Memorandum

Date:	February 28,2024
Recipient:	Oaktree Development
Attention:	Ms. Gwendolen Noyes
Sender:	Amy D. Apfelbaum, P.E.
Project:	Thorndike Place; Arlington, MA
Project No:	7679
Subject:	Updated Foundation Design Recommendations

In response to your recent request, we have reviewed the proposed scope of development for Thorndike Place in Arlington. Fronting onto Dorothy Road to the north, the site of the proposed development is bounded by residential property to the east and by Thorndike Park to the south and west. Existing ground surface across the site is generally relatively level varying from about Elevation +9 to +10 on the northern side of the site to about Elevation +7 to +8 along the southern side of the site.

It is anticipated that the site is underlain by fill and organic soils that extend to depths of about 6 to 8 feet below ground surface overlying a natural marine sand and clay deposit. The measured seasonal high groundwater levels at the site vary from Elevation -0.5 to Elevation +4. Based upon the relatively flat topography of the site and surrounding area, it is anticipated that the groundwater gradient is also relatively level across the site. The groundwater levels at the site may fluctuate seasonally and be impacted by extreme weather and flooding of the nearby Alewife Brook. Based on the provided existing conditions plan, the FEMA Zone AE and Zone X apply to the site. Portions of the buildings located within Zone AE are subject to a Base Flood Elevation of Elevation +6.8.

It is understood that the proposed primary structure will consist of 2 to 4 stories with a partially below-grade garage. The first-floor slab will be located at Elevation +16 and the parking garage slab will be located at Elevation +6. The separate townhouse buildings are planned to have their first-floor slab at Elevation +12 and basement slab at Elevation +3.

Based upon the above, foundation support for the proposed building is anticipated to be provided using conventional spread footings. The footings are anticipated to bear on the natural marine sand and/or clay deposits or on ground improvement such as rigid inclusions depending on the depth to the natural marine sand and clay bearing stratum. Rigid inclusions are commonly used in urban areas to mitigate the noise and vibrations resulting from pile driving activities. Noise and vibrations generated from rigid inclusion installation operations are typical of common construction equipment such as excavators and vibratory compactors, and are significantly less than those generated by pile driving operations. Also, the installation time for rigid inclusions is significantly less than that required for pile installation.

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Finally, it is recommended that the lowest level slabs be designed as a waterproofed slab and the waterproofing should extend up the foundation walls to ground surface. The lowest level slab and foundation walls will need to be designed to resist hydrostatic pressure. Buildings located within FEMA Zone AE should be designed to resist hydrostatic pressure resulting from the design flood level plus 1-foot which is understood to be equivalent to Elevation +.7.8. This will protect the below-grade spaces from possible groundwater intrusion and from potential seasonal fluctuations in the groundwater level and flooding.

Given that the primary garage is located about 2 feet above the observed groundwater and the individual townhouse basements are located only slightly below the highest observed groundwater level, the garage and basements should not have an impact on seasonal groundwater fluctuations or on the relatively flat groundwater gradient (flow) in the area surrounding the proposed building.

https://mcphailintranet-my.sharepoint.com/personal/aapfelbaum_mcphailgeo_com/Documents/Thorndike Place Building Memo Update 022824.docx
AJD/ADA/ntd

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