

Geotechnical Report

Clark House Addition

590 Verbank Road
Millbrook, New York

November 16, 2021

Prepared for:

Historical Concepts
414 Bill Kennedy Way SE, Suite 301
Atlanta, GA 30316

Prepared by:

SKYLANDS ENGINEERING, LLC
124 Milton Road
Sparta, NJ 07871

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Certificate of Authorization No: 0013524

Eugene J. Schwarzbrog, Professional Engineer Date 11-16-21
New York License No. 027007

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INTRODUCTION

This project involves the design and construction of an addition to an existing house at 590 Verbank Road, in the Village of Millbrook, Dutchess County, New York. The project site is located in the same area as the existing, irregularly-shaped, house and garage. The zigzag-shaped house addition with attached garage will have a footprint of $\pm 6,891$ SF. When completed, the remodeled house will contain a ground floor across the entire footprint, an upper level above the garage, and a walk-out, lower level in the southeastern half of the house. No basement is planned. An in-ground pool is also proposed to be constructed immediately northeast of the proposed garage/veranda.

Existing grades around the proposed footprint range from El. ± 440 to El. ± 441.5 around the northern half of the house/garage, then drop to El. ± 425 to the east in the area of the southeastern wing. It is anticipated the main floor will be set within a few feet of El. 441, and the lower level will walk-out at El. ± 430 . A $\frac{1}{2}$ ac. pond with surface elevation at El. ± 422 is located ± 50 ft. east of the proposed addition.

This Geotechnical Report presents the findings of a subsurface investigation program prepared and performed by others, as well as recommendations for design and construction of the proposed building addition.

GEOLOGY

Based on our review of topographic maps and published geologic data for this area of Millbrook, including the *Surficial Geologic Map of New York - Lower Hudson Sheet*, 1989, by Cadwell, Connally, et. al., this site is expected to be underlain by glacial till consisting of a mixture of grain sizes ranging from clay and silt, to sand, cobbles and boulders. Bedrock is expected to consist of gray schist with possible graywacke (sandstone) lenses, based on our review of the *(Bedrock) Geologic Map of New York - Lower Hudson Sheet*, 1970, by Rickard, Isachsen, and Fisher. Shale and quartzite of the Nassau Formation were mapped a very short distance west of the project location so these rock types may be present instead, depending on the accuracy of the mapping.

Notably, online imagery along with survey notes and geologist reports from field work here indicate a very large boulder, presumably a glacial erratic, ± 50 ft. in diameter, is present ± 20 ft. northeast of the existing and proposed house.

SUBSURFACE INVESTIGATION

Soiltesting, Inc. of Oxford, CT performed seven (7) borings on October 13 and 14, 2021 to identify the subsurface conditions present beneath the proposed house, garage, and pool. Borings B-1, B-2, and B-3 were performed along the western side of the proposed house/garage, boring B-4 was performed near the proposed pool, and borings B-5, B-6, and B-7 were performed along the eastern side of the proposed house.

All borings were drilled using a $4\frac{1}{4}$ in. diameter hollow stem auger to advance and maintain the hole. The soils were sampled either generally continuously from the ground surface to a depth of ± 12 ft., then at 5 ft. intervals to the bottom of the boring, or at 5 ft. intervals from the ground surface to the bottom of each boring. Soil sampling was performed using a 2 in. O.D. split spoon sampler driven by a 140 lb. safety hammer with a 30 in. drop and the number of blows for each 6 in. increment was recorded, in accordance with procedures outlined in ASTM D1586, Standard Test Method for Standard Penetration



Test (SPT) and Split-Barrel Sampling of Soils. Soil samples were classified by an experienced geologist in general accordance with D.M. Burmister's "Suggested Test Methods for Identification of Soils" (ASTM, 1958). The structure borings were terminated at depths ranging from 17 ft. to 27 ft., while the pool boring was terminated at a depth of 10 ft.

Groundwater was recorded when it was first encountered in each of the borings since the borings were performed without the introduction of water. Additionally, groundwater readings were obtained from temporary groundwater measurement wells installed in two (2) of the completed borings approximately 24 hr. after the borings were completed. Those readings are included on the boring logs and incorporated in the discussions below.

