

LETTER OF TRANSMITTAL

TO: Ms. Jackie Dominguez Sunrise Senior Living 7902 Westpark Drive McLean, Virginia 22102	FROM: Rebecca L. Smith-Zakowicz, PG
	DATE: September 18, 2017
RE: Preliminary Geotechnical Engineering Recommendations, Sunrise at Tenley Circle, NW, Washington, DC	OUR CONTRACT NUMBER: 16393.01

AS REQUESTED
 FOR REVIEW AND COMMENT
 FOR APPROVAL
 PLEASE RECYCLE

COPIES	NO.	DESCRIPTION
1	1	Figure 1, Site Vicinity Map
1	1	Figure 2, Boring Location Plan
1	6	Draft Boring Logs

NOTES/COMMENTS:

GeoConcepts Engineering, Inc. (GeoConcepts) is pleased to provide preliminary foundation design recommendations for the subject project. The site is located at 3920 Alton Place in NW, Washington, DC. The site is currently developed with an existing church with basement, surface asphalt parking to the south, and a small playground area. Based on conceptual plans provided to us by you dated August 2016, the proposed construction consists of a 34,443 square foot, 4-story assisted living building with an adjoining church, and one floor of below-grade parking. The proposed site development is expected to be within WMATA's Zone of Influence of the underground red line Metrorail.

Attached to this transmittal is a site vicinity map, boring location plan, and draft boring logs. At this writing, laboratory testing has been assigned but not completed. Therefore, the preliminary recommendations may change pending the results of the laboratory testing.

The site is located near the dividing line between the Coastal Plain and the Piedmont Physiographic Provinces of the District of Columbia, locally referred to as the "Fall Line." This name comes from the waterfalls that form as a result of the differential erosion that occurs as streams cross the Piedmont/Coastal Plain contact.

Specifically, according to local geologic maps, the site is mapped in the Georgetown Intrusive Suite of the Early Ordovician geologic period overlain by the gravel, sand, silt, and clay of the middle Miocene geologic period. Based on our subsurface investigation, the sediments and strata correspond favorably to the geologic publications.

Groundwater level observations were made in the field during drilling and 24 hours after completion of the test borings. During the field investigation, groundwater was recorded at depths ranging from approximately 24.5 feet to 34.5 feet, or EL 362.4 feet to EL 253.5 feet. After 24 hours, the test borings were recorded as dry, with borehole cave-in depths ranging from 16.5 feet to 22.5 feet.

The existing soils underlying the site exhibit low to moderate shear strength and high compressibility characteristics. When considering the magnitude of the probable column loads, the calculated settlement for conventional spread footing foundations bearing directly upon the existing soils will be unacceptable for the proposed construction. However, spread footings may be used to support the building when founded on soils improved by aggregate piers.

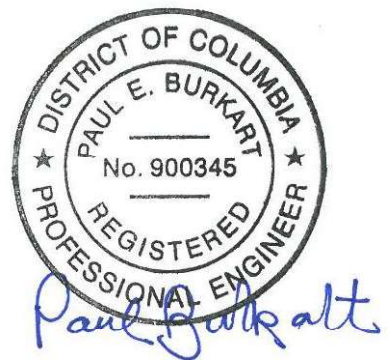
Aggregate pier systems are design-build systems and are installed under various trade names. Typically, these elements are constructed by the replacement method by pre-drilling a nominal 30-inch diameter hole into the subsurface soils to the design depth. Subsequently, crushed stone is placed in the hole in lifts and densified with a special, high-energy compactor (probe) until thoroughly compacted. The process repeats until the hole is filled to the ground surface. Upon completion of the aggregate pier installation, conventional spread foundations can be constructed in accordance with commonly accepted methods. We estimate that treatment of this site with aggregate piers will increase the allowable bearing capacity for the design of spread foundations to 4,000 psf with a maximum allowable total settlement less than 1-inch.

Aggregate piers can also be installed by the displacement method depending on the site conditions. Displacement (driven) aggregate piers are a ground improvement technique that involves creating a cavity in the ground using specially designed equipment. The cavity is filled with aggregate in layers and each layer is subjected to a compaction process, and the process is repeated. This technique may be preferable to the replacement method in that it doesn't generate spoils.

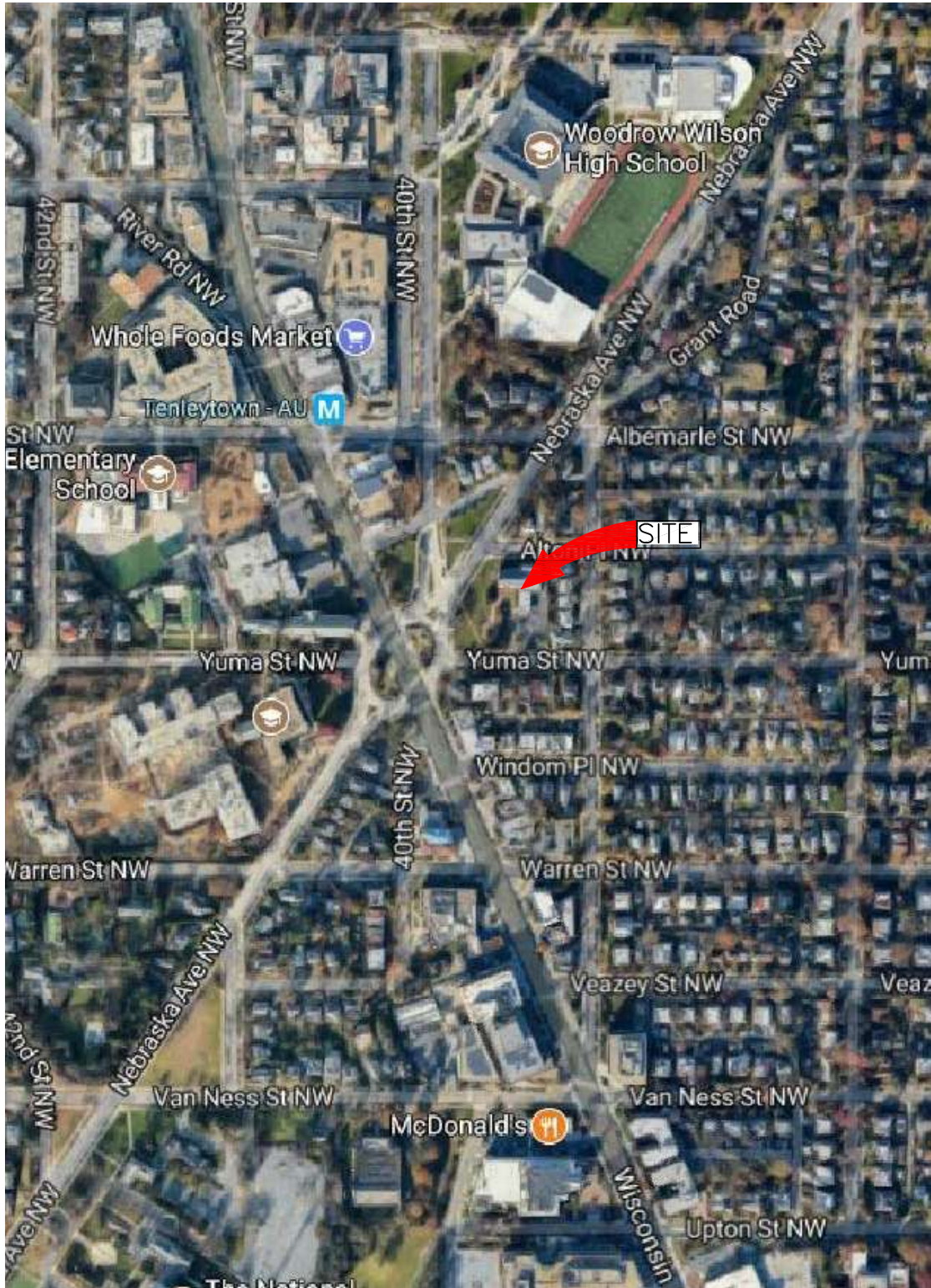
Also, we obtained a profile from WMATA to identify the location of the underground Metrorail going through the property. The top of the Metrorail ranges from EL 260 feet to EL 278 feet, about 106 to 124 feet below the lowest existing ground surface elevation on the site. It is our professional opinion that the planned development will have no adverse impacts on the underlying WMATA tunnel.

It should be noted that the recommendations provided herein are for planning purposes until the final geotechnical engineering study can be completed. Accordingly, the information provided herein should be used with caution.

Please contact me with any questions pertaining to the information contained in this transmittal.



SENT VIA: MAIL E-MAIL UPS OVERNIGHT UPS GROUND



COPYRIGHT GOOGLE MAPES, DATED 2017



**GeoConcepts
Engineering, Inc.**

19955 Highland Vista Dr., Suite 170 (703) 726-8030
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SUNRISE AT TENLEY CIRCLE
3920 ALTON PLACE NW, WASHINGTON, DC

SITE VICINITY
MAP

Scale:
N.T.S.

Fig.

Date:
SEPT 2017

Checked By:
R.S.Z.

Project No.:
16393.01

1

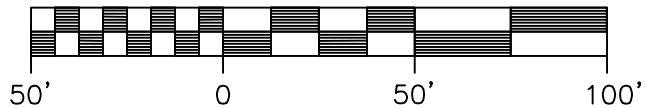


L E G E N D



TEST BORING LOCATION

GRAPHICAL SCALE



NOTE: BASE PLAN PROVIDED BY GOOGLE EARTH DATED 2016.



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SUNRISE AT TENLEY CIRCLE
3920 ALTON PLACE NW, WASHINGTON, DC

TEST BORING LOCATION PLAN

Scale:
AS SHOWN

Fig.

Date:
SEPT 2017

Drawn By:
J.D.

Checked By:
R.S.Z.

Project No.:
16393.01

2



PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-1	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/12/17 - 9/12/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 386.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diedrich D50	

ELEV. (ft.)	DEPTH (ft.)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	PID (ppm)	SOIL		
							SPT BLOW COUNTS	REC (in)	STANDARD PENETRATION TEST RESISTANCE (BPF) 20 40 60 80
386.0 385.5 383.5		⊗	A		Topsoil = 6 in. Fill, brown and light brown, LEAN CLAY, firm, moist, CL	0.0	2+2+3	18	
		⊗			Terrace deposit, red-brown, SANDY LEAN CLAY, stiff, moist, CL	0.0	2+3+6	18	
	5	⊗			Firm	0.0	3+3+3	18	
	10	⊗	B		Terrace deposit, light brown and gray, SANDY SILT, stiff, moist, ML	0.0	2+2+3	18	
	15	⊗			Residual, black tan, SANDY SILT, very hard, moist, ML	0.0	3+4+4	18	
	20	⊗	C1		Residual, black tan, SANDY SILT, very hard, moist, ML	0.0	17+27+30	18	
	23.5				Auger and Spoon Refusal at 23.5 ft.		50/0	0	>>

GROUND WATER LEVELS: NOT ENCOUNTERED DURING DRILLING NOT ENCOUNTERED UPON COMPLETION 9/13/2017: NOT ENCOUNTERED	CAVED: <u>17.0</u> ft. ELEV. <u>369.0</u>	SAMPLE TYPES: <input checked="" type="checkbox"/> SPT
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REMARKS:
THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17



PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-2	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/13/17 - 9/13/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 387.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diedrich D50	

ELEV. (ft.)	DEPTH (ft.)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	PID (ppm)	SOIL		
							SPT BLOW COUNTS	REC (in)	STANDARD PENETRATION TEST RESISTANCE (BPF) 20 40 60 80
387.0 386.8			A		Asphalt = 3 in.				
383.5	5				Fill, brown, SANDY LEAN CLAY WITH GRAVEL, firm, moist, CL	2.0	2+2+3	10	
					Terrace deposit, light brown and gray, SANDY SILT, firm, moist, ML	1.0	2+2+3	10	
					Terrace deposit, gray tan, SANDY LEAN CLAY, firm, moist, CL	1.0	2+2+3	12	
378.5	10				Stiff	1.0	2+2+4	12	
373.5	15		B		Black, firm	1.0	2+3+5	6	
368.5	20				Stiff	1.0	2+2+2	18	
363.5	25				Stiff	0.0	3+3+5	18	
358.5	30		C2		Weathered rock, gray and white, SILTY SAND, very dense, moist, SM	0.0	30+33+50/4	15	>>
354.3	35				Auger Refusal at 32.7 ft.	0.0	50/2	2	>>

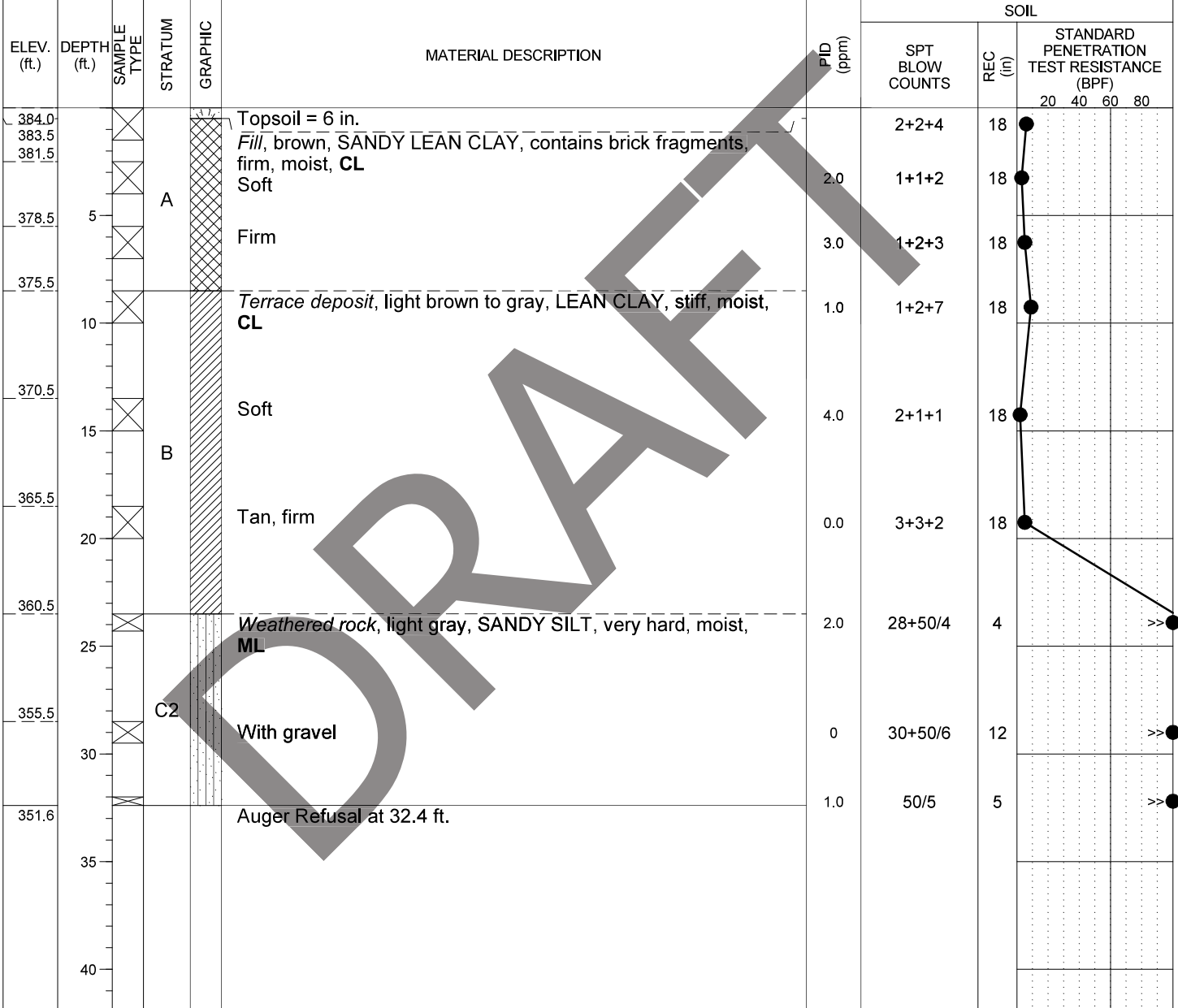
GROUND WATER LEVELS: NOT ENCOUNTERED DURING DRILLING UPON COMPLETION: <u>24.6</u> ft. ELEV. <u>362.4</u> CAVED: <u>27.5</u> ft. ELEV. <u>359.5</u>	SAMPLE TYPES: SPT
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REMARKS:
THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17



PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-3	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/12/17 - 9/12/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 384.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diedrich D50	



GROUND WATER LEVELS: NOT ENCOUNTERED DURING DRILLING NOT ENCOUNTERED UPON COMPLETION 9/13/2017: NOT ENCOUNTERED	CAVED: <u>22.7</u> ft. ELEV. <u>361.3</u> CAVED: <u>16.5</u> ft. ELEV. <u>367.5</u>	SAMPLE TYPES: <input checked="" type="checkbox"/> SPT
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REMARKS:
THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17

PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-4	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/11/17 - 9/11/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 388.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diederich D50	

ELEV. (ft.)	DEPTH (ft.)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	PID (ppm)	SOIL		
							SPT BLOW COUNTS	REC (in)	STANDARD PENETRATION TEST RESISTANCE (BPF) 20 40 60 80
388.0					Asphalt = 3 in.				
387.8					Crushed stone = 9 in.				
387.0					Fill, red-brown and gray, LEAN CLAY, firm, moist, CL	0.0	2+3+3	18	
384.5			A		Tan-orange				
383.0	5				Fill, orange-brown, SANDY SILT, firm, moist, ML	1.2	2+3+3	18	
						0.0	2+3+3	18	
379.5	10				Terrace deposit, tan-orange, SANDY SILT, stiff, moist, ML	0.0	2+3+4	18	
374.5	15		B		Firm	0.0	2+3+3	18	
369.5	20				Terrace deposit, light brown-gray, SANDY LEAN CLAY, firm, moist, CL	0.0	1+2+2	18	
364.5	25				Weathered rock, black tan, LEAN CLAY, very hard, moist, CL	0.0	27+50/5	9	>>
359.5	30		C2		Weathered rock, light gray, SANDY SILT WITH GRAVEL, very hard, moist, ML	0.0	50/4	4	>>
						0.0	50/2	2	>>
352.3	35				Auger and Spoon Refusal at 35.7 ft.		50/0	0	>>

GROUND WATER LEVELS:				SAMPLE TYPES:	
▽ ENCOUNTERED:	<u>34.5</u> ft.	ELEV. <u>353.5</u>		☒ SPT	
▽ UPON COMPLETION:	<u>25.0</u> ft.	ELEV. <u>363.0</u>	CAVED: <u>23.0</u> ft.	ELEV. <u>365.0</u>	
9/12/2017: NOT ENCOUNTERED			CAVED: <u>19.3</u> ft.	ELEV. <u>368.7</u>	

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BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17

PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-5	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/11/17 - 9/11/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 389.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diedrich D50	

ELEV. (ft.)	DEPTH (ft.)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	PID (ppm)	SOIL			
							SPT BLOW COUNTS	REC (in)	STANDARD PENETRATION TEST RESISTANCE (BPF)	
							20	40	60	80
389.0					Asphalt = 3 in.					
388.8					Crushed stone = 9 in.					
388.0					Fill, light brown, SILTY SAND, medium dense, moist, SM	10.2	3+6+9	18		
385.5			A		Stiff					
384.0	5				Fill, red-brown, LEAN CLAY, stiff, moist, CL	146.0	3+5+6	18		
						87.6	3+6+6	18		
380.5	10				Terrace deposit, red-brown and gray, LEAN CLAY, stiff, moist, CL	0.0	2+3+4			
375.5	15				With sand	0.0	4+4+4	12		
370.5	20		B		Terrace deposit, orange-gray, SANDY LEAN CLAY, firm, moist, CL	55.9	1+2+3	18		
						69.1	1+2+3	18		
360.5	30				Residual, light gray, SANDY SILT WITH GRAVEL, hard, moist, ML	77.3	8+12+20	18		
355.5	35		C1		Very hard	31.8	12+32+50	18		
350.5	40		C2		Weathered rock, dark brown black, SILTY GRAVEL, very dense, moist, GM	0.7	50/2	2		
349.0					Auger Refusal at 40.0 ft.					

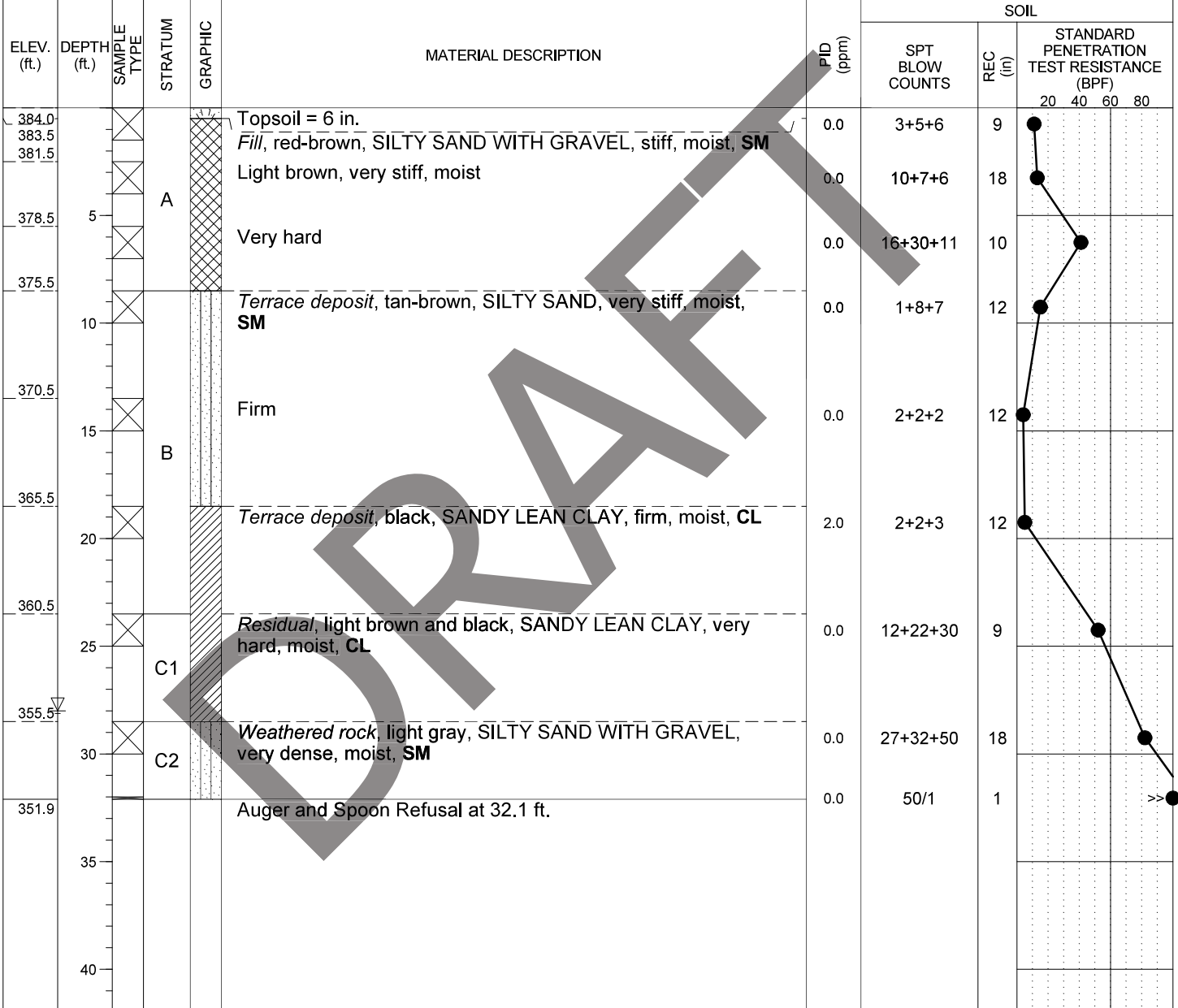
GROUND WATER LEVELS:		SAMPLE TYPES:	
NOT ENCOUNTERED DURING DRILLING		☒ SPT	
NOT ENCOUNTERED UPON COMPLETION		CAVED: <u>31.0</u> ft. ELEV. <u>358.0</u>	
9/12/2017: NOT ENCOUNTERED		CAVED: <u>22.5</u> ft. ELEV. <u>366.5</u>	

REMARKS:

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BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17

PROJECT: Sunrise at Tenley Circle		LOGGED BY: A. Arnold		BORING NUMBER: B-6	
LOCATION: 3920 Alton Place NW, Washington DC		DRILLING CONTRACTOR: Connelly & Associates Inc.		SHEET 1 OF 1	
OWNER/CLIENT: Sunrise Senior Living		DRILLER: S. Lind		DATES DRILLED: 9/12/17 - 9/12/17	
PROJECT NUMBER: 16393.01	GROUND SURFACE ELEVATION (ft.): 384.0 ±	DRILLING METHOD: 2.25 ID HSA		DRILL RIG: Track Diedrich D50	



GROUND WATER LEVELS:		SAMPLE TYPES:	
ENCOUNTERED: <u>28.0</u> ft. ELEV. <u>356.0</u>		<input checked="" type="checkbox"/> SPT	
NOT ENCOUNTERED UPON COMPLETION	CAVED: <u>21.4</u> ft. ELEV. <u>362.6</u>		
9/13/2017: NOT ENCOUNTERED	CAVED: <u>21.0</u> ft. ELEV. <u>363.0</u>		

REMARKS:

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BOREHOLE/TEST PIT SUNRISE OF TENLEY CIRCLE LOGS.GPJ GEOCONCEPTS 20170216.GDT 9/18/17