

Coarse

2.4

Fine

1.1

Medium

3.9

Fine

6.3

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0	1	
3 2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
1/4	99.6		
#4	98.9		
#10	96.5		
#20	94.5		
#40	92.6		
#60	90.8		
#100	89.4		
#140	88.0		
#200	86.3		

Coarse

0.0

1	Material Descri	otion
SS-3		
	Atterberg Lim	its
PL=	LL=	PI=
D <sub>90</sub> = 0.1846 D <sub>50</sub> = D <sub>10</sub> =	Coefficients D <sub>85</sub> = D <sub>30</sub> = C <sub>u</sub> =	D <sub>60</sub> = D <sub>15</sub> = C <sub>c</sub> =
USCS=	Classificatio AAS	<u>n</u> HTO=
ASTM D6913, I Moisture Conter		

Silt

86.3

Clay

\* (no specification provided)

Source of Sample: 2.9B Sample Number: 01-050422

0.0

**Depth:** 13'-15'

Client: Kiewit Engineering (NY) Corp.

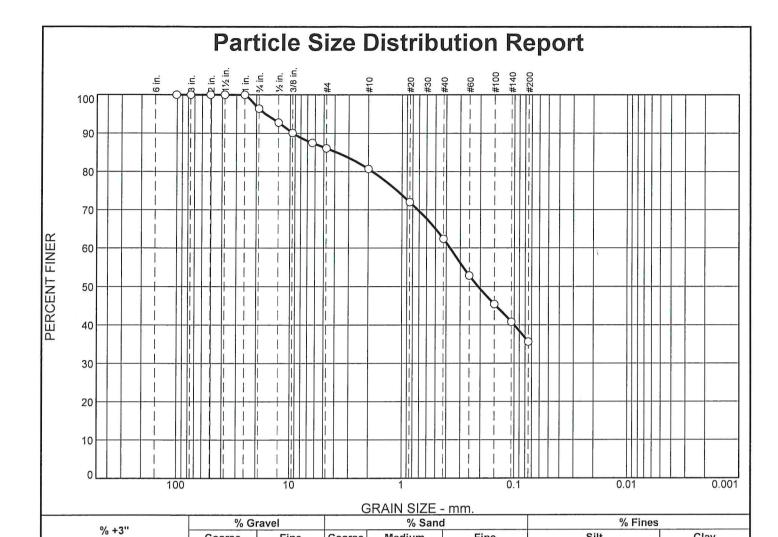
FAIRWAY TESTING CO., INC.

Project: Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

Date: 05-04-22



Coarse

5.4

Fine

10.3

Medium

18.3

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
3 2	100.0		Ĭ ,
1.5	100.0		
1	100.0		
3/4	96.4		
1/2	92.8		
3/8	90.1		
1/4	87.5		
#4	86.1		
#10	80.7		
#20	72.0		
#40	62.4		
#60	52.8		
#100	45.4		
#140	40.8		
#200	35.6		
*			

Coarse

3.6

<u>І</u> МС-9	Material Description MC-9										
PL=	Atterberg Limits LL=	Pl=									
D <sub>90</sub> = 9.4145 D <sub>50</sub> = 0.2095 D <sub>10</sub> =	Coefficients D <sub>85</sub> = 3.8304 D <sub>30</sub> = C <sub>u</sub> =	D <sub>60</sub> = 0.3712 D <sub>15</sub> = C <sub>c</sub> =									
USCS=	Classification AASHT	O=									
ASTM D6913, I Moisture Conter											

Silt

35.6

Clay

Fine

26.8

\* (no specification provided)

**FAIRWAY** 

**TESTING** CO., INC.

Source of Sample: 2.9B Sample Number: 02-050422

0.0

Depth: 28'-30'

Client: Kiewit Engineering (NY) Corp.

**Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

Date: 05-04-22



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date: 6

6/22/22

Project:

Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

REPORT:

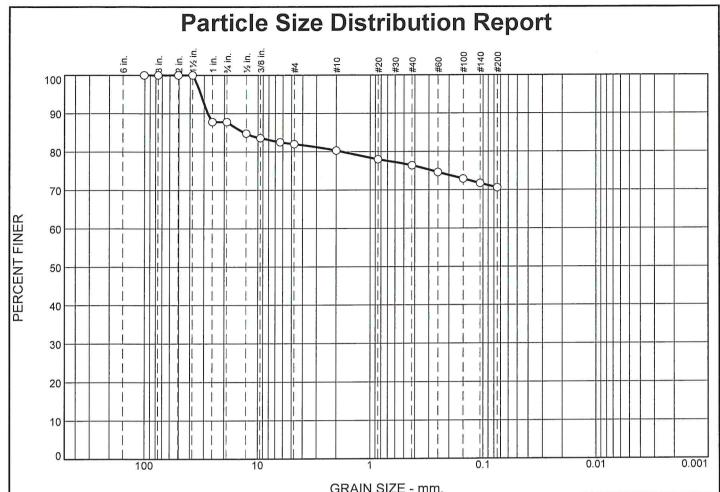
Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9-3.0. Moisture content test results are listed below.

Sample ID (sample depth, ft.)	Moisture Content
SS-4 (23'- 25')	10.3%
SS-8 (43'- 45')	18.5%

Respectfully Submitted,
Fairway Testing

fill J D Connell



	% Gr	avel		% Sand		% Fines			
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt Cl			
0.0	12.2	5.8	1.7	3.9	5.8	70.6	,		

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3 2	100.0		
2	100.0		
1.5	100.0		
1	87.8		
3/4	87.8		
1/2	84.8		
3/8	83.6		
1/4	82.5		
#4	82.0		
#10	80.3		
#20	78.0		
#40	76.4		
#60	74.6		
#100	72.9		
#140	71.7		
#200	70.6		

M	aterial Description	<u>on</u>									
GS-1 silty clay with gravel											
PL= 18	Atterberg Limits PL= 18										
D <sub>90</sub> = 27.8601 D <sub>50</sub> = D <sub>10</sub> =	Coefficients D85= 13.1556 D30= Cu=	D <sub>60</sub> = D <sub>15</sub> = C <sub>c</sub> =									
USCS= CL-ML	Classification AASHT	O= A-4(3)									
ASTM D6913, De Moisture Content	(5)										

(no specification provided)

Source of Sample: 3.0 Sample Number: 01-042622

**Depth:** 30'-35'

**Date:** 04-26-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp.

**Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 





DATE: July 14, 2022

TO: Zachary Bauer; Tetra Tech Rooney

FROM: Matthew Hawley, P.E.; Kiewit Engineering (NY) Corp. MKH

Jaren Knighton; Kiewit Engineering (NY) Corp.

SUBJECT: Geotechnical Data: Segment 12 - Package 7B - HDD Crossing 129/130

Champlain Hudson Power Express Project

West Haverstraw, New York

Kiewit Engineering is providing the attached geotechnical data for use in the horizontal direction drill (HDD) design for the Champlain Hudson Power Express project in Upstate New York. This HDD crossing is located in West Haverstraw, New York. The approximate station for the start of HDD crossing number 129/130 is STA 72636+00 (41.2065° N, 73.9845° W).

The geotechnical data at this HDD crossing is attached. The available data is taken from the previous investigation by AECOM and data from a recent investigation by Kiewit, referenced below.

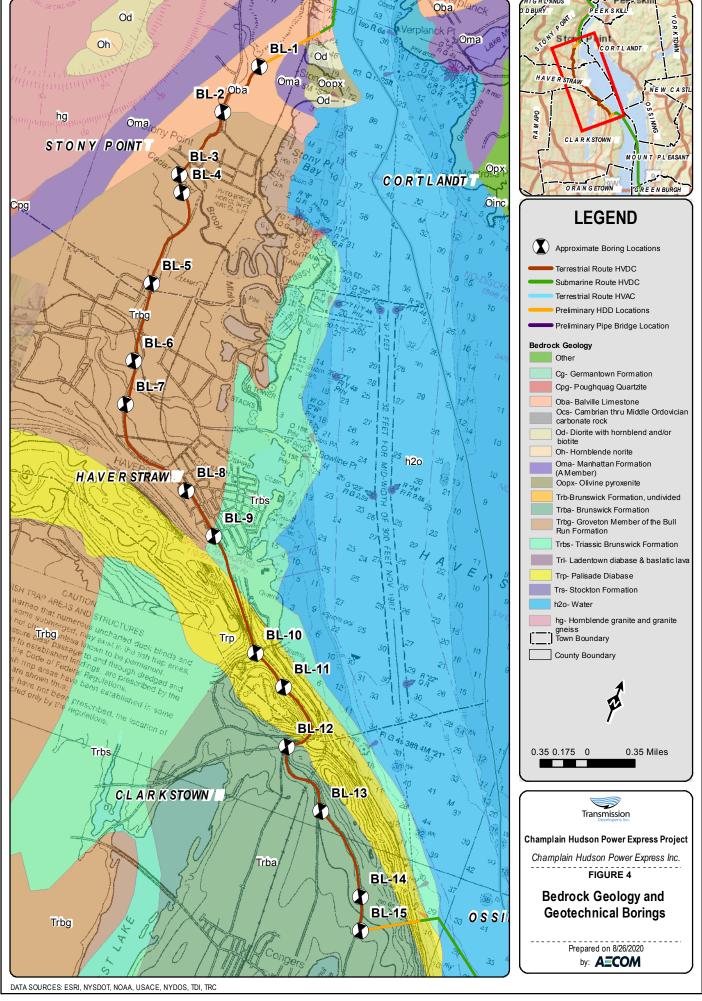
- AECOM, Geotechnical Data Report, Upland Segment, Rockland County, NY, Champlain Hudson Power Express, dated September 18, 2020.
- Kiewit Engineering (NY) Corp., Segment 12 Package 7B HDD Borings Rockland, Champlain-Hudson Power Express, dated July 5, 2022.

Contact us if you have questions or require additional information.

Kiewit Project Number: 20001480 Page 1 of 1

HDD 129/130
Borings K-294.9-3.3, K-294.9-3.3R,
K-294.9-3.4A, K-294.9-3.4B, BL-7,
K-294.9-3.6
Segment 12 - Design Package 7B

cts\CHPE\\Rockland\_Co\_Geology\_Figures\Boring\_location\_Map\_082520.mxd



cts\CHPE\\Rockland\_Co\_Geology\_Figures\Boring\_location\_Bedrock\_Map\_082520.mxd

