

SOIL EVALUATION SERVICES INC.

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March 5, 2018

Foundation For Historic Christ Church, Inc.
ATTN: Doug Walker
P.O. Box 24
Irvington, VA 22480

Re: Soil borings in and around existing church.

Mr. Walker,

Soil Evaluation Services, Inc. is pleased to present findings regarding the soil conditions for the existing Christ Church. The attached sketch shows the location of the five soil borings. Although the borings vary from each other to some degree, it is believed that the soil morphology is consistent (in all borings) with a Craven silt loam. Depth to perched water table was 12-30"+, with restrictive to impermeable Silty clay loam to Silt Clay to Clay from 24"+. The soils were Massive in Boring #4 from 42-72"+ & Boring #3 from 68-72"+.

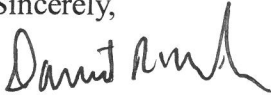
The existing brick foundation for the church extends to a depth of approximately 60". Boring #1, (placed inside the church), showed significant wetness in close proximity to the foundation. This appears to confirm the concern that the rain water runoff is migrating down the sides of the foundation, potentially to the depth of the footers, with nowhere to basically drain. This may be causing the water to wick upward, through the brick walls, causing degradation of the mortar. It is important to note that all four borings outside of the church were not significantly wet and no Free Water was observed to a depth of 120" (See boring #2). During the 2 1/2" hour evaluation, Boring #2 remained dry.

There are presently no gutters to aid in redirecting the rain water. There were "skirts" around the perimeter of the church, but they have been removed. Although it appears that the gradient is away from the church, there is still considerable water which ultimately ponds around the outer walls and (most assuredly) under the church in the crawl.

The potential corrective measure is to divert the water completely away from the church. However, this will be no easy feat given that the walls extend to 60". It will be quite the endeavor to excavate to a depth of 60"+ around the entire perimeter of the church, install french drains with outfall to the woods, hundreds of feet away. Installation of gutters to tie into this drainage system would also be recommended. The thought process, now that two evaluations have been performed, is to concentrate on promoting drainage away from the church, attempting to drain the water with shallow placed diversion trenches, collecting the water and pumping to the outskirts of the property ultimately into the ravine(s).

A Structural Engineer should be consulted to gain greater insight and perspective to this situation. Hopefully, my two reports will be helpful to the cause. If there are any questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "David R. Miles". The signature is fluid and cursive, with a long horizontal stroke at the end.

David R. Miles, Certified Professional Soil Scientist

Site and Soil Evaluation Report

VDH Use Only
HDIN: _____

General Information

Date: 3/6/2018 Lancaster County Health Department
 Owner: Foundation For Historic Christ Church, Inc. Phone: _____
 Owner Address: ATTN: Doug Walker P.O. Box 24, Irvington, VA 22480
 Property Address: 360 Christ Church Road
 Tax Map/GPIN #: 27-206
 Subdivision: _____ Section: _____ Block: _____ Lot: _____

Soil Information Summary

1. Position in landscape satisfactory: Yes No Describe landscape position: Upland, open, flat
 2. Slope: 0-1 %
 3. Depth to rock/impervious strata: Max. 72+ in. Min. 24 in. Not observed
 4. Free Water Present: Yes No Range in inches: Damp to Wet Boring #1 inside church
 5. Depth to seasonal water table (gray mottling or gray color): 12-30+ inches Not observed
 6. Soil percolation rate estimated: Yes No Estimated rate: 45-120+ min/in at 0-120 inches depth
 Texture Group: I II III IV
 7. Percolation test performed: Yes No If yes, provide additional data on percolation test results.
- Name and title of evaluator: David R. Miles, CPSS, OSE
 Signature: David R. Miles

Site approved: _____ (describe dispersal area, e.g. absorption trenches) dispersing
 _____ (proposed level of treatment at time of evaluation) to be placed at _____ (inches) depth at
 site designated on permit. Site provides a total of _____ square feet of absorption area for primary and
 reserve (if applicable).

Site disapproved: Reasons for rejection (check all that apply)

1. Position in landscape subject to flooding or periodic saturation.
2. Insufficient depth of suitable soil over hard rock.
3. Insufficient depth of suitable soil to seasonal water table.
4. Rates of absorption too slow.
5. Insufficient area of acceptable soil for required absorption area, and/or reserve area.
6. Proposed system too close to well.
7. Other (specify) _____

Date of Evaluation: 2/28/2018

Profile Description

SOIL EVALUATION REPORT

Property ID: T.M. #27-206

Where the local health department conducts the soil evaluation the location of profile holes may be shown on the schematic drawing on the construction permit or the sketch submitted with the application. If soil evaluations are conducted by a private Onsite Soil Evaluator or Professional Engineer, location of profile holes and sketch of the area investigated including all structural features (i.e. sewage disposal systems, wells, etc.) within 100 feet of the site and reserve site shall be shown on the reverse side of this page or prepared on a separate page and attached to this form.