A Boring Location Plan and boring logs are presented in the Appendix. The boring logs were amended by Skylands Engineering to include estimated ground and groundwater elevations, which we estimated based on the Boring Location Plan and survey provided to us, as well as bedrock core recovery percentage.

SUBSURFACE CONDITIONS

The subsurface conditions encountered beneath this site are generally consistent with the published geologic literature. In general, this site is underlain by brown and/or gray-brown, loose to mostly medium dense, coarse to fine sand with with minor percentages of fine gravel and only trace amounts of silt to depths of ± 4 ft. to ± 20 ft. Beneath this depth, loose to medium dense, mostly fine sand and/or silt is present to the bottom of each boring. Standard penetration test N-values in the overlying coarser sands ranged from 10 blows per foot (bpf) to 49 bpf, with $N_{ave}=\pm 18$ bpf, not counting the surficial samples shallower than 4 ft. SPT N-values in the lower fine sands ranged from 5 bpf to 15 bpf, with $N_{ave}=\pm 10$ bpf.

A ± 7 in. thick layer of black organic silt was encountered at a depth of ± 4.5 ft. (El. ± 423) in boring B-6 near the proposed walk-out to the lower level. No other organics were encountered in the borings below any surficial topsoil.

Cobbles were encountered at or above the anticipated footing elevations at boring B-2, and beginning just below the anticipated footing elevation at boring B-1.

Bedrock was not encountered in any of the borings and no estimation of its depth can be inferred from the boring logs.

Groundwater was encountered consistently between El. ± 423 and El. ± 425.5 , which is a few feet higher than the water surface elevation in the nearby pond, and as expected given the open gradation of the in situ soils.

Complete records of the findings of this subsurface investigation are shown on the borings logs located in the Appendix.

DESIGN RECOMMENDATIONS

Based on our review of the proposed construction, anticipated footing elevations, and the findings of the above-described subsurface investigation, we recommend conventional spread footings are suitable

for support of the planned house and garage. The recommended frost depth for this area of New York is 48 in. therefore all footings shall be constructed at least 48 in. below finish exterior grade, except for interior footings within continuously heated space, which may be founded at shallower depth (18 in. minimum recommended).

With the proposed lower level slab at El. ± 430 , footings are expected to be at El. ± 428.5 , except at the area of the basement where the basement walks-out to the surrounding ground. Footings here will be lowered to El. ± 426 . Beneath the remainder of the house, which will only contain the ground floor at El. ± 441 , exterior footings should be founded at or below El. ± 437 . At these elevations we expect loose to mostly medium dense sands to be present. Following excavation to the required grades, the subgrade soils should be thoroughly compacted using a vibratory trench compactor using a minimum of 4 passes and until no further settlement is observed. Additionally the black organic soils present beneath the area of the lower level walk-out, should be removed in their entirety prior to compaction of the subgrade and backfilling of the over excavation with structural fill. Following these treatments, an allowable bearing capacity of 1.0 tsf and a coefficient of base sliding of 0.45 are recommended for design of the house and garage. Minimum footing widths of 18 in. for wall footings and 24 in. for column footings are recommended to limit differential settlements.

It is estimated that maximum post-construction foundation settlements will be no more than 1 in., with maximum differential settlement between adjacent columns estimated at $\frac{1}{2}$ in. Settlement will be elastic (instantaneous), with no long term consolidation settlement occurring.

The following soil properties are recommended for design of new walls, including basement and other walls.

Brown c-f Sand (0 ft. ± 10 ft.)

Moist unit weight of soil,	$\gamma_t = 120$ pcf
Angle of internal friction,	$\phi = 30^\circ$
Lateral earth pressure coefficients:	
Active,	$K_a = 0.33$ (unrestrained walls)
Passive,	$K_p = 3.00$
At-rest,	$K_o = 0.50$ (restrained/basement walls)

The lower level and ground floors may be economically designed as slabs-on-grade following excavation and compaction of the soil overburden and placement of capillary break material. A modulus of subgrade reaction equal to 150 pci is recommended for design of these slabs constructed in this manner.