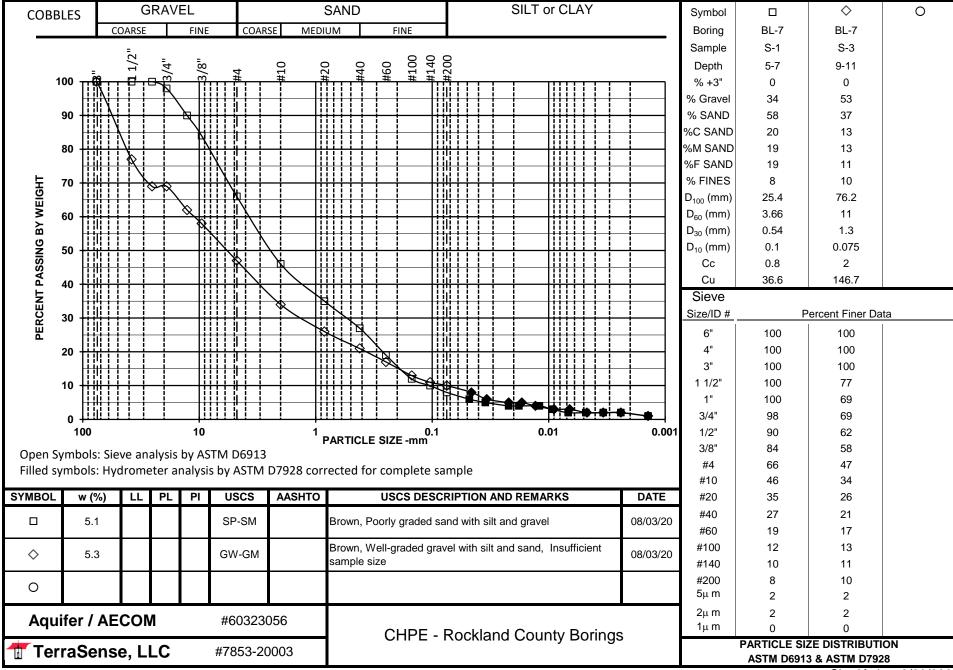
PROJECT No.		BORING	CONTRACTOR:												SHEET 1 OF 1				
Dick No. BL 2   SOLE PROBLECT   SOLE PROBLEC		ADT						A =							PROJECT NAME: CHPE - Rockland Co. Borings				
Dick No. BL 2   SOLE PROBLECT   SOLE PROBLEC		DRILLER:													PROJECT NO.: 60323056				
		Chris Cha	illou												HOLE NO.: BL-7				
COCKURN MINISTA AMONISTORY   CASING SAMPLER   CASING SAMPLER   DRUL BIT   CORE BANNEL PRIOR DRUL RIT		SOILS EN	IGINEER:		· ·									START DATE: 7/8/2020					
CASING   SAMPLER   DRILL BIT   OGRE BARREL		Roberto L	ucidi		BORING LOG										FINISH DATE: 7/8/2020				
150 pelow grade on 78-2000 at 2 pm   TYPE		LOCATIO	N: Hillside Avenue	and Rout	e 9W, Hav	verstraw,	NY								OFFSET: N/A				
SIZE ID	GRC	UND WA	TER OBSERVATION	NS			CAS	SING		SAMPLER		DRILL BIT		ARREL	DRILL RIG: Geoprobe				
SOPTION   S.A.M.P.L.   HAMMERY PALL   30"   30"   SOPTION   SOURCE FLETY. 100 175   MORTHING BS33851-1   MORTHIN	10' be	low grade	on 7/8/2020 at 2 pm	1	TYPE		Flush jo	int Steel	SPLIT S	POON <sup>(1)</sup>	-		-		BORING TYPE: SPT				
NAMER NT.   140 By (AUTO)   40 Ib   -												-							
Description   S. A.M. P.L.   HAMMER PALL   30°								(AUTO)											
E   RATE   DEPTHS   TYPE   PEN   REC.   ROCK QUALITY DESIGNATION   No.	n	CORING	SAMPLE	=				(AUTO)											
The content of the							30		30				STRAT.		LASTING 034090.701				
Hand Cleared	Р	MIN/FT			in	in					Corr. (2)	CLASS.			FIELD IDENTIFICATION OF SOILS				
Hand Cleared			(FEET)	NO.			(ROCK	QUALITY	/ DESIGN	IATION)			DEPTH						
Hand Cleared														6" Ası	phalt				
100   100	1.0													<u> </u>					
3.0	2.0											SM							
3.0	∠.∪		0.0 - 0.0										≣	incue S	iit, moist				
4.0	3.0	3.0											γþr						
SAMME TYPE:  S = SEMIT SPOON Used to find the first at the actual subsurface condition. The contractor agrees that he will make no claims against AECOM if the Soli description represents a field identification after Um. But I in the soli description represents a field identification after Um. But I in the soli description represents a field identification after Um. But I in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III in the soli description represents a field identification after Um. But III											1		Sal	TR <sup>(3)</sup> -1	(3.0'-5.0')				
S-1: Brown, f-m SAND, some fine gravel, trace sitt, moist, medium dense TR-2 (6.0-6.5)  S-2: Same as above, moist, medium dense TR-3 (10.0-10.5)  S-3: Brown, f-m SAND, some fine gravel, trace sitt, moist, medium dense TR-2 (6.0-6.5)  S-2: Same as above, moist, medium dense TR-3 (10.0-10.5)  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little sitt, wet, medium dense TR-3 (10.0-10.5)  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little sitt, wet, reduce dense properties of the same show, wet, dense TR-3 (10.0-10.5)  S-4: Same as above, wet, dense TR-4 (14.0-14.5)  S-5: Brown, f-m-SAND, some f-m-c gravel, little sitt, wet, very dense TR-4 (14.0-14.5)  S-6: Same as above, wet, very dense TR-4 (14.0-14.5)  NOTES:  NOTES	4.0																		
Trace slit, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-3 (10.0°-10.5')  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-2: Same as above, moist, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, recorded interest and little slitle slit, wet, recorded interest and little slit, wet, recorded i	5.0																		
Trace slit, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-2: Same as above, moist, medium dense  TR-3 (10.0°-10.5')  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-2: Same as above, moist, medium dense  TR-2 (6.0°-6.5')  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-2: Same as above, moist, medium dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0°-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0°-14.5')  S-6: Same as above, moist, medium dense  TR-2 (6.0°-6.5)  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little slit, wet, recorded interest and little slitle slit, wet, recorded interest and little slit, wet, recorded i														Ì					
TR-2 (6.0-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0-6.5')  S-2: Same as above, moist, medium dense  TR-2 (6.0-6.5')  S-2: Same as above, moist, medium dense  TR-3 (10.0-10.5')  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, medium dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0-10.5')  S-6: Same as above, wet, dense  TR-4 (14.0-14.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0-10.5')  S-4: Same as above, wet, dense  TR-3 (10.0-10.5')  S-6: Same as above, wet, dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0-14.5')  S-6: Same as above, moist, medium dense	6.0		5.0 - 7.0	S-1	24.0	16.0	11	21	25	22	30	SP-SM			•				
SAMPLE TYPE:  S-2: Same as above, moist, medium dense  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, medium dense  TR-3 (10.0'-10.5')  S-4: Same as above, wet, dense  S-3: Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, medium dense  TR-3 (10.0'-10.5')  S-4: Same as above, wet, dense  S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0'-14.5')  S-6: Same as above, moist, medium dense  S-7: Same as above, moist, medium dense  S-7: Same as above, moist, medium dense  S-8: Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, very dense  TR-3 (10.0'-10.5')  S-4: Same as above, wet, dense  TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0'-14.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6: Same as above, moist, medium dense  TR-3 (10.0'-10.5')  S-6:	7.0																		
9.0																			
10.0 9.0 - 11.0 S-3 24.0 16.0 14 21 19 14 26 GW-GM S-3 24.0 16.0 14 21 19 14 26 GW-GM S-31. Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, medium dense TR-3 (10.0°-10.5')  11.0 11.0 - 13.0 S-4 24.0 18.0 28 41 18 17 38 SP GW-GM S-4: Same as above, wet, dense  13.0 13.0 - 15.0 S-5 24.0 12.0 Direct Push(4) S-4: Same as above, wet, dense  14.0 13.0 - 15.0 S-6 24.0 12.0 Direct Push(4) S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0°-14.5')  16.0 15.0 - 17.0 S-6 24.0 12.0 Direct Push S-6: Same as above, wet, very dense  17.0 S-6: Same as above, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-6: Same as above, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt,	8.0		7.0 - 9.0	S-2	24.0	20.0	20	23	14	13	24	SP		S-2: S	Same as above, moist, medium dense				
10.0 9.0 - 11.0 S-3 24.0 16.0 14 21 19 14 26 GW-GM S-3 24.0 16.0 14 21 19 14 26 GW-GM S-31. Brown, f-m-c GRAVEL, and f-m-c sand, little silt, wet, medium dense TR-3 (10.0°-10.5')  11.0 11.0 - 13.0 S-4 24.0 18.0 28 41 18 17 38 SP GW-GM S-4: Same as above, wet, dense  13.0 13.0 - 15.0 S-5 24.0 12.0 Direct Push(4) S-4: Same as above, wet, dense  14.0 13.0 - 15.0 S-6 24.0 12.0 Direct Push(4) S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0°-14.5')  16.0 15.0 - 17.0 S-6 24.0 12.0 Direct Push S-6: Same as above, wet, very dense  17.0 S-6: Same as above, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-6: Same as above, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense  18.0 S-7: Brown, f-m SAND, some f-m-c gravel, little silt,	9.0																		
SAMPLE TYPE:   S = SPLIT SPOON   U=SHELBY TUBE   R=ROCK CORE   SAM, little silt, wet, medium dense   SAMPLE TYPE:   S = SPLIT SPOON   U=SHELBY TUBE   R=ROCK CORE   SAMPLE TYPE:   S = SPLIT SPOON   U=SHELBY TUBE   R=ROCK CORE   SRP   SPAME   SRP																			
13.0   13.0 - 15.0   S-4   24.0   12.0   Direct Push   15.0   - SM   S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0'-14.5')   S-6: Same as above, wet, very dense 17.0   S-6   24.0   12.0   Direct Push   - SM   S-6: Same as above, wet, very dense 17.0   S-6: Same as above, wet, very dense 18.0   S-6: Same as above, wet, very dense 19.0   S-6: Same as above, wet, very dense 19.	10.0		9.0 - 11.0	S-3	24.0	16.0	14	21	19	14	26	GW-GM	Þ						
13.0   13.0 - 15.0   S-4   24.0   16.0   20   41   10   17   38   SF   5   5   5   5   5   5   5   5   5	11 0												Sar						
13.0   13.0 - 15.0   S-4   24.0   12.0   Direct Push   15.0   - SM   S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0'-14.5')   S-6: Same as above, wet, very dense 17.0   S-6   24.0   12.0   Direct Push   - SM   S-6: Same as above, wet, very dense 17.0   S-6: Same as above, wet, very dense 18.0   S-6: Same as above, wet, very dense 19.0   S-6: Same as above, wet, very dense 19.	11.0												/elly	1110	10.0				
14.0 13.0 - 15.0 S-5 24.0 12.0 Direct Push <sup>(4)</sup> - SM S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0-14.5')  16.0 15.0 - 17.0 S-6 24.0 12.0 Direct Push - SM S-6: Same as above, wet, very dense  17.0 S-6: Same as above, wet, very dense  18.0 S-6: Same as above, wet, very dense  Borehole grouted  NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor. Noorr=N"(2.0°-1.375°)n/(3.0°-2.4°)n. = N"0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	12.0		11.0 - 13.0	S-4	24.0	18.0	28	41	18	17	38	SP		S-4: S	Same as above, wet, dense				
14.0 13.0 - 15.0 S-5 24.0 12.0 Direct Push <sup>(4)</sup> - SM S-5: Brown, f-m SAND, some f-m-c gravel, little silt, wet, very dense TR-4 (14.0-14.5')  16.0 15.0 - 17.0 S-6 24.0 12.0 Direct Push - SM S-6: Same as above, wet, very dense  17.0 S-6: Same as above, wet, very dense  18.0 S-6: Same as above, wet, very dense  Borehole grouted  NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor. Noorr=N"(2.0°-1.375°)n/(3.0°-2.4°)n. = N"0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	12.0																		
Ititle silt, wet, very dense TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0'-14.5')  S-6:	13.0																		
TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  Find of boring at 17.0' below grade  Borehole grouted  The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against AECOM (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  TR-4 (14.0'-14.5')  S-6: Same as above, wet, very dense  Find of boring at 17.0' below grade  Borehole grouted  The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against AECOM if he finds that the actual conditions do not conform to those indicated by this log.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	14.0		13.0 - 15.0	S-5	24.0	12.0	Direct P	ush <sup>(4)</sup>			-	SM							
16.0 15.0 - 17.0 S-6 24.0 12.0 Direct Push - SM S-6: Same as above, wet, very dense  17.0 End of boring at 17.0' below grade  18.0 End of boring at 17.0' below grade  Borehole grouted  19.0 NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples, Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Noorr=N*(2.0²-1.375²)in/(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	15.0														· · · · · · · · · · · · · · · · · · ·				
17.0  18.0  19.0  NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length. (2) Correction factor: Ncorr=N"(2.0²-1.375²)in./(3.0²-2.4²)in. = N"0.65.  (3) TR = sample for thermal resistivity testing. (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil. Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	15.0													1R-4 (	14.0 - 14.5 )				
18.0  19.0  NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	16.0		15.0 - 17.0	S-6	24.0	12.0	Direct P	ush			-	SM		S-6: S	Same as above, wet, very dense				
18.0  19.0  NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE																			
Borehole grouted  Borehole gro	17.0													End of	horing at 17 0' below grade				
NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE	18.0														-				
NOTES:  (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE																			
NOTES: (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length. (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65. (3) TR = sample for thermal resistivity testing. (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil. Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE:  S= SPLIT SPOON  The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against AECOM if he finds that the actual conditions do not conform to those indicated by this log.  SAMPLE TYPE:  S= SPLIT SPOON  U=SHELBY TUBE  R=ROCK CORE	19.0																		
NOTES: (1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length. (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65. (3) TR = sample for thermal resistivity testing. (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil. Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE:  S= SPLIT SPOON  The information contained on this log is not warranted to show the actual subsurface condition. The contractor agrees that he will make no claims against AECOM if he finds that the actual conditions do not conform to those indicated by this log.  SAMPLE TYPE:  S= SPLIT SPOON  U=SHELBY TUBE  R=ROCK CORE	20.0	0.0																	
(1) Thick-wall ring lined drive sampler (California sampler) used for SPT samples. Rings dimensions = 2-1/2" O.D. by 2-7/16" I.D. by 6" length.  (2) Correction factor: Ncorr=N*(2.0²-1.375²)in./(3.0²-2.4²)in. = N*0.65.  (3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE					•	•		ı	ı	ı		•		The info	ormation contained on this log is not warranted				
(3) TR = sample for thermal resistivity testing.  (4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE								s. Rings dir	mensions =	2-1/2" O.D	. by 2-7/16	" I.D. by 6" I	ength.						
(4) SPT sampler driven by Geoprobe direct push device to attempt recovery of high density soil.  Soil description represents a field identification after D.M. Burmister unless otherwise noted.  SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE			,	/(3.U <sup>-</sup> -2.4 <sup>-</sup> )In. = N <sup>-</sup> U.65.								<b>I</b> −							
SAMPLE TYPE: S= SPLIT SPOON U=SHELBY TUBE R=ROCK CORE					sh device to attempt recovery of high density soil.														
													AND=3	5-50%					

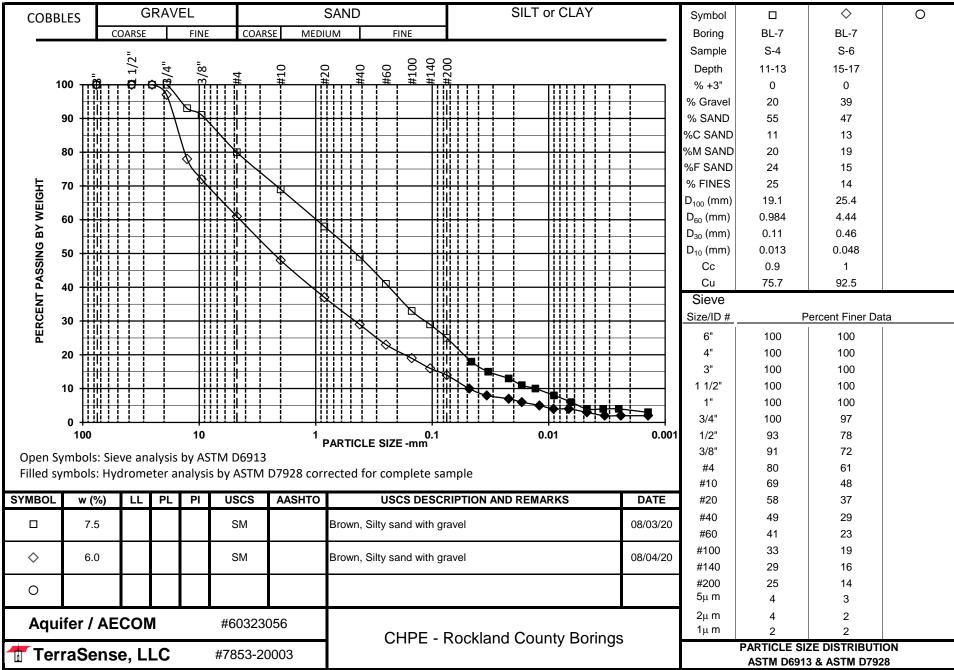
#### Aquifer / AECOM #60323056 CHPE - Rockland County Borings LABORATORY SOIL TESTING DATA SUMMARY

BORING	SAMPLE	DEPTH			II	DENTIFIC	CATION TE	STS			REMARKS
			WATER	LIQUID	PLASTIC	PLAS.	USCS	SIEVE	HYDRO.	SPECIFIC	
NO.	NO.		CONTENT	LIMIT	LIMIT	INDEX	SYMB.	MINUS	% MINUS	GRAVITY	
							(1)	NO. 200	2 μm		
		(ft)	(%)	(-)	(-)	(-)		(%)	(%)	(-)	
BL-2	S-1b	7.2-8.0	22.1	28	19	9	CL	86	17		
BL-2	S-2	8-10	18.6	27	19	8	CL	75	13		
BL-3	S-1	6-8	12.5				ML	96.1	20		
BL-3	S-2	8-10	16.3				ML	93	14		
BL-3	S-3	10-10.7	12.4				ML	66	14		
BL-5	S-1	5-7	10.6				SM	40	8		
BL-5	S-3	9-11	7.0				SM	23	4	2.728	
BL-5	S-4	11-13	8.6				SM	24	4		
BL-5	S-6	15-17	8.2				SM	22	3		
BL-6	S-1	4-6	4.1				GW-GM	7	2		
BL-7	S-1	5-7	5.1				SP-SM	8	2		
BL-7	S-3	9-11	5.3				GW-GM	10	2		
BL-7	S-4	11-13	7.5				SM	25	4		
BL-7	S-6	15-17	6.0				SM	14	2		
BL-8	S-1	6-8	17.9	35	20	15	CL	51	11		
BL-8	S-3	10-12	10.2				SM	32	6		
BL-9	S-1	6-8	10.0				SP-SM	9	2		
BL-9	S-3	10-12	7.0				SM	14	3		
BL-9	S-5	14-16	4.9				SW-SM	11	3		
BL-11	S-4	11-13	10.1				SM	24	5		
BL-12	S-1	6-8	8.9				SM	24	6		
BL-13	S-1	4.5-6.5	9.3				SM	15	4	2.722	
BL-13	S-3	8.5-10.5	6.6				SM	13	3		
BL-13	S-4	10.5-12.5	9.9				SM	19	5		
BL-14	S-1	6-8	10.0				SM	27	6		
BL-14	S-2	8-10	8.1				SM	24	5		
BL-15	S-3	9-11	9.5				SM	32	8		
BL-15	S-9	21-23	7.9				SM	26	4		
BL-15	S-14	31-33	6.1				SM	33	4		
BL-15	S-17	45-47	11.9				SM	20	3		
BL-15	S-21	65-67	8.2				SP-SM	10	1		

Note: (1) USCS symbol based on visual observation and Sieve and Atterberg limits reported.