See application sketch See Construction Permit See sketch on reverse side or page attached to this form.

Hole #	Horizon	Depth (Inches)	Description of color, texture, etc.	Texture Group
1		0-02	Clay Loam to Clay Fill with brick remnants	
		02-14	Dark Brownish Gray (10YR 4/2) Loam	II
		14-24	Light Yellow Brown to Pale Brown (10YR 6/4-10YR 6/3) Clay Loam	III
		24-28	Pale Brown to Light Yellow Brown mottled Gray to Grayish Brown (10YR 5/1-5/2) Clay Loam-Clay	III-IV
		28-42	Pale Brown (10YR 6/3) to Light Yellow Brown (10YR 6/4) mottled Gray Brown (10YR 5/2), Gray (10YR 5/1), Light Brownish Gray (10YR 6/2), White (10YR 8/1,8/2) & Strong Brown (7.5YR 5/8) Clay Loam (Damp to Wet)	III
		42-54	Multi-colored Clay Loam with brick remnants	III
		54-60	Original soil, Clay apparently below the footer depth. It appears that the upper 0-54" is material used to backfill footers and church foundation walls.	IV
2	A	0-08	Brown (10YR 4/3) Loam	II
	E	08-18	Pale Brown (10YR 6/3) Loam	II
	B	18-26	Yellow Brown (10YR 5/4) mottled Light Brownish Gray (10YR 6/2) Clay Loam	III
	B	26-36	Brown (10YR 5/3) mottled Strong Brown (7.5YR 5/8), Gray (10YR 6/1,5/1) Clay Loam	III
	B	36-52	Gray (10YR 6/1) to Light Brownish Gray (10YR 6/2) mottled Strong Brown (7.5YR 5/8) Clay Loam to Sandy Clay Loam	III-II
	B	52-60	Light Gray (10YR 7/2,7/1) mottled Strong Brown (7.5YR 5/8, Gray Brown (10YR 5/2), Light Brownish Gray (10YR 6/2) & Gray (10YR 6/1) Silty Clay to Clay	III-IV
	B	60-90	Light Gray (10YR 7/2) mottled Strong Brown (7.5YR 5/8) Silty Clay Loam	III
	B	90-120	Strong Brown (7.5YR 5/8) mottled Light Gray (10YR 7/1) Silt Loam to Silty Clay Loam	III

REMARKS: _____

Date of Evaluation: 2/28/2018

Profile Description
SOIL EVALUATION REPORT

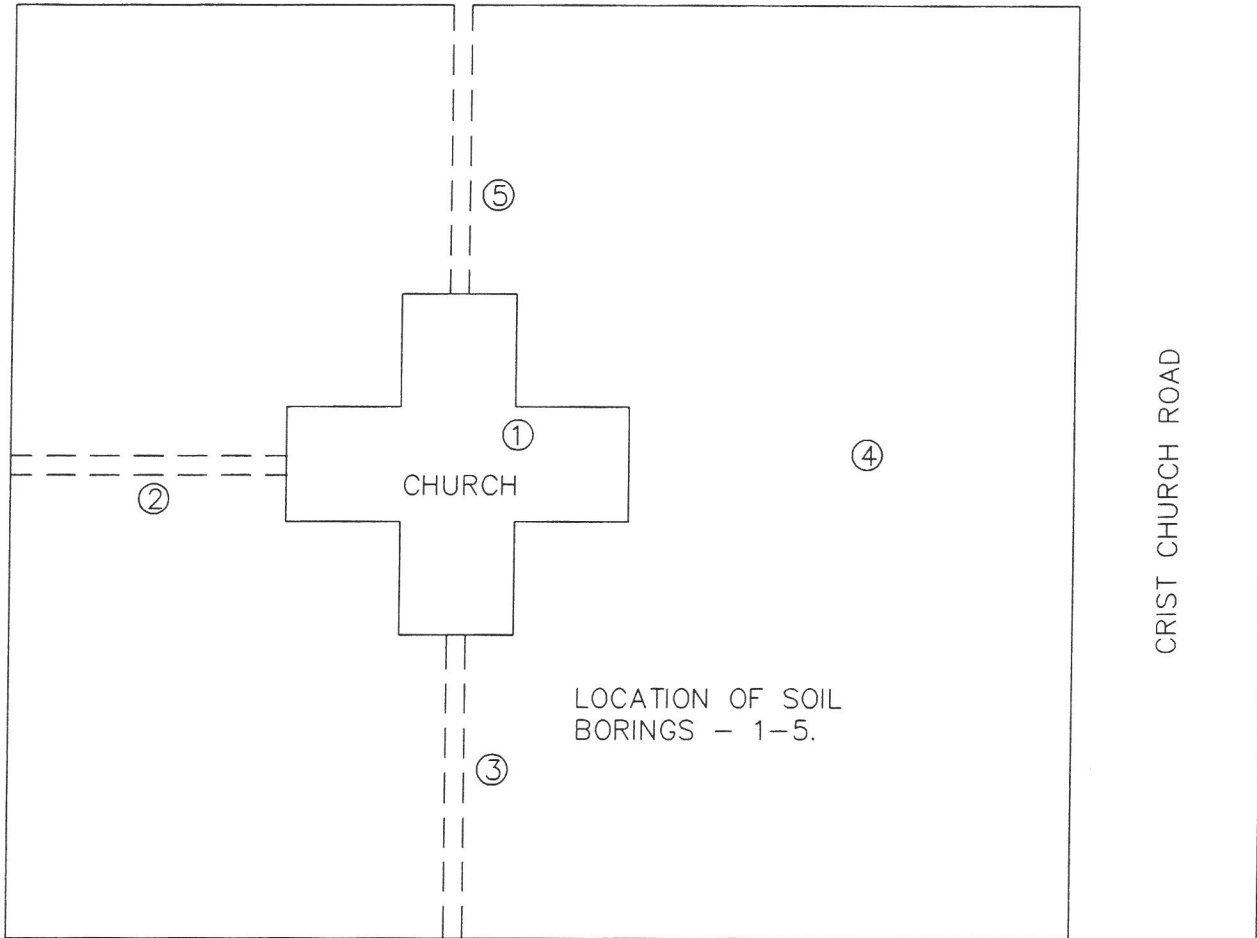
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See application sketch See Construction Permit See sketch on reverse side or page attached to this form.

