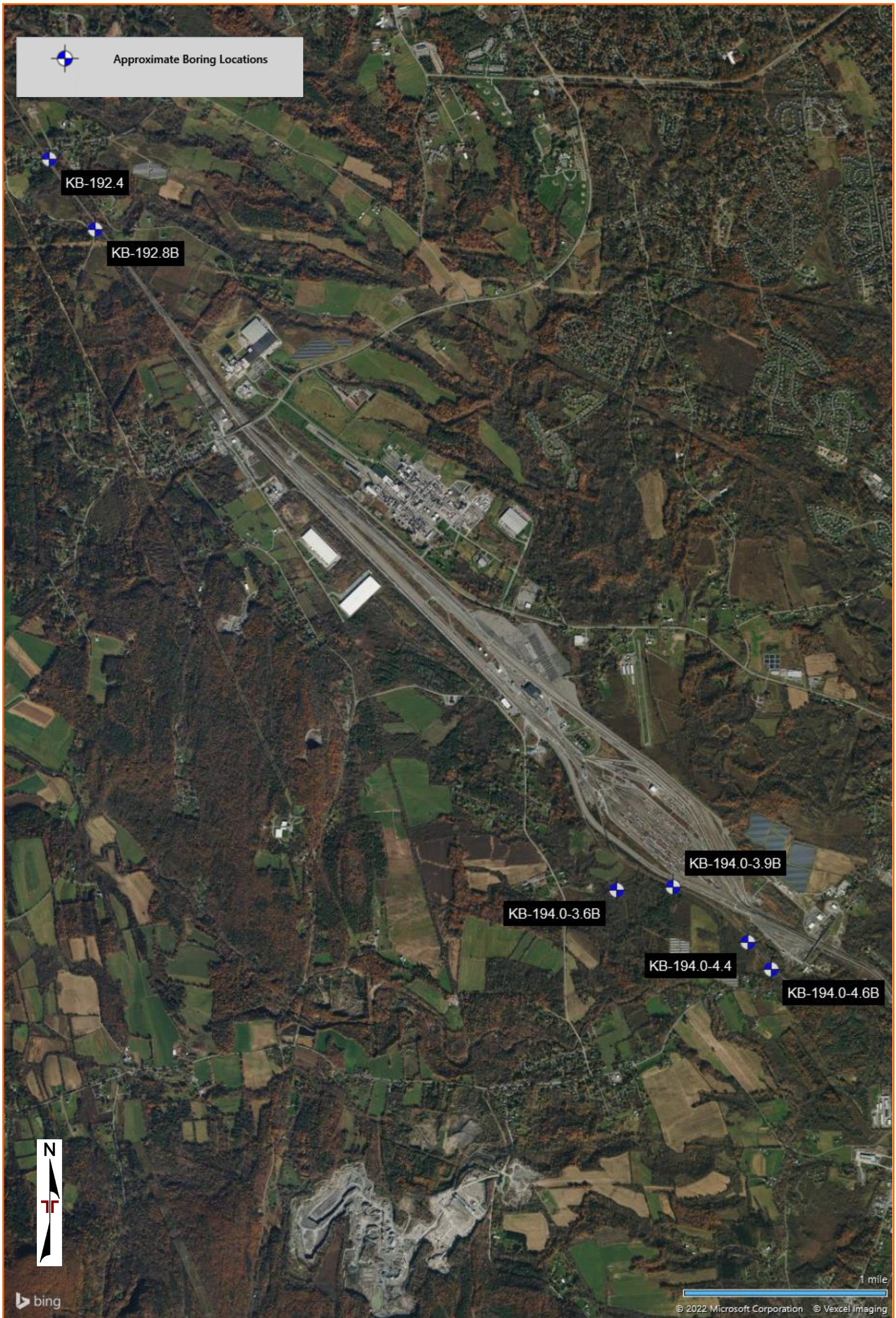


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

BORING LOG NO. KB-192.4

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.599764° Longitude: -73.891611°

Surface Elev.: 238.6860 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		"Soft Dig" (by others) to 10 feet. Set casing at 10'	5							
10.0	228.7	**LEAN CLAY (CL)**, varved silt and clay, occasional fine sand partings, brown, very soft to stiff	10			24	3-4-6-8 N=10			
			15			24	2-2-3-4 N=5	36.9	43-25-18	88
		grades gray	20			24	WH-WH-WH-WH			
			25			24	WH-WH-WH-WH	42.6	44-24-20	98

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-85' 3" casing, mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer
WR = Weight of rods

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-21-2022 | Boring Completed: 09-21-2022
Drill Rig: Diedrich D-50 | Driller: S. Morey
Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

BORING LOG NO. KB-192.4

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.599764° Longitude: -73.891611°

Surface Elev.: 238.6860 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
LEAN CLAY (CL), varved silt and clay, occasional fine sand partings, brown, very soft to stiff *(continued)*								
	30			24	WR-WR-WR-WR			
	35			24	WR-WR-WR-WR			
	40			24	WR-WR-WH-WH			
	45			24	WR-WR-WR-WH	46.0	45-25-20	92
	50			24	WR-WR-WR-WH			
55.0 183.7	55				12-10-11-9			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-85' 3" casing, mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer
WR = Weight of rods

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-21-2022 | Boring Completed: 09-21-2022
Drill Rig: Diedrich D-50 | Driller: S. Morey
Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

BORING LOG NO. KB-192.4

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.599764° Longitude: -73.891611°

Surface Elev.: 238.6860 (Ft.)

DEPTH ELEVATION (Ft.)

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SILTY SAND (SM), occasional cobbles and boulders, shale fragments noted, gray, medium dense to very dense, (GLACIAL TILL) *(continued)*				21	N=21			
	60			18	16-13-14-14 3" Split Spoon Bulk Sample			
				20	16-17-17-20 3" Split Spoon Bulk Sample			
	65			10	21-20-25-28 N=45	8.0		24
	70			4	50/4"			
	75			9	45-50/3"			
	80			4	50/4"			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-85' 3" casing, mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer
WR = Weight of rods

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-21-2022	Boring Completed: 09-21-2022
Drill Rig: Diedrich D-50	Driller: S. Morey
Project No.: JB215256G	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

BORING LOG NO. KB-192.4

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.599764° Longitude: -73.891611°

Surface Elev.: 238.6860 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS		WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	85.3	153.4	85			0	50/3"				

SILTY SAND (SM), occasional cobbles and boulders, shale fragments noted, gray, medium dense to very dense, (GLACIAL TILL) *(continued)*

Boring Terminated at 85.25 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-85' 3" casing, mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer
WR = Weight of rods
Logged by AB

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-21-2022 | Boring Completed: 09-21-2022

Drill Rig: Diedrich D-50 | Driller: S. Morey

Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

Summary of Laboratory Results

BORING ID	Depth (Ft.)	Water Content (%)	Organic Content (%)
KB-182.7B	20-22	31.1	
KB-182.7B	50-52	35.4	
KB-182.7B	80-82	26.5	
KB-184.2	4-6	17.3	
KB-184.2	20-21.5	10.0	
KB-184.9	10-12	35.4	
KB-184.9	25-26.5	8.6	
KB-184.9	40-42	9.2	
KB-184.9	55-56.5	12.2	
KB-185.4	6-8	34.3	
KB-185.4	20-21.5	13.7	
KB-185.4	35-39	9.1	
KB-185.4	45-47	14.7	
KB-192.4	15-17	36.9	
KB-192.4	25-27	42.6	
KB-192.4	45-47	46.0	
KB-192.4	65-67	8.0	
KB-192.8B	15-17	36.5	
KB-192.8B	40-40.2	14.1	
KB-192.8B	50-50.2	14.2	
KB-194.0-3.6B	5-7	31.0	
KB-194.0-3.6B	30-32	37.9	
KB-194.0-3.6B	50-52	39.6	
KB-194.0-3.6B	70-72	46.7	
KB-194.0-3.9B	4-6	31.5	
KB-194.0-3.9B	25-26.5	50.2	
KB-194.0-3.9B	45-46.5	43.4	
KB-194.0-3.9B	60-61.5	52.9	
KB-194.0-4.4	20-22	50.1	
KB-194.0-4.4	40-42	37.9	
KB-194.0-4.4	50-52	47.6	
KB-194.0-4.4	70-72	37.4	
KB-194.0-4.6B	4-6	24.1	
KB-194.0-4.6B	20-21.5	40.3	
KB-194.0-4.6B	40-41.5	42.9	
KB-194.0-4.6B	60-61.5	45.6	
KB-200.6	8-10	20.3	
KB-200.6	30-32	30.5	
KB-200.6	45-47	26.3	
KB-200.6	55-57	33.6	
KB-200.8A	15-17	39.6	
KB-200.8A	35-36.5	45.0	

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

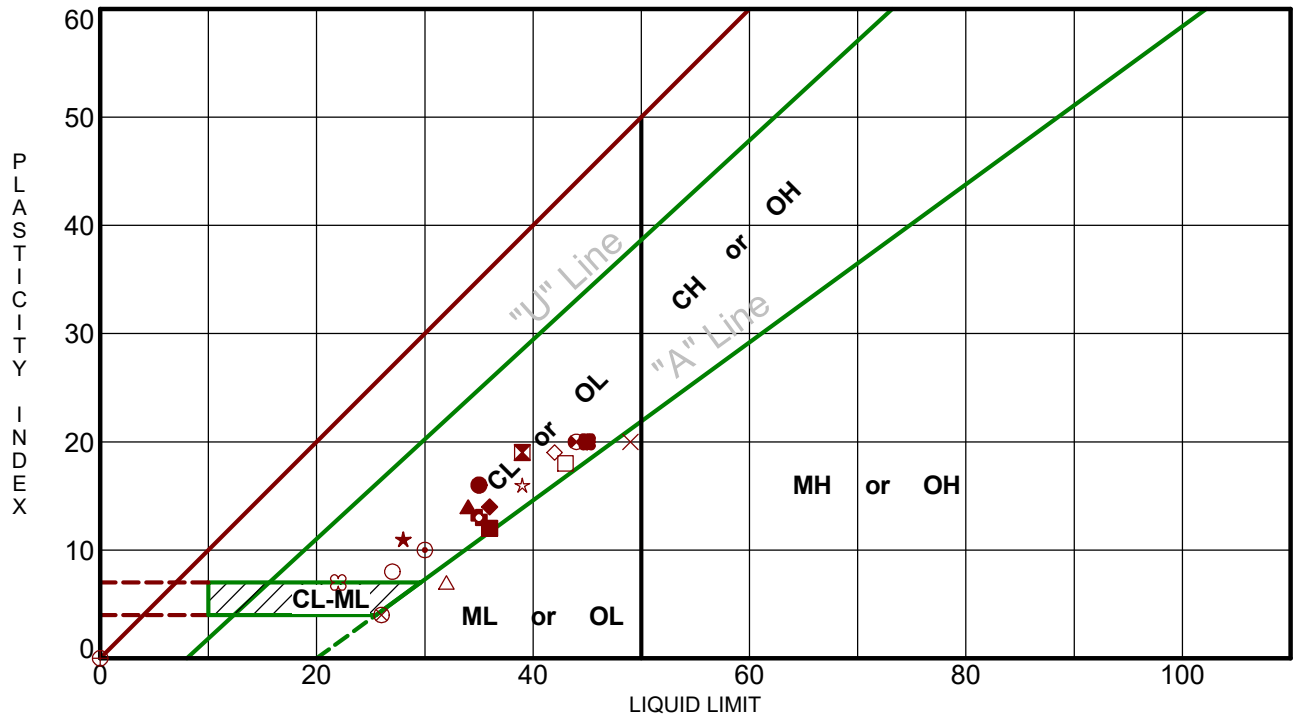
PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	KB-135.7	30 - 32	35	19	16	96.6	CL	LEAN CLAY
⊠	KB-135.8	15 - 17	39	20	19	93.6	CL	LEAN CLAY
▲	KB-135.8	30 - 32	34	20	14	94.2	CL	LEAN CLAY
★	KB-135.8	40 - 42	28	17	11	99.5	CL	LEAN CLAY
⊙	KB-182.7B	20 - 22	30	20	10	98.6	CL	LEAN CLAY
✿	KB-182.7B	50 - 52	35	22	13	98.6	CL	LEAN CLAY
○	KB-182.7B	80 - 82	27	19	8	98.3	CL	LEAN CLAY
△	KB-184.9	10 - 12	32	25	7	86.1	ML	SILT
⊗	KB-185.4	6 - 8	26	22	4	87.4	ML	SILT
⊕	KB-185.4	20 - 21.5	NP	NP	NP	15.8	SM	SILTY SAND
□	KB-192.4	15 - 17	43	25	18	87.5	CL	LEAN CLAY
⊗	KB-192.4	25 - 27	44	24	20	97.7	CL	LEAN CLAY
◕	KB-192.4	45 - 47	45	25	20	92.4	CL	LEAN CLAY
☆	KB-192.8B	15 - 17	39	23	16	81.8	CL	LEAN CLAY with SAND
✿	KB-192.8B	50 - 50.2	22	15	7	26.0	SC-SM	SILTY, CLAYEY SAND
■	KB-194.0-3.6B	5 - 7	36	24	12	89.4	CL	LEAN CLAY
◆	KB-194.0-3.6B	30 - 32	36	22	14	95.7	CL	LEAN CLAY
◇	KB-194.0-3.6B	50 - 52	42	23	19	95.7	CL	LEAN CLAY
×	KB-194.0-3.6B	70 - 72	49	29	20	91.9	ML	SILT
✖	KB-194.0-3.9B	4 - 6	45	25	20	76.6	CL	LEAN CLAY with SAND

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

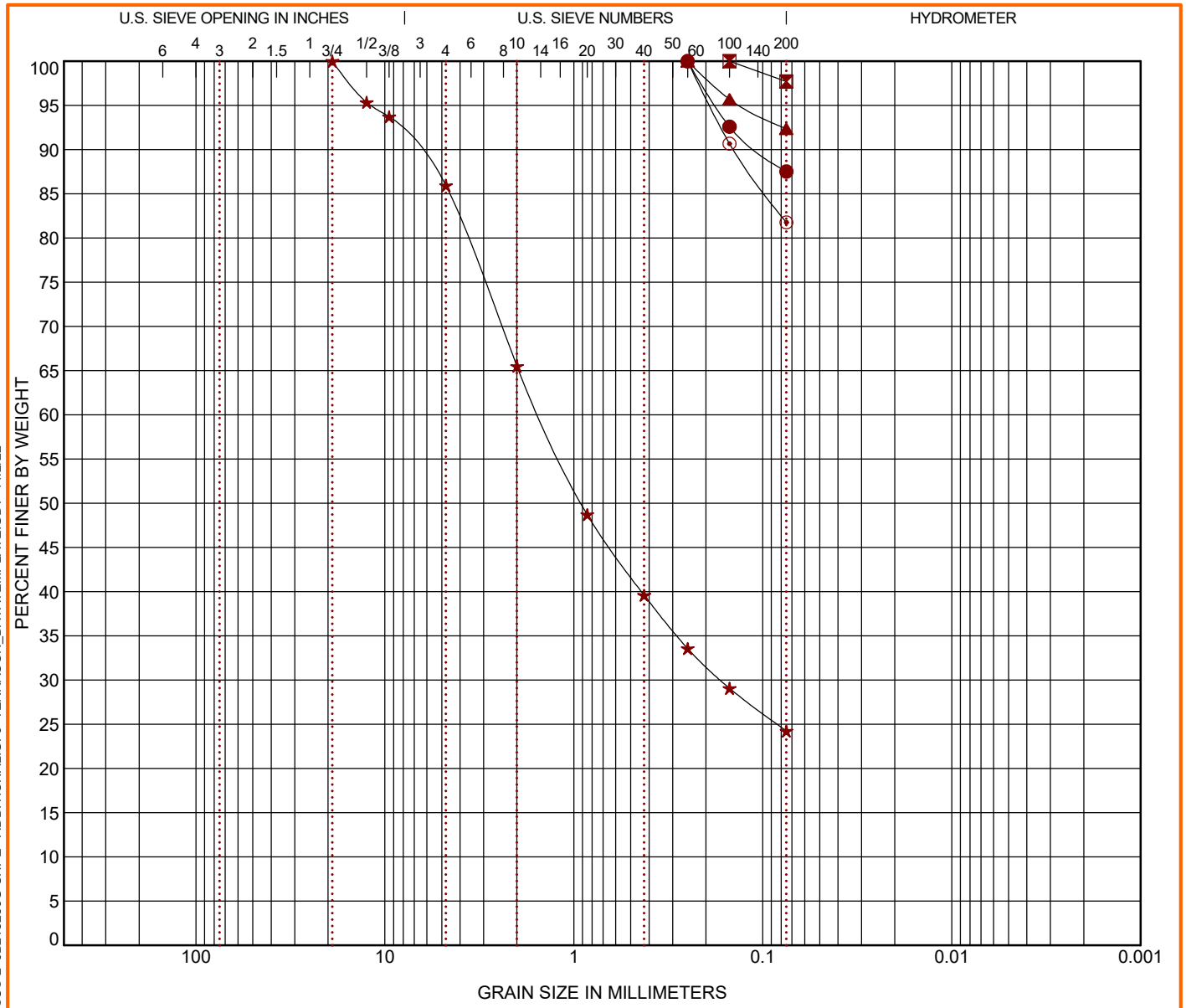
PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-192.4	15 - 17	LEAN CLAY (CL)	36.9	43	25	18		
⊠	KB-192.4	25 - 27	LEAN CLAY (CL)	42.6	44	24	20		
▲	KB-192.4	45 - 47	LEAN CLAY (CL)	46.0	45	25	20		
★	KB-192.4	65 - 67	SILTY SAND (SM)	8.0					
⊙	KB-192.8B	15 - 17	LEAN CLAY with SAND (CL)	36.5	39	23	16		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-192.4	15 - 17	0.25				0.0	0.0	12.5		87.5	
⊠	KB-192.4	25 - 27	0.15				0.0	0.0	2.3		97.7	
▲	KB-192.4	45 - 47	0.25				0.0	0.0	7.6		92.4	
★	KB-192.4	65 - 67	19	1.511	0.167		0.0	14.1	61.7		24.2	
⊙	KB-192.8B	15 - 17	0.25				0.0	0.0	18.2		81.8	

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

Kiewit

MEMORANDUM

DATE: February 13, 2023

TO: Nick Strater; Brierley Associates Underground Engineers, PLLC.

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

SUBJECT: Geotechnical Data: Segment 8 – Package 5 – HDD Crossing 87 – Revision 1
Champlain Hudson Power Express Project
Schenectady, New York

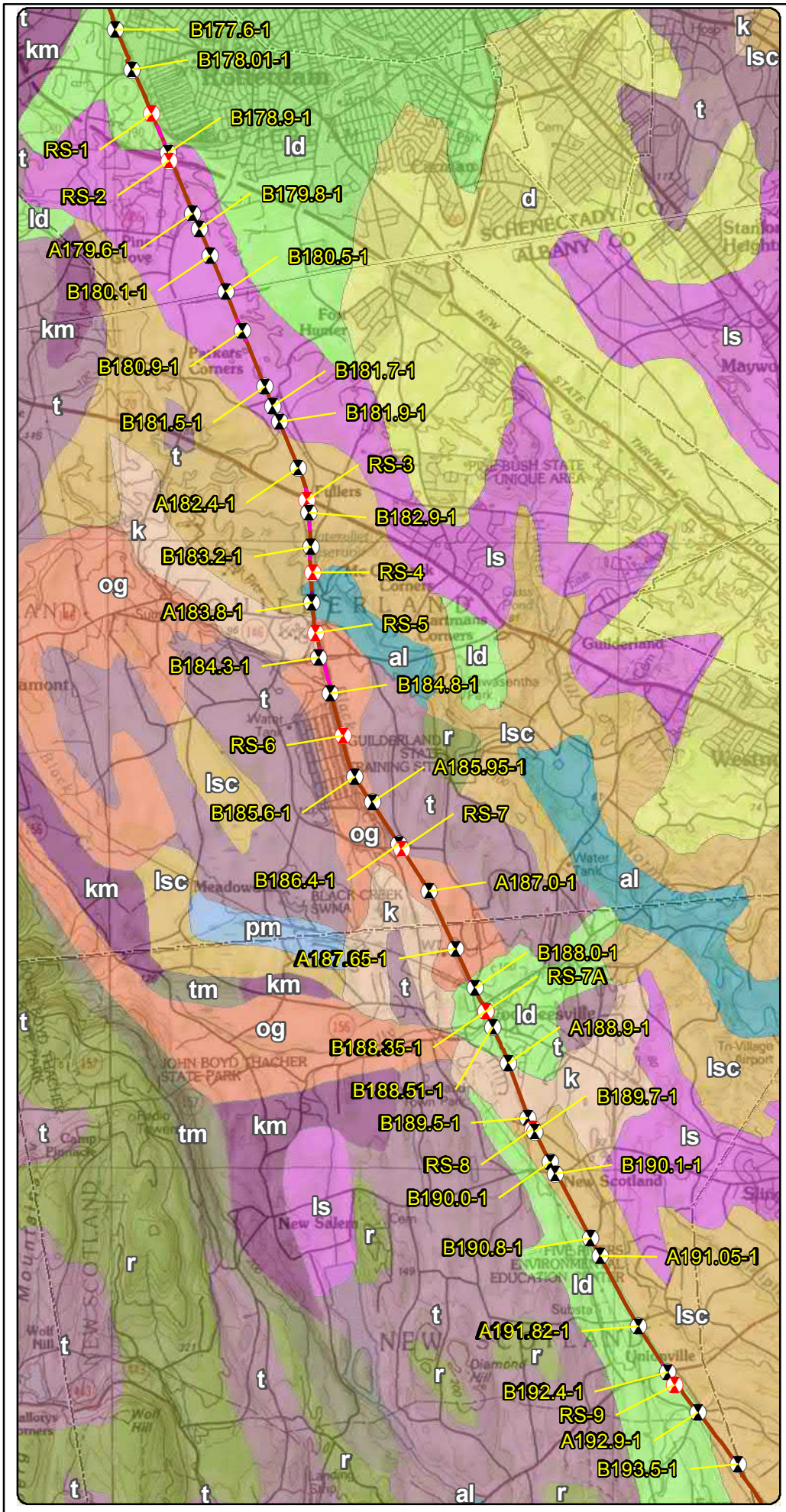
Kiewit Engineering is providing the attached geotechnical data for use in the horizontal direction drill (HDD) design for the Champlain Hudson Power Express project in Upstate New York. This HDD crossing is located south of Schenectady, New York. The approximate station for the start of HDD crossing Number 87 is STA 50831+00 (42.5959° N, 73.8878° W).

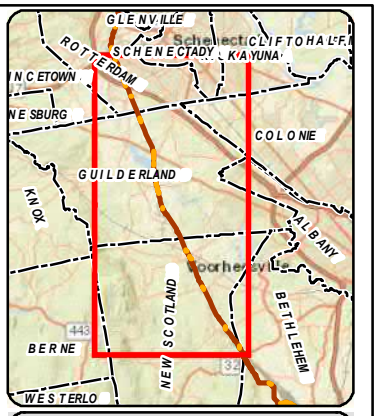
The geotechnical data at this HDD crossing is attached. The available data is from the previous investigation by TRC and the recent investigations by Terracon and Kiewit, referenced below.

- Kiewit Engineering (NY) Corp., Package 5 Phase 3 Borings, Champlain Hudson Power Express, New York, dated December 9, 2022.
- TRC, Geotechnical Data Report, Champlain Hudson Power Express, Canadian Pacific Railway Borings MP 177.6-228.2, dated March 15, 2013.
- Terracon, Geotechnical Data Report, Champlain-Hudson Power Express – Additional HDD Borings – Phase 3, Fort Ann to Coxsackie, dated November 3, 2022.

Contact us if you have questions or require additional information.

HDD 87
Borings A192.9-1,
KB-192.8A, KB-192.8B
Segment 8 - Package 5





LEGEND

- 2021 Boring Location
- Previous (2013) Boring Location
- Terrestrial Route HVDC
- Submarine Route HVDC
- Terrestrial Route HVAC
- Preliminary HDD Locations
- Preliminary Pipe Bridge Location
- Town Boundary
- County Boundary

Surficial Geology

- al - Recent alluvium
- d - Dunes
- k - Kame deposits
- km - Kame moraine
- ld - Lacustrine delta
- ls - Lacustrine sand
- lsc - Lacustrine silt and clay
- og - Outwash sand and gravel
- pm - Swamp deposits
- r - Bedrock
- t - Till
- tm - Till moraine

N

0.7 0.35 0 0.7 Miles

Transmission Developers Inc.

Champlain Hudson Power Express Project

Champlain Hudson Power Express Inc.

Surficial Geology and Geotechnical Borings Rotterdam to Selkirk Figure 3-8

Prepared on 5/4/2021

by: AECOM

DATA SOURCES: ESRI, NYSDOT, NOAA, USACE, NYDOS, TDI, TRC

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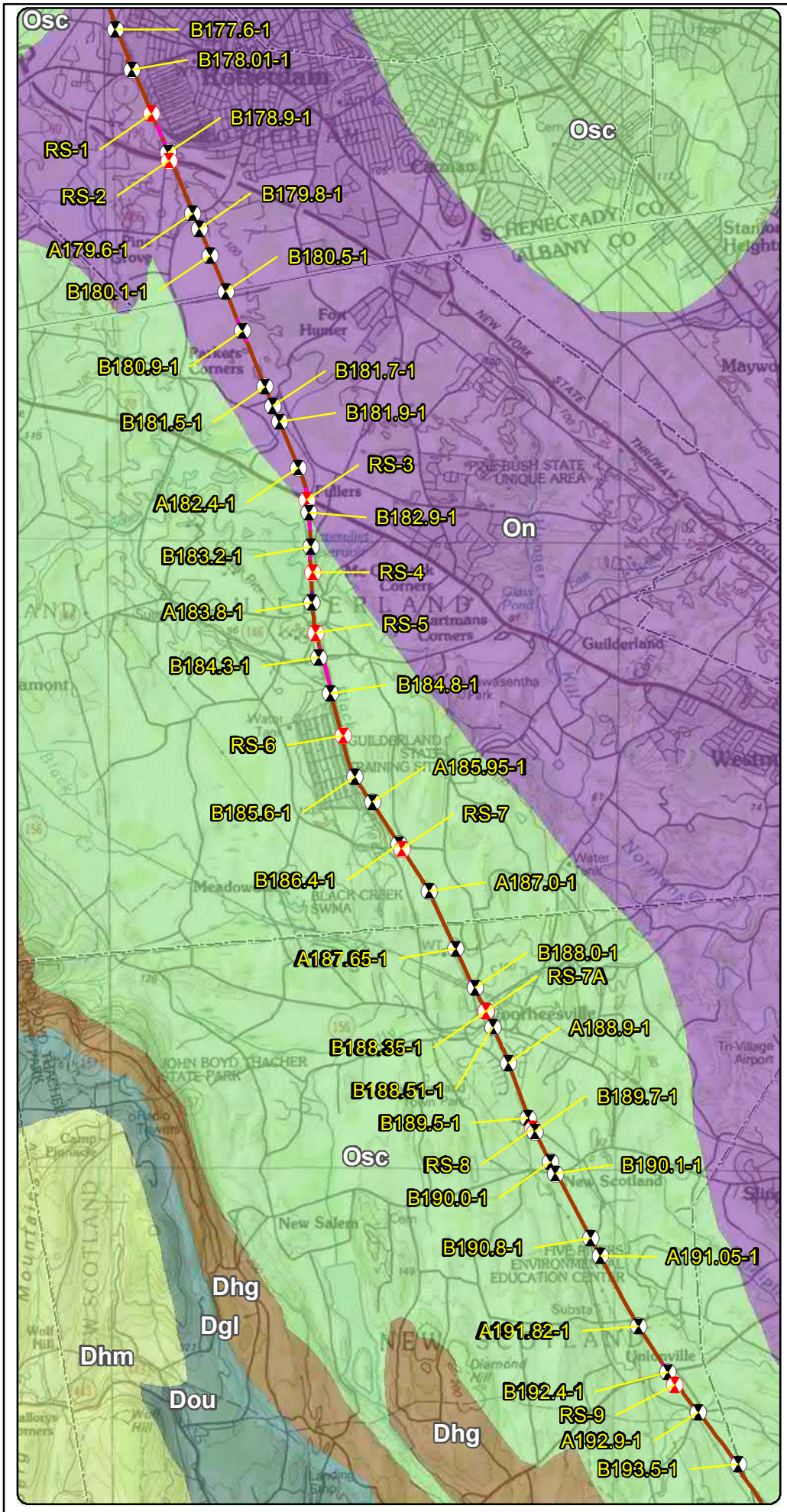
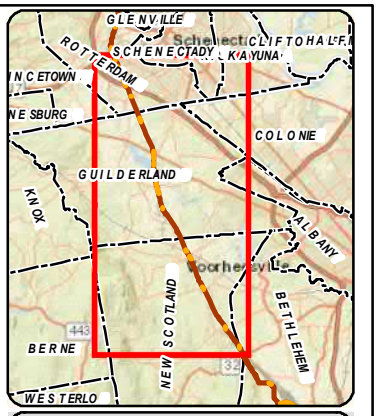




LEGEND

- 2021 Boring Location
- Previous (2013) Boring Location
- Terrestrial Route HVDC
- Submarine Route HVDC
- Terrestrial Route HVAC
- Preliminary HDD Locations
- Preliminary Pipe Bridge Location
- Town Boundary
- County Boundary

Bedrock Geology

- Dgl - Glenerie Formation
- Dhg - Port Ewen Formation
- Dhm - Undiff Lower Hamilton Group
- Dou - Onondaga Limestone
- On - Normanskill Shale
- Osc - Schenectady Formation

* Schenectady Formation includes: graywacke, sandstone, siltstone, shale

N

0.7 0.35 0 0.7 Miles

Transmission

Champlain Hudson Power Express Project

Champlain Hudson Power Express Inc.

Bedrock Geology and Geotechnical Borings Rotterdam to Selkirk Figure 4-8

Prepared on 5/4/2021

by: AECOM

DATA SOURCES: ESRI, NYSDOT, NOAA, USACE, NYDOS, TDI, TRC

Y:\Projects\CHPE\IRoute\Consensus_Alternative_Routes\MXD\Alt_5_Routes_DZ_201909\Boring_Locations\Maps_for_May_2021_Report\Rotterdam_to_Selkirk_Boring_Locations_Bedrock_May_2021_Report.mxd

TEST BORING LOG

PROJECT: TDI CHAMPLAIN HUDSON POWER EXPRESS
LOCATION: CSX RAILROAD ROW, NY

BORING	**A192.9-1**
G.S. ELEV.	N/A
FILE	195651
SHEET	1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED 4.0 '			
DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '

DRILLER	P. PLANTIER
HELPER	M. NAGEY
INSPECTOR	C. POPPE
DATE STARTED	02/01/2013
DATE COMPLETED	02/01/2013

DEPTH	A	B	C	DESCRIPTION	Wn	REMARKS
	S-1	2 2 3 4		***BROWN CLAY, TR TO SM F/M/C SAND, TR TO SM SILT*** 2.0		
	S-2	2 2 1 2			34.1	
5	S-3	2 4 2 4		***GRAY SILTY CLAY***	39.4	
	S-4	2 1 1 2			39.1	
10	S-5	2 1 1 1		10.0		
				END OF BORING AT 10'		
15						
20						
25						
30						
35						

DRN.	JPB
CKD.	PWK

NEW PROJECTS TEST BORING LOG 195651_TDI_CSX.GPJ SITE BLAUVELT.GDT 3/12/13

SUMMARY OF LABORATORY TEST DATA

Project Name: TDI Champlain Hudson Power Express – CSX
Client Name: Transmission Developers, Inc.
TRC Project #: 195651

SAMPLE IDENTIFICATION			Soil Group (USCS System)	GRAIN SIZE DISTRIBUTION				PLASTICITY				Specific Gravity	Moisture Content (%)	Unit Weight (pcf)	Compressive Strength (tsf)	Organic Content (%)
Boring #	Sample #	Depth (ft)		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index)					
	S-7	18.5-20.0	-	0.0	2.5	28.8	68.7	-	-	-	-	2.77	35.1	-	-	-
A192.9-1	S-2	2.0-4.0	-	-	-	-		-	-	-	-	-	34.1	-	-	-
	S-3	4.0-6.0	-	-	-	-		-	-	-	-	-	39.4	-	-	-
	S-4	6.0-8.0	-	-	-	-		-	-	-	-	-	39.1	-	-	-
B193.5-1	S-3	4.0-6.0	-	-	-	-		-	-	-	-	-	27.1	100.5	-	-
	S-5	8.0-10.0	-	-	-	-		-	-	-	-	-	41.0	-	-	-
	S-6	13.5-15.0	-	-	-	-		-	-	-	-	-	38.6	-	-	-
	S-7	18.5-20.0	CL	-	-	-		45	25	20	1.2	-	49.2	-	-	-
B198.7-1	S-1	0.0-2.0	-	-	-	-		-	-	-	-	-	17.8	-	-	-
	S-2	2.0-4.0	SM	0.0	73.6	26.4		-	-	-	-	-	5.3	-	-	-
	S-3	4.0-6.0														

Package 5 Phase 3 Borings

Champlain Hudson Power Express

New York

PROJECT NUMBER 20001480

CREATED BY Kiewit

DATE 12/09/2022

Legend Key

- Kiewit Borings (2022)

N

EXPLORATORY BORING LOG

Champlain Hudson Power Express

New York

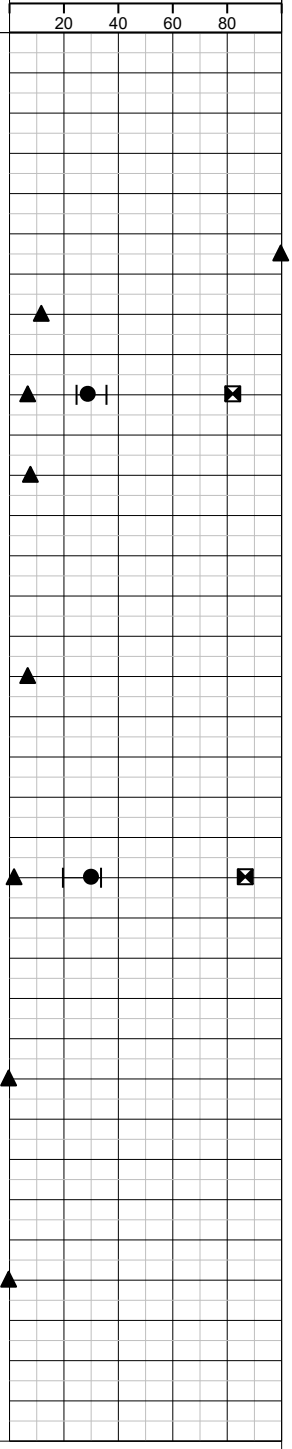
BORING NO: KB-192.8A

PROJECT NUMBER	20001480	**LOGGED BY**	A. McCart	**COORDINATES**	N 1371169.75 E 656839.32
START DATE	08/30/2022	**DRILLER/RIG**	R. Navatka / CME 550	**GROUND ELEV.**	242.1 ft
FINISH DATE	08/31/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Automatic

Depth (ft)	Elevation (ft)	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
		Excavated to 5 ft by air knife and vacuum						Boring advanced with 4.25" ID HSA
5	237.1	SILT with Sand (ML), light brown, firm to stiff, dry Some gray mottling at 6 - 8 ft			92%		3-6	
					79%		3-6-6-10 (12)	
					100%		3-3-4-6 (7)	
10					79%		4-4-4-4 (8)	
15					100%		1-2-5-6 (7)	
20	222.1	Lean CLAY (CL), dark grayish brown, soft to very soft, moist			100%		1-1-1-1 (2)	
25		Wet below 25 ft			100%		0-0-0-0 (0)	WOH
30					100%		0-0-0-0 (0)	WOH
	210.1	Silty CLAY with Sand (CL-ML), dark grayish brown, very soft, wet						
35								

Legend

- ▲ SPT N Value
- ● MC (%)
- — PL & LL (%)
- ⊠ Fines Content (%)



EXPLORATORY BORING LOG

Champlain Hudson Power Express

New York

BORING NO: KB-192.8A

PROJECT NUMBER	20001480	**LOGGED BY**	A. McCart	**COORDINATES**	N 1371169.75 E 656839.32
START DATE	08/30/2022	**DRILLER/RIG**	R. Navatka / CME 550	**GROUND ELEV.**	242.1 ft
FINISH DATE	08/31/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Automatic

Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
			Silty CLAY with Sand (CL-ML), dark grayish brown, very soft, wet			100%		0-0-0-0 (0)	WOH
40						66%		0-0-0-0 (0)	WOH
45						75%		0-0-0-6 (0)	
50						100%		20-50/3"	
	190.6		Shale, gray, slightly to moderately weathered		1	44% / 0			
55			Soft clay seam at 55 - 55.1 ft		2	100% / 0			
			Vertical fracture at 58.3 - 58.8 ft		3	90% / 25			
			Vertical fracture at 59.1 - 59.3 ft						
60	181.6		Boring Terminated at 60.5 ft						Coring stopped at 60.5 ft (planned depth 80 ft) due to stuck core barrel
65									
70									

Legend

- ▲ SPT N Value
- ● MC (%)
- — PL & LL (%)
- ⊠ Fines Content (%)

20 40 60 80

Summary of Laboratory Results

BORING ID	Depth (Ft.)	Water Content (%)
KB-183.6	8	11.5
KB-183.8	4-6	12.7
KB-184.0	4-6	19.9
KB-184.0	10-12	14.1
KB-187.5	10-12	15.9
KB-187.5	20-22	9.2
KB-187.5	30-32	14.1
KB-187.5	40-42	12.2
KB-187.5	45-47	10.9
KB-187.5	60-62	7.5
KB-187.7	10-12	6.3
KB-187.7	20-22	24.3
KB-187.7	35-37	7.2
KB-187.7	55-57	6.6
KB-190.8	4-6	10.9
KB-190.8	15-17	22.7
KB-191.7	4-6	24.0
KB-191.7	10-12	28.2
KB-191.7	25-27	33.6
KB-192.8A	8-10	29.1
KB-192.8A	20-22	30.3
KB-192.8A	40-42	19.6
KB-193.9	4-6	30.2
KB-193.9	10-12	35.1
KB-193.9	15-17	36.0
KB-193.9	35-37	56.2
KB-194.0	4-6	37.9
KB-194.0	15-17	49.1
KB-194.0	25-27	49.4
KB-194.0	35-37	11.2
KB-220.5	8-10	14.2
KB-221.0A	4-6	30.5
KB-221.0A	8-10	9.0
KB-221.0A	15-17	6.1
KB-221.0A	25-27	6.1
KB-221.0A	35-37	6.8
KB-221.3	8	17.8
KB-221.4	4-6	14.8
KB-221.4	8-10	10.5
KB-222.2	7-9	37.9
KB-222.2	25-27	36.9
KB-222.2	40-42	38.2

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

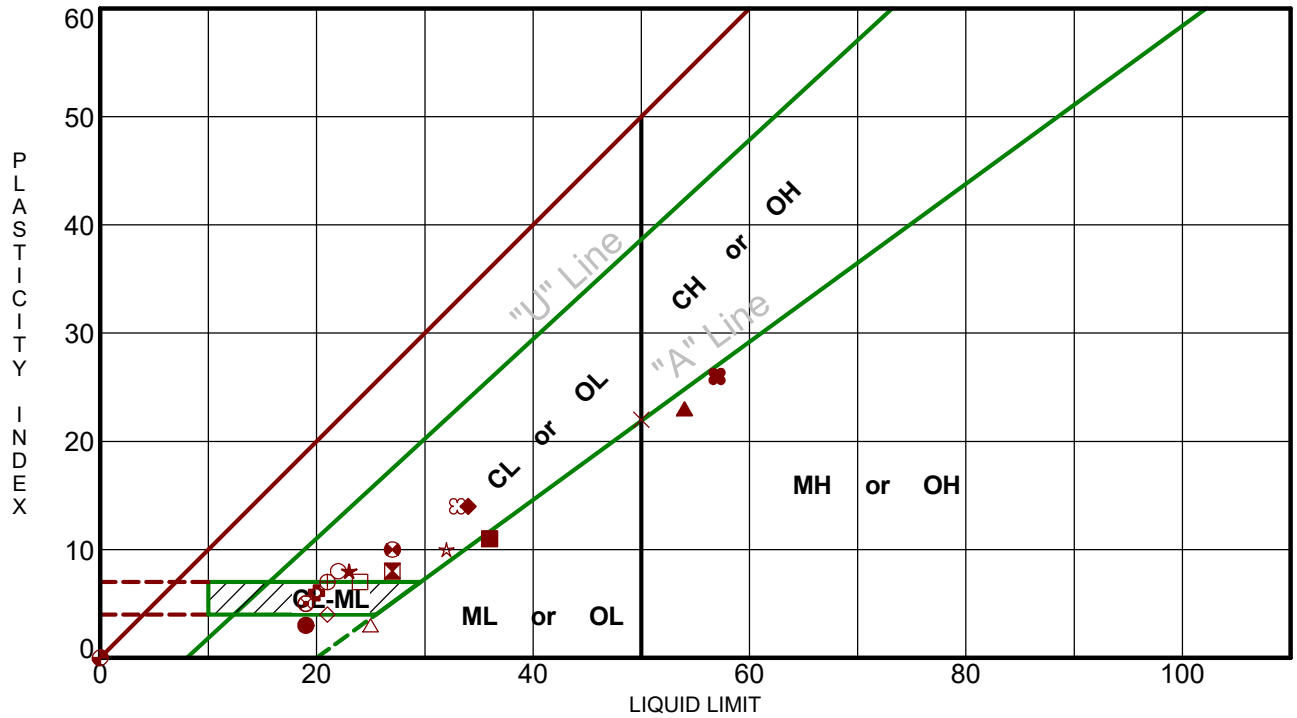
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	KB-183.6	8	19	16	3	53.0	ML	GRAVELLY SILT with SAND
⊠	KB-183.8	4 - 6	27	19	8	17.4	SC	CLAYEY SAND with GRAVEL
▲	KB-187.5	20 - 22	54	31	23	48.6	GM	SILTY GRAVEL with SAND
★	KB-187.5	30 - 32	23	15	8	51.9	CL	SANDY LEAN CLAY
⊙	KB-187.5	40 - 42	19	14	5	38.8	SC-SM	SILTY, CLAYEY SAND with GRAVEL
✿	KB-187.5	45 - 47	20	14	6	42.8	SC-SM	SILTY, CLAYEY SAND
○	KB-187.5	60 - 62	22	14	8	33.7	SC	CLAYEY SAND with GRAVEL
△	KB-187.7	20 - 22	25	22	3	64.0	ML	SANDY SILT with GRAVEL
⊗	KB-187.7	35 - 37	19	14	5	24.3	SC-SM	SILTY, CLAYEY SAND with GRAVEL
⊕	KB-187.7	55 - 57	21	14	7	15.5	SC-SM	SILTY, CLAYEY SAND with GRAVEL
□	KB-190.8	4 - 6	24	17	7	21.5	GC-GM	SILTY, CLAYEY GRAVEL with SAND
⊗	KB-190.8	15 - 17	27	17	10	94.2	CL	LEAN CLAY
◕	KB-191.7	4 - 6	NP	NP	NP	82.8	ML	SILT with SAND
☆	KB-191.7	10 - 12	32	22	10	98.4	CL	LEAN CLAY
✿	KB-191.7	25 - 27	33	19	14	99.4	CL	LEAN CLAY
■	KB-192.8A	8 - 10	36	25	11	82.4	ML	SILT with SAND
◆	KB-192.8A	20 - 22	34	20	14	87.0	CL	LEAN CLAY
◇	KB-192.8A	40 - 42	21	17	4	84.9	CL-ML	SILTY CLAY with SAND
×	KB-193.9	4 - 6	50	28	22	77.9	CH	FAT CLAY with SAND
✖	KB-193.9	10 - 12	57	31	26	71.4	MH	ELASTIC SILT with SAND

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

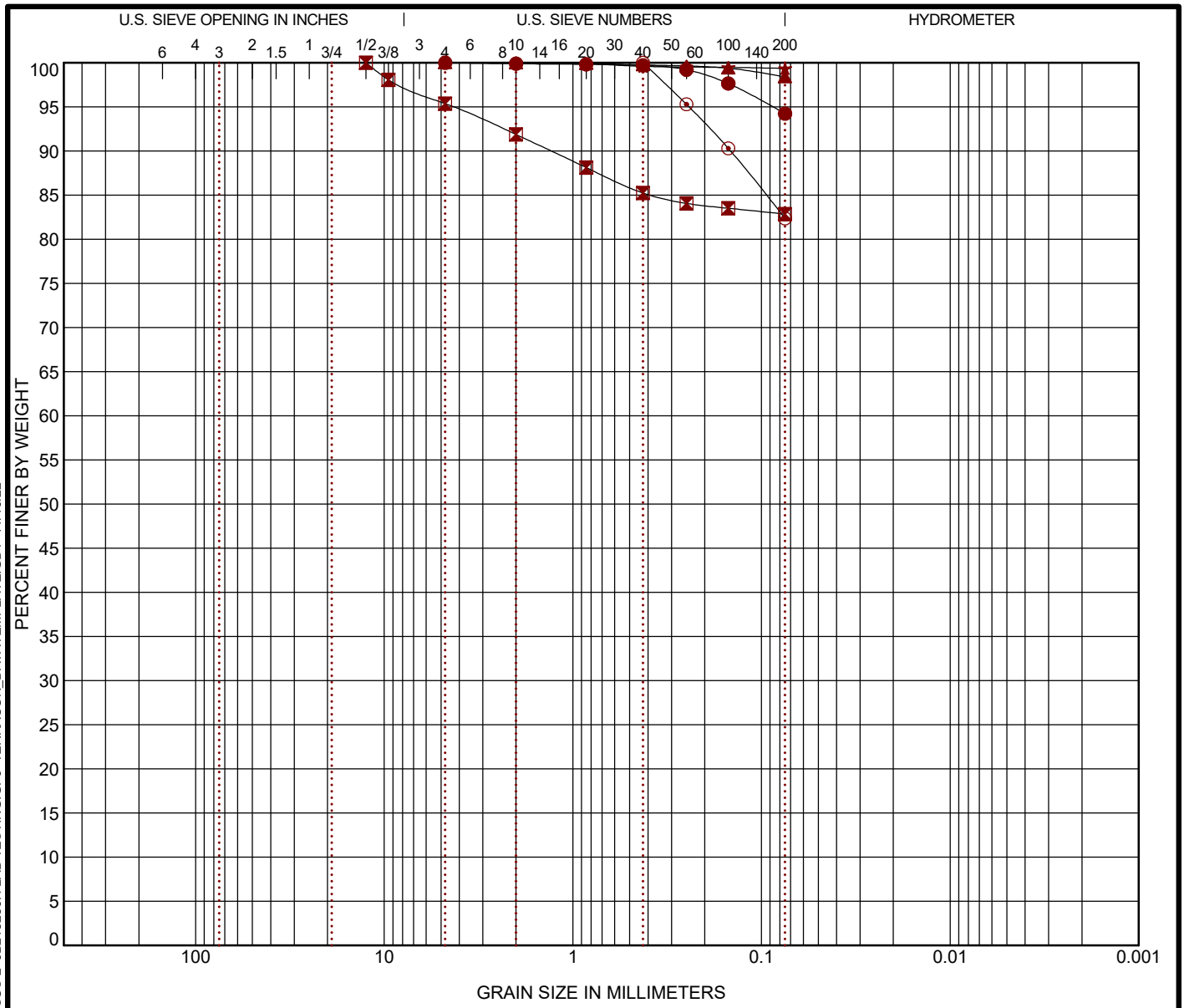
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-190.8	15 - 17	LEAN CLAY (CL)	22.7	27	17	10		
⊠	KB-191.7	4 - 6	SILT with SAND (ML)	24.0	NP	NP	NP		
▲	KB-191.7	10 - 12	LEAN CLAY (CL)	28.2	32	22	10		
★	KB-191.7	25 - 27	LEAN CLAY (CL)	33.6	33	19	14		
⊙	KB-192.8A	8 - 10	SILT with SAND (ML)	29.1	36	25	11		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-190.8	15 - 17	4.75				0.0	0.0	5.8		94.2	
⊠	KB-191.7	4 - 6	12.5				0.0	4.6	12.5		82.8	
▲	KB-191.7	10 - 12	4.75				0.0	0.0	1.6		98.4	
★	KB-191.7	25 - 27	2				0.0	0.0	0.6		99.4	
⊙	KB-192.8A	8 - 10	0.425				0.0	0.0	17.6		82.4	

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

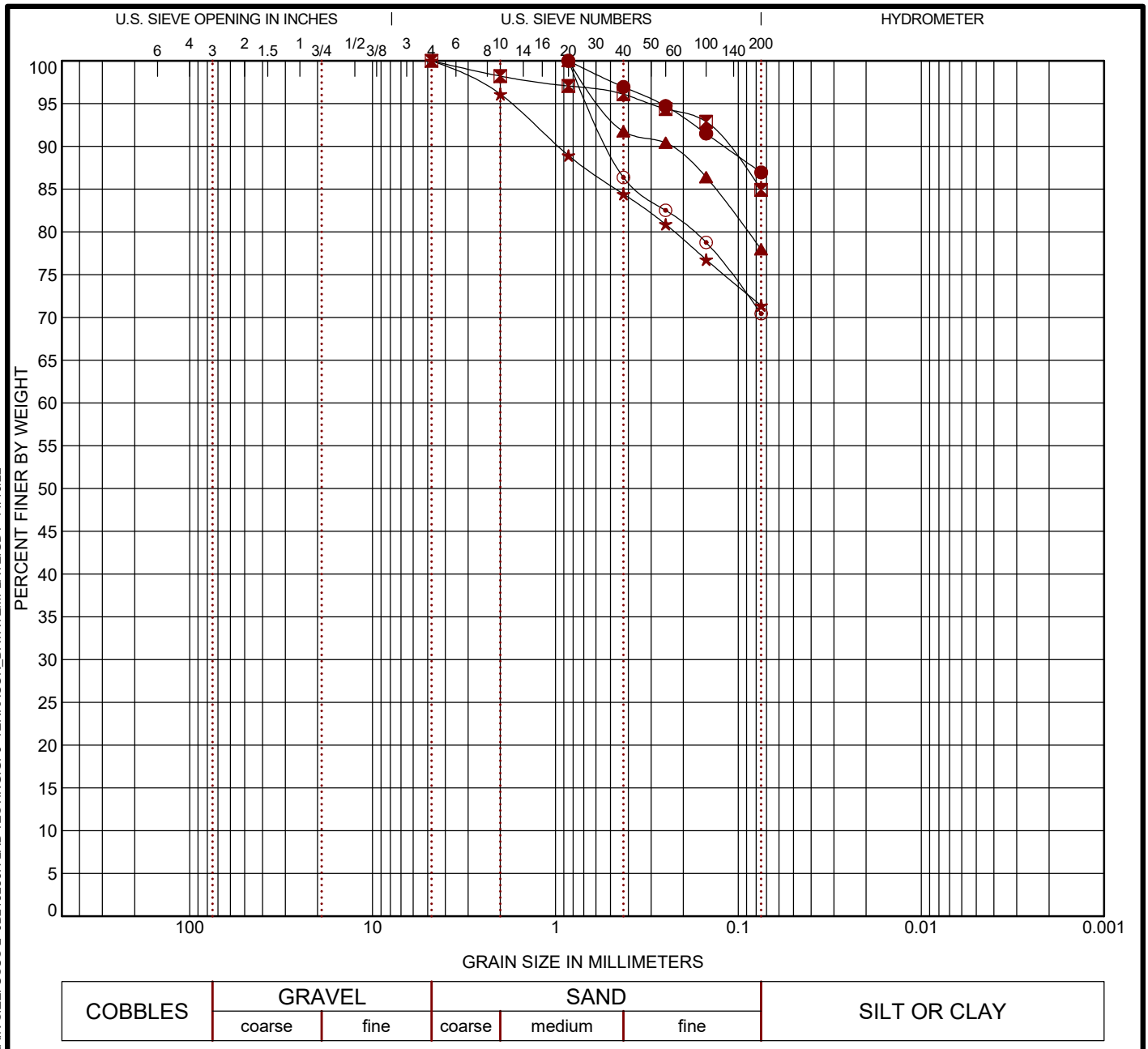
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-192.8A	20 - 22	LEAN CLAY (CL)	30.3	34	20	14		
⊠	KB-192.8A	40 - 42	SILTY CLAY with SAND (CL-ML)	19.6	21	17	4		
▲	KB-193.9	4 - 6	FAT CLAY with SAND (CH)	30.2	50	28	22		
★	KB-193.9	10 - 12	ELASTIC SILT with SAND (MH)	35.1	57	31	26		
⊙	KB-193.9	15 - 17	LEAN CLAY with SAND (CL)	36.0	46	27	19		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-192.8A	20 - 22	0.85				0.0	0.0	13.0		87.0	
⊠	KB-192.8A	40 - 42	4.75				0.0	0.0	15.1		84.9	
▲	KB-193.9	4 - 6	0.85				0.0	0.0	22.1		77.9	
★	KB-193.9	10 - 12	4.75				0.0	0.0	28.6		71.4	
⊙	KB-193.9	15 - 17	0.85				0.0	0.0	29.6		70.4	

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

Champlain Hudson Power Express
Kiewit Engineering (NY) Corp.

KB-192.8A - Runs 1 through 3

CERCHAR Abrasiveness
ASTM D7625

CLIENT	Terracon	JOB NO.	2261-249
PROJECT	Champlain-Hudson Power Express	LOCATION	--
PROJECT NO.	JB215256		

BORING NO.	KB-192.8A	KB-226.1
DEPTH	54.5	40.0-45.0
SAMPLE NO.		
DATE SAMPLED		
DATE TESTED	10/18/22	10/18/22
TECHNICIAN	HN	HN
ROCK TYPE		

Surface Type:	Natural	Saw Cut
Moisture Condition	As Received	As Received
Reading A.1 (in):	0.00920	0.00480
Reading A.2 (in):	0.01350	0.00750
Reading A.3 (in):	0.00380	0.00600
Reading A.4 (in):	0.00890	0.00640
Reading A.5 (in):	0.00830	0.00650
Reading B.1 (in):	0.00790	0.00770
Reading B.2 (in):	0.01620	0.00760
Reading B.3 (in):	0.00540	0.00670
Reading B.4 (in):	0.00790	0.00500
Reading B.5 (in):	0.00850	0.00700
Average Reading (in):	0.00896	0.00652
Average Reading (mm):	0.2276	0.1656
Uncorrected CAI or CAI_s:	**2.28**	**1.66**
Corrected CAI:	**--**	**2.12**

NOTES

CAI_s 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:	DL	Date:	10/19/22
Checked by:	HN	Date:	10/19/22
File name:	2261249__CHERCHAR ASTM D7625_0.xlsm		

CHERCHAR Abrasiveness
ASTM D7625

CLIENT	Terracon	BORING NO.	KB-192.8A
JOB NO.	2261-249	DEPTH	54.5
PROJECT	Champlain-Hudson Power Express	SAMPLE NO.	--
PROJECT NO.	JB215256	DATE SAMPLED	--
LOCATION	--	DATE TESTED	10/18/22
		TECHNICIAN	HN
		ROCK TYPE	--

Before Picture

NOTES

Picture File: 2.JPG
File name: 2261249__CHERCHAR ASTM D7625_0.xlsm

CHERCHAR Abrasiveness
ASTM D7625

CLIENT	Terracon	BORING NO.	KB-192.8A
JOB NO.	2261-249	DEPTH	54.5
PROJECT	Champlain-Hudson Power Express	SAMPLE NO.	--
PROJECT NO.	JB215256	DATE SAMPLED	--
LOCATION	--	DATE TESTED	10/18/22
		TECHNICIAN	HN
		ROCK TYPE	--

After Picture

NOTES

Picture File: 2a.JPG
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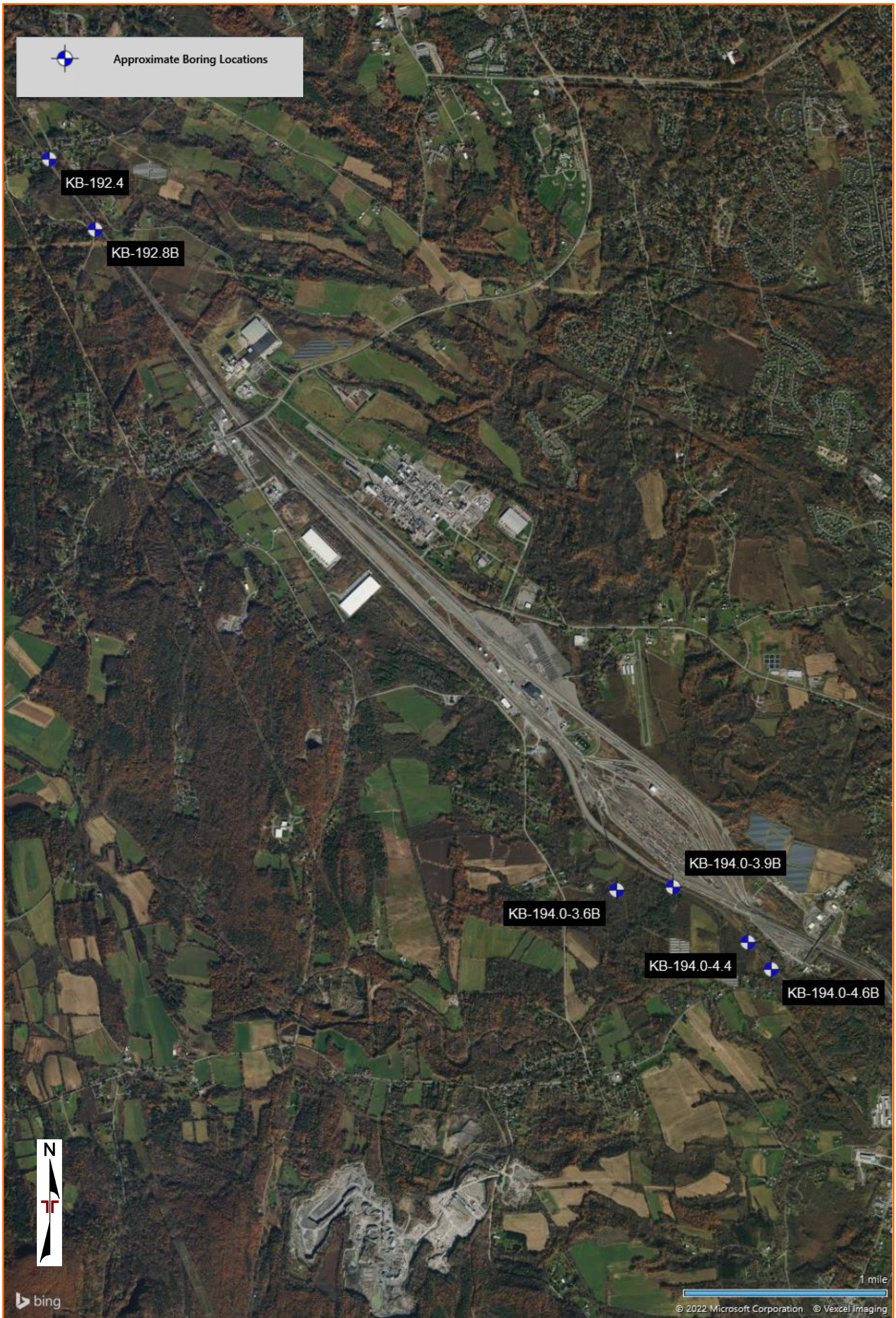


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

BORING LOG NO. KB-192.8B

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.594616° Longitude: -73.887159°

Surface Elev.: 236.8620 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		"Soft Dig" (by others) to 10 feet. Set casing at 10'					
10.0	226.9	**LEAN CLAY WITH SAND (CL)**, varved silt and clay, brown to gray, very soft to soft	24	2-2-2-2 N=4			
			24	WH-WH-WH-WH	36.5	39-23-16	82
			24	WH-WH-WH-WH			
24.0	212.9	**SILTY SAND (SM)**, occasional cobbles and boulders, shale fragments noted, gray, very dense, (GLACIAL TILL)		50/2"			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-55.3' Mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-16-2022 | Boring Completed: 09-20-2022
Drill Rig: Diedrich D-50 | Driller: S. Morey
Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

BORING LOG NO. KB-192.8B

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.594616° Longitude: -73.887159°

Surface Elev.: 236.8620 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY SAND (SM), occasional cobbles and boulders, shale fragments noted, gray, very dense, (GLACIAL TILL) *(continued)*								
			30				50/4"			
			35				50/2"			
			40				50/2"	14.1		29
			45				50/4"			
50.0	186.9									
		SILTY CLAYEY SAND (SC-SM), occasional cobbles and boulders, shale fragments noted, gray, very dense, (GLACIAL TILL)	50				50/2"	14.2	22-15-7	26
55.3	181.6		55				100/3" 3" Split Spoon			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-55.3' Mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-16-2022 | Boring Completed: 09-20-2022
Drill Rig: Diedrich D-50 | Driller: S. Morey
Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

BORING LOG NO. KB-192.8B

PROJECT: CHPE - Additional HDD Borings - Phase 3

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

SITE: Fort Ann to Coxsackie, NY

LOCATION See Exploration Plan

Latitude: 42.594616° Longitude: -73.887159°

Surface Elev.: 236.8620 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	FIELD TEST RESULTS
		SHALE, slightly weathered, extremely close to moderate fractured, poor RQD, gray *(continued)*	Bulk Sampler REC = 94% RQD = 32%
60.0	176.9	**SHALE**, slightly to moderately weathered, extremely close to close fractured, very poor RQD, gray	REC = 100% RQD = 0%
65.0	171.9	**SHALE**, slightly to moderately weathered, extremely close to close fractured, very poor RQD, gray	REC = 63% RQD = 0%
70.0	166.9	**SHALE**, slightly to moderately weathered, extremely close to close fractured, very poor RQD, gray	REC = 100% RQD = 0%
75.0	161.9	***Boring Terminated at 75 Feet***	

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0-10' 4 inch casing
10'-55.3' Mud rotary

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

Logged by AB
Hammer Efficiency Summary:
Energy Transfer Ratio: 84.7% +/-5.0%
Hammer Efficiency Correction (CE): 1.41
WH = Weight of hammer

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
30 Corporate Cir Ste 201
Albany, NY

Boring Started: 09-16-2022 | Boring Completed: 09-20-2022
Drill Rig: Diedrich D-50 | Driller: S. Morey
Project No.: JB215256G

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

Summary of Laboratory Results

BORING ID	Depth (Ft.)	Water Content (%)	Organic Content (%)
KB-182.7B	20-22	31.1	
KB-182.7B	50-52	35.4	
KB-182.7B	80-82	26.5	
KB-184.2	4-6	17.3	
KB-184.2	20-21.5	10.0	
KB-184.9	10-12	35.4	
KB-184.9	25-26.5	8.6	
KB-184.9	40-42	9.2	
KB-184.9	55-56.5	12.2	
KB-185.4	6-8	34.3	
KB-185.4	20-21.5	13.7	
KB-185.4	35-39	9.1	
KB-185.4	45-47	14.7	
KB-192.4	15-17	36.9	
KB-192.4	25-27	42.6	
KB-192.4	45-47	46.0	
KB-192.4	65-67	8.0	
KB-192.8B	15-17	36.5	
KB-192.8B	40-40.2	14.1	
KB-192.8B	50-50.2	14.2	
KB-194.0-3.6B	5-7	31.0	
KB-194.0-3.6B	30-32	37.9	
KB-194.0-3.6B	50-52	39.6	
KB-194.0-3.6B	70-72	46.7	
KB-194.0-3.9B	4-6	31.5	
KB-194.0-3.9B	25-26.5	50.2	
KB-194.0-3.9B	45-46.5	43.4	
KB-194.0-3.9B	60-61.5	52.9	
KB-194.0-4.4	20-22	50.1	
KB-194.0-4.4	40-42	37.9	
KB-194.0-4.4	50-52	47.6	
KB-194.0-4.4	70-72	37.4	
KB-194.0-4.6B	4-6	24.1	
KB-194.0-4.6B	20-21.5	40.3	
KB-194.0-4.6B	40-41.5	42.9	
KB-194.0-4.6B	60-61.5	45.6	
KB-200.6	8-10	20.3	
KB-200.6	30-32	30.5	
KB-200.6	45-47	26.3	
KB-200.6	55-57	33.6	
KB-200.8A	15-17	39.6	
KB-200.8A	35-36.5	45.0	

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

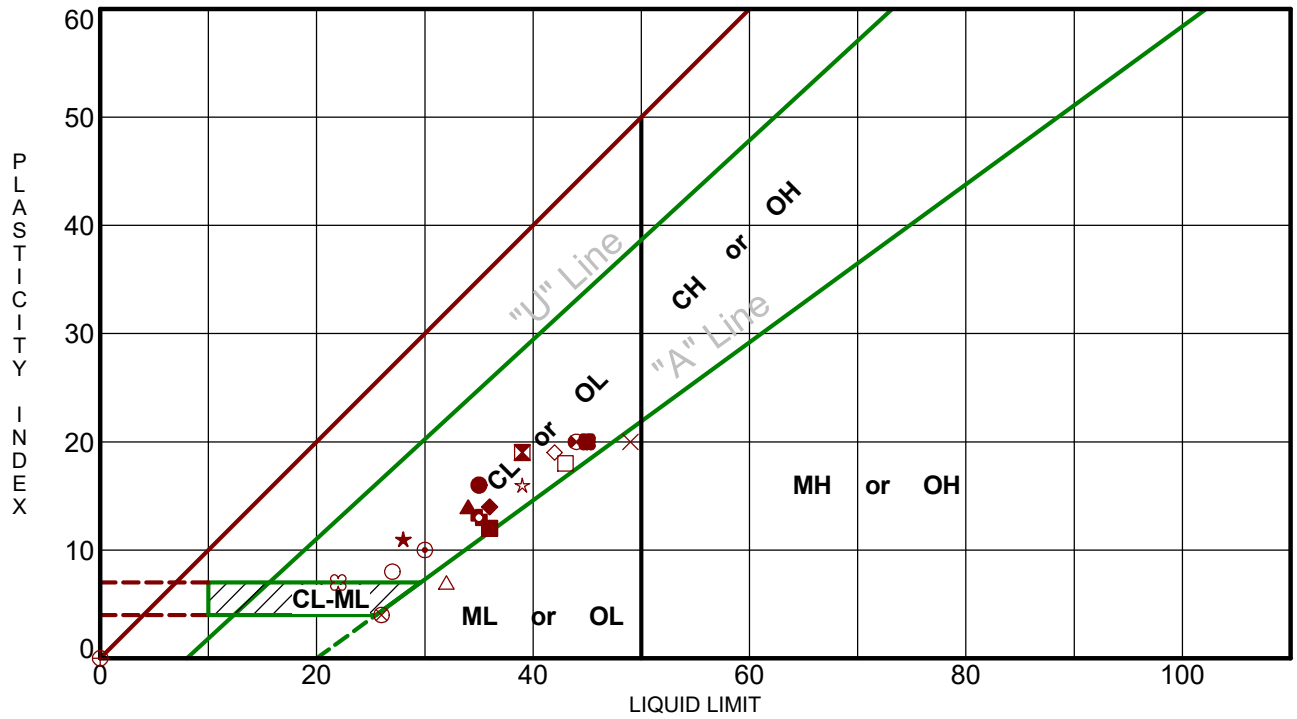
PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	KB-135.7	30 - 32	35	19	16	96.6	CL	LEAN CLAY
⊠	KB-135.8	15 - 17	39	20	19	93.6	CL	LEAN CLAY
▲	KB-135.8	30 - 32	34	20	14	94.2	CL	LEAN CLAY
★	KB-135.8	40 - 42	28	17	11	99.5	CL	LEAN CLAY
⊙	KB-182.7B	20 - 22	30	20	10	98.6	CL	LEAN CLAY
✿	KB-182.7B	50 - 52	35	22	13	98.6	CL	LEAN CLAY
○	KB-182.7B	80 - 82	27	19	8	98.3	CL	LEAN CLAY
△	KB-184.9	10 - 12	32	25	7	86.1	ML	SILT
⊗	KB-185.4	6 - 8	26	22	4	87.4	ML	SILT
⊕	KB-185.4	20 - 21.5	NP	NP	NP	15.8	SM	SILTY SAND
□	KB-192.4	15 - 17	43	25	18	87.5	CL	LEAN CLAY
⊗	KB-192.4	25 - 27	44	24	20	97.7	CL	LEAN CLAY
◕	KB-192.4	45 - 47	45	25	20	92.4	CL	LEAN CLAY
☆	KB-192.8B	15 - 17	39	23	16	81.8	CL	LEAN CLAY with SAND
✿	KB-192.8B	50 - 50.2	22	15	7	26.0	SC-SM	SILTY, CLAYEY SAND
■	KB-194.0-3.6B	5 - 7	36	24	12	89.4	CL	LEAN CLAY
◆	KB-194.0-3.6B	30 - 32	36	22	14	95.7	CL	LEAN CLAY
◇	KB-194.0-3.6B	50 - 52	42	23	19	95.7	CL	LEAN CLAY
×	KB-194.0-3.6B	70 - 72	49	29	20	91.9	ML	SILT
✖	KB-194.0-3.9B	4 - 6	45	25	20	76.6	CL	LEAN CLAY with SAND

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

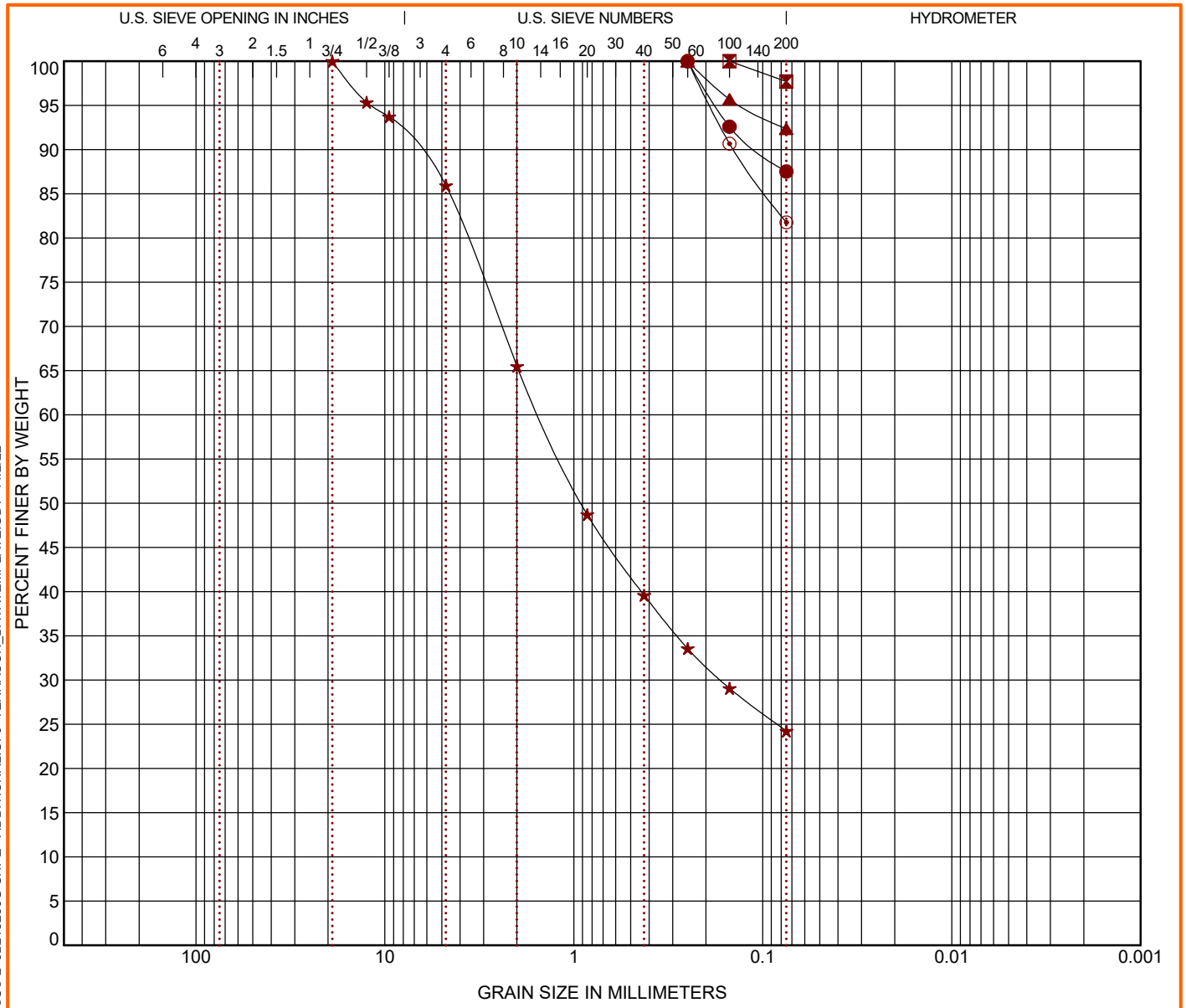
PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-192.4	15 - 17	LEAN CLAY (CL)	36.9	43	25	18		
⊠	KB-192.4	25 - 27	LEAN CLAY (CL)	42.6	44	24	20		
▲	KB-192.4	45 - 47	LEAN CLAY (CL)	46.0	45	25	20		
★	KB-192.4	65 - 67	SILTY SAND (SM)	8.0					
⊙	KB-192.8B	15 - 17	LEAN CLAY with SAND (CL)	36.5	39	23	16		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-192.4	15 - 17	0.25				0.0	0.0	12.5		87.5	
⊠	KB-192.4	25 - 27	0.15				0.0	0.0	2.3		97.7	
▲	KB-192.4	45 - 47	0.25				0.0	0.0	7.6		92.4	
★	KB-192.4	65 - 67	19	1.511	0.167		0.0	14.1	61.7		24.2	
⊙	KB-192.8B	15 - 17	0.25				0.0	0.0	18.2		81.8	

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

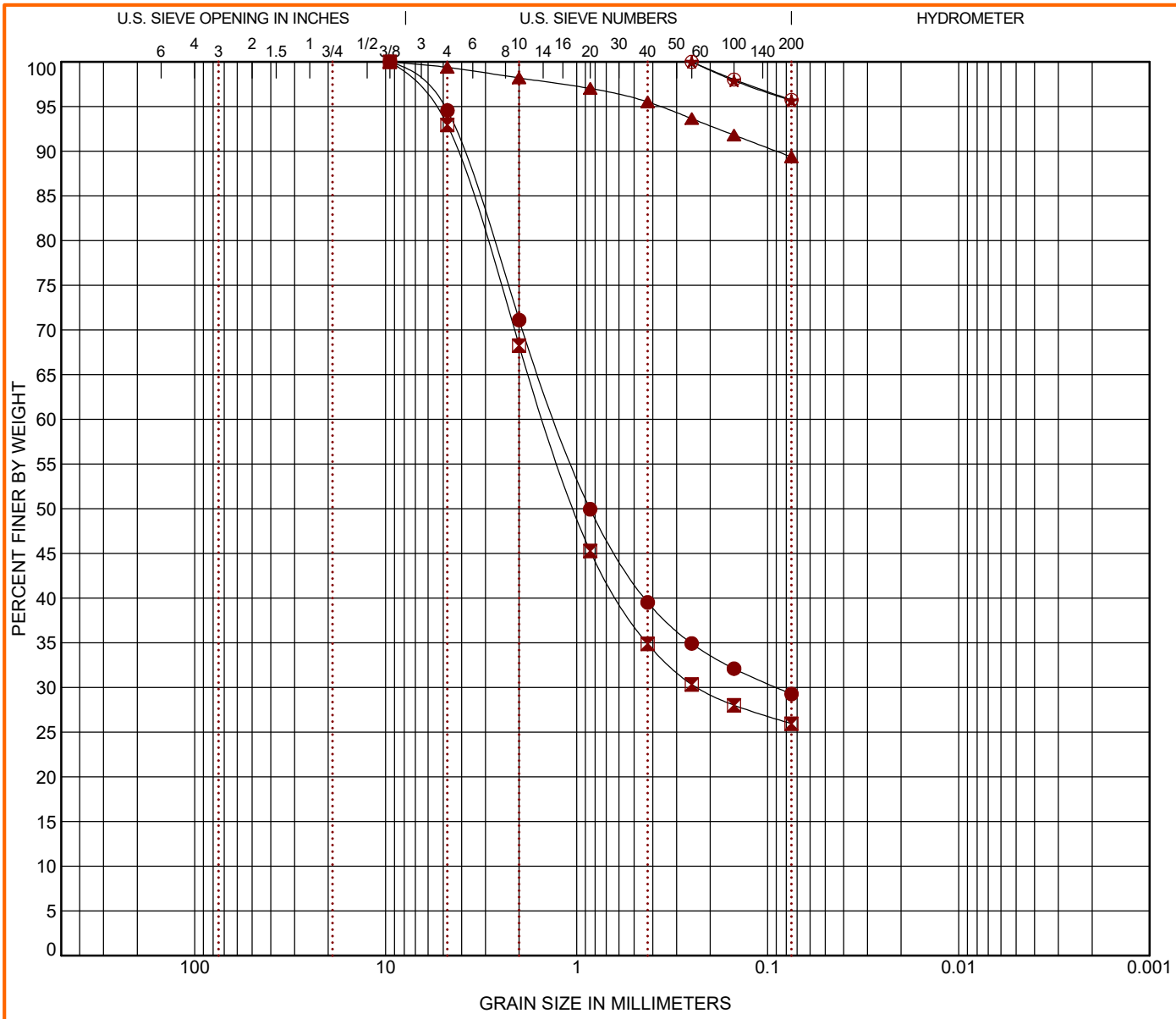
PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-192.8B	40 - 40.2	SILTY SAND (SM)	14.1					
⊠	KB-192.8B	50 - 50.2	SILTY, CLAYEY SAND (SC-SM)	14.2	22	15	7		
▲	KB-194.0-3.6B	5 - 7	LEAN CLAY (CL)	31.0	36	24	12		
★	KB-194.0-3.6B	30 - 32	LEAN CLAY (CL)	37.9	36	22	14		
⊙	KB-194.0-3.6B	50 - 52	LEAN CLAY (CL)	39.6	42	23	19		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-192.8B	40 - 40.2	9.5	1.277	0.09		0.0	5.4	65.3		29.3	
⊠	KB-192.8B	50 - 50.2	9.5	1.472	0.232		0.0	7.1	67.0		26.0	
▲	KB-194.0-3.6B	5 - 7	9.5				0.0	0.6	10.0		89.4	
★	KB-194.0-3.6B	30 - 32	0.25				0.0	0.0	4.3		95.7	
⊙	KB-194.0-3.6B	50 - 52	0.25				0.0	0.0	4.3		95.7	

PROJECT: CHPE - Additional HDD Borings - Phase 3

SITE: Fort Ann to Coxsackie, NY

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256G

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256G CHPE - ADDITIONAL.GPJ TERRACON_DATATEMPLATE.GDT 11/2/22

Client
Kiewit Engineering Corp

Project
Champlain-Hudson Power Express Project

Project No. JB215256

Splitting Tensile Strength of Intact Rock Core Specimens, ASTM D3967

Boring	KB-192.8B	**Material Description**	Shale
Sample No	RC2	**Equipment Used**	Tinius Olsen (120,000lbs)
Depth (ft)	54.5-55.5	**TICCS ID/Serial No.**	C-48999, 118285
Lab No	8748	**Calibration Date**	11/2/2021

	TENSILE STRENGTH				
Sample No.	1	2	3	4	5
Diameter (in)	1.96	--	--	--	--
Length (in)	0.7	--	--	--	--
Length Diameter Ratio	0.36	--	--	--	--
Rate of Loading	0.07	--	--	--	--
Moisture Condition	1.43%	--	--	--	--
Maximum Applied Load (lbf)	2538	--	--	--	--
Splitting Tensile Strength (psi)	1178.3	--	--	--	--

	TENSILE STRENGTH				
Sample No.	6	7	8	9	10
Diameter (in)	--	--	--	--	--
Length (in)	--	--	--	--	--
Length Diameter Ratio	--	--	--	--	--
Rate of Loading	--	--	--	--	--
Moisture Condition	--	--	--	--	--
Maximum Applied Load (lbf)	--	--	--	--	--
Splitting Tensile Strength (psi)	--	--	--	--	--

Notes:

Only 1 specimen was tested due to limited amount of material.

Kiewit

MEMORANDUM

DATE: February 13, 2023

TO: Nick Strater; Brierley Associates Underground Engineers, PLLC

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

SUBJECT: Geotechnical Data: Segment 8 – Package 5 – HDD Crossing 87.A – Revision 1
Champlain Hudson Power Express Project
Schenectady, New York

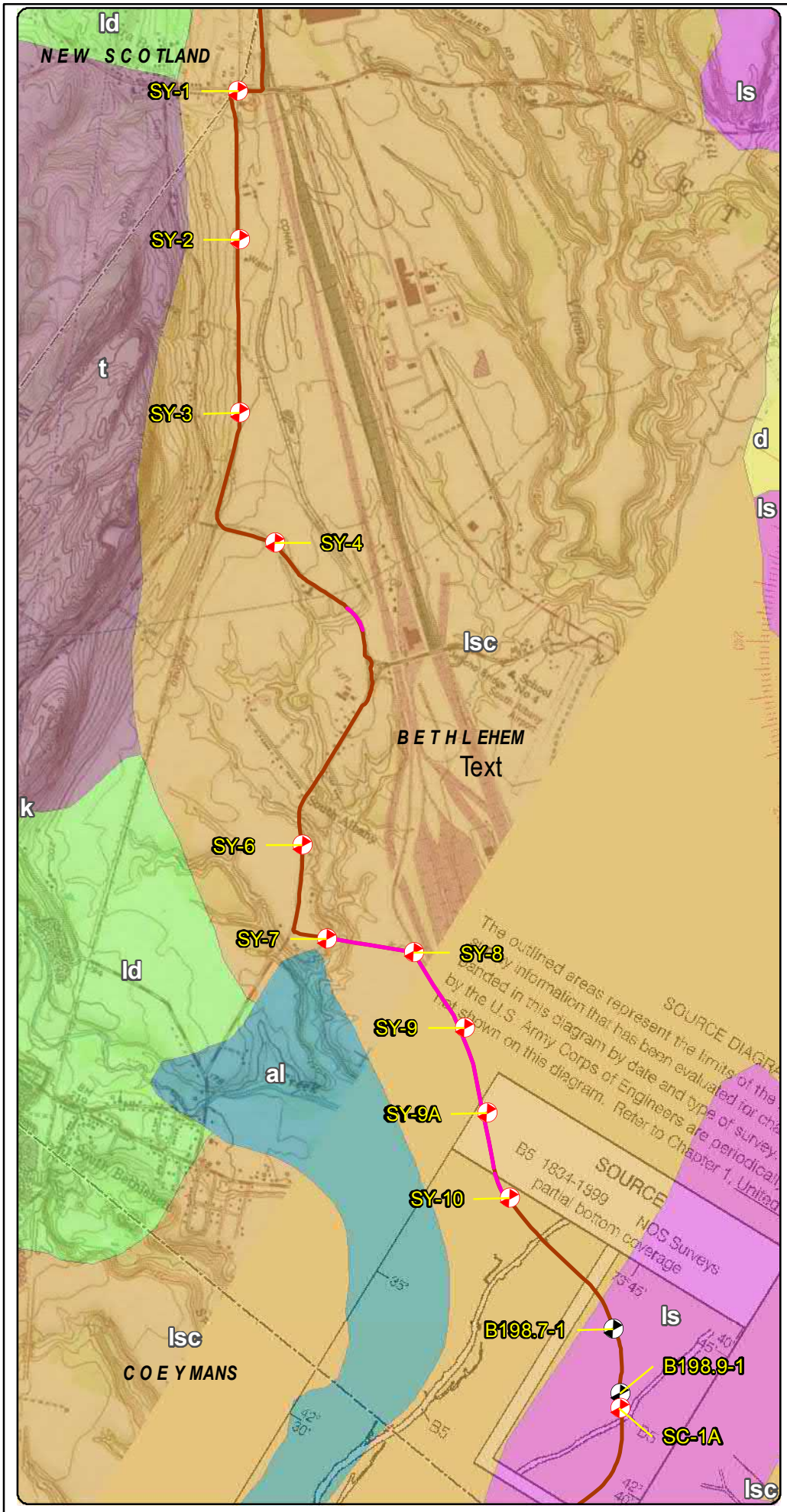
Kiewit Engineering is providing the attached geotechnical data for use in the horizontal direction drill (HDD) design for the Champlain Hudson Power Express project in Upstate New York. This HDD crossing is located south of Schenectady, New York. The approximate station for the start of HDD crossing Number 87.A is STA 50890+50 (42.5827° N, 73.8756° W).

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

- Kiewit Engineering (NY) Corp., Package 5 Phase 3 Borings, Champlain Hudson Power Express, New York, dated December 9, 2022.

Contact us if you have questions or require additional information.

HDD 87.A
Borings KB-193.9, KB-194.0
Segment 8 - Package 5



LEGEND

- 2021 Boring Location
- Previous (2013) Boring Location
- Terrestrial Route HVDC
- Submarine Route HVDC
- Terrestrial Route HVAC
- Preliminary HDD Locations
- Preliminary Pipe Bridge Location
- Town Boundary
- County Boundary

Surficial Geology

- al - Recent alluvium
- d - Dunes
- k - Kame deposits
- ld - Lacustrine delta
- ls - Lacustrine sand
- lsc - Lacustrine silt and clay
- t - Till

0.25 0.125 0 0.25 Miles

Transmission Developers Inc.

Champlain Hudson Power Express Project

Champlain Hudson Power Express Inc.

Surficial Geology and Geotechnical Borings Selkirk Rail Yard Bypass Figure 3-9

Prepared on 4/30/2021

by: AECOM

DATA SOURCES: ESRI, NYSDOT, NOAA, USACE, NYDOS, TDI, TRC

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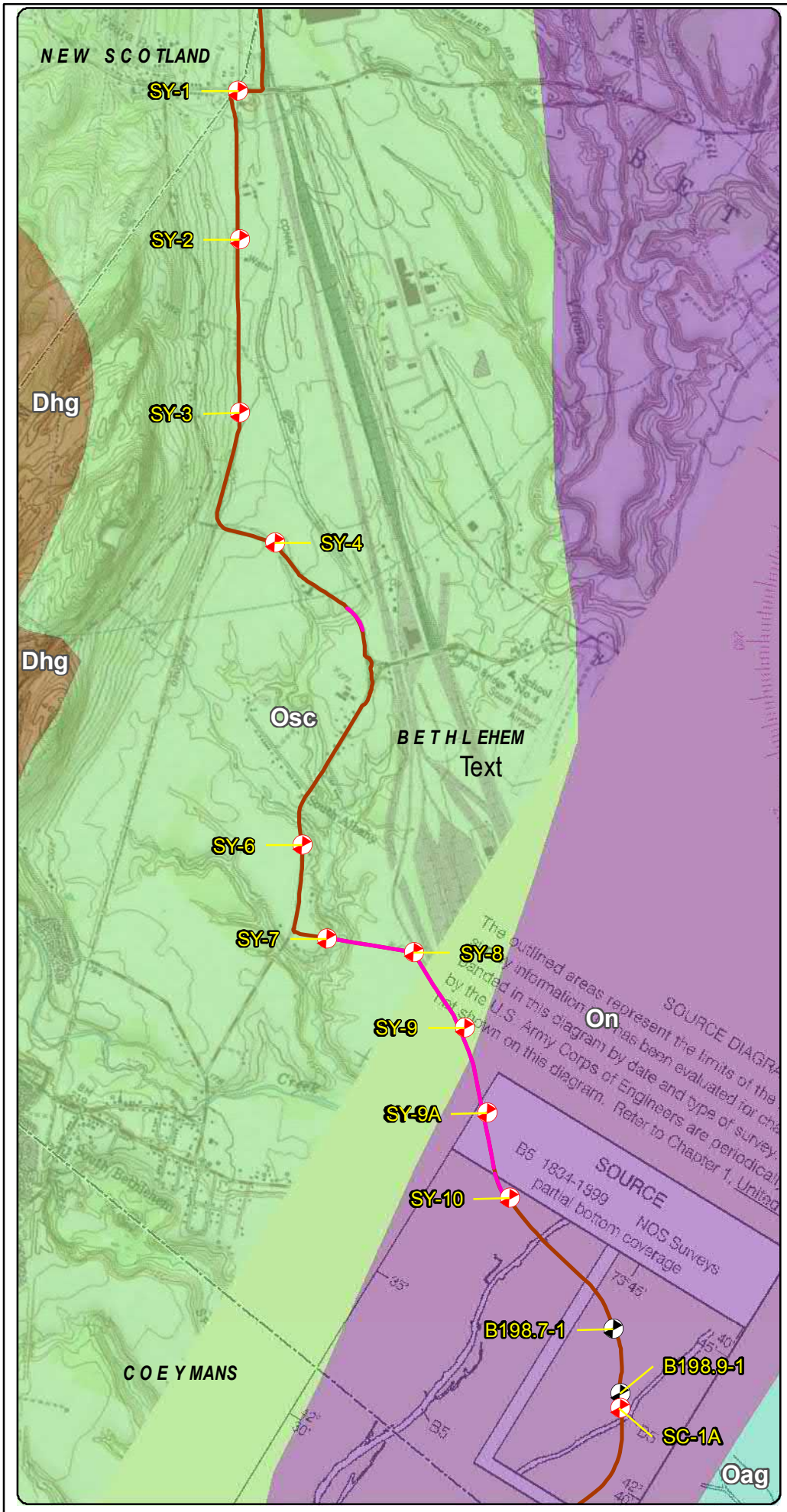

LEGEND

- 2021 Boring Location
- Previous (2013) Boring Location
- Terrestrial Route HVDC
- Submarine Route HVDC
- Terrestrial Route HVAC
- Preliminary HDD Locations
- Preliminary Pipe Bridge Location
- Town Boundary
- County Boundary

Bedrock Geology

- Dhg - Port Ewen Formation
- Oag - Austin Glen Formation
- On - Normanskill Shale
- Osc - Schenectady Formation

* Schenectady Formation includes: graywacke, sandstone, siltstone, shale

0.25 0.125 0 0.25 Miles

Transmission

Champlain Hudson Power Express Project

Champlain Hudson Power Express Inc.

Bedrock Geology and Geotechnical Borings Selkirk Rail Yard Bypass Figure 4-9

Prepared on 4/30/2021

by: AECOM

DATA SOURCES: ESRI, NYSDOT, NOAA, USACE, NYDOS, TDI, TRC

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Package 5 Phase 3 Borings

Champlain Hudson Power Express

New York

PROJECT NUMBER 20001480

CREATED BY Kiewit

DATE 12/09/2022

Legend Key

- Kiewit Borings (2022)

EXPLORATORY BORING LOG

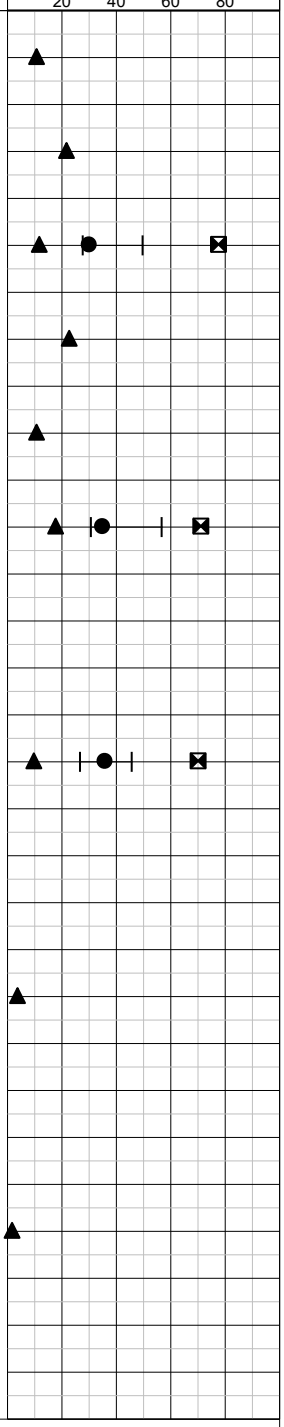
Champlain Hudson Power Express

New York

BORING NO: KB-193.9

PROJECT NUMBER	20001480	**LOGGED BY**	Rafael Salas	**COORDINATES**	N 1366388.46 E 660338.64
START DATE	08/24/2022	**DRILLER/RIG**	C. Brown / Diedrich D-90	**GROUND ELEV.**	209.9 ft
FINISH DATE	08/25/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Manual

Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
			FAT CLAY with Sand (CH), light brown, stiff to very stiff, dry to moist, high plasticity			4%		2-5-6-9 (11)	Boring advanced with 3.25" ID HSA
						21%		9-12-10-16 (22)	
5						100%		7-5-7-8 (12)	
						100%		11-10-13-13 (23)	
			Color change to gray			100%		6-5-6-9 (11)	
10	199.9		SILT with Sand (MH), light brown, very stiff, moist, high plasticity			100%		9-9-9-7 (18)	
15	194.9		Lean CLAY with Sand (CL), dark grayish brown, stiff, moist, medium plasticity			25%		3-5-5-7 (10)	
20	189.9		FAT CLAY with Sand (CH), dark grayish brown, very soft to very stiff, moist, medium to high plasticity			100%		2-2-2-4 (4)	
25						0%		1-1-1-2 (2)	
30									



EXPLORATORY BORING LOG

Champlain Hudson Power Express

New York

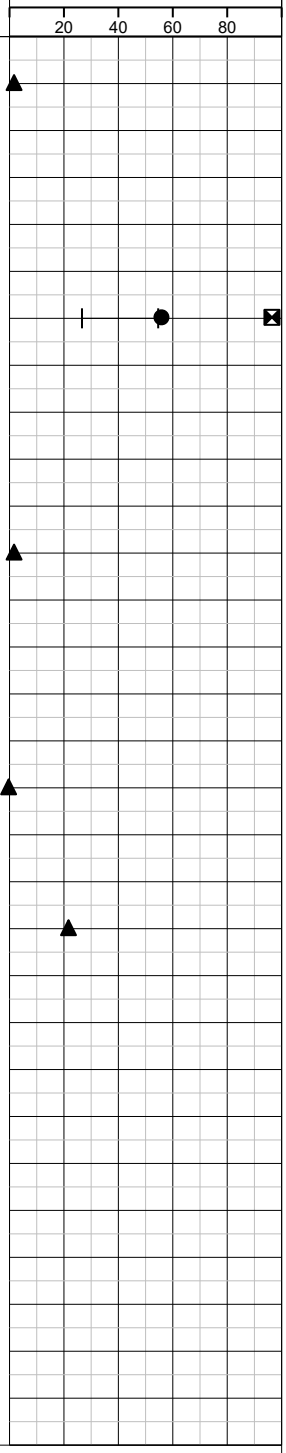
BORING NO: KB-193.9

PROJECT NUMBER	20001480	**LOGGED BY**	Rafael Salas	**COORDINATES**	N 1366388.46 E 660338.64
START DATE	08/24/2022	**DRILLER/RIG**	C. Brown / Diedrich D-90	**GROUND ELEV.**	209.9 ft
FINISH DATE	08/25/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Manual

Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
			FAT CLAY with Sand (CH), dark grayish brown, very soft to very stiff, moist, medium to high plasticity			100%		0-0-2-3 (2)	
35						100%		0-4-4-3	3-inch ring sampler Caved in at 37.5 ft after drilling
40						100%		0-0-2-1 (2)	
45			Silt seams, weathered/fragmented shale, fine to medium grained gravel, gray to dark gray			100%		0-0-0-4 (0)	
						75%		8-11-11-9 (22)	
50	159.9		Boring Terminated at 50 ft						
55									
60									

Legend

- ▲ SPT N Value
- ● MC (%)
- — PL & LL (%)
- ⊠ Fines Content (%)



EXPLORATORY BORING LOG

Champlain Hudson Power Express

New York

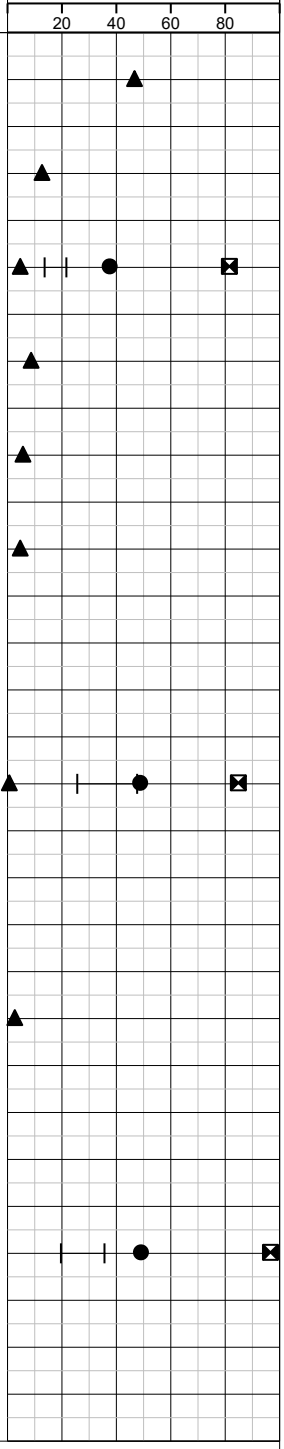
BORING NO: KB-194.0

PROJECT NUMBER	20001480	**LOGGED BY**	Rafael Salas	**COORDINATES**	N 1366081.35 E 660590.50
START DATE	08/24/2022	**DRILLER/RIG**	C. Brown / Diedrich D-90	**GROUND ELEV.**	208.2 ft
FINISH DATE	08/24/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Manual

Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
			Railroad ballast to 3 ft			21%		11-30-17-20 (47)	Boring advanced with 3.25" ID HSA
	205.2		LEAN CLAY with Sand (CL), light brown, firm to stiff, moist			48%		17-7-6-9 (13)	Rained on 8/23/22 (previous day)
5			Spoon soaked with water			50%		4-2-3-4 (5)	Artesian condition regulated after removal of augers, approx. 1ft-5ft
						0%		5-4-5-5 (9)	
	200.2		LEAN CLAY (CL), gray, firm to very soft, moist, medium plasticity			100%		2-3-3-4 (6)	
10						54%		4-3-2-3 (5)	
15			Very soft at 15 ft			100%		0-0-1-1 (1)	
20			Silt seams at 20 ft			100%		0-2-1-2 (3)	
25						100%		1-3-3-4	3-inch ring sampler
									Caved in at 28 ft after drilling
30									

Legend

- ▲ SPT N Value
- ● MC (%)
- — PL & LL (%)
- ⊠ Fines Content (%)



EXPLORATORY BORING LOG

Champlain Hudson Power Express

New York

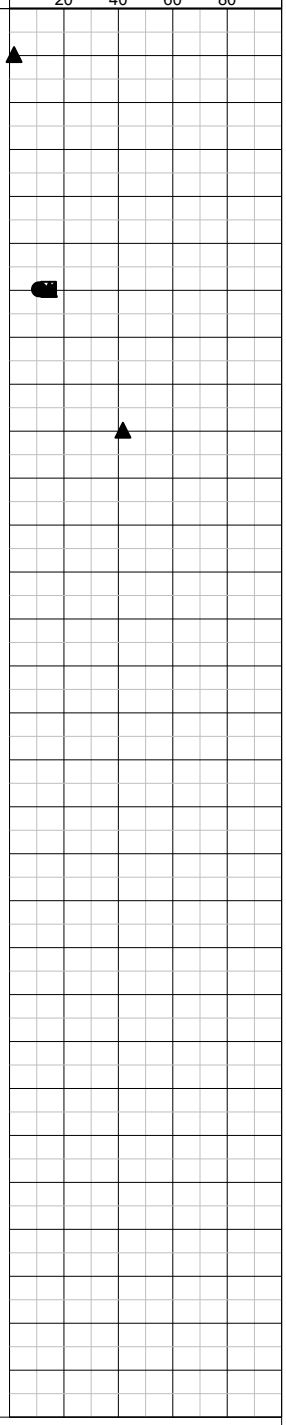
BORING NO: KB-194.0

PROJECT NUMBER	20001480	**LOGGED BY**	Rafael Salas	**COORDINATES**	N 1366081.35 E 660590.50
START DATE	08/24/2022	**DRILLER/RIG**	C. Brown / Diedrich D-90	**GROUND ELEV.**	208.2 ft
FINISH DATE	08/24/2022	**DRILL CONTRACTOR**	Parratt Wolff	**HAMMER TYPE/EFF.**	Manual

Depth (ft)	Elevation (ft)	Graphic Log	Material Description	Sample Type	Core Run No.	Recovery % RQD	Pocket Pen. (tsf)	Blow Counts (N Value)	Notes
			LEAN CLAY (CL), gray, very soft, moist, medium to high plasticity			100%		0-0-2-2 (2)	
35	172.2		Silty SAND with Gravel (SM), gray, fine to coarse, with weathered shale fragments			50%		12-7-8-10 (15)	
			Gray silt seams at 38 ft			79%		42-22-20-14 (42)	
40	168.2		Boring Terminated at 40 ft						
45									
50									
55									
60									

Legend

- ▲ SPT N Value
- ● MC (%)
- — PL & LL (%)
- ⊠ Fines Content (%)



Summary of Laboratory Results

BORING ID	Depth (Ft.)	Water Content (%)
KB-183.6	8	11.5
KB-183.8	4-6	12.7
KB-184.0	4-6	19.9
KB-184.0	10-12	14.1
KB-187.5	10-12	15.9
KB-187.5	20-22	9.2
KB-187.5	30-32	14.1
KB-187.5	40-42	12.2
KB-187.5	45-47	10.9
KB-187.5	60-62	7.5
KB-187.7	10-12	6.3
KB-187.7	20-22	24.3
KB-187.7	35-37	7.2
KB-187.7	55-57	6.6
KB-190.8	4-6	10.9
KB-190.8	15-17	22.7
KB-191.7	4-6	24.0
KB-191.7	10-12	28.2
KB-191.7	25-27	33.6
KB-192.8A	8-10	29.1
KB-192.8A	20-22	30.3
KB-192.8A	40-42	19.6
KB-193.9	4-6	30.2
KB-193.9	10-12	35.1
KB-193.9	15-17	36.0
KB-193.9	35-37	56.2
KB-194.0	4-6	37.9
KB-194.0	15-17	49.1
KB-194.0	25-27	49.4
KB-194.0	35-37	11.2
KB-220.5	8-10	14.2
KB-221.0A	4-6	30.5
KB-221.0A	8-10	9.0
KB-221.0A	15-17	6.1
KB-221.0A	25-27	6.1
KB-221.0A	35-37	6.8
KB-221.3	8	17.8
KB-221.4	4-6	14.8
KB-221.4	8-10	10.5
KB-222.2	7-9	37.9
KB-222.2	25-27	36.9
KB-222.2	40-42	38.2

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

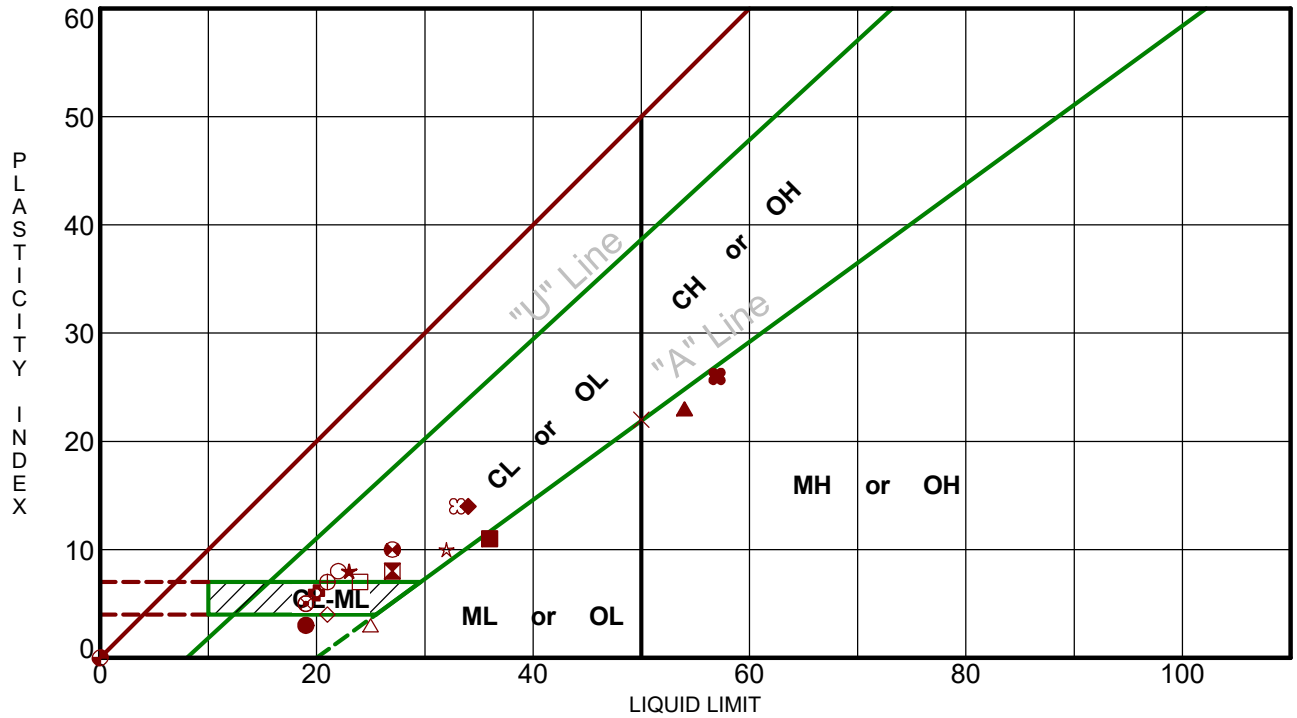
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	KB-183.6	8	19	16	3	53.0	ML	GRAVELLY SILT with SAND
⊠	KB-183.8	4 - 6	27	19	8	17.4	SC	CLAYEY SAND with GRAVEL
▲	KB-187.5	20 - 22	54	31	23	48.6	GM	SILTY GRAVEL with SAND
★	KB-187.5	30 - 32	23	15	8	51.9	CL	SANDY LEAN CLAY
⊙	KB-187.5	40 - 42	19	14	5	38.8	SC-SM	SILTY, CLAYEY SAND with GRAVEL
✿	KB-187.5	45 - 47	20	14	6	42.8	SC-SM	SILTY, CLAYEY SAND
○	KB-187.5	60 - 62	22	14	8	33.7	SC	CLAYEY SAND with GRAVEL
△	KB-187.7	20 - 22	25	22	3	64.0	ML	SANDY SILT with GRAVEL
⊗	KB-187.7	35 - 37	19	14	5	24.3	SC-SM	SILTY, CLAYEY SAND with GRAVEL
⊕	KB-187.7	55 - 57	21	14	7	15.5	SC-SM	SILTY, CLAYEY SAND with GRAVEL
□	KB-190.8	4 - 6	24	17	7	21.5	GC-GM	SILTY, CLAYEY GRAVEL with SAND
⊗	KB-190.8	15 - 17	27	17	10	94.2	CL	LEAN CLAY
◕	KB-191.7	4 - 6	NP	NP	NP	82.8	ML	SILT with SAND
☆	KB-191.7	10 - 12	32	22	10	98.4	CL	LEAN CLAY
✿	KB-191.7	25 - 27	33	19	14	99.4	CL	LEAN CLAY
■	KB-192.8A	8 - 10	36	25	11	82.4	ML	SILT with SAND
◆	KB-192.8A	20 - 22	34	20	14	87.0	CL	LEAN CLAY
◇	KB-192.8A	40 - 42	21	17	4	84.9	CL-ML	SILTY CLAY with SAND
×	KB-193.9	4 - 6	50	28	22	77.9	CH	FAT CLAY with SAND
✖	KB-193.9	10 - 12	57	31	26	71.4	MH	ELASTIC SILT with SAND

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
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Albany, NY

PROJECT NUMBER: JB215256H

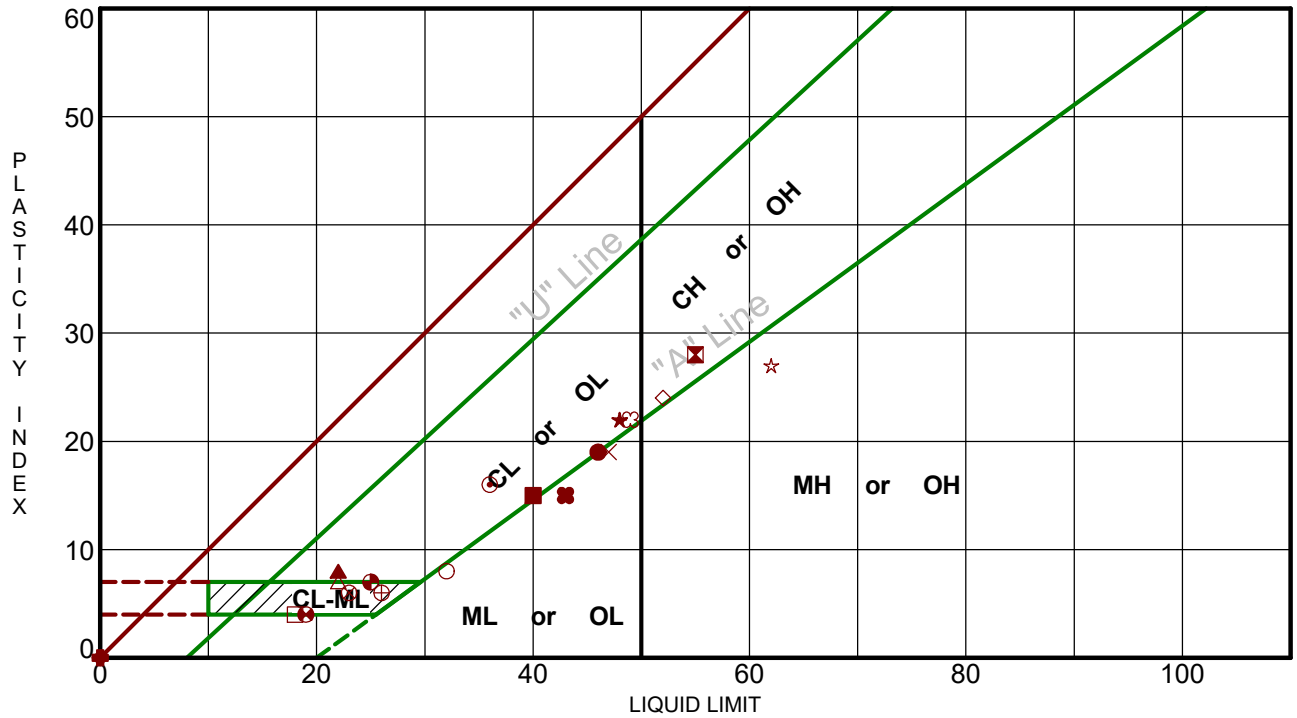
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	KB-193.9	15 - 17	46	27	19	70.4	CL	LEAN CLAY with SAND
⊠	KB-193.9	35 - 37	55	27	28	96.8	CH	FAT CLAY
▲	KB-194.0	4 - 6	22	14	8	81.9	CL	LEAN CLAY with SAND
★	KB-194.0	15 - 17	48	26	22	85.2	CL	LEAN CLAY
⊙	KB-194.0	25 - 27	36	20	16	97.0	CL	LEAN CLAY
✿	KB-194.0	35 - 37	NP	NP	NP	14.7	SM	SILTY SAND with GRAVEL
○	KB-220.5	8 - 10	32	24	8	26.2	SM	SILTY SAND with GRAVEL
△	KB-221.0A	4 - 6	22	15	7	89.6	CL-ML	SILTY CLAY
⊗	KB-221.0A	8 - 10	23	17	6	11.7	GP-GC	POORLY GRADED GRAVEL with SILTY CLAY and SAND
⊕	KB-221.0A	15 - 17	26	20	6	11.8	GP-GC	POORLY GRADED GRAVEL with SILTY CLAY and SAND
□	KB-221.0A	25 - 27	18	14	4	25.9	GC-GM	SILTY, CLAYEY GRAVEL with SAND
⊗	KB-221.0A	35 - 37	19	15	4	21.0	SC-SM	SILTY, CLAYEY SAND with GRAVEL
◕	KB-221.3	8	25	18	7	13.7	GC-GM	SILTY, CLAYEY GRAVEL with SAND
☆	KB-222.2	7 - 9	62	35	27	100.0	MH	ELASTIC SILT
✿	KB-222.2	25 - 27	49	27	22	94.8	CL	LEAN CLAY
■	KB-222.2	40 - 42	40	25	15	90.4	CL	LEAN CLAY
◆	KB-222.6A	15 - 17	NP	NP	NP	7.4	GP-GM	POORLY GRADED GRAVEL with SAND and SILT
◇	KB-222.6A	35 - 37	52	28	24	87.3	CH	FAT CLAY
×	KB-222.6A	50 - 52	47	28	19	96.5	ML	SILT
✖	KB-222.6A	65 - 67	43	28	15	99.3	ML	SILT

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
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Albany, NY

PROJECT NUMBER: JB215256H

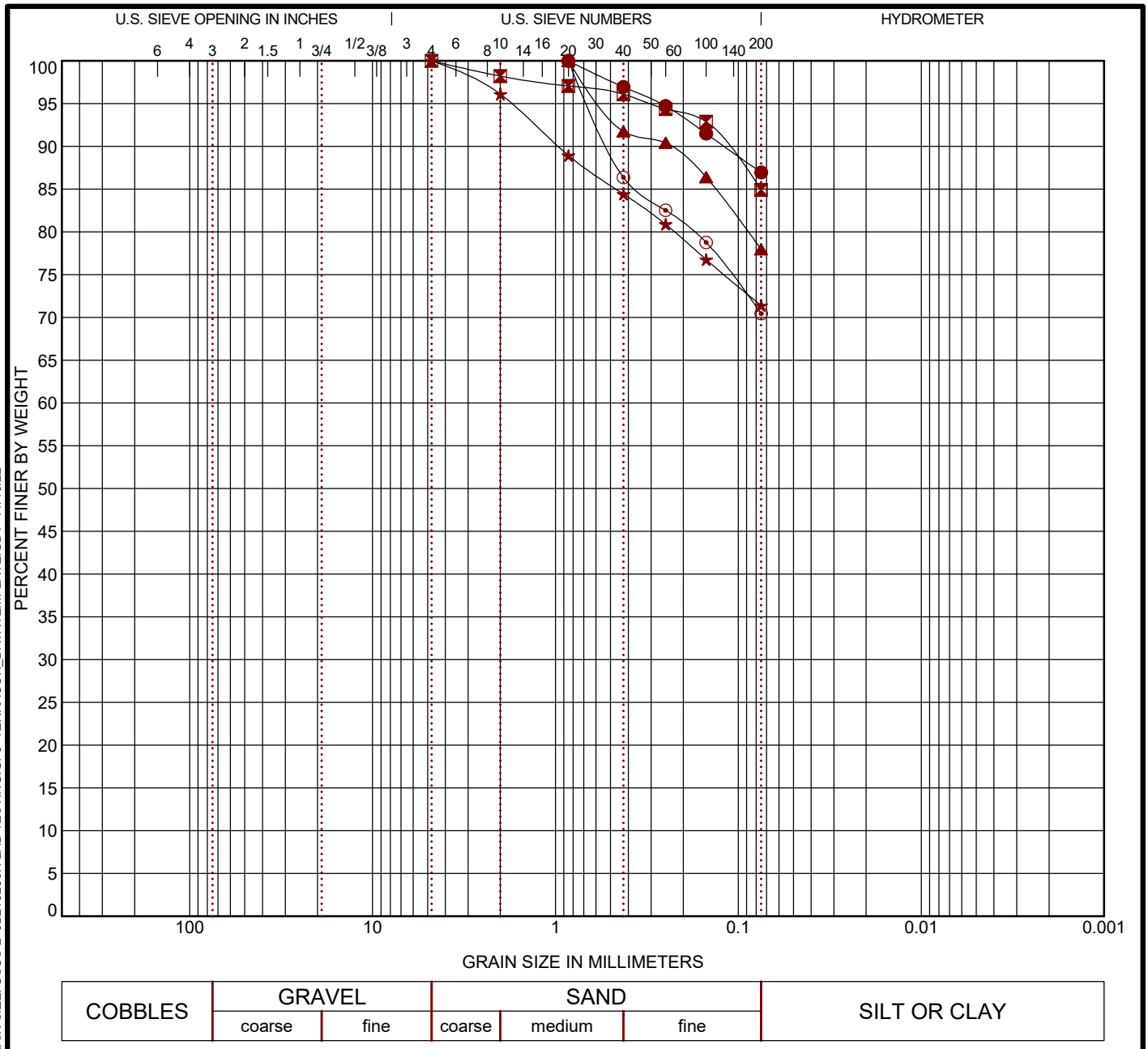
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-192.8A	20 - 22	LEAN CLAY (CL)	30.3	34	20	14		
⊠	KB-192.8A	40 - 42	SILTY CLAY with SAND (CL-ML)	19.6	21	17	4		
▲	KB-193.9	4 - 6	FAT CLAY with SAND (CH)	30.2	50	28	22		
★	KB-193.9	10 - 12	ELASTIC SILT with SAND (MH)	35.1	57	31	26		
⊙	KB-193.9	15 - 17	LEAN CLAY with SAND (CL)	36.0	46	27	19		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-192.8A	20 - 22	0.85				0.0	0.0	13.0		87.0	
⊠	KB-192.8A	40 - 42	4.75				0.0	0.0	15.1		84.9	
▲	KB-193.9	4 - 6	0.85				0.0	0.0	22.1		77.9	
★	KB-193.9	10 - 12	4.75				0.0	0.0	28.6		71.4	
⊙	KB-193.9	15 - 17	0.85				0.0	0.0	29.6		70.4	

PROJECT: LAB Testing

SITE: Champlain- Hudson Power Express

Terracon
30 Corporate Cir Ste 201
Albany, NY

PROJECT NUMBER: JB215256H

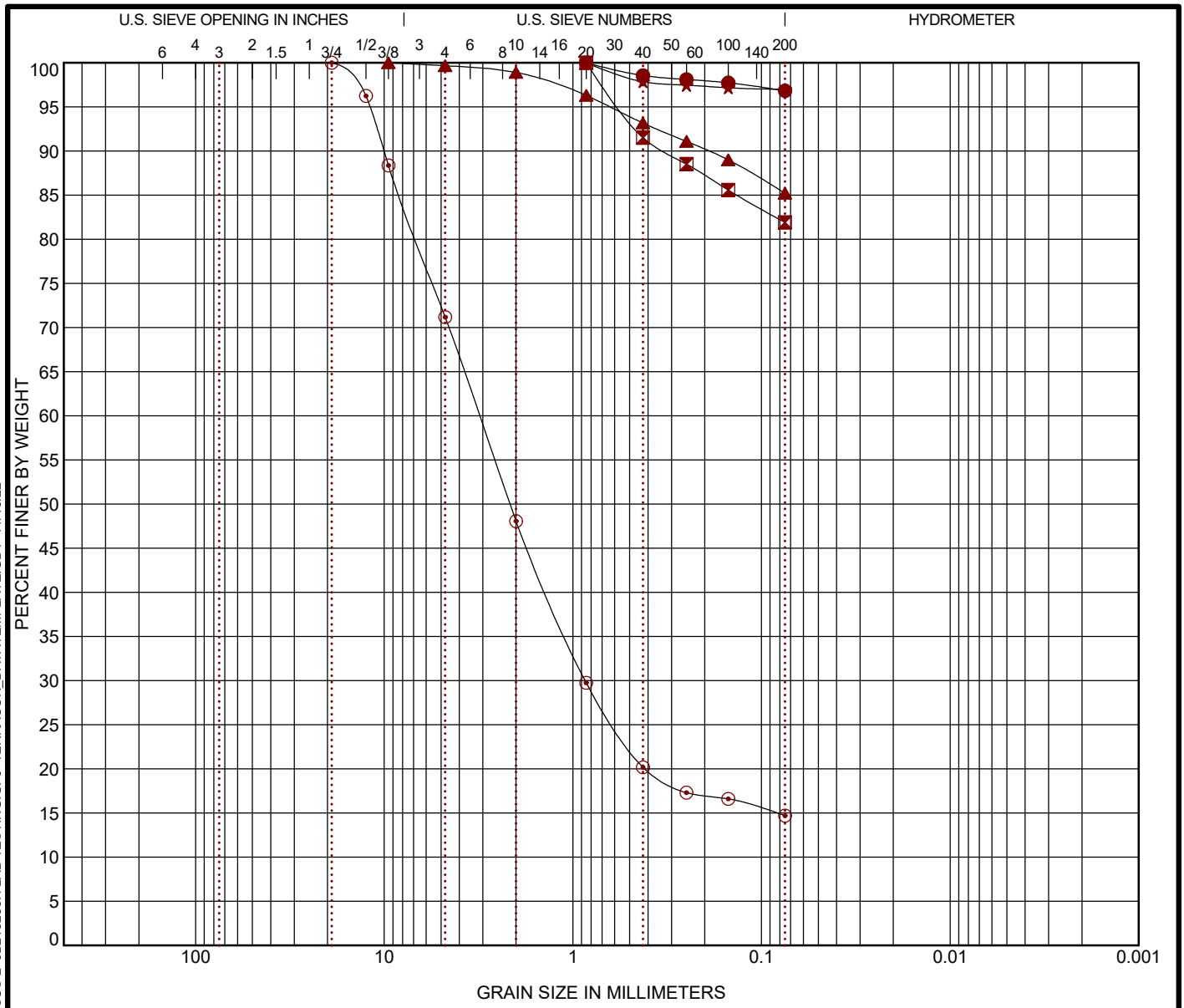
CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth (Ft)	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	KB-193.9	35 - 37	FAT CLAY (CH)	56.2	55	27	28		
⊠	KB-194.0	4 - 6	LEAN CLAY with SAND (CL)	37.9	22	14	8		
▲	KB-194.0	15 - 17	LEAN CLAY (CL)	49.1	48	26	22		
★	KB-194.0	25 - 27	LEAN CLAY (CL)	49.4	36	20	16		
⊙	KB-194.0	35 - 37	SILTY SAND with GRAVEL (SM)	11.2	NP	NP	NP		

	Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	KB-193.9	35 - 37	0.85				0.0	0.0	3.2		96.8	
⊠	KB-194.0	4 - 6	0.85				0.0	0.0	18.1		81.9	
▲	KB-194.0	15 - 17	9.5				0.0	0.3	14.5		85.2	
★	KB-194.0	25 - 27	0.85				0.0	0.0	3.0		97.0	
⊙	KB-194.0	35 - 37	19	3.127	0.86		0.0	28.8	56.5		14.7	

PROJECT: LAB Testing

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PROJECT NUMBER: JB215256H

CLIENT: Kiewit Engineering (NY) Corp
Lone Tree, CO

EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 JB215256H LAB TESTING.GPJ TERRACON_DATATEMPLATE.GDT 11/16/22