Prepared by: NG Reviewed by: GT Date: 8/20/2020 **TerraSense, LLC** 45H Commerce Way Totowa, NJ 07512 Project No.: 7853-20003 File: Indx3.xlsx Page 1 of 1







# Segment 12 Package 7B HDD Borings - Rockland Champlain Hudson Power Express

New York

PROJECT NUMBER

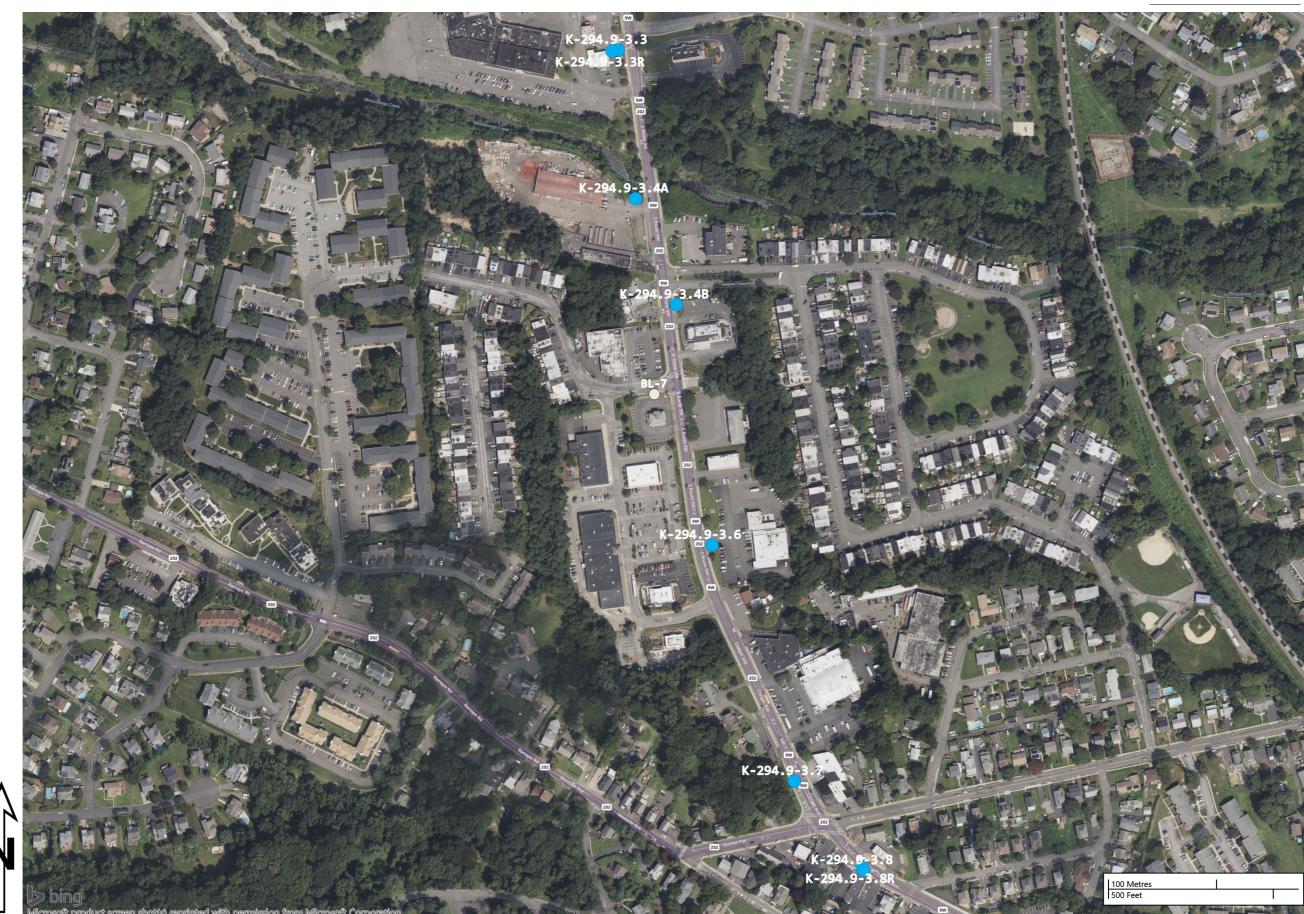
20001480

**CREATED BY Kiewit** DATE 07/05/2022

# Legend Key

Kiewit Borings (2022)

Borings by Others







20001480

PROJECT NUMBER

#### EXPLORATORY BORING LOG

Champlain Hudson Power Express **New York** 

Jialin Li

**LOGGED BY** 

**BORING NO: K-294.9-3.3** 

N 864428.84 **COORDINATES** E 633983.02

FINISH DATE  04/13/2022  DRILL CONTRACTOR  Parrat Wolff  Administration  Applied  Applied  Applied  Acceptable State (Applied)  Acceptable Sta		STAR	Γ DATE	04/12/2022	DRILLER/RIG	Co	re\	/ Brov	vn / CN	MF 550	GROUND ELEV			37.2 1	ft		
## State   Figure			_	_			,, 0,									r:	_
88.7 Shifty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Solid description based on observations from redrill (K-294,9-3,3R)  O%  O%  O%  O%  O%  O%  O%  O%  O%  O			-	04/13/2022		_		Pan	all vvo	<u> </u>				Tutoi	Hau		—
88.7 Shifty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Silty SAND (SM), with cobbles and boulders, gray, dry  Solid description based on observations from redrill (K-294,9-3,3R)  O%  O%  O%  O%  O%  O%  O%  O%  O%  O	Depth (ft)	levation (ft)	raphic Log	Material De	scription	ample Type	ore Run No.	tecovery % RQD	ocket Pen. (tsf)	low Counts (N Value)	Notes		▲ SP ● MC — PL	T N Va (%) . & LL (	alue (%)	%)	
Sitt (ML), with sand (based on observations of excavated materials)  - 5 - 30.9  Clayey and Sitty SAND (SC-SM), fine to medium coarse, gray, very loose to very dense  10 - 10 - 10 - 10 - 10 - 10 - 10 - 10			Q	6" Acabalt		Ö	ၓ	<u>œ</u>	_	<u> </u>	Poring advanced	2	1 20 4	10	60	80	
Clayey and Silty SAND (SC-SM), fine to medium coarse, gray, very loose to very dense  16% 2.2.2.4 (4)  50/3"  Silty SAND (SM), with cobbles and boulders, gray, dry  Soil description based on observations from redrill (K-294.9-3.3R)  0% 0 0% 0 0% 0		86.7		SILT (ML), with sand (base excavated materials) 0 - 6.3 ft was excavated I							with 3.5" ID HSA						
Clayey and Silty SAND (SX-SM), line of medium coarse, gray, very loose to very dense    16%   2-2-2-4	 - 5 - 	80.9															
15 - 15 - 70.7    Silty SAND (SM), with cobbles and boulders, gray, dry    Solidescription based on observations from redrill (K-294.9-3.3R)   O%   O	 	00.0		Clayey and Silty SAND ( medium coarse, gray, vei	SC-SM), fine to ry loose to very dense	7											
70.7  Silty SAND (SM), with cobbles and boulders, gray, dry  Soil description based on observations from redrill (K-294.9-3.3R)  0% 0  0% 0  0% 0  0% 0	- 10 -							16%				<b>A</b>   -	•				
70.7  Silty SAND (SM), with cobbles and boulders, gray, dry  Soil description based on observations from redrill (K-294.9-3.3R)  0% 0  0% 0  0% 0	 					$\bowtie$				50/3"							
Soil description based on observations from redrill (K-294.9-3.3R)  -20	- 15 -																
20 - 20 -	 	70.7		Silty SAND (SM), with co gray, dry	bbles and boulders,						based on observations from						
	 - 20 -										(K-294.9-3.3R)						
	- 25 -																
	 							0% 0									
30 1 11111111	 																
Page 1 of 2	30 -																



Champlain Hudson Power Express

**BORING NO: K-294.9-3.3** 

N 864428.84

**New York** 

**PROJECT NUMBER LOGGED BY COORDINATES** 20001480 Jialin Li E 633983.02 DRILLER/RIG Corey Brown / CME 550 START DATE **GROUND ELEV.** 04/12/2022 87.2 ft **FINISH DATE DRILL CONTRACTOR** HAMMER TYPE/EFF. 04/13/2022 Automatic Parratt Wolff Sample Type
Core Run No.
Recovery %
RQD Blow Counts (N Value) Legend **Graphic Log** Pocket Pen. (tsf) € ▲ SPT N Value
● MC (%)
— PL & LL (%)

► Fines Content (%) Depth (ft) Elevation **Material Description** Notes Silty SAND (SM), with cobbles and boulders, gray, dry 0 35 52.2 Boring Terminated at 35 ft 40 45 50 55 60 Page 2 of 2



Champlain Hudson Power Express

New York

**BORING NO: K-294.9-3.3R** 

PROJECT NUMBER 20001480 LOGGED BY

Rafael Salas

N 864425.80 E 633963.27

START DATE (

04/26/2022

DRILLER/RIG

Corey B. / CME 550

87.2 ft

FINISH DATE

04/27/2022

**DRILL CONTRACTOR** 

Parratt Wolff

HAMMER TYPE/EFF.

COORDINATES

**GROUND ELEV.** 

Automatic

	LIMIOL	T DATE	04/2//2022 DRILL CONTRACTOR	—	Parr	att Wo	lff	HAWIWER ITPE		A	uton	natic	
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes		SPT MC PL &		ue %) tent (%)	
	Ш			ၓ	8	٥	<u> </u>		20	4(	0 6	1 30 8	80
5 -	Elevatir	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Silty GRAVEL (GM), with sand, fine to coarse sand, fine to coarse gravel, subrounded, with cobbles, brown, dry  Silty SAND (SM), with gravel, fine sand, fine gravel, gray, dry	Core Ru	Recove RQ	Pocket (tsi	Blow G (N Va	Boring advanced with 3.25" ID HSA  Soil description based on observed drill cuttings  Boring advanced to 33 ft without sampling					
- 15 20 25 25													
- 30 ⊥		<u> </u>		Ш									of 2
											Pa	age 1	of 3



Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.3R** 

PROJECT NUMBER 20001480 START DATE

**LOGGED BY** 

Rafael Salas

**COORDINATES GROUND ELEV.**  N 864425.80 E 633963.27

87.2 ft

FINISH DATE

04/26/2022

DRILLER/RIG DRILL CONTRACTOR

Corey B. / CME 550

					, <b>.</b>	7 01111							
	FINISI	H DATE	04/27/2022 <b>DRILL CONTI</b>	RACTOR	Parr	att Wo	olff	HAMMER TYPE	EFF. 	Au	utom	atic_	
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	<u> </u>	SPT N MC (% PL & Fines		e ) ent (%)	
- 35	54.2	Grap	Silty SAND (SM), with gravel, fine sand, gravel, gray, dry  Lean CLAY (CL), gray, hard, dry to mois	, fine	100%	Pock (	<b>NOIB</b> 50/4"  50/50/4"			Fines			\$0
- 50		XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXX	Siltstone, red, fine grained, fresh to sligh weathered, closely spaced fractures, me strong rock to weak rock	ntly edium 1	100% 0% 100% 65 100% 69		50/4"	3-inch ring sampler			Pa	gge 2	of 3



START DATE

#### **EXPLORATORY BORING LOG**

Champlain Hudson Power Express

New York

**BORING NO: K-294.9-3.3R** 

**COORDINATES** 

**GROUND ELEV.** 

PROJECT NUMBER 20001480 LOGGED

04/26/2022

LOGGED BY Rafael Salas

DRILLER/RIG Corey B. / CME 550

D-----

N 864425.80 E 633963.27

87.2 ft

	FINISH	H DATE_	04/27/2022	DRILL CONTRACTOR		Parr	att Wo	olff	HAMMER TYPE	/EFF.	Αι	itoma	tic	_
Depth (ft)	Elevation (ft)	Graphic Log	Material De	scription ac	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	4	SPTI	gend N Value %) LL (%) Conter		
				l l	ပိ	Ř	P	<u> </u>		20	40	60	80	)
- 65		RXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Siltstone, red, fine graine weathered, closely space strong rock to weak rock  Dense silt seam, red at 6  Dense silt seams, red at  Boring Terminated at 70 f	d, fresh to slightly and fractures, medium  3.5 ft  - 66.5 - 67.5 ft	Core Rur	92% 80 98% 49 BOD	Pocket F (tsf)	Blow Co	Notes	$\overline{}$				
													$\Box$	
													$\pm$	
													$\dashv$	$\blacksquare$
90													Ш	
												Pag	je 3 c	of 3



Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.4A** 

PROJECT NUMBER 20001480 START DATE

**LOGGED BY** 

Rafael Salas

COORDINATES **GROUND ELEV.**  N 863977.56 E 634037.90

82.6 ft

**FINISH DATE** 

04/14/2022

DRILLER/RIG

Corey B. / CME 550

	FINISI	H DATE	04/18/2022	DRILL CONTRACTOR Parratt Wolff			olff	HAMMER TYPE/EFF. Automatic		natic					
Depth (ft)	Elevation (ft)	Graphic Log	Material De	scription	ample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	9	SPT MC ( PL 8	%) LL (% S Cont	ue %) tent (%)	)
- 5 -		60, 60, 60, 60, 60, 60, 60, 60, 60, 60,	Silty GRAVEL (GM), with observations of excavate 0 - 7 ft was excavated by truck	d materials)	S	Ö	<b>T</b>		Δ.	Boring advanced with 3.5" ID HSA	20	) 40		60	80
- 10 -	75.6	<u>V.C. (V.O.</u>	Silty SAND (SM), with grapossible small cobble, broto dense, dry  Rig grinding and moderal large cobble or boulder	own, medium dense			25%		6-8-6-16 (14)		•				
							21%		40-23-20-30 (43)				<b>k</b>		
- 20 -	64.6		Clayey and Silty SAND (s fine grained, subangular, dense, moist	SC-SM), with gravel, brown, loose to			29%		24-9-12-15 (21)						
- 25 -			✓				54%		7-15-20-32 (35)		<b>₽</b> I				
- 30 -							66%		3-4-4-5 (8)		<b>A</b> •	<b>B</b>	P	age 1	of 2



Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.4A** 

PROJECT NUMBER 20001480 START DATE 04/14/2022

**LOGGED BY** Rafael Salas DRILLER/RIG Corey B. / CME 550

**GROUND ELEV.** 82.6 ft HAMMER TYPE/EFF. Automatic

COORDINATES

FINISH DATE 04/18/2022 DRILL CONTRACTOR

N 863977.56

E 634037.90

	FINISH	H DATE	04/18/2022 DRILL CONTRACTO	DR -		Parr	att W	olff	HAMMER TYPE/	EFF	Auto	matic	<u>;                                    </u>
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	<u> </u>	Lege SPT N Va MC (%) PL & LL Fines Co	alue (%) ontent (%	
35 -	ш		Clayey and Silty SAND (SC-SM), with gravel, fine grained, subangular, brown, loose to dense, moist			100%		2-7-9-13 (16)		20	40	60	80
	44.6		Clayey SAND (SC), fine to coarse sand, little gravel, fine, brown, medium dense, moist			84%		6-12-12-12 (24)		1 1	8		
- 45	39.6	<i>(.</i> , <i>., ., ., ., ., ., ., ., ., ., ., ., ., .</i>	Silty SAND (SM), with gravel, fine to coarse sand, fine to coarse gravel, subrounded to subangular, reddish brown, very dense, moist			119%		50/5"					
- - -				×		100%		50/4"	3-inch ring sampler	• 🗷			
- 50 - - 				X		77%		14-50/3"					•
55						100%		50/4"					
	22.6		Boring Terminated at 60 ft			100%		50/3"				Dage '	2 of 2



Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.4B** 

PROJECT NUMBER 20001480 **LOGGED BY** 

Rafael Salas

**COORDINATES GROUND ELEV.**  N 863655.85 E 634164.01

98.7 ft

START DATE

04/19/2022

DRILLER/RIG

Corey B. / CME 550

	FINISI	H DATE	04/20/2022 DRILL CONTRACTO	_			att Wo		HAMMER TYPE/EF	F		ıtom	atic	
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	20	Le SPT I MC (° - PL &   Fines	%) LL (% Cont	e o) ent (%	) 
	98.4		4" Topsoil Silty SAND (SM) (based on observations of excavated materials) 0 - 7 ft was excavated by air knife and vacuum truck		0				Boring advanced with 3.25" ID HSA	20	40			50
- 5 -   - 10 -	91.7		Silty SAND (SM) with gravel, medium coarse to coarse sand, fine to coarse gravel, angular to subangular, brown, medium dense, dry			75%		25-9-9-23 (18)	•	<b>A</b>				
- 15 -						42%		44-21-8-7 (29)						
- 20 -						29%		10-10-13-9 (23)		<b>A</b>				
_ 25 -	75.7		SILT (ML), with gravel and sand, coarse gravel subangular, coarse sand, brown, very stiff, dry	,		62%		8-13-14-20 (27)						
- 30 -	70.7		Silty SAND (SM), with gravel, fine sand, fine to coarse gravel, subrounded to subangular, brown with reddish brown, very dense, silt seams, moist			100%		16-31-50-50/ 3"				Pa	ige 1	of 3



Champlain Hudson Power Express
New York

**BORING NO: K-294.9-3.4B** 

PROJECT NUMBER 20001480

LOGGED BY

Rafael Salas

COORDINATES

N 863655.85 E 634164.01

98.7 ft

START DATE

04/19/2022

DRILLER/RIG

Corey B. / CME 550

GROUND ELEV.

	FINISH	H DATE	04/20/2022 DRILL Co	ONTRACTOR	1	Parr	att Wo	olff	HAMMER TYPE	EFF.	Au	toma	tic	_
Depth (ft)	Elevation (ft)	Graphic Log	Material Description		Sample Type Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	20	SPT N	gend Value b) LL (%) Conten	t (%)	
- 35 -			Silty SAND (SM), with gravel, fine scoarse gravel, subrounded to subabrown with reddish brown, very der seams, moist	sand, fine to ingular, nse, silt		100%		(81) 37-50/3"		20	40	60	80	
 					X	100%		20-90/5"	3-inch ring sampler	•	B			
					⋈	100%		80/4"						
- 40 - - 					×	100%		50/4"						
- 45 -	55.7		SILT (ML), with some sand and gra gravel, coarse sand, brown, hard, o	avel, fine dry		100%		37-50/4"		•				I
- 50 -	50.7		Lean CLAY (CL), with sand, possib weathered siltstone/sandstone, sor cementation, red, hard, dry	oly me		100%		50/6"						
				5		100%		50/4"		•				
- 60						100%		50/1"					e 2 o	



START DATE

#### EXPLORATORY BORING LOG

Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.4B** 

PROJECT NUMBER 20001480

04/19/2022

**LOGGED BY** Rafael Salas DRILLER/RIG

Corey B. / CME 550

N 863655.85

E 634164.01 98.7 ft

**COORDINATES** 

**GROUND ELEV.** 

	EINIG	- DATE	0.1/0.0/5555	DDILL CONTRACTO	_										
	LINIO	H DATE	04/20/2022	DRILL CONTRACTO	<b>K</b> _		Parr	att Wo	olff	HAMMER TYPE/	EFF. -		Auto	matic	
Depth (ft)	Elevation (ft)	Graphic Log	Material De	scription	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes		▲ SP ● MC — PL ■ Fin	Lege T N Va C (%) L & LL ( les Col T 40	ilue (%) ntent (%	_
- 65 -	28.7		Lean CLAY (CL), with sa weathered siltstone/sand cementation, red, hard, d	oarse grained, dark			96% 100% 100%		50/1" 60/1" 50/3"	3-inch ring sampler	101		<b>3</b>	60	80
75 -		**************************************	red, weak to strong rock, fractures  Siltstone, fresh, red, very grained, moderately space	closely spaced		-	63% 7 100% 73								
- 80	18.7	XXXXXXX	Boring Terminated at 80 f	ft										2 Page 3	



Champlain Hudson Power Express **New York** 

**BORING NO: K-294.9-3.6** 

N 862925.98

PROJECT NUMBER **LOGGED BY COORDINATES** 20001480 E 634278.00 Jialin Li START DATE DRILLER/RIG **GROUND ELEV.** 04/18/2022 Rick / Diedrich D-90 100.4 ft **FINISH DATE DRILL CONTRACTOR** HAMMER TYPE/EFF. 04/18/2022 Automatic Parratt Wolff

		-	01/10/2022	-		1 411	all VV	<u> </u>						
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	ample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	•	SPT MC( PL8	egeno N Valu %) LL (% s Conte	ie o)	) )
		9	OII T 11	S	ŭ	<u> </u>	4	Δ		20	40	6	<u> </u>	80
	100.2		—3" Topsoil	1					Boring advanced with 3.5" ID HSA		+		+	+
			Silty SAND (SM) (based on observations of excavated materials)						WILL 3.5 ID HSA				_	+
			0 - 7.42 ft was excavated by air knife and											
		R:3116:33	vacuum truck											
		8:316:31											+	+-
		8:816:11												
		8:818:31	▼						Water added to hole				$\perp$	
- 5 -		8381634											_	+-
		8:314:41							-				_	
		10011100							-					+-
	93.0		Silty SAND (SM), with gravel, trace clay,										_	-
		100114014	reddish brown, dense, dry to moist	$\square$										
		1941 1949		IIVI		50%		20-12-22-14		•				$\perp$
				$\ /\ $				(34)	-				+	+-
– 10 –		1331151												+
		1331149											$\perp$	$\perp$
									-					-
		133 H (d)							-				_	+
		8:914:34	$\nabla$											
		8:818:31		M					-				_	++
		939 1 631		$\ X\ $		0%		18-20-27-13				<b>A</b>	_	+
- 15 -		8::114::13		$\mathbb{Z}$				(47)						
		1931 143 14											_	+
													_	+
_ ]														
									and the state of t				_	+
		R::114:33		$\square$					-					+
]		8:316:31		IIVI		0%		27-15-16-23						
		8:314:33		$\  \wedge \ $		0 / 0		(31)	and the state of t		ŦH		_	+
– 20 –	80.4	77777	Clayey SAND (SC), with gravel, grayish brown,	1					-					+
]		[:/:/:///	very dense, moist			100%		100/3"	3-inch ring sampler	•				
		[/////]				10070		100/3					_	+
		17777												+
]		17:7:7:7:7:		_		0%		100/1"						$\perp$
		[////]				3.0					++		+	+
_		[//////												
- 25 -	75.4	<del>/////////////////////////////////////</del>												
		X X X X X X X	Siltstone, fresh, closely spaced fractures, fine grained, maroon, very strong								++		+	+-
_		X X X X X X X	grameu, maroon, very strong			1000/								
		X X X X X X X X				100% 67							1	
		X X X X X X X											+	+
		X X X X X X X									+			+
		X X X X X X X		П		89%								
		X X X X X X X X X X X X X X X X X X X				25					+		+	+
- 30 ⊥		10000000						l				Da		of 2
												Ра	ge 1	of 2



20001480

PROJECT NUMBER

### **EXPLORATORY BORING LOG**

Champlain Hudson Power Express

New York

**BORING NO: K-294.9-3.6** 

N 862925.98

LOGGED BY Jialin Li COORDINATES E 634278.00

START DATE 04/18/2022 DRILLER/RIG Rick / Diedrich D-90 GROUND ELEV. 100.4 ft

FINISH DATE 04/18/2022 DRILL CONTRACTOR Parratt Wolff HAMMER TYPE/EFF. Automatic

	FINISI	H DATE	04/18/2022 DRILL CONTRACTOR	<b>-</b>	Parı	att Wo	olff	HAMMER TYPE/EFF	- Au	tomatic	
Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes	▲ SPT N ● MC (% — PL &   ■ Fines	gend I Value b) LL (%) Content (%)	
	ѿ		0111.1	တို ပိ	<u>~</u>	Ф.	<u> </u>		20 40	60 8	80
   		X X X X X X X X X X X X X X X X X X X	Siltstone, fresh, closely spaced fractures, fine grained, maroon, very strong		100% 44						
- 35 -	65.4	XXXXXXX	Boring Terminated at 35 ft	Щ							
			Bonning reminiated at 55 ft								
-											
- 40 -											
- - 45 -											
-											
- 50 -											
- 											
- 55 - -											
-											
<u> </u>											
											+++
											+
60											
										Page 2	of 2



### **SOIL LEGEND**

Explanation of Symbols and Terms Used on Boring and Test Pit Logs for Sampling and Description of Soils

SAM	IPLE AND DRILL METHODS		COMMON ABBREVIAT	IONS AND	ACRONYMS
	Standard Penetration Split-Spoon	MR	Mud Rotary	Bulk	Bulk Sample
	Sample	HSA	Hollow Stem Auger	EOB	End of Boring
	Undisturbed Sample	SSA	Solid Stem Auger	AR	Auger Refusal
	Piston Sampler	SS	Split Spoon Sampler	N-Value	Sum of blows for last two 6-in.
<b>8</b>	Grab Sample	UD	Undisturbed Sample	in-value	increments of SPT
	Bulk Sample	WOR	Weight of Rods	LICCC	Unified Soil Classification
	Auger Cuttings	WOH	Weight of Hammer	USCS	System
	Rock Core	SPT	Standard Penetration Test		
	Modified California Sample	REC	Recovery		
V	VATER LEVEL SYMBOLS	RQD	Rock Quality Designation	CRO	OSS SECTION LEGEND
$\nabla$	Observation at time of drilling	MC	Moisture Content		
<b>T</b>	Observation after drilling	PI	Plasticity Index	N	N(bpf) % Moisture Content
▼	Delayed observation	PL	Plastic Limit		Moisture Content
₩	Perched water observed at drilling	LL	Liquid Limit	Recove	<u>a</u>
₹	Observed Seepage	CPT	Cone Penetration Test		AD %
<u> • </u>	Cave-in Depth	PP	Pocket Penetrometer		

	RELATIVE D	ENSITY / CONSI	STENCY	
Coarse-g	rained Soils	Fir	ne-grained Soil	s
N-Value	,		Consistency	Pocket Pen (TSF)
0 - 4	Very Loose	0 - 1	Very Soft	0.0 - 0.25
5 - 10			Soft	0.25 - 0.50
11 20			Firm	0.51 - 1.00
	11 - 30 Medium		Stiff	1.01 - 2.00
31 - 50	Dense	16 - 30	Very Stiff	2.01-4.00
> 50	Very Dense	> 30	Hard	> 4.00

	RTIONS OF GRAVEL, SAND, AND FINES
Trace	> 5 %
Few	5 to 10 %
Little	15 to 25 %
Some	30 - 45 %
Mostly	50 to 100 %

#### **SOIL GRAIN SIZE**

U.S. Standard Sieve 10 40 Sand 3/4" Gravel Cobbles Coarse Fine Boulders Silt Clay 
 Coarse
 Medium
 Fine

 76
 2.00
 0.420
 0
 152 76.2 0.074 0.002 (mm) 19.1 4.76

CRITERIA FOR DESCRIBING MOISTURE CONDITION		CONDITION CRITERIA FOR DESCRIBING CEMENTATION	
Description	Criteria	Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch	Weak	Crumbles or breaks with handling or little finger pressure
Moist	Damp but no visible free water	Moderate	Crumbles or breaks with considerable finger pressure
Wet	Visible free water, typically soil is below water table	Strong	Will not crumble or break with finger pressure

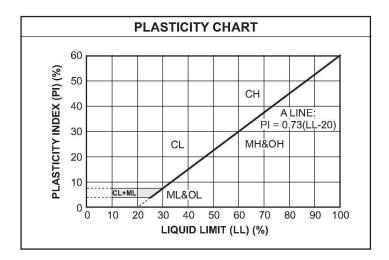
CRITERIA FOR DESCRIBING STRUCTURE		
Description	Criteria	
Stratified	Alternating layers of varying material or color with layers at least 1/4 in. thick; note thickness	
Laminated	Alternating layers of varying material or color with the layers less than 1/4 in. thick; note thickness	
Fissured	Breaks along definite planes of fracture with little resistance to fracturing	
Slickensided	ded Fracture planes appear polished or glossy, sometimes striated	
Blocky	Blocky Cohesive soil that can be broken down into small angular lumps which resist further breakdown	
Lensed	Inclusion of small pockets of different soils, such as lenses of sand scattered through a mass of clay; note thickness	
Homogeneous Same color and appearance throughout		



# **SOIL SYMBOLS**

USCS SOIL TYPES			
Symbol Group Description			
1:5:	GW	Well-graded gravels, gravel sand mixtures with trace or no fines	
00°0°	GP	Poorly-graded gravels, gravel-sand mixtures with trace or no fines	
	GW-GM	Well-graded gravels, gravel-sand mixtures with silt fines	
1:1/4	GW-GC	Well-graded gravels, gravel-sand mixtures with clay fines	
20°29	GP-GM	Poorly-graded gravels, gravel-sand mixtures with silt fines	
2004	GP-GC	Poorly-graded gravels, gravel-sand mixtures with clay fines	
	GM	Silty gravels, gravel-silt-sand mixtures	
119	GC	Clayey gravels, gravel-sand-clay mixtures	
	GC-GM	Clayey gravels, gravel-sand-clay-silt mixtures	
	SW	Well-graded sands, sand-gravel mixtures with trace or no fines	
	SP	Poorly-graded sands, sand-gravel mixtures with trace or no fines	
	SW-SM	Well-graded sands, sand-gravel mixtures with silt fines	
	SW-SC	Well-graded sands, sand-gravel mixtures with clayfines	
	SP-SM	Poorly-graded sands, sand-gravel mixtures with silt fines	
	SP-SC	Poorly-graded sands, sand-gravel mixtures with clay fines	
	SM	Silty sands, sand-gravel-silt mixtures	
	SC	Clayey sands, sand-gravel-clay mixtures	
	SC-SM	Clayey sands, sand-gravel-clay-silt mixtures	
	ML	Inorganic silts with low plasticity	
	CL	Inorganic clays of low plasticity, gravelly or sandy clays, silty clays, lean clays	
	CL-ML	Inorganic clay-silts of low plasticity, gravelly clays, sandy clays, silty clays, lean clays	
	OL	Organic silts and organic silty clays of low plasticity	
	МН	Inorganic silts of high plasticity, elastic silts	
	СН	Inorganic clays of high plasticity, fat clays	
	ОН	Organic clays and organic silts of high plasticity	
6 76 76 7 76 76 76	PT	Peat, humus, swamp soils with high organic contents	

OTHER MATERIALS		
Symbol	Description	
	Asphalt	
	Concrete	
	Crushed Stone/Aggregate Base	
	Fill	





ROCK LEGEND

Explanation of Symbols and Terms Used on Boring and Test Pit
Logs for Sampling and Description of Rock

TERMS AND ABBREVIATIONS		
Fracture Collective term for any seperation in a geologic formation		
Joint (JT) Natural break in a layer or body of rock that lacks visible offset		
Bedding	Layers of sedimentary rocks that are distinctly different from overlying and underlying beds	
Mechanical Break (MB)	Breaks due to drilling or handling in rock or sediment cores	
RQD	Rock Quality Designation	
REC Percent Recovery		
Shear (SH) Surface of differential movement evident by presence of slickensides, striations, or polishir		
Shear Zone (SZ)	Zone of gouge and rock fragments bounded by planar shear surfaces	
Fault (FT) Planar fracture with significant displacement		

	ROCK HARDNESS	
Very Soft Can be deformed by hand (has a rock-like character but can be broken easily by hand)		
Soft	Can be scratched by fingernail (cannot be crumbled between fingers but can be easily pitted with light blows of a geology hammer)	
Moderately Hard	Can be scratched easily with a knife; cannot be scratched with a fingernail (can be pitted with moderate blows of a geology hammer)	
Hard	Difficult to scratch with a knife (cannot be pitted with a geology hammer but can be chipped with moderate blows of the hammer)	
Very Hard	Cannot be scratched with a knife (chips can be broken off only with heavy blows of the geology hammer)	

BEDDING THICKNESS			
Laminated	< 0.04 in.	< 1 mm	
Parting	0.04 - 1/4 in.	1 - 6 mm	
Banded	1/4 - 1 in.	6 mm - 3 cm	
Thin	1 - 4 in.	3 - 9.1 cm	
Medium	4 in 1 ft.	9.1 - 30.5 cm	
Thick	1 - 3 ft.	30.5 cm - 1 m	
Massive	> 3 ft.	> 1 m	

VOIDS		
Porous	Smaller than a pinhead. Their presence is indicated by the degree of absorbency.	
Pitted	Pinhead size to a 1/4 in. If only thin walls separate the individual pits, the core may be described as honeycombed.	
Vug	1/4 in. to the diameter of the core. The upper limit will vary with core size.	
Cavity	Larger than the diameter of the core.	

TEXTURE	
Aphanitic	Individual grains or crystals are too small to be seen with the naked eye.
Fine-grained, finely crystalline	Grain diameters between 0.1 and 1 mm; grains or crystals can be seen with naked eye.
Medium-grained, crystalline	Grain diameters between 1 and 5 mm.
Coarse-grained, coarsely crystalline	Grain diameters greater than 5 mm.

JOINT AND FRACTURE DENSITY		
Very Tight	< 2 in.	< 5.1 cm
Tight	2 in 1 ft.	5.1 - 30.5 cm
Moderately tight	1 - 3 ft.	30.5 - 91.4 cm
Wide	3 - 10 ft.	91.4 cm - 3 m

WEATHERING		
Unweathered	No evidence of any mechanical or chemical alteration.	
Slightly	Superficial discoloration, alteration, and/or discoloration along discontinuities; less than 10% of the rock volume is altered; strength is essentially unaffected.	
Moderately	Discoloration is evident; surface is pitted and altered, with alterations penetrating well below rock surfaces; 10 to 50% of the rock is altered; strength is noticeably less than unweathered rock.	
Highly	Entire section is discolored; alteration is greater than 50%; some areas of slightly weathered rock are present; some minerals are leached away; retains only a fraction of its original strength (wet strength is usually lower than dry strength).	
Decomposed	Saprolite; rock is essentially reduced to a soil with a relic rock texture; can be molded or crumbled by hand.	



### **ROCK SYMBOLS**

ROCK TYPES			
		Shale	
	X X X X X X X X X X X X X X X X X X X	Siltstone	
		Sandstone	
	· · · · · · · · · · · · · · · · · · ·	Conglomerate	
Rocks	0.0.0	Breccia	
Sedimentary Rocks		Limestone	
Sedim		Dolomite	
		Gypsum	
		Coal	
	္ () ()	Coral	
		Chalk	
		Slate	
sks		Schist	
Metamorphic Rocks		Gneiss	
stamorp		Quartzite	
Me		Serpentinite	
	+ +	Greenstone	
		Granite	
	Y Y Y Y Y Y X X X X X X X X X X X X X X	Tuff	
s Rocks		Rhyolite	
Igneous Rocks	<u></u>	Dacite	
	= :	Andesite	
		Basalt	

	OTHER MATERIALS					
		Asphalt				
Other		Concrete				
		Bedrock				

	ROCK QUALITY DESIGNATION (RQD) AND RECOVERY								
% RQD	Quality								
< 25	Very Poor	Recovery (%) = Length of Core Sample Recovered x 100  Length of the Core Run							
25 - 50	Poor	Length of the Core Run							
50 - 75	Fair	RQD (%) = Sum of Lengths of Intact Rock Pieces of 4 in. and Longer x 100							
75 - 90	Good	Length of the Core Run							
90 - 100	Excellent								



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date: 6/20/22

Project: Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

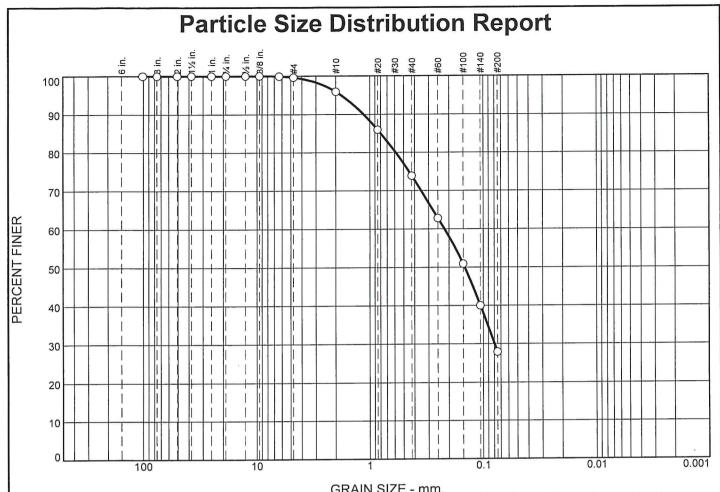
REPORT:

Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9-3.3.

Respectfully Submitted, Fairway Testing

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GRAIN SIZE - IIIIII.						00	
0/ - 011	% Gr	avel		% Sand		% Fines	
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	3.7	22.0	46.0	27.9	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
1/4	99.9		
#4	99.6		
#10			
#20	86.0		
#40	73.9		
#140	6.0000		
#200	27.9		
	SIZE  4 3 2 1.5 1 3/4 1/2 3/8 1/4 #4 #10 #20 #440 #60 #100 #140	SIZE FINER  4 100.0 3 100.0 2 100.0 1.5 100.0 1 100.0 3/4 100.0 1/2 100.0 3/8 100.0 1/4 99.9 #4 99.6 #110 95.9 #20 86.0 #440 73.9 #60 62.8 #100 50.9 #140 40.0	SIZE FINER PERCENT  4 100.0 3 100.0 2 100.0 1.5 100.0 1 100.0 3/4 100.0 1/2 100.0 3/8 100.0 1/4 99.9 #4 99.6 #10 95.9 #20 86.0 #40 73.9 #60 62.8 #100 50.9 #140 40.0

M	aterial Descripti	<u>on</u>					
S-1 silty, clayey sand							
PL= 10	Atterberg Limits LL= 16	PI= 6					
D <sub>90</sub> = 1.1324 D <sub>50</sub> = 0.1453 D <sub>10</sub> =	Coefficients D <sub>85</sub> = 0.7961 D <sub>30</sub> = 0.0796 C <sub>u</sub> =	D <sub>60</sub> = 0.2192 D <sub>15</sub> = C <sub>c</sub> =					
USCS= SC-SM	USCS= SC-SM						
	<u>Remarks</u>						
ASTM D6913							
Moisture Content	- 25.1%						

Source of Sample: 3.3 Sample Number: 01-042022 Depth: 8'-15'

Date: 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

<sup>(</sup>no specification provided)



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date: 6/24/2022

Project: Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

REPORT:

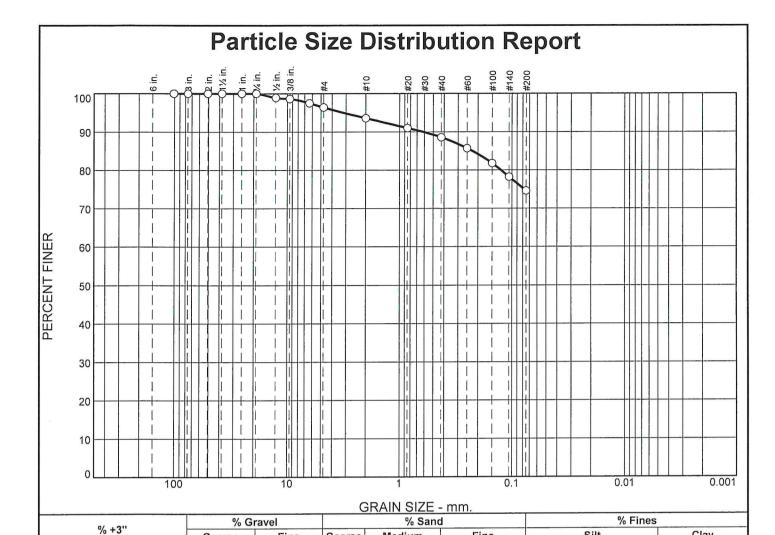
Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9-3.3R. Moisture content test results are listed below.

Sample ID (sample depth, ft.)	Moisture Content
SS-4 (43'-45')	7.7%

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Coarse

2.8

Fine

3.6

Medium

5.0

Fine

14.0

SIZE FINER PERCENT (X=NO)  4 100.0 3 100.0 2 100.0 1.5 100.0 1 100.0 3/4 100.0 1/2 98.9 3/8 98.6 1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2 #200 74.6	SIEVE	PERCENT	SPEC.*	PASS?
3 100.0 2 100.0 1.5 100.0 1 100.0 3/4 100.0 1/2 98.9 3/8 98.6 1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	SIZE	FINER	PERCENT	(X=NO)
1.5	4	100.0		
1.5	3	100.0		
1.5	2	100.0		
3/4 100.0 1/2 98.9 3/8 98.6 1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	1.5	100.0		
1/2 98.9 3/8 98.6 1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	1	100.0		
3/8 98.6 1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	3/4	100.0		
1/4 97.5 #4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	1/2	98.9		
#4 96.4 #10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	3/8	98.6		
#10 93.6 #20 91.0 #40 88.6 #60 85.7 #100 81.8 #140 78.2	1/4	97.5		
#20	#4	96.4		
#40 88.6 #60 85.7 #100 81.8 #140 78.2	#10	93.6		
#60 85.7 #100 81.8 #140 78.2	#20	91.0		
#100 81.8 #140 78.2	#40	88.6		
#140 78.2	#60	85.7		
503.5.5	#100	81.8		
#200 74.6	#140	78.2		
	#200	74.6		

Coarse

0.0

Material Description										
SS-1	SS-1									
lean clay with sa	nd									
PL= 12	Atterberg Limits	<b>S</b> PI= 12								
D <sub>90</sub> = 0.6149 D <sub>50</sub> = D <sub>10</sub> =	$\begin{array}{cccc} & & & & & & & \\ D_{90} = 0.6149 & & D_{85} = 0.2246 & & D_{60} = \\ D_{50} = & & D_{30} = & & D_{15} = \\ D_{10} = & & C_{U} = & & C_{c} = \end{array}$									
USCS= CL	USCS= CL Classification  AASHTO= A-6(6)									
Remarks ASTM D6913, D4318, D2216 Moisture Content- 14.3%										

Silt

74.6

Clay

(no specification provided)

**Source of Sample:** 3.3R **Sample Number:** 01-050422

0.0

Depth: 33'-35'

Client: Kiewit Engineering (NY) Corp.

**Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

**Date:** 05-04-22

**FAIRWAY TESTING** CO., INC.



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date: 6/20/22

Project: Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

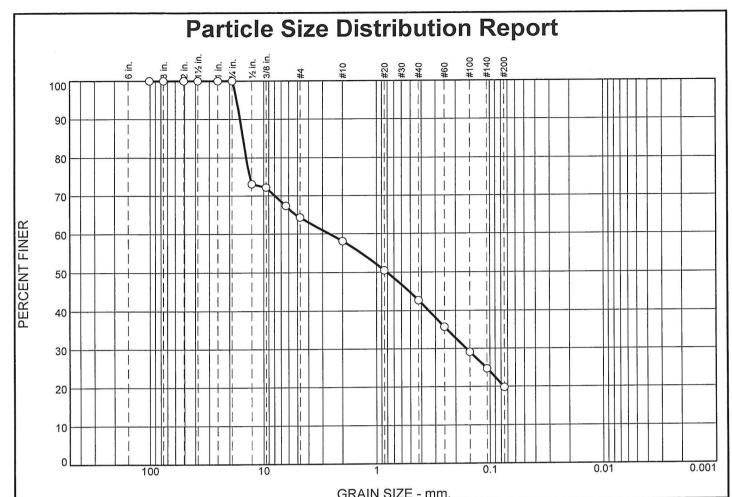
REPORT:

Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9-3.4A.

