



November 20, 2020

Jenny Raitt, Director, Department of Planning and Community Development

Arlington Town Counsel
50 Pleasant Street
Arlington, MA 02476

Re: Thorndike Place - Arlington, MA
Comprehensive Permit Civil / Site Peer Review #2

Dear Ms. Raitt:

BETA Group, Inc. (BETA) has completed its second peer review of the environmental, civil and stormwater related elements of the site plans and supporting engineering documents for the above-referenced project, based on the following materials:

- Thorndike Place Comprehensive Permit stamped plan set, Dorothy Road, Arlington MA, 12 sheets, dated March 13, 2020, revised November 3, 2020 prepared by BCS Group;
- Thorndike Place Stormwater Report, Dorothy Road, Arlington MA, dated November 2020 prepared by BCS Group;
- Notice of Eligibility for 40B Site Eligibility Letter, "Thorndike Place" off Dorothy Road, (Mugar Site) Arlington, MA, peer review letter prepared by Nover-Armstrong Associates, dated August 10, 2015;
- Report on Existing Conditions (Section 3.2.6 of Arlington Comprehensive Permit Regulations), dated November 3, 2020 prepared by Smolak & Vaughan, LLP;
- Architectural Drawings, dated November 3, 2020;
- Wildlife Habitat and Vegetation Evaluation;
- Updated waiver request list;
- Statement of Compliance with Arlington's Master Plan, Housing Production Plan, and Open Space and Recreation Plan; and
- Wetland Delineation Memorandum and Wetland Delineation Field Data Forms, October 19, 2020;
- FEMA Flood Insurance Study, Middlesex County, Revised June 6, 2016;
- City of Cambridge Floodviewer v2.1
- Town of Arlington Zoning Bylaw with amendments through April 2016;
- Town of Arlington Wetland Protection Bylaw, Article 8 and Regulations for Wetland Protection, June 4, 2015;
- MassDEP Stormwater Management Standards (SMS);
- Massachusetts GIS mapping tool OLIVER (http://maps.massgis.state.ma.us/map_ol/oliver.php), website visited July 20, 2020;
- USFWS Information for Planning and Consultation (IPaC), online tool (<https://ecos.fws.gov/ipac/>), website visited July 20, 2020.

GENERAL

BETA Group was retained to perform a civil / site / stormwater design and traffic impact study peer review of the Comprehensive Permit application for the proposed Thorndike Place 40B housing project. Part of this review includes an overall analysis of the existing site to confirm its suitability for the proposed project. Stormwater calculations have been provided and proposed utilities are shown on the site plans. BETA's review of the Applicant's Traffic Impact Study is currently being conducted and those findings and recommendations will be provided in a separate comment letter.

BETA conducted a detailed site evaluation on November 12, 2020 to verify the data provided in the supplemental materials provided by BSC. The visit included confirmation of wetland boundaries, previously identified isolated wetland areas, review of general wildlife and vegetative habitat, and examination of the site for evidence of potential wetland conditions underlying fill material.

EXISTING CONDITIONS

The project site includes multiple parcels that total approximately 17.7-acres of land located between Dorothy Road, Burch Street, and the Concord Turnpike (Route 2) in Arlington, Mass. Dorothy Road and Burch Street are both residential neighborhood streets featuring predominantly single-family houses. The site is essentially undeveloped woodland area that has been a location for the dumping of earthen fill and assorted debris throughout the years. Site topography generally slopes southerly towards the Concord Turnpike.

A review of the current FEMA Flood Insurance Study for Middlesex County indicates that a majority of the site is located within the mapped 100-year flood plain Zone AE (Elev. 6.8) and that almost all of the site is located within the 500-year flood plain Zone X.

PROPOSED PROJECT

The proposed project includes the construction of a multi-unit 4-story residential apartment building along with associated access driveways, parking areas, utilities, infrastructure, and stormwater management system.

2015 Comprehensive Permit Application

A Comprehensive Permit Application was originally submitted for the proposed Thorndike Place project by the Applicant in 2015. Nover-Armstrong Associates (N-A) conducted a detailed peer review of the application package and issued a peer review letter dated August 10, 2015. Their review letter contained eighteen (18) comments regarding the site plans and application package. The following comments from the 2015 N-A review letter related to civil/site design remain applicable:

15. Eight boring locations are shown on the Existing Conditions Plan C-1 with surface elevations and depths to groundwater noted. Dated and detailed boring logs are not provided on the plans or in the Application making it difficult to evaluate whether the depth of the groundwater observed represents the seasonal high groundwater elevation. The depth to groundwater is presumed to have been measured the day the borings were advanced and may not represent the actual high ground water elevation.

16. Excavated test holes witnessed by a MassDEP Soil Evaluator are necessary to definitively identify the Site's soil types and whether the conceptual project design is generally appropriate for the Site.