In accordance with the provisions of Section R301.2.2 of the New York 2020 Residential Code, and ASCE 7-16 Chapter 20, a seismic site class of D, stiff soil, is recommended for design of the proposed house based on the findings of this subsurface investigation and assumed conditions to 100 ft. Based on the project location, in conjunction with the above site class, a seismic design category of B follows from the Code.

The use of waterproofing is recommended for the lower level slab and walls up to a point above El. 430, or approximately 5 ft. above the highest groundwater reading recorded during this investigation. This should allow for sufficient protection of the basement from a future rise in groundwater elevations.



There is no reported evidence of past slope instability and none is expected under static or seismic loading.

The soils at this site are expected to be non-liquefiable based on their lack of groundwater in the upper portion of the soil profile, and the presence of fine-grained soils in the lower portion.

CONSTRUCTION RECOMMENDATIONS

Footings shall not be constructed on frozen or wet subgrade materials. All frozen or saturated subgrade soil should be removed and replaced with compacted structural fill, or $\frac{3}{4}$ in. clean crushed stone, as required.

The organic soils removed from the area of the walk-out lower level, near boring B-6, should be removed completely from beneath the limits of work and be replaced with compacted structural fill. Organic soils should not be used as structural or site backfill, but may be used as topsoil.

Cobbles are expected to be encountered during excavation in the southern end of the house. Any cobbles or boulders encountered during construction should be removed so that no part protrudes into the bottom or sides of foundation excavations.

Dewatering may be required during construction since groundwater is expected to be present at least as high as El. 425. Depending on the season of construction, groundwater may be higher in spring or slightly lower in mid-late summer.

Compacted structural fill should consist of predominately well-graded, coarse to fine sand and/or gravel with a maximum 10% non-plastic fines (material passing a No. 200 sieve) and be free of organics and other deleterious materials. Aggregate size should be limited to no bigger than 2 in. in the largest dimension. It is estimated that $\frac{1}{2}$ to $\frac{3}{4}$ of the in situ soils may be suitable for use as structural fill given the low percentage of silt present. Representative samples of any proposed fill material should be tested for gradation and moisture-density relationship prior to use to confirm its suitability. Should the in-situ soils be reused, they should be placed and compacted within the same day, and rolled tight and pitched to drain at the end of each day to prevent softening overnight during precipitation.

Structural fill should be placed in maximum 10 in. loose lifts and compacted to 95% of its maximum dry density at optimum moisture content as determined by the Modified Proctor Density Test (ASTM D1557). These operations should be performed under full-time geotechnical inspection and testing by either the Sand Cone Method (ASTM D1556), Nuclear Density Gauge (ASTM D6938), or other moisture/density test methods. These density tests should be performed by an experienced geotechnical inspector at sufficient frequency to ensure proper compaction.

All excavations that extend deeper than 5 ft. need to be sloped back, sheeted or shored per OSHA standards. Considering the openness of the site, all options are considered suitable for this project. Based upon the material characteristics and estimated strength of the soils encountered during the subsurface exploration, the soil present on site may be assumed to be Type C and should be sloped at a 1.5H:1V (34°) per OSHA requirements. For the design of temporary sheeting or shoring, the soil properties listed above may be used for design. All sheeting, shoring and/or bracing shall be designed by a professional engineer registered in the State of New York.



All footing and subgrade preparation procedures should be inspected by a qualified geotechnical engineer experienced with these types of construction.

APPENDIX



LEGEND

○ BORING
B-1

SCALE

N.T.S.

NOTES:

- 1. BASE IMAGERY © GOOGLE EARTH PRO, 11-16-2021
- 2. BUILDING LIMITS PROVIDED BY HISTORICAL CONCEPTS
- 3. AS-DRILLED BORING LOCATIONS PROVIDED BY SOILTESTING, INC.

