EVAN L. HANKIN, P.E.
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March 15, 2019

Re:
60 Stearns Street, Cambridge MA
File No. 9130

Attn:

Cambridge Historic Commission
Demo Case: D-1508

I recently inspected the residential building at **60 Stearns Street** in order to render an opinion regarding its structural condition and to suggest any repairs, if needed. A soil boring report was used to complete my analysis.

The structure is a 2½-story, wood-framed structure with a 12" rubble stone foundation located on a gently sloping lot. The existing condition of the residence is unsatisfactory with poor mortar joints in the foundation, water infiltration, and floor and wall framing which are in need of repair and replacement.

Rebuilding the foundation walls at their present location would restrict the construction effort and cause potential damage to the foundation and the superstructure of the adjacent structure. In order to accomplish the construction of the new foundation walls the house would need to be supported by wood cribbing to allow removal of the existing rubble stone walls and then be lifted to allow tradesmen to form and place concrete for the new walls. The existing structure would then be lowered to its new position.

As shown in the attached cross-section the foundation walls are in very close proximity to each other. It is my concern that the removal of the rubble stone foundation wall at 60 Stearns Street would disturb the adjacent foundation wall. The internal angle of friction, which determines the natural slope of the sub-grade, is shown as dashed lines on the drawing. The angle currently intersects

the existing wall and any required excavation for underpinning. This means that the sub-grade material would slough downwards, i.e. separate from the ground soil and sink. This would then need to be removed for purposes of the new construction. Once the new wall is constructed fill material would need to be installed and compacted. This is another operation that would disturb the adjacent wall and impose stresses for which it was probably not designed.

To avoid these problems, the proposed plans indicate a new structure with concrete foundation walls and wood framing properly sized as required by the Mass. State Building Code and located near the middle of the lot at an appropriate distance from the neighboring residential structure. The new foundation walls would be designed for an allowable soil bearing pressure of 1.5 ksf (0.75 tons per sf.). This is a very conservative value consistent with the boring logs and the Mass. State Building Code.

Under the proposed plans, the existing rubble foundation wall, approximately 3'-10" distance near the property line, would be left in place except for the removal of the top 12 inches. It would then be covered with sub-grade material and have little or no impact on the adjacent structure.

In summary, it is my professional opinion that a new foundation should be built preferably at 11'-6" away from its current location.

Very Truly Yours,

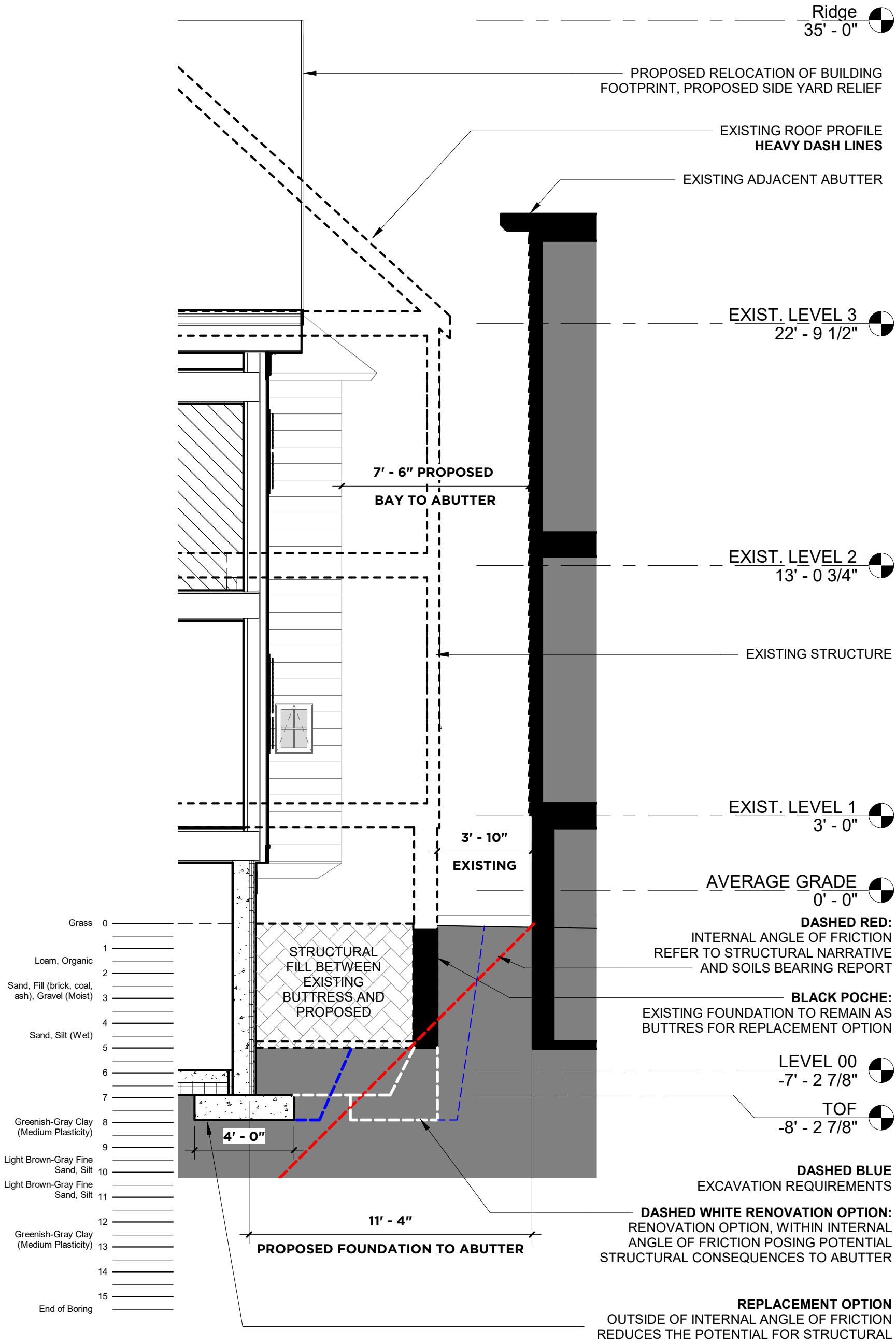
Evan L. Hankin, P.E.