Boring logs document encountered type soils on the Project Site which help evaluate what types of BMPs would be feasible for the stormwater management system.

Recommendation: The results of any soil borings or test pits done on the project site should be submitted for review. Determination of the seasonal high groundwater elevation is necessary to confirm that the proposed stormwater BMPs are suitable as shown.

2020 Comprehensive Permit Application

The following are new comments based on our review of the revised Comprehensive Permit submittal from November 2020:

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.
2. A 15-ft wide pervious paver emergency access drive is shown looping around the rear of the main site building.
Recommendation: The Applicant should confirm that the access drive can accommodate an emergency vehicle (fire truck) turning around the southeast corner of the site building.
3. Existing Conditions Plan - The applicant should add a professional surveyor's stamp.
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.
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.
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.
7. Grading and Drainage Plan – The applicant proposes an entrance door to the garage level on the east side of the building, the proposed finished grade elevation is 2.83. The seasonal high groundwater elevation of the site development area is presumed to be around elev. 3.0 based on past soil borings.
Recommendation: The applicant should confirm the seasonal high groundwater elevation in this area and provide appropriate mitigative measures if necessary, to prevent surface water from entering the garage through the doorway.

8. Areas for trash collection and snow storage are not identified on the site plan.
Recommendation: The Applicant should identify potential areas for trash collection and snow storage on the site plan to confirm that these will not conflict with other site elements.
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.
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.
11. Recommend the applicant adjust the location of the proposed pedestrian ramp on the west side of the site building so that it is located within the proposed crosswalk crossing the site access drive.
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.

FLOOD PLAIN

13. A portion of the proposed project design requires filling within the 100-year flood plain. Compensatory storage is required on a 1:1 (per foot) basis by the Mass Wetlands Protection Act (310 CMR 10.57) and on a 2:1 basis by the Arlington Wetlands Bylaw.

The applicant has provided compensatory flood plain storage calculations in the stormwater report (Sec. 2.12) and has designated an upland area on the site plan southeast of the proposed building for compensatory storage. In addition, the southeast courtyard area is labeled “Open Space / Flood Storage”.

Recommendation: The Applicant should provide a plan graphic showing the existing flood plain area being altered by the proposed building / site development, currently the building hatch is obscuring the flood plain limits. The proposed compensatory flood storage volume calculations and designated flood storage volume area appear consistent.

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.
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.

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

UTILITIES

21. The applicant proposes some drain manholes (DMH-2, 3) requiring shallow installations. For these applications the applicant should confirm the frame/cover height (standard 8-in, shallow 4-in) and that adequate cover exists over the inlet/outlet pipes for constructability.
22. The Utility Plans show the proposed utility services from the project site to the existing municipal/gas/electric utilities in Dorothy Road.

Recommendation: We recommend the Applicant coordinate with the Arlington Public Works Department and local utility companies regarding all proposed site utility connections to the public utilities in Dorothy Road to confirm compliance with applicable construction standards.
23. The existing survey shows an existing drain line in Dorothy Road that runs in front of the project site. The Utility Plan shows three proposed sewer service lines from the building to the existing municipal sewer in Dorothy Road that cross the drain line.
Recommendation: The Applicant should confirm the proposed sewer services as shown do not conflict with the existing drain line.

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.

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”.

26. As part of a Construction Management Plan the applicant should develop a map of approved haul routes for trucks traveling to/from the project site during construction as the immediate site vicinity is comprised of narrow residential streets.

WETLAND BOUNDARY

During the site visit BETA confirmed the wetland boundaries were field delineated in accordance with the definition and methods approved in the MA DEP Delineating Bordering Vegetated Wetlands Handbook (March 1995). BETA found BSC’s evaluation of the previously delineated isolated wetlands, presented on the 2006 ANRAD Plan as Wetlands F, G, H, and I, to be accurate in that the areas did not demonstrate a predominance of wetland vegetation or other indicators of hydrology.

EVIDENCE OF FILLED WETLANDS

A history of disturbance is apparent throughout much of the site with remanent piles of asphalt, piles of earthen material, and an abundance of construction stone and debris. BETA’s site review included looking for evidence of potentially filled wetlands as a result of these disturbances. BETA did not look at soil profiles underlying disturbed areas because of the potential health hazards that exist from old construction material as well as human waste present at the site. BETA examined vegetation, topography, historic aerial photographs, and historical topographic maps and found no evidence of preexisting wetlands or hydrologic conditions beyond the delineated wetlands at the site. Large cottonwood trees (*Populus deltoides*) and a large willow (*Salix* sp.), indicators of hydrology, were observed at the northeastern portion of the site and consistent with the floodplain. Based on review of historic topographic maps and aerial photographs that went back as early as 1893 (<https://www.historicaerials.com/viewer>) BETA concluded there was no indication of additional wetland conditions at the site prior to the construction of Route 2.

WILDLIFE HABITAT REVIEW AND EVALUATION

BETA reviewed the Wildlife Habitat and Vegetation Evaluation provided by BSC as well as conducted observational surveys of wildlife and habitat during the November 12, 2020 site visit. BETA’s inspection of the site was done during mid-November when most wildlife is dormant, and weather was cool and overcast. A walkthrough was completed of the proposed construction and floodplain fill mitigation areas and the 100-foot buffers to BVW / AURA to evaluate existing habitat on the site. An Eastern Cottontail (*Sylvilagus floridanus*) was seen fleeing through the underbrush, but no other species were observed. Signs of wildlife activity seem to corroborate the previous BSC’s field observations. Deer scat was found throughout the site as well as one instance of Eastern cottontail scat. Squirrel nests were found in trees throughout the site and snags containing cavities showing evidence of habitation by some tree dwelling species.

The western end of the site, where the proposed parking lot will be located mostly consists of fallen trees, standing deadwood, tall shrubs/small trees, dense briers and woody vines. Decaying logs are common in this area providing ample ground cover for small mammals, reptiles and amphibians. This dense area of woody vines includes bittersweet, briers, and grape which provide food for local wildlife. No songbird nests were seen in this area at the time of the observation, despite the dense vegetation cover which suggests this area is not used by songbirds for protection and reproduction.

The eastern end of the site, from the eastern edge of the proposed building to the edge of the property is generally more open in the understory. There are more large standing trees in this area but with fewer decomposing logs or vegetated ground cover which provides less protection for wildlife. Suitable bat habitat, including large foliating bark trees, were not present on the site. The site has extensive stands of invasive species including Japanese knotweed (*Polygonum cuspidatum*) that tend to dominate the understory in some places. Japanese knotweed can provide food for pollinators but crowd out other native plant food species. Although this area has less cover and apparent food sources than the western side, a songbird nest was found, and signs of deer activity were common.

Based on the proposed plans the eastern section of the property will not be cleared as part of construction. The potential for wildlife habitat improvements exist at the site and include replacing proposed cultivar plant species with native plantings, incorporating fruit producing shrubs to encourage foraging and controlling invasive species.

CONCLUSIONS

At this early design phase, the Applicant has not provided sufficient detail regarding the disposition of site-generated stormwater runoff to determine that the proposed project is able to satisfy MassDEP Stormwater Management Regulations. The proposed stormwater management approach utilizes rooftop detention and subsurface infiltration BMPs to mitigate the impacts from the proposed site development. Absent the disposition of the rooftop stormwater detention in the stormwater calculations, it is not possible to evaluate if the requisite peak rate/volume mitigation has been provided.

The project design includes compensatory flood storage to offset proposed filling within the 100-year floodplain. The proposed volume of compensatory storage included in the calculations appears consistent with the compensatory flood storage area designated on the site plans.

The proposed site grading plans appears to demonstrate that the proposed surface grading of the site will allow it to drain properly; however, necessary revisions to the proposed stormwater management system identified in the previous comments will likely require adjustments to the grading currently shown.

The proposed utility layouts for sewer, water and drainage are shown and appear feasible. Gas, electric and tele/com utility layouts are also shown, and their final design will require coordination with the appropriate utility providers. Coordination with Town Departments regarding sewer/water service connections to municipal utilities will be required to verify compliance with Town construction standards.

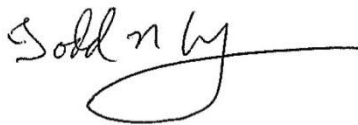
BETA concurs that the functions and values provided by the site's AURA and upland floodplain habitat are currently low and we support the Applicant's 2:1 floodplain compensation proposal. A 2:1 floodplain compensation ratio begins to address climate change and resiliency by providing more storage during flooding events and also provides an opportunity to replace the invasive species and low quality native

vegetative species with higher quality native species that provide wildlife food, cover and nesting habitat resulting in a more resilient project.

As the development design advances, there may be additional impact to the AURA and 100-year floodplain for the ZBA and Conservation Commission to consider and this may provide an opportunity for additional mitigation and habitat improvement. BETA recommends that the Applicant provide a clear commitment towards these significant mitigation opportunities on this site in their next submittal to the ZBA including floodplain and AURA/Buffer Zone restoration design details.

If you have questions about any of these comments, please feel free to contact me at (401) 333-2382.

Very truly yours,
BETA Group, Inc.



Todd Undzis, P.E.
Project Manager



Marta Nover
Vice President

cc: Jennifer Raitt, Director Department of Planning and Community Development
Emily Sullivan, Environmental Planner & Conservation Commission Agent
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