

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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Date

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11-16-21

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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	TYPE	CASING HSA	SAMPLER SS*	CORE BAR OFFSET
GROUND WATER OBSERVATIONS	SIZE I.D.	4 1/4"		DATE START 10/14/21
AT 16 FT AFTER 0 HOURS	HAMMER WT.	140#		DATE FINISH 10/14/21
AT _ FT AFTER _ HOURS	HAMMER FALL	30"		SURFACE ELEV. El. ±441
				GROUND WATER ELEV. El. ±425

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					MOIST	ELEV	
5		1	ss	24"	18"	2'0"	14	10			compact		Brn f-m sand, f-m gravel, trace silt
							9	13			moist		
		2	ss	24"	14"	4'0"	9	11			compact		
							11	14			moist		
10		3	ss	24"	24"	7'0"	13	11			compact		Brn f-c sand, some f-c gravel, trace cobbles
							12	16			dry		
		4	ss	24"	10"	9'0"	13	22			dense		
							27	30			dry		
15		5	ss	24"	16"	12'0"	10	11			compact		Same
							11	9			dry		
20		6	ss	24"	14"	17'0"	6	5			compact		Brn f-c sand, lit f-c gravel
							6	5			moist/wet	17'	
25													EOB 17'0"
30													
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-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	TYPE	CASING	SAMPLER	CORE BAR
		HSA	SS*	
GROUND WATER OBSERVATIONS	SIZE I.D.	4 1/4"	1 3/8"	
AT 16_FT AFTER 0_HOURS	HAMMER WT.	140#	BIT	
AT __FT AFTER __HOURS	HAMMER FALL	30"		
				OFFSET
				DATE START 10/14/21
				DATE FINISH 10/14/21
				SURFACE ELEV. El. ±440.5
				GROUND WATER ELEV. El. ±424.5

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					MOIST	ELEV	
5		1	ss	24"	16"	2'0"	22	24			dense moist compact wet		Gry brn f-m sand, f-c gravel, trace silt
		2	ss	24"	18"	4'0"	10	10					Same
							8	7					
10		3	ss	24"	20"	7'0"	10	11			compact dry compact dry		Brn f-c sand & f-c gravel, lit cobbles
							11	8					
		4	ss	24"	20"	9'0"	13	13					Same
							12	10					
15		5	ss	24"	18"	12'0"	7	6			compact dry		Brn f-c sand, some f-c gravel, trace cobbles
							7	6					
20		6	ss	24"	14"	17'0"	6	6			compact moist/wet		Brn f-c sand, lit f-c gravel
							5	5					
25		7	ss	24"	22"	22'0"	3	4			loose wet		Brn f sand, some silt
							5	5					
30		8	ss	24"	20"	27'0"	4	5			loose wet	27'	Same
							4	5					EOB 27'0"
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-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	TYPE	CASING	SAMPLER	CORE BAR	OFFSET
		HSA	SS*		
GROUND WATER OBSERVATIONS	SIZE I.D.	4 1/4"	1 3/8"		DATE START 10/13/21
AT <u>15'6"</u> FT AFTER <u>0</u> HOURS	HAMMER WT.		140#	BIT	DATE FINISH 10/13/21
AT <u>14'1"</u> FT AFTER <u>24</u> HOURS	HAMMER FALL		30"		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) 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							
											MOIST	ELEV	
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
20													Gry brn vf-f sand
		4	ss	24"	20"	22'0"	4	4			loose wet		Gry brn vf-f sand, lit layers of vf-fsand, some silt
							5	6					
25													
		5	ss	18"	18"	26'6"	3	3			soft wet	25'	
							3					26'6"	Gry clayey silt, lit vf sand
30													EOB 26'6"
													Installed 1" SCH 40 PVC observation well with 10' screen length to 18' depth & 2' 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. <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</u> <u>Millbrook NY</u>			
INSPECTOR	CASING	SAMPLER	CORE BAR	OFFSET
	TYPE	HSA	SS*	DATE START <u>10/13/21</u>
GROUND WATER OBSERVATIONS	SIZE I.D.	<u>4 1/4"</u>	<u>1 3/8"</u>	DATE FINISH <u>10/13/21</u>
AT 16 FT AFTER <u>0</u> HOURS	HAMMER WT.	<u>140#</u>	BIT	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) 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					MOIST	ELEV	
5		1	ss	24"	18"	2'0"	2	2			stiff moist		10" Top soil Red brn silt, trace gravel
							3	3					
10		2	ss	24"	19"	7'0"	10	9			compact dry		Brn f-c sand, lit f-c gravel
							8	7					
15		3	ss	24"	10"	12'0"	7	8			compact moist		Same, trace silt, lit cobbles, boulders 12'
							6	13					
20		4	ss	24"	14"	17'0"	9	8			compact moist/wet	16'6"	Same
							7	5				17'	Gry/brn silt
													EOB 17'0"
25													
30													
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. <u>B-4</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-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	SAMPLER	CORE BAR	OFFSET
	TYPE	HSA	SS*	DATE START <u>10/13/21</u>
GROUND WATER OBSERVATIONS	SIZE I.D.	<u>4 1/4"</u>	<u>1 3/8"</u>	DATE FINISH <u>10/13/21</u>
AT <u>15</u> FT AFTER <u>0</u> HOURS	HAMMER WT.	<u>140#</u>	BIT	SURFACE ELEV. <u>El. ±440.5</u>
AT <u> </u> FT AFTER <u> </u> HOURS	HAMMER FALL	<u>30"</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					MOIST	ELEV		
5		1	ss	24"	18"	2'0"	1	1			v soft	2'	1' Top soil	
							1	5			moist		Brn/red/gry silt	
		2	ss	24"	8"	4'0"	8	8			compact			
							12	13			moist		Brn/gry f sand, lit silt, trace gravel	
		3	ss	24"	18"	6'0"	9	8			compact			
							10	9			dry		Gry/brn f-c sand, lit gravel, trace silt	
		4	ss	24"	19"	8'0"	6	7			compact			
							7	8			dry		Gry/brn f-c sand, lit gravel, trace silt	
		5	ss	24"	14"	10'0"	5	9			compact			
							16	12			moist		Same, lit silt	
10		6	ss	24"	20"	12'0"	7	7			compact		Same, trace silt	
							8	12			moist			
		7	ss	24"	16"	17'0"	3	4			compact		Same, trace gravel	
							6	7			wet			
20												20'		
		8	ss	24"	20"	22'0"	5	7			compact		21'9"	Gry brn silt, lit vf-f sand
							8	8			wet		22'	Gry f sand
25													EOB 22'0"	
30														
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. <u>B-5</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-6</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		TYPE		CASING	SAMPLER							
GROUND WATER OBSERVATIONS		SIZE I.D.		<u>HSA</u>	<u>SS*</u>							
AT <u>7</u> FT AFTER <u>0</u> HOURS		HAMMER WT.		<u>4 1/4"</u>	<u>1 3/8"</u>							
AT <u>3</u> FT AFTER <u>1</u> HOUR		HAMMER FALL		<u>140#</u>	<u>BIT</u>							
				<u>30"</u>								
DEPTH D	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						
5		1	ss	24"	18"	2'0"	3	3		loose		6" Top soil
							3	4		moist		
		2	ss	24"	8'0"	4'0"	3	4		loose		Gry/brn f-c sand, lit gravel, lit silt
							3	3		v moist	4'5"	Same, some silt
		3	ss	24"	18"	6'0"	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	ss	24"	20"	8'0"	10	7		compact	7'0"	Gry/brn f-c sand, some silt, lit gravel
							4	5		moist	8'6"	Gry/brn vf-f sand, trace silt
		5	ss	24"	24"	10'0"	5	7		stiff		Gry silt, lit vf-f sand
							6	5		wet		
10		6	ss	24"	24"	12'0"	6	7		stiff		
							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. <u>B-6</u>
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%					
			C = COARSE M = MEDIUM F = FINE		

[illegible]