EVAN L. HANKIN No. 28679 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

					Client: Group Design Build, Inc.		***BORING ID: SB-01***
					Project Name/Number: ***Harper Residence***		
					58-60 Stearns, Cambridge, Massachusetts		
					Boring Location: Near southwest corner of the house.		*Sheet:* ***1 of 1***
					Drilling Contractor: GeoSearch, Inc.	*Drilling Method: GeoProbe*	*Monitoring Well Installed (Y/N):* ***N***
Logged For: ***Hankin***					*Date Started:* ***2/24/2019***	*Boring Diameter: 2"*	*Approx Hammer Weigth/Fall:* ***N/A***
Ground Elevation: ***N/A***					*Date Completed: 2/24/2019*	*Depth of Boring: 15'*	*Approx. Water Level at Completion: NM*

Sample ID	Blows per 6"	Recovery (inches)	tVOCs (ppmv)	Depth (feet)	SOIL CLASSIFICATION	BORING & SAMPLING NOTES
SB-01 (0-5')	N/A	46	N/A	0.5 1 2 3 4 5	Grass Loam/ORGANIC Light Brown Fine to Coarse SAND and FILL (i.e. Asphalt, Brick, Coal/Ash, etc…) Trace GRAVEL (Moist) Brown Fine to Medium SAND and SILT Dark Brown/Gray Fine to Medium SAND and SILT	No odors or laboratory confrimation sample collected.
SB-01 (5-10')	N/A	60	N/A	6 7 8 9 10	Brown Fine-Medium SAND and SILT (Wet) Greenish-Gray CLAY (Medium Plasticity) Light Brown/Gray Fine to Medium SAND and SILT	No odors or laboratory confrimation sample collected.
SB-01 (10-15')	N/A	60	N/A	11 12 13 14 15	Light Brown/Gray Fine to Medium SAND and SILT Greenish-Gray CLAY (Medium Plasticity)	No odors or laboratory confrimation sample collected.
				16 17 18 19 20	End of Boring	

Ntoes: Stratum Features are approximate. Proportions used 0-10% Trace, 10-20% Little, 20-35% Some & 35-50% And. tVOCs = Total Volatile Organic Compounds (PID calibrated to represent the bezene equivilant in part per million by volume (ppmv)).



58-60 Stearns Street

Existing & Proposed Foundations

Project number	201811
Date	03/18/2019
Scale	1/4" = 1'-0"
CHC Review	

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GROUP DESIGN BUILD