BORING LOCATION PLAN

CLARK HOUSE ADDITION

590 VERBANK ROAD
MILLBROOK, NEW YORK

SKYLANDS ENGINEERING, LLC

124 MILTON ROAD
SPARTA, NJ 07871
CERTIFICATE OF AUTHORIZATION NO. 0013524

DATE: 11-16-2021

Boring Logs

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-1</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 590 Verbank Road Millbrook NY	
INSPECTOR	CASING TYPE <u>HSA</u> SAMPLER <u>SS*</u> CORE BAR	OFFSET
GROUND WATER OBSERVATIONS AT <u>16</u> FT AFTER <u>0</u> HOURS	SIZE I.D. <u>4 1/4"</u> <u>1 3/8"</u>	DATE START <u>10/14/21</u>
AT <u> </u> FT AFTER <u> </u> HOURS	HAMMER WT. <u>140#</u> BIT	DATE FINISH <u>10/14/21</u>
	HAMMER FALL <u>30"</u>	SURFACE ELEV. <u>El. ±441</u>
		GROUND WATER ELEV. <u>El. ±425</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)			CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC.	DEPTH @ BOT	0 - 6	6 - 12	12 - 18				
5		1	ss	24"	18"	2'0"	14	10		compact moist		Brn f-m sand, f-m gravel, trace silt	
		2	ss	24"	14"	4'0"	9	11		compact moist			
10		3	ss	24"	24"	7'0"	13	11		compact dry		Brn f-c sand, some f-c gravel, trace cobbles	
		4	ss	24"	10"	9'0"	13	22		dense dry			
15		5	ss	24"	16"	12'0"	10	11		compact dry		Same	
							11	9					
20		6	ss	24"	14"	17'0"	6	5		compact moist/wet	17'	Brn f-c sand, lit f-c gravel	
							6	5					
25												EOB 17'0"	
40												* Cathead & Rope	

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-1
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS	C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER	M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-2</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION <u>590 Verbank Road</u> <u>Millbrook NY</u>	
INSPECTOR	CASING TYPE <u>HSA</u> SAMPLER <u>SS*</u> CORE BAR	OFFSET
GROUND WATER OBSERVATIONS AT <u>16</u> FT AFTER <u>0</u> HOURS	SIZE I.D. <u>4 1/4"</u> <u>1 3/8"</u>	DATE START <u>10/14/21</u>
AT <u> </u> FT AFTER <u> </u> HOURS	HAMMER WT. <u>140#</u> BIT	DATE FINISH <u>10/14/21</u>
	HAMMER FALL <u>30"</u>	SURFACE ELEV. <u>El. ±440.5</u>
		GROUND WATER ELEV. <u>El. ±424.5</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)			CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC	DEPTH @ BOT	0 - 6	6 - 12	12 - 18				
5	1	ss	24"	16"	2'0"	22	24			dense moist		Gry brn f-m sand, f-c gravel, trace silt	
						14	11			compact wet			
10	2	ss	24"	18"	4'0"	10	10			compact wet		Same	
						8	7						
15	3	ss	24"	20"	7'0"	10	11			compact dry		Brn f-c sand & f-c gravel, lit cobbles	
						11	8			compact dry			
20	4	ss	24"	20"	9'0"	13	13			compact dry		Same	
						12	10						
25	5	ss	24"	18"	12'0"	7	6			compact dry		Brn f-c sand, some f-c gravel, trace cobbles	
						7	6						
30	6	ss	24"	14"	17'0"	6	6			compact moist/wet		Brn f-c sand, lit f-c gravel	
						5	5						
35	7	ss	24"	22"	22'0"	3	4			loose wet		Brn f sand, some silt	
						5	5						
40	8	ss	24"	20"	27'0"	4	5			loose wet	27'	Same EOB 27'0"	
						4	5						

