County Engineer
Environmental Engineer
Building Department
233 W. Sixth Street
Marysville, Ohio 43040
P 937. 645. 3018
F 937. 645. 3161
www.unioncountyohio.gov/engineer

Marysville Operations Facility
16400 County Home Road
Marysville, Ohio 43040
P 937. 645. 3017
F 937. 645. 3111

Richwood Outpost
190 Beatty Avenue
Richwood, Ohio 43344

***Public Service** with integrity*

ADDENDUM #1

FROM: Union County Engineers Office
Josh Holtschulte

DATE: April 19, 2023

RE: **UNI-CR222D-3.57 Bridge Replacement**

PAGES: 2

This addendum supplements and amends the original Drawings and Specification issued and shall be taken into account in preparing proposals, and shall become a part of the Contract Documents.

1. *Reference Instructions to Bidders Number 16 (Time of Commencement, Completion and Milestone Dates) on page 4.4 of the bid documents:* Construction work shall be completed not later than October 31, 2023. The actual period of work shall not exceed ~~90 calendar days~~ **120 calendar days**.

2. *Reference Instructions to Bidders Number 18 (Documents Required at the Time of Proposal) on page 4.5 of the bid documents:* Certification of Non-Segregated Facilities is listed but was not included in the bid documents. Because this project is not federally funded this form is not required as part of the bid packet.

3. There is no DBE requirement.

4. Video inspection of conduit described in Item 611.12 will not be required.

5. Proposal Note 555 (smoothness measurements) will not be required.

6. Galvanized piles will not be allowed. Complete encasement of piles will be required as described in the plans.

7. Reference Proposal: Item 202 – PIPE REMOVED 24” & UNDER was in the plans but not in the original proposal. This has been added to the new proposal.

8. Reference Proposal: Item SPECIAL – PILE ENCASEMENT units changed from EA to FT

9. Reference Proposal: Item 516 – SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL units changed from SF to FT

10. Reference Proposal: Item 526 – REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN (T=12”)(15’ LONG) units changed from CY to SY

11. A revised proposal is attached. A revised Excel spreadsheet proposal has also been placed on the Union County Engineer’s website at https://www.unioncountyohio.gov/bid-info as *Proposal (MS Excel) – revised 4/19/2023.*

12. The soil boring results are attached.

Please note and sign the bottom portion of 6.6 of the bid packet proposal acknowledging that this Addendum was received.

Proposal - ADDENDUM #1 (4/19/2023) Date:_____

TