: In November 2020, BSC performed three soil test pits on site. The results of these test pits confirmed the soils mapping and previously performed borings with regard to seasonal high groundwater. Locations of the test pits are shown on the enclosed revised Grading & Drainage Plan. Test pit logs are included in Appendix D and more detailed information is provided in Section 1.02 of the revised Stormwater Report.

15. The proposed site building roof will be designed to provide stormwater detention, with a roof drain connection to the proposed subsurface infiltration chamber system #1 located west of the building. The HydroCAD model included with the Stormwater Report shows zero runoff leaving the roof area for all storms up to and including the 100-year design storm. Discussions with the applicant indicate the disposition of this retained stormwater has not yet been finalized. Until the disposition of the retained rooftop stormwater is known, its effects on the proposed stormwater BMPs cannot be evaluated.

Response: Runoff calculations have been revised to include discharge from the roof detention system in all storms analyzed. This overflow will be at a controlled rate and will flow into the underground infiltration system in the parking lot west of the building. The detailed design of the rooftop detention will be provided as the architectural and plumbing construction plans are developed. In addition, approximately 9,000 square feet of the southeast corner of the building roof will discharge directly to the surface through roof a roof drain. Please see the enclosed, revised Stormwater Report for additional information and calculations.

16. The proposed infiltration chamber system #1 receives stormwater from a proposed CB located between the site access drive and proposed parking area west of the site building. The rim elevation of this CB is 8.0. The results of the HydroCAD model indicate that the 50-yr flood elevation within the infiltration system is elev. 8.28. This flood elevation will cause stormwater to surcharge out of the CB grate and overflow down the access driveway to the lower garage level.

Recommendation: The Applicant should reevaluate the proposed infiltration chamber system #1 to provide adequate stormwater capacity so that there is no onsite surface surcharge for any of the proposed design storms.

Response: The infiltration system has been revised, both in footprint and storage volume and the area around the catch basin regraded (rim elevation 8.84) so that no surcharge will occur. Please refer to the enclosed revised Grading & Drainage Plan.

17. The proposed infiltration chamber system #2 located near the southwest corner of the site building receives stormwater from a proposed trench drain located across the access driveway to the lower garage level. The rim elevation of the proposed trench drain is 4.1. The results of the HydroCAD model indicate that the 2-yr flood elevation within the infiltration chamber system is elev. 8.40. This is not possible. The applicant is currently reevaluating the design of Infiltration Chamber System #2.

Response: The proposed system has been resized and the area around the trench drain regraded so that no surcharge will occur.



18. The applicant should provide groundwater mounding calculations as the two proposed infiltration chamber systems are designed to provide peak rate mitigation and appear to be within 4-ft of estimated seasonal high groundwater.

Response: A groundwater mounding analysis of the underground recharge system has been performed and is included in Section 6.05 of the Stormwater Report. The analysis shows that the groundwater mound is less than the provided separation to groundwater.

19. The HydroCAD model included in the stormwater report analyzes the proposed stormwater BMPs over a 24-hr time period.

Recommendation: The applicant should increase the analysis time period to 72 hours to allow the BMPs to demonstrate their drain down capacity after the storm event concludes.

Response: The analysis time period has been extended to 72-hours as requested. In addition, a drawdown calculation in accordance with Volume 3, Chapter 1 of the Massachusetts Stormwater Handbook has been performed demonstrating that the infiltration system will drain within 72-hours. This information is included in Section 6.02 of the accompanying Stormwater Report.

20. MassDEP Stormwater Standard #10 – The applicant should provide a signed Illicit Discharge Compliance statement.

Response: An illicit discharge compliance statement has been included in Section 6.06 of the Stormwater Report and will be signed by the Applicant prior to issuance of permits.

Construction

24. Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan – Section 3.10.4 Equipment/Vehicle Maintenance and Fueling Areas:

Recommendation: We recommend adding a provision prohibiting refueling of vehicles or equipment within 100-feet of any onsite resource area.

Response: A prohibition on refueling and maintenance has been added in Section 3.10.5 of the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan as recommended.

25. Recommend the applicant add a provision to the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan that “Dorothy Road shall be swept clean on a daily basis of any soils tracked onto it from the project site”.

Response: A daily sweeping requirement has been added in Section 3.10.1 of the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan as recommended.

Stormwater/Resource Areas (Mr. Chouinard’s Memorandum, p.2¹)

- See previous comments pertaining to status of Isolated Vegetated Wetlands sent by email on December 3, 2020.

Response: An updated memorandum on wetland resource areas including Isolated Vegetated Wetlands as well as an updated Existing Environmental Resources Plan (Sheet C-100) are being submitted under separate cover.

¹ Comments in original memorandum are bulleted, not numbered. The enclosed responses adhere to the bulleting style.



- Based on review of the Grading & Drainage Plan it is not clear how the proposed drainage system relates to the post-development routing diagram included in the Stormwater Report, particularly connection of subcatchment 3S and 7S to the drainage collection system.

Response: Subcatchment 3S represents courtyard areas located above the garage level of the building. Stormwater runoff from these courtyards will be collected in area drains and routed through the building's internal plumbing to the underground infiltration area west of the building. The detailed design of the courtyards, area drains, and building plumbing will be provided as the architectural and plumbing construction plans are developed. Subcatchment 7S represents the narrow area of land between the building/garage footprint and the project's property line. Runoff from this subcatchment will not be collected by the on-site stormwater management system, but will bypass to Dorothy Road. This subcatchment is predominantly lawn area and, as shown in the Stormwater Report, will not increase peak flow rates to Dorothy Road over existing conditions.

- There are no details provided to review the stormwater runoff system on the building roof which is indicated to detain roof runoff.

Response: Runoff calculations have been revised to include discharge from the roof detention system in all storms analyzed. This overflow will be at a controlled rate and will flow into the underground infiltration system in the parking lot west of the building. The detailed design of the rooftop detention will be provided as the architectural and plumbing construction plans are developed. In addition, approximately 9,000 square feet of the southeast corner of the building roof will discharge directly to the surface through a roof drain. Please see the enclosed, revised Stormwater Report for additional information and calculations.

- Plan should indicate all drainage and stormwater collection pipes or infrastructure, including downspouts or perimeter drains.

Response: All on-site stormwater management systems are depicted on the attached Grading & Drainage Plan (Sheet C-105). While a drainage connection from the building to the underground infiltration system west of the building is shown on the plans, the detailed design of the courtyard area drains, the roof detention system, roof drains, and building plumbing will be provided as the architectural and plumbing construction plans are developed. This final design will conform to the runoff calculations provided with the courtyard areas and majority of the roof routed to the underground infiltration system and approximately 9,000 square feet of roof area in the southeast corner discharging directly to the surface through a roof drain as shown on the Plans.

- Suitable documentation of groundwater conditions have not been provided. Deep observation test holes should be performed to identify soil conditions and observable groundwater indicators. Additionally, and due to the disturbed nature of the site, full depth monitor wells should be installed to a depth of 10 feet to document the probable seasonal high groundwater level. The Frimpter Method shall be utilized with the observed ground water readings and in conjunction with the USGS Groundwater Well Network. At a minimum, these test pits should be installed in the proposed foot print of the building and in the areas of the proposed stormwater infiltration systems.



Response: In November 2020, BSC performed three soil test pits on site. The results of these test pits confirmed the soils mapping and previously performed borings with regard to seasonal high groundwater. Locations of the test pits are shown on the enclosed Grading & Drainage Plan. Test pit logs are included in Appendix D and more detailed information is provided in Section 1.02 of the revised Stormwater Report. Due to the nature of the existing soils, redox features were not visible. The Massachusetts Stormwater Handbook states that when redox features are not available, installation of temporary push point wells or piezometers should be considered. The Stormwater Handbook does not require the use of the Frimpter method for estimating seasonal high groundwater. Wells should be monitored in the spring when groundwater is highest and results compared to nearby groundwater wells monitored by the USGS to estimate whether regional groundwater is below normal, normal or above normal. The applicant proposes performing further on-site testing for groundwater levels during March and/or April 2021 during the expected seasonal high groundwater period. Per the Stormwater Handbook, these observations will be compared to nearby USGS wells to determine if the observed levels are below normal, normal or above normal. Based on the timing of the expected seasonal high groundwater, the Applicant is amenable to including this requirement as a condition of the Comprehensive Permit and modifying the stormwater design, if necessary, for review by the Town Engineer prior to issuance of building permit.

- Stormwater infiltration is not recommended over the existing sewer line/easement without upgrading or renewing the existing 14"/18" sewer main. Groundwater mounding calculations shall be provided and the infiltration system shall be placed a minimum of 2ft above the calculated ground water mound elevation as well as in a location such that the infiltrated water does not impact the sewer main.

Response: The infiltration system in question has been relocated south of the sewer line to allow Town access should it be needed. Per the Massachusetts Stormwater Handbook, a mounding analysis is required when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm (e.g., 10-year, 25-year, 50-year, or 100-year 24-hour storm). In such cases, the mounding analysis must demonstrate that the Required Recharge Volume (e.g., infiltration basin storage) is fully dewatered within 72 hours (so the next storm can be stored for exfiltration). The mounding analysis must show that the groundwater mound will not reach the base of the recharge system and will not break out above the land or water surface of a wetland. It is not a requirement for an infiltration BMP to be located a minimum of 2 feet above the calculated groundwater mound elevation.



Jenny Raitt, Director

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We look forward to discussing these revisions with you at the next public hearing on the project. Should you have any questions on this information, please do not hesitate to reach out to me at (617) 896-4321 or jhession@bscgroup.com.

Sincerely,

BSC Group, Inc.

A handwritten signature in black ink, appearing to read "John Hession".

John Hession, P.E.

Vice President

cc: zba@town.arlington.ma.us
Marta Nover and Todd Undzis, BETA
Stephanie Kiefer, Smolak & Vaughan
Gwen Noyes and Arthur Klipfel, Arlington Land Realty