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-2
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS	C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER	M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-3</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER <u>AO/jd</u>	LOCATION <u>590 Verbank Road</u> <u>Millbrook NY</u>	
INSPECTOR	CASING TYPE <u>HSA</u> SAMPLER <u>SS*</u> CORE BAR	OFFSET
GROUND WATER OBSERVATIONS AT <u>15'6"</u> FT AFTER <u>0</u> HOURS	SIZE I.D. <u>4 1/4"</u> <u>1 3/8"</u>	DATE START <u>10/13/21</u>
AT <u>14'1"</u> FT AFTER <u>24</u> HOURS	HAMMER WT. <u>140#</u> BIT	DATE FINISH <u>10/13/21</u>
	HAMMER FALL <u>30"</u>	SURFACE ELEV. <u>El. ±437</u>
		GROUND WATER ELEV. <u>El. ±423</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)		CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC	DEPTH @ BOT	0 - 6	6 - 12				
5											8" Top soil	
		1	ss	24"	20"	7'0"	12	11		compact dry/moist	Brn/gry f-c sand, some f-c gravel, trace silt	
							9	7				
10												
		2	ss	24"	22"	12'0"	3	5		loose dry	Brn f sand, lit layers of f sand, lit silt	
							5	6				
15												
		3	ss	24"	24"	17'0"	2	3		loose wet	15'6" Same	
							2	3			16'6" Gry brn silt, some vf sand	
											Gry brn vf-f sand	
20												
		4	ss	24"	20"	22'0"	4	4		loose wet	Gry brn vf-f sand, lit layers of vf-sand, some silt	
							5	6				
25												
		5	ss	18"	18"	26'6"	3	3		soft wet	25' Gry clayey silt, lit vf sand	
							3				26'6" EOB 26'6"	
30												
											Installed 1" SCH 40 PVC observation well with 10' screen length to 18' depth & 2' above grade.	
35												
											* Cathead & Rope	
40												

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. <u>B-3</u>
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE	
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM	
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-4</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER <u>AO/jd</u>	LOCATION <u>590 Verbank Road Millbrook NY</u>	
INSPECTOR	CASING SAMPLER CORE BAR	OFFSET
	TYPE <u>HSA SS*</u>	DATE START <u>10/13/21</u>
GROUND WATER OBSERVATIONS	SIZE I.D. <u>4 1/4" 1 3/8"</u>	DATE FINISH <u>10/13/21</u>
AT 16 FT AFTER <u>0</u> HOURS	HAMMER WT. <u>140# BIT</u>	SURFACE ELEV. <u>El. ±441.5</u>
AT <u>16'9"</u> FT AFTER <u>24</u> HOURS	HAMMER FALL <u>30"</u>	GROUND WATER ELEV. <u>El. ±424.75</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)		CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.	
		NO	Type	PEN	REC	DEPTH @ BOT	0 - 6	6 - 12					12 - 18
							MOIST	ELEV					
5	1	ss	24"	18"	2'0"	2	2		stiff		10" Top soil		
						3	3		moist		Red brn silt, trace gravel		
	2	ss	24"	19"	7'0"	10	9		compact		Brn f-c sand, lit f-c gravel		
						8	7		dry				
10	3	ss	24"	10"	12'0"	7	8		compact		Same, trace silt, lit cobbles, boulders 12'		
						6	13		moist				
	4	ss	24"	14"	17'0"	9	8		compact	16'6"	Same		
						7	5		moist/wet	17'	Gry/bm silt		
20											EOB 17'0"		
25													
30											Installed 1" SCH 40 PVC observation well with 8' screen length to 17' depth & 1' above grade.		
35													
40											* Cathead & Rope		

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-4
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE	
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM	
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-5</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER <u>AO/jd</u>	LOCATION <u>590 Verbank Road</u> <u>Millbrook NY</u>	
INSPECTOR	CASING TYPE <u>HSA</u> SAMPLER <u>SS*</u> CORE BAR	OFFSET
GROUND WATER OBSERVATIONS AT <u>15</u> FT AFTER <u>0</u> HOURS	SIZE I.D. <u>4 1/4"</u> <u>1 3/8"</u>	DATE START <u>10/13/21</u>
AT <u> </u> FT AFTER <u> </u> HOURS	HAMMER WT. <u>140#</u> BIT	DATE FINISH <u>10/13/21</u>
	HAMMER FALL <u>30"</u>	SURFACE ELEV. <u>El. ±440.5</u>
		GROUND WATER ELEV. <u>El. ±425.5</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0-6 6-12 12-18				CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC	DEPTH @ BOT	0-6	6-12	12-18				
5	1	ss	24"	18"	2'0"	1	1			v soft moist	2'	1' Top soil	
	2	ss	24"	8"	4'0"	8	8			compact moist		Brn/red/gry silt	
10	3	ss	24"	18"	6'0"	9	8			compact moist		Brn/gry f sand, lit silt, trace gravel	
	4	ss	24"	19"	8'0"	6	7			compact dry		Gry/brn f-c sand, lit gravel, trace silt	
15	5	ss	24"	14"	10'0"	7	8			compact dry		Gry/brn f-c sand, lit gravel, trace silt	
	6	ss	24"	20"	12'0"	5	9			compact moist		Same, lit silt	
20						16	12			compact moist		Same, trace silt	
	7	ss	24"	16"	17'0"	3	4			compact wet		Same, trace gravel	
25						6	7						
	8	ss	24"	20"	22'0"	5	7			compact wet	20'	Gry brn silt, lit vf-f sand	
30						8	8				21'9"	Gry f sand	
											22'	Gry f sand	
35												EOB 22'0"	
40													
												* Cathead & Rope	