Respectfully Submitted, Fairway Testing

l J D'Connell



	% Gr	% Gravel		% Sand		% Fin	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	35.7	6.2	15.4	22.9	19.8	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3 2	100.0	1	
2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	73.1		
3/8	72.2		
1/4	67.4		
#4	64.3		
#10	58.1		
#20	50.5		
#40	42.7		
#60	35.7		
#100	29.1		
#140	24.7		
#200	19.8		

<u>N</u>	<u> laterial Description</u>	1
SS-1		
	Atterberg Limits	D.
PL=	LL=	PI=
	Coefficients	
D <sub>90</sub> = 16.2296 D <sub>50</sub> = 0.8094 D <sub>10</sub> =	D <sub>85</sub> = 15.2512 D <sub>30</sub> = 0.1612	$D_{60} = 2.6101$
D <sub>50</sub> = 0.8094	D <sub>30</sub> = 0.1612	D15= Co=
D-10-	u	
11000-	Classification AASHTC	<b>\_</b>
USCS=	AASHIC	) <del>-</del>
	<b>Remarks</b>	
<b>ASTM D6913</b>		
Moisture Conten	t- 6.8%	

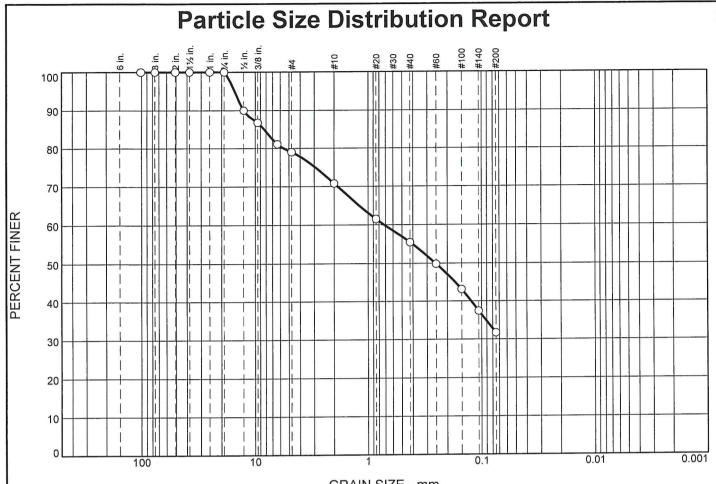
Source of Sample: 3.4A Sample Number: 01-042022 Depth: 8'-10'

Date: 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure

<sup>(</sup>no specification provided)



	% Gr	avel		**Sand	mm.	% Fine	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	21.0	8.2	15.3	23.8	31.7	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4 3 2 1.5 1 3/4 1/2 3/8 1/4 #4	100.0 100.0 100.0 100.0 100.0 100.0 90.0 86.8 81.1 79.0	PERCENT	(X=NO)
#10 #20 #40 #60 #100 #140 #200	70.8 61.5 55.5 49.8 43.1 37.4 31.7		

<u>Material Description</u>				
SS-4 silty, clayey sand with gravel				
erg Limits 15 PI= 7				
Ficients  8 8.3063				
USCS= SC-SM				
<u>Remarks</u>				
ASTM D6913, D4318				
Moisture Content- 10.1%				

(no specification provided)

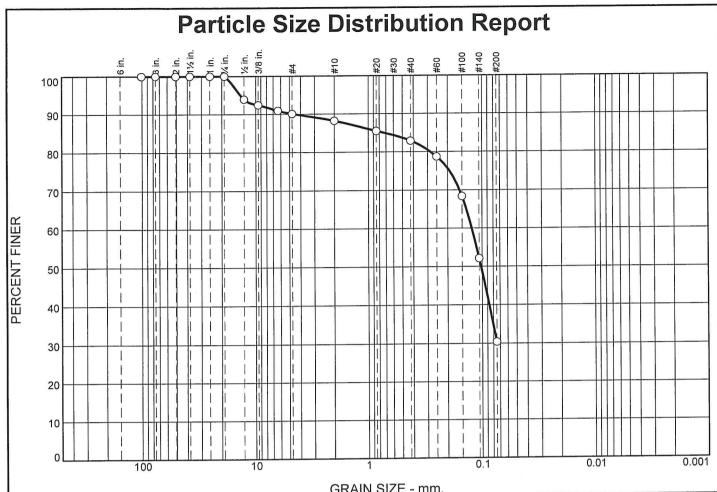
**Source of Sample:** 3.4A **Sample Number:** 02-042022

Depth: 23'-25'

Date: 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure



	% Gr	avel	GRAIN SIZE - IIIII.			% Fines	
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.9	1.9	5.3	52.5	30.4	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
4 3 2	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	93.9		
3/8	92.4		
1/4	90.9		
#4	90.1		
#10	88.2		
#20	85.5		
#40	82.9		
#60	78.7		
#100	68.4		
#140	52.1		
#200	30.4		

Material Description							
SS-7							
PL=	Atterberg Limits LL=	PI=					
D <sub>90</sub> = 4.5440 D <sub>50</sub> = 0.1022 D <sub>10</sub> =	<u>Coefficients</u> D <sub>85</sub> = 0.7238 D <sub>30</sub> = C <sub>U</sub> =	D <sub>60</sub> = 0.1230 D <sub>15</sub> = C <sub>c</sub> =					
USCS=	<u>Classification</u> USCS= AASHTO=						
	Remarks_						
ASTM D6913	ASTM D6913						
Moisture Conter	nt- 19.6%						

(no specification provided)

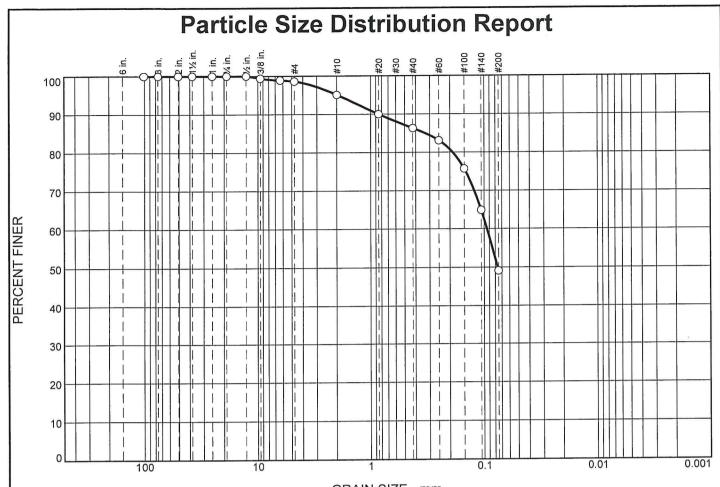
**Source of Sample:** 3.4A **Sample Number:** 03-042022

Depth: 28'-30'

Date: 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure



	% Gr	avel	G	RAIN SIZE - % Sand	mm.	% Fine	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	3.5	8.8	37.2	49.1	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3 2	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	100.0		
3/8	99.4		
1/4	98.9		
#4	98.6		
#10	95.1		
#20	90.0		
#40	86.3		
#60	83.1		
#100	75.7	۵	
#140	64.9		
#200	49.1		

<u>N</u> SS-10	laterial Descripti	<u>on</u>			
clayey sand					
PL= 13	Atterberg Limits	P = 11			
D <sub>90</sub> = 0.8500 D <sub>50</sub> = 0.0764 D <sub>10</sub> =	Coefficients D85= 0.3300 D30= Cu=	D <sub>60</sub> = 0.0944 D <sub>15</sub> = C <sub>c</sub> =			
USCS= SC Classification AASHTO= A-6(2)					
<u>Remarks</u> ASTM D6913, D4318					

**Source of Sample:** 3.4A **Sample Number:** 04-042022

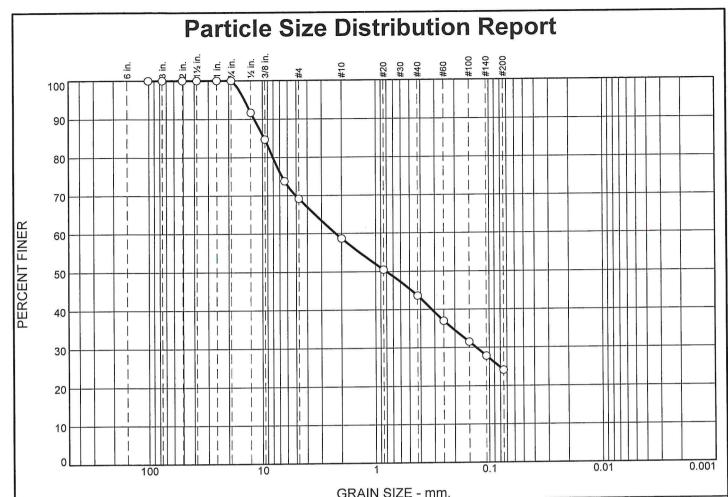
Depth: 38'-40'

**Date:** 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure

<sup>(</sup>no specification provided)



	% Gravel		% Gravel % Sand		% Fines		
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	30.8	10.5	15.1	19.5	24.1	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
3 2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	91.7		
3/8	84.7		
1/4	73.8		
#4	69.2		
#10	58.7		
#20	50.5		
#40	43.6		
#60	37.0		
#100	31.5		
#140	27.8		
#200	24.1		
1			
1			

Material Description							
MC-13							
PL=	Atterberg Limits LL=	PI=					
D <sub>90</sub> = 11.8351 D <sub>50</sub> = 0.8043 D <sub>10</sub> =	Coefficients D <sub>85</sub> = 9.6344 D <sub>30</sub> = 0.1302 C <sub>u</sub> =	D <sub>60</sub> = 2.2505 D <sub>15</sub> = C <sub>c</sub> =					
USCS=	USCS= Classification AASHTO=						
<u>Remarks</u>							
ASTM D6913							
Moisture Content	t- 13.6%						

(no specification provided)

**Source of Sample:** 3.4A **Sample Number:** 05-042022

Depth: 48'

Client: Kiewit Engineering (NY) Corp.

Project: Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

**Date:** 04-20-22

FAIRWAY TESTING CO., INC.



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date: 6/22/22

Project: Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

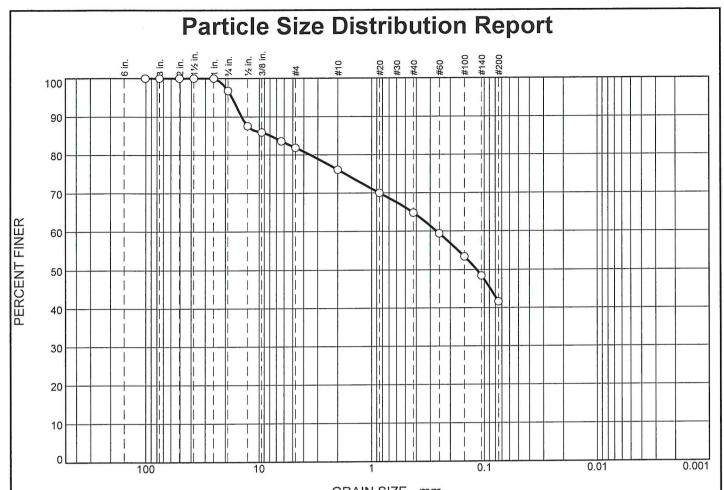
REPORT:

Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9- 3.4B. Moisture content test results are listed below.

Sample ID (sample depth, ft.)	Moisture Content
SS-1/SS-2 (8'- 10')	4.4%
SS-5/SS-6 (23'-25')	9.0%
SS-19 (53'- 55')	7.4%

Respectfully Submitted, Fairway Testing



			G	RAIN SIZE -	· mm.		
% +3"	% Gr	avel	% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.2	14.9	5.8	11.3	23.2	41.6	<u> </u>

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3 2	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	96.8		
1/2	87.6		
3/8	85.9		
1/4	83.6		
#4	81.9		
#10	76.1		
#20	70.0		
#40	64.8		
#60	59.4		
#100	53.4		
#140	48.4		
#200	41.6		

MC-10	laterial Descriptio	<u>on</u>			
PL=	Atterberg Limits	PI=			
D <sub>90</sub> = 14.3830 D <sub>50</sub> = 0.1170 D <sub>10</sub> =	Coefficients D <sub>85</sub> = 7.9001 D <sub>30</sub> = C <sub>u</sub> =	D <sub>60</sub> = 0.2640 D <sub>15</sub> = C <sub>c</sub> =			
USCS=	Classification AASHT	O=			
Remarks ASTM D6913, D2216 Moisture Content - 9.7%					

Source of Sample: 3.4B Sample Number: 01-042622

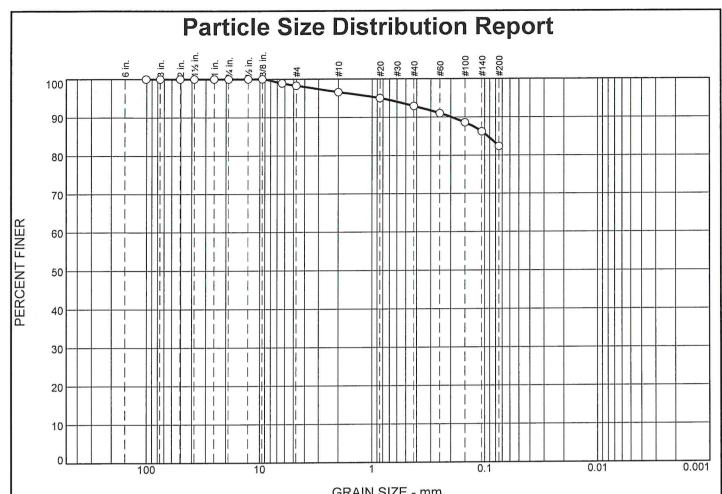
Depth: 37'-38'

**Date:** 04-26-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure

<sup>(</sup>no specification provided)



			G	RAIN SIZE -	ШШ.		
	% Gr	avel		% Sand		% Fin	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.7	1.7	3.7	10.5	82.4	-

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
1/4	98.9		
#4	98.3		
#10	96.6	3	
#20	95.0		
#40	92.9		
#60	91.0		
#100	88.6		
#140	86.2		
#200	82.4		

	Material Descripti	<u>on</u>	
SS-13/SS-14			
silt with sand			
PL= NP	Atterberg Limits	PI= NV	
	Coefficients		
$D_{90} = 0.1980$	$D_{85} = 0.0940$	D <sub>60</sub> =	
D <sub>50</sub> = D <sub>10</sub> =	C <sub>u</sub> =	C <sub>c</sub> =	
	<b>Classification</b>		
USCS= ML	AASH*	$\Gamma O = A-4(0)$	
	<b>Remarks</b>		
ASTM D6913,	D4318, D2216		
Moisture Conte	ent- 18.1%		

Source of Sample: 3.4B Sample Number: 02-042622

Depth: 43'-45'

**Date:** 04-26-22

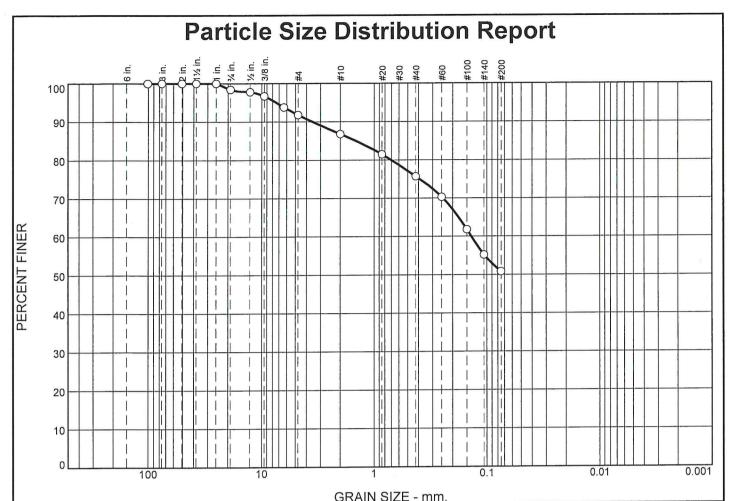
FAIRWAY TESTING CO., INC. Client: Kiewit Engineering (NY) Corp.

**Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

<sup>(</sup>no specification provided)



	% Gr	avel		% Sand		% Fin	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.6	6.6	5.0	11.1	24.9	50.8	3

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		1
3/4	98.4		
1/2	97.8		
3/8	96.7		
1/4	93.8		
#4	91.8		
#10	86.8		-
#20	81.5		
#40	75.7		
#60	70.3		
#100	61.8		
#140	55.2		
#200	50.8		

	<u> Material Descriptio</u>	<u>n</u>
GS-26 sandy lean clay		
PL= 10	Atterberg Limits LL= 19	PI= 9
D <sub>90</sub> = 3.5417 D <sub>50</sub> = D <sub>10</sub> =	<u>Coefficients</u> D <sub>85</sub> = 1.4532 D <sub>30</sub> = C <sub>u</sub> =	D <sub>60</sub> = 0.1370 D <sub>15</sub> = C <sub>c</sub> =
USCS= CL	Classification AASHT	O= A-4(1)
ASTM D6913, I Moisture Conter	5	

Source of Sample: 3.4B Sample Number: 03-042622

**Depth:** 65'-70'

**Date:** 04-26-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9 Figure

<sup>(</sup>no specification provided)



22 North Liberty Drive P.O. Box 578 Stony Point, NY 10980 Telephone 845.942.2088 Fax 845.942.0995

Report Date:

6/20/22

Project:

Champlain Hudson Power Express

Client:

Kiewit Engineering (NY) Corp.

REPORT:

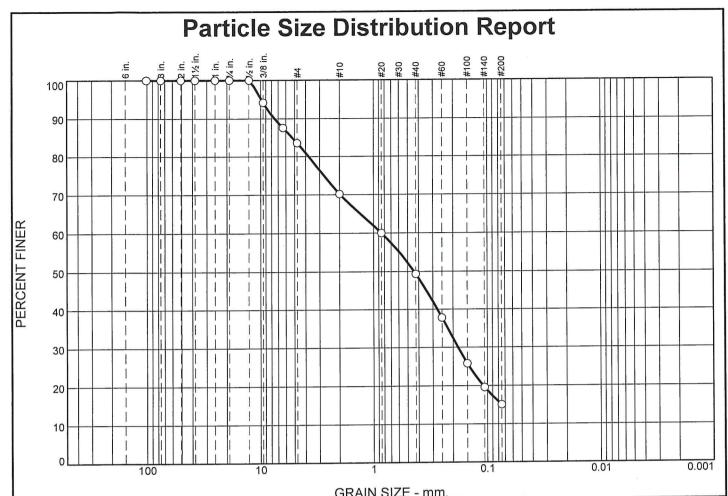
Soil Analysis

See attached reports for testing requested by the client as per attached submittals for locations K.294.9-3.6.

Respectfully Submitted, Fairway Testing

Gabriel J. O'Connell, P.E.

Hobil & O'Connell



	% Gravel		vel % Sand			% Fin	es
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	16.4	13.4	20.9	34.2	15.1	

SIEVE	PERCENT	SPEC.*	PASS?	
SIZE	FINER	PERCENT	(X=NO)	
4	100.0			
3 2	100.0			
2	100.0			
1.5	100.0			
1	100.0			
3/4	100.0			
1/2	100.0			
3/8	94.2			
1/4	87.6			
#4	83.6			
#10	70.2			
#20	60.0			
#40	49.3			
#60	37.8			
#100	25.8			
#140	19.6			
#200	15.1			

1	Material Description	<u>on</u>
SS-1		
PL=	Atterberg Limits LL=	PI=
D <sub>90</sub> = 7.5309 D <sub>50</sub> = 0.4412 D <sub>10</sub> =	Coefficients D <sub>85</sub> = 5.2436 D <sub>30</sub> = 0.1810 C <sub>u</sub> =	D <sub>60</sub> = 0.8500 D <sub>15</sub> = C <sub>c</sub> =
USCS=	Classification AASHT	O=
	Remarks	
<b>ASTM D6913</b>		
Moisture Conter	nt- 11.9%	

Source of Sample: 3.6 Sample Number: 01-042022 Depth: 8'-10'

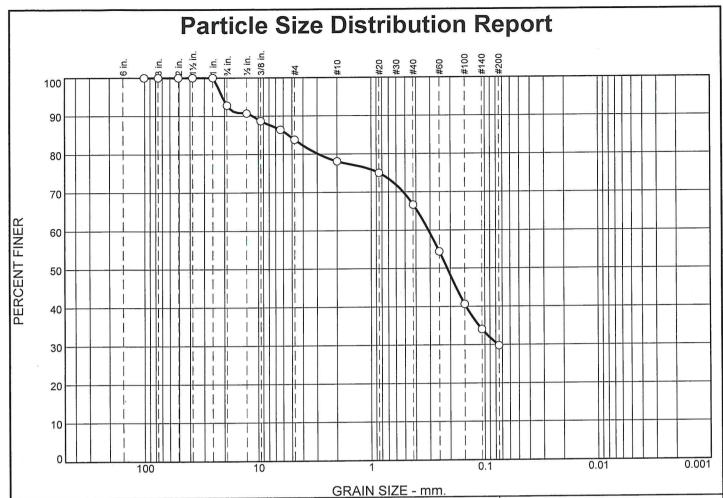
**Date:** 04-20-22

FAIRWAY TESTING CO., INC. **Client:** Kiewit Engineering (NY) Corp. **Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

<sup>(</sup>no specification provided)



% Fines % Gravel % Sand % +3" Clay Silt Fine Medium Coarse Fine Coarse 29.8 7.2 9.0 5.7 11.4 36.9 0.0

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4	100.0		
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
3/4	92.8		
1/2	90.7		
3/8	88.7		
1/4	86.4		
#4	83.8		-
#10	78.1		
#20	75.0		
#40	66.7		
#60	54.4		
#100	40.6		
#140	34.0		
#200	29.8		

<u>M</u>	<u>aterial Descripti</u>	<u>on</u>
MC-1		
	<b>Atterberg Limits</b>	<u> </u>
PL=	LL=	PI=
	Coefficients	
$D_{00} = 11.2207$	$D_{85} = 5.3859$	$D_{60} = 0.3107$
D <sub>90</sub> = 11.2207 D <sub>50</sub> = 0.2135 D <sub>10</sub> =	D <sub>85</sub> = 5.3859 D <sub>30</sub> = 0.0764	D15= C <sub>C</sub> =
$D_{10} =$	C <sub>u</sub> =	C <sub>c</sub> =
	Classification	
USCS=	AASH	TO=
	Remarks	
ASTM D6913		
Moisture Content	- 16.1%	
1.1010tale Collient		

(no specification provided)

**Source of Sample:** 3.6 **Sample Number:** 02-042022

Depth: 21'-23'

**Client:** Kiewit Engineering (NY) Corp.

FAIRWAY TESTING CO., INC.

**Project:** Champlain Hudson Power Express

Project No: K-294.9

**Figure** 

Date: 04-20-22

### K-294.9-1.3 - Run 1 through 3



### K-294.9-3.3R - Runs 1 through 4



### K-294.9-3.4B - Runs 1 and 2



### K-294.9-3.6 - Runs 1 through 3





PROJECT NO.   Champlain Hudson Power Express   LOCATION   New York	CLIENT	Fairway Testing Con	npany		JOB NO.	3151-001	
DEPTH			Power Express		LOCATION	New York	
DATE TESTED TECHNICIAN ROCK TYPE	DEPTH SAMPLE NO.	)	55.0-60.0	28.5-30.0	75.0-80.0	25.0-30.0	
Moisture Condition         As Received         As Received         As Received         As Received           Reading A.1 (in):         0.00360         0.00330         0.00300         0.00330           Reading A.2 (in):         0.00380         0.00430         0.00220         0.00420           Reading A.3 (in):         0.00510         0.00360         0.00220         0.00420           Reading A.5 (in):         0.00490         0.00370         0.00260         0.00300           Reading B.1 (in):         0.00310         0.00320         0.00260         0.00370           Reading B.1 (in):         0.00310         0.00320         0.00260         0.00370           Reading B.2 (in):         0.00300         0.00420         0.00380         0.00350           Reading B.3 (in):         0.00390         0.00460         0.00300         0.00320           Reading B.5 (in):         0.00480         0.00380         0.00220         0.00500           Reading B.5 (in):         0.00480         0.00380         0.00220         0.00500           Reading B.5 (in):         0.00413         0.00399         0.00291         0.00379           Average Reading (in):         0.00413         0.00399         0.00291         0.00360	DATE TESTED TECHNICIAN						
Reading A.2 (in):       0.00380       0.00430       0.00380       0.00350         Reading A.3 (in):       0.00360       0.00540       0.00220       0.00420         Reading A.4 (in):       0.00510       0.00360       0.00260       0.00300         Reading B.5 (in):       0.00490       0.00370       0.00260       0.00430         Reading B.1 (in):       0.00310       0.00320       0.00260       0.00370         Reading B.3 (in):       0.00300       0.00420       0.00380       0.00350         Reading B.3 (in):       0.00480       0.00380       0.00320       0.00500         Reading B.5 (in):       0.00480       0.00380       0.00220       0.00500         Reading B.5 (in):       0.00413       0.00399       0.00291       0.00379         Average Reading (in):       0.00413       0.00399       0.00291       0.00379         Average Reading (mm):       0.1049       0.1013       0.0739       0.0963         Uncorrected CAI:       1.05       1.01       0.74       0.96         Corrected CAI:       1.52       1.48       1.21       1.43         NOTES       CAIs is the CAI calculated on saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAIs + 0.48.       Applie	, ,	on	_				
Average Reading (mm):  Uncorrected CAI or CAI <sub>s</sub> :  1.05 1.01 0.74 0.96 1.52 1.48 1.21 1.43   NOTES  CAI <sub>s</sub> is the CAI calculated on saw cut specimens. Corrected CAI for saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAIs + 0.48. Applied pins had a Rockwell Hardness of 54-56.	Reading A.2 (in): Reading A.3 (in): Reading A.4 (in): Reading A.5 (in): Reading B.1 (in): Reading B.2 (in): Reading B.3 (in): Reading B.4 (in): Reading B.5 (in):		0.00380 0.00360 0.00510 0.00490 0.00310 0.00300 0.00390 0.00480 0.00550	0.00430 0.00540 0.00360 0.00370 0.00320 0.00420 0.00460 0.00380 0.00380	0.00380 0.00220 0.00260 0.00260 0.00380 0.00300 0.00220 0.00330	0.00350 0.00420 0.00300 0.00430 0.00370 0.00350 0.00320 0.00500 0.00420	
NOTES  CAI <sub>s</sub> is the CAI calculated on saw cut specimens. Corrected CAI for saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAIs + 0.48. Applied pins had a Rockwell Hardness of 54-56.  Data entry by: HN  Date: 06/17/22	Average Reading	(mm):	0.1049	0.1013	0.0739	0.0963	
Corrected CAI for saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAIs + 0.48.  Applied pins had a Rockwell Hardness of 54-56.  Data entry by: HN  Date: 06/17/22		or CAI <sub>s</sub> :					
	NOTES		Corrected CAI form	or saw cut speci ula CAI = 0.99*0	mens based on CAIs + 0.48.	R. Plinger and H. Kas	ling
File name: 3151001CHERCHAR ASTM D7625_0.xlsm	Checked by:	DL	IAD ACTAL DZCC	F 0 vla			



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9 LOCATION

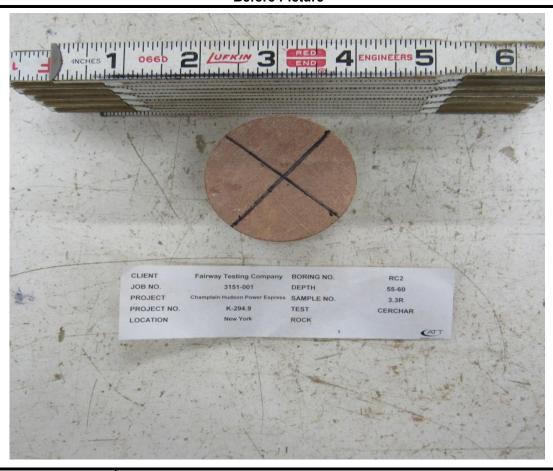
New York

BORING NO. RC2 55.0-60.0 DEPTH

SAMPLE NO. 3.3R DATE SAMPLED

DATE TESTED 06/16/22 **TECHNICIAN** HN **ROCK TYPE** 

#### **Before Picture**



N	L	$\overline{}$	٠т	_	$\sim$

1.JPG Picture File:



CLIENT Fairway Testing Company

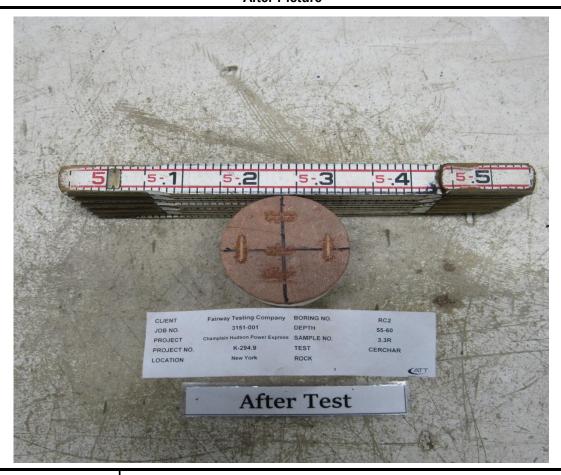
JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9 LOCATION New York BORING NO. RC2
DEPTH 55.0-60.0
SAMPLE NO. 3.3R
DATE SAMPLED --

DATE TESTED 06/16/22 TECHNICIAN HN ROCK TYPE --

#### After Picture



NOTES

Picture File: 1a.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

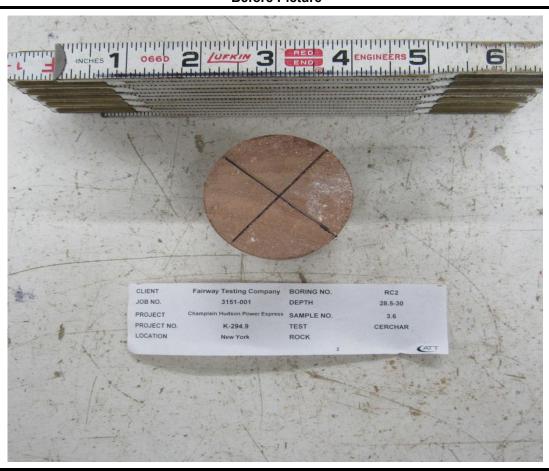
LOCATION New York BORING NO. RC2 28.5-30.0 DEPTH

SAMPLE NO. 3.6

DATE SAMPLED

DATE TESTED 06/16/22 **TECHNICIAN** HN **ROCK TYPE** 

#### Before Picture



Ν	Ю	T	Е	S

Picture File: 2.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

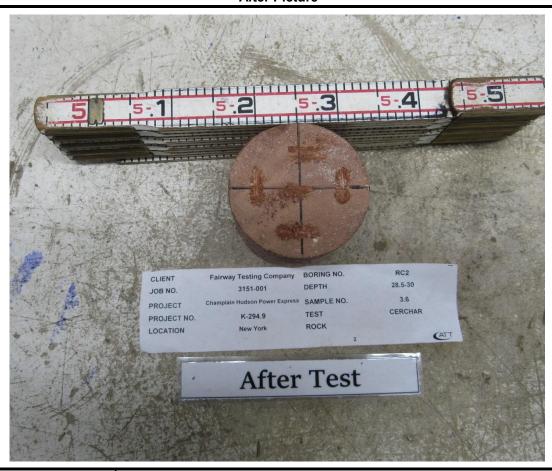
PROJECT NO. K-294.9 LOCATION New York BORING NO. RC2 DEPTH 28.5-30.0

SAMPLE NO. 3.6

DATE SAMPLED --

DATE TESTED 06/16/22 TECHNICIAN HN ROCK TYPE --

#### **After Picture**



NOTES

Picture File: 2a.JPG



CLIENT Fairway Testing Company

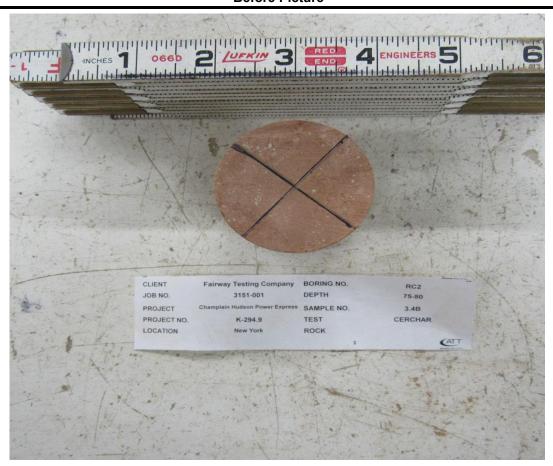
JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9 LOCATION New York BORING NO. RC2
DEPTH 75.0-80.0
SAMPLE NO. 3.4B
DATE SAMPLED --

DATE TESTED 06/16/22 TECHNICIAN HN ROCK TYPE --

#### Before Picture



N	റ	т	F	S

Picture File: 3.JPG



CLIENT Fairway Testing Company

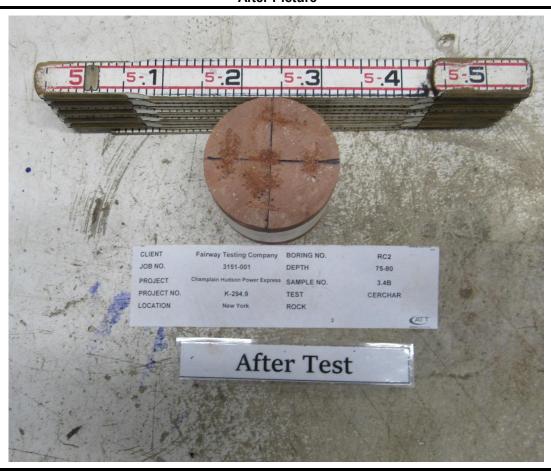
JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9 LOCATION New York BORING NO. RC2
DEPTH 75.0-80.0
SAMPLE NO. 3.4B
DATE SAMPLED --

DATE TESTED 06/16/22 TECHNICIAN HN ROCK TYPE --

#### After Picture



N	$\cap$	ΓF	2

Picture File: 3a.JPG



# Splitting Tensile Strength ASTM D3967

CLIENT Fain	way Testing Com	ıpany		JOB NO.	3151-001	
PROJECT Chai PROJECT NO. K-29	mplain Hudson F 94.9	ower Express		LOCATION	New York	
BORING NO. DEPTH SAMPLE NO.		RC2 55-60 3.3R	RC2 28.5-30 3.6	RC2 75-80 3.4B	RC1 25-30 4.2A	RC3 21-26 0.7
DATE SAMPLED DATE TESTED TECHNICIAN ROCK TYPE		06/16/22 DL	06/16/22 DL	06/16/22 DL	06/16/22 DL	06/16/22 DL
Diameter (in):		1.971	1.982	1.979	1.966	1.989
Height (in): Mass of Wet Rock (g):		0.999 127.50	1.018 131.70	1.084 134.40	1.093 137.10	1.036 138.20
Wet Density (lbs/ft³): Wet Density (g/cm³):		159.4 2.553	159.7 2.559	153.6 2.460	157.4 2.522	163.6 2.620
Peak Load (lbs): Splitting Tensile Streng Splitting Tensile Streng Failure Type:		3099 1002 6907 Single Plane	1286 406 2799 Single Plane	1128 335 2307 Multiple Plane	2924 866 5972 Single Plane	4536 1401 9662 Single Plane
BORING NO. DEPTH SAMPLE NO. DATE SAMPLED DATE TESTED TECHNICIAN ROCK TYPE						
Diameter (in): Height (in): Mass of Wet Rock (g):						
Wet Density (lbs/ft³): Wet Density (g/cm³):						
Peak Load (lbs): Splitting Tensile Streng Splitting Tensile Streng Failure Type:	,					
NOTES						
Data entry by: DL Checked by: HN File name: 315	1001 Brazilian <i>i</i>	ASTM D3967 0.	xlsm			06/16/22 06/17/22



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 55-60

SAMPLE NO. 3.3R

DATE SAMPLED

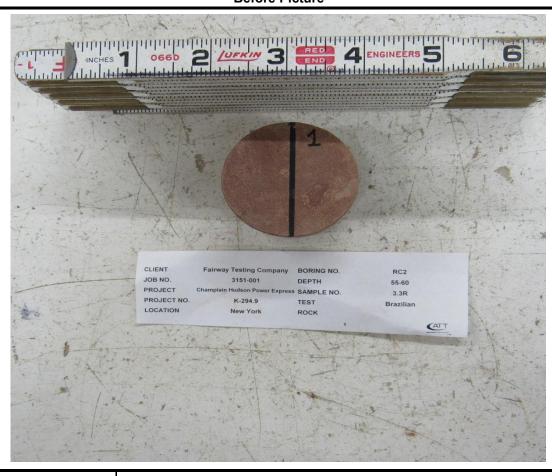
DATE TESTED 06/16/22

DL

TECHNICIAN

**ROCK TYPE** 

#### **Before Picture**



NO.	TES
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Picture File: 1.JPG

File name: 3151001\_Brazilian ASTM D3967\_0.xlsm



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 55-60

SAMPLE NO. 3.3R

DATE SAMPLED

DATE TESTED 06/16/22

DL

TECHNICIAN

**ROCK TYPE** 

#### After Picture



NO.	TES
-----	-----

Picture File: 1a.JPG

File name: 3151001\_\_Brazilian ASTM D3967\_0.xlsm



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 28.5-30

SAMPLE NO. 3.6

DATE SAMPLED

DATE TESTED 06/16/22 TECHNICIAN DL

TECHNICIAN ROCK TYPE

#### **Before Picture**



NOTES

Picture File: 2.JPG

File name: 3151001\_Brazilian ASTM D3967\_0.xlsm



CLIENT Fairway Testing Company

JOB NO. 3151-001

Champlain Hudson Power Express PROJECT

PROJECT NO. K-294.9

LOCATION **New York**  BORING NO. RC2 DEPTH 28.5-30

SAMPLE NO. 3.6

DATE SAMPLED

06/16/22 DATE TESTED DL

**TECHNICIAN** 

**ROCK TYPE** 

#### **After Picture**



NOTES	ò
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Picture File: 2a.JPG

File name: 3151001\_\_Brazilian ASTM D3967\_0.xlsm



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 75-80

SAMPLE NO.
DATE SAMPLED

DATE TESTED 06/16/22

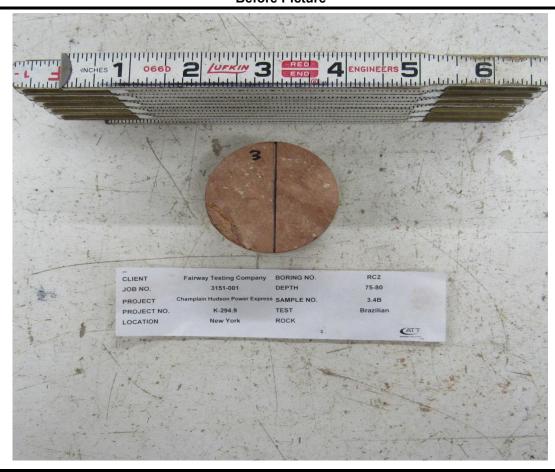
3.4B

DL

TECHNICIAN

**ROCK TYPE** 

#### **Before Picture**



NO.	TES
-----	-----

Picture File: 3.JPG

File name: 3151001\_\_Brazilian ASTM D3967\_0.xlsm



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 75-80

SAMPLE NO. DATE SAMPLED

DATE TESTED 06/16/22

3.4B

TECHNICIAN DL

**ROCK TYPE** 

#### After Picture



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,	ES	Г	١	O	N	ľ

Picture File: 3a.JPG

File name: 3151001\_Brazilian ASTM D3967\_0.xlsm



CLIENT	Fairway Testing Con	npany		JOB NO.	3151-001	
	Champlain Hudson F K-294.9	Power Express		LOCATION	New York	
BORING NO. DEPTH SAMPLE NO. DATE SAMPLED DATE TESTED TECHNICIAN		RC2 55-60 3.3R 06/17/22 DL	RC2 28.5-30 3.6 06/17/22 DL	RC2 75-80 3.4B 06/17/22 DL	RC1 25-30 4.2A 06/17/22 DL	RC3 21-26 0.7 06/17/22 DL
ROCK TYPE  Diameter (in):		1.975	1.975	1.973	1.974	1.982
Height (in): Mass of Wet Rock Wet Density (lbs/ft Wet Density (g/cm	<sup>3</sup> ):	4.194 527.20 156.3 2.50	3.954 511.20 160.8 2.58	4.075 525.10 160.6 2.57	4.321 550.40 158.6 2.54	3.977 542.30 168.4 2.70
Peak Load (lbs): Compressive Strer Compressive Strer Failure Type:		38252 12486 86 Shear / Fracture	19993 6526 45 Fracture / Void	14999 4906 34 Shear	28736 9389 65 Fracture / Bedding	28043 9089 63 Fracture / Bedding
BORING NO. DEPTH SAMPLE NO. DATE SAMPLED DATE TESTED TECHNICIAN ROCK TYPE						
Diameter (in): Height (in): Mass of Wet Rock Wet Density (lbs/ft Wet Density (g/cm	<sup>3</sup> ):					
Peak Load (lbs): Compressive Strer Compressive Strer Failure Type:						
NOTES						
Checked by:	DL HN 3151001 Rock UC	S-TCS ASTM D7	012 Method A a	and C <sub>_</sub> 0.xlsm		06/17/22 06/17/22



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. DEPTH RC2

SAMPLE NO.

55-60 3.3R

DL

DATE SAMPLED

DATE TESTED 06/17/22

TECHNICIAN

**ROCK TYPE** 

#### **Before Picture**



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Picture File: 1.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2

DEPTH 55-60 SAMPLE NO. 3.3R

DATE SAMPLED

DATE TESTED 06/17/22

DL

TECHNICIAN

**ROCK TYPE** 

#### After Picture



NO.	TES
-----	-----

Picture File: 1a.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9 LOCATION New York DEPTH ress SAMPLE NO.

DATE SAMPLED

DATE TESTED 06/17/22 TECHNICIAN DL

RC2

28.5-30

3.6

**ROCK TYPE** 

BORING NO.

#### **Before Picture**



Picture File: 2.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION **New York**  BORING NO. RC2 28.5-30 DEPTH

SAMPLE NO. 3.6

DATE SAMPLED

06/17/22 DATE TESTED DL

**TECHNICIAN** 

**ROCK TYPE** 

#### After Picture



N	O	Т	ES

Picture File: 2a.JPG

3151001\_\_Rock UCS-TCS ASTM D7012 Method A and C\_0.xlsm File name:



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 75-80

SAMPLE NO.
DATE SAMPLED

DATE TESTED 06/17/22

3.4B

DL

TECHNICIAN

**ROCK TYPE** 

#### **Before Picture**



NO.	TES
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Picture File: 3.JPG



CLIENT Fairway Testing Company

JOB NO. 3151-001

PROJECT Champlain Hudson Power Express

PROJECT NO. K-294.9

LOCATION New York

BORING NO. RC2 DEPTH 75-80

DEPTH 75-80 SAMPLE NO. 3.4B

DATE SAMPLED

DATE TESTED 06/17/22

DL

TECHNICIAN

**ROCK TYPE** 

#### After Picture



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Picture File: 3a.JPG



Page 1 of 1



DATE: July 14, 2022

TO: Zachary Bauer; Tetra Tech Rooney

FROM: Matthew Hawley, P.E.; Kiewit Engineering (NY) Corp. MKH

Jaren Knighton; Kiewit Engineering (NY) Corp.

SUBJECT: Geotechnical Data: Segment 12 - Package 7B - HDD Crossing 131

Champlain Hudson Power Express Project

Haverstraw, New York

Kiewit Engineering is providing the attached geotechnical data for use in the horizontal direction drill (HDD) design for the Champlain Hudson Power Express project in Upstate New York. This HDD crossing is located in Haverstraw, New York. The approximate station for the start of HDD crossing number 131 is STA 72656+00 (41.2010° N, 73.9835° W).

The geotechnical data at this HDD crossing is attached. The available data is taken from the data from a recent investigation by Kiewit, referenced below.

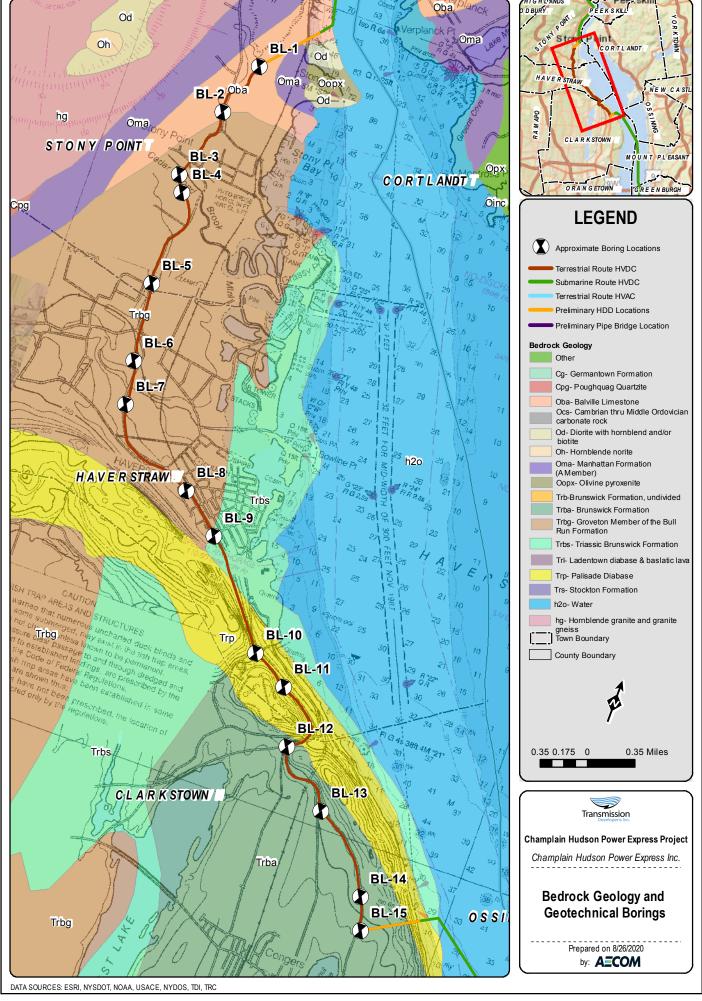
• Kiewit Engineering (NY) Corp., Segment 12 Package 7B HDD Borings - Rockland, Champlain-Hudson Power Express, dated July 5, 2022.

Contact us if you have questions or require additional information.

Kiewit Project Number: 20001480

HDD 131 Borings K-294.9-3.6, K-294.9-3.7, K-294.9-3.8, K-294.9-3.8R Segment 12 - Design Package 7B

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