Hole #	Horizon	Depth (Inches)	Description of color, texture, etc.	Texture Group
3	A	0-06	Dark Gray Brown (10YR 4/2) Loam to Sandy Clay Loam	II
	E	06-12	Light Yellow Brown (10YR 6/4) Loam to Sandy Clay Loam	II
	B	12-24	Pale Brown (10YR 6/3) to Brown (10YR 5/3) mottled	III
			Light Brownish Gray (10YR 6/2) Clay Loam	
	B	24-36	Pale Brown (10YR 6/3) to Brown (10YR 5/3) mottled Light Brownish Gray (10YR 6/2),	III
			Strong Brown (7.5YR 5/8) & Gray (10YR 6/1,5/1) Clay Loam	
	B	36-68	Pale Brown (10YR 6/3) mottled Strong Brown (7.5YR 5/8), Light Gray (10YR 7/2,7/1) &	III-IV
White (10YR 8/2) Silty Clay Loam to Clay				
B	68-72	Light Gray (10YR 7/2) mottled Strong Brown (7.5YR 5/8) Silty Clay to Clay (Massive)	IV	
4		0-10	Dark Gray Brown (10YR 4/2-4/3) Loam with Very Pale Brown (10YR 8/3) to	II
			White (10YR 8/2) Fill Sand & Brick remnants	
		10-16	Dark Brown (10YR 4/3-4/2) Loam	II
		16-32	Dark Brown (10YR 4/3-4/2) Loam with Brick remnants	II
	B	32-42	Pale Brown (10YR 6/3) mottled Light Yellow Brown (10YR 6/4),	III
			Light Brownish Gray (10YR 6/2) & Strong Brown (7.5YR 5/8) Clay Loam	
	B	42-72	Light Gray (10YR 7/2-7/1 mottled Strong Brown (7.5YR 5/8), Gray (10YR 6/1),	IV
Light Brownish Gray (10YR 6/2) & Brown (10YR 4/3) Clay (Massive)				
		Upper 32" was deemed to be Fill material/Disturbed		
5	A	0-10	Dark Gray Brown (10YR 4/2) Loam to Sandy Clay Loam	II
	E	10-22	Light Yellow Brown (10YR 6/4) Loam to Sandy Clay Loam	II
	B	22-30	Pale Brown (10YR 6/3) to Light Yellow Brown (10YR 6/4) Clay Loam	III
	B	30-42	Brown (10YR 4/3) mottled Gray (10YR 5/1), Gray Brown (10YR 5/2) &	III
			Strong Brown (7.5YR 5/8) Clay Loam	
	B	42-72	Light Gray (10YR 7/1) mottled Strong Brown (7.5YR 5/8), Gray (10YR 6/1),	IV
		Light Brownish Gray (10YR 6/2) & Brown (10YR 4/3) Silty Clay to Clay		

REMARKS:



BORINGS #2 & #3 PLACED 30' OFF OF BUILDING. BORING #4 PLACED 50' OFF CHURCH. BORING #5 PLACED 22' OFF BUILDING.

Title	Soil Boring Locations		
Reference Subtitle	Historic Christ Church, Lancaster Co., VA Specific Site Layout		
Drawn By	DRM	Approved By	DRM
Date	3/5/2018	Scale	1" = 50'
Revision	0	Drawing No.	