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-5
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS	C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER	M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Wendy & Michael Clark	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. G213-1929-21	HOLE NO. B-6
	PROJECT NAME Proposed Addition	BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/jd	LOCATION 590 Verbank Road Millbrook NY	
INSPECTOR	TYPE	CASING HSA SAMPLER SS* CORE BAR
GROUND WATER OBSERVATIONS AT <u>7</u> FT AFTER <u>0</u> HOURS AT <u>3</u> FT AFTER <u>1</u> HOUR	SIZE I.D. <u>4 1/4"</u>	1 <u>3/8"</u>
	HAMMER WT. <u>140#</u>	BIT
	HAMMER FALL <u>30"</u>	
		OFFSET
		DATE START <u>10/13/21</u>
		DATE FINISH <u>10/13/21</u>
		SURFACE ELEV. <u>El. ±427.5</u>
		GROUND WATER ELEV. <u>El. ±424.5</u>

I.D. (IN)	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)			CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC.	DEPTH @ BOT	0 - 6	6 - 12	12 - 18				
5		1	ss	24"	18"	2'0"	3	3		loose		6" Top soil	
							3	4		moist			
							3	4		loose		Gry/brn f-c sand, lit gravel, lit silt	
							3	3		v moist	4'5"	Same, some silt	
							3	4		stiff	5'0"	Gry clayey silt, lit blk organic silt	
							7	10		moist	6'0"	Gry clayey silt, trace f sand, f gravel	
							4	5		compact	7'0"	Gry/brn f-c sand, some silt, lit gravel	
10		4	ss	24"	20"	8'0"	10	7		moist	8'6"	Gry/brn vf-f sand, trace silt	
							4	5		stiff			
							5	7		wet		Gry silt, lit vf-f sand	
							6	5		wet			
15		6	ss	24"	24"	12'0"	6	7		stiff		Same, trace m sand (seams)	
							8	6		wet			
15		7	ss	18"	18"	16'6"	5	4		stiff			
							6				16'6"	Gry silt, lit vf sand	
20												EOB 16'6"	
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-6
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS	C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER	M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: <u>Wendy & Michael Clark</u>	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. <u>G213-1929-21</u>	HOLE NO. <u>B-7</u>
	PROJECT NAME <u>Proposed Addition</u>	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 590 Verbank Road Millbrook NY	
INSPECTOR	CASING TYPE <u>HSA</u>	SAMPLER <u>SS*</u>
GROUND WATER OBSERVATIONS AT <u>none</u> _FT AFTER <u>0</u> _HOURS AT <u> </u> _FT AFTER <u> </u> _HOURS	SIZE I.D. <u>4 1/4"</u>	CORE BAR <u>1 3/8"</u>
	HAMMER WT. <u>140#</u>	BIT
	HAMMER FALL <u>30"</u>	GROUND WATER ELEV. <u>Dry</u>

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)			CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC.	DEPTH @ BOT	0 - 6	6 - 12	12 - 18				
5		1	ss	24"	10"	2'0"	8	7		compact		6" Top soil Brn f-c sand, lit f-c gravel Same Brn f sand, trace f-c gravel Same, trace silt 10' Brn f sand, lit silt EOB 10'0"	
		2	ss	24"	8"	4'0"	4	3		dry loose			
		3	ss	24"	16"	6'0"	3	2		dry loose			
		4	ss	24"	18"	8'0"	6	5		compact dry			
		5	ss	24"	12"	10'0"	6	5		compact dry			
10						6	5			moist	10'		
15													
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-7
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE	
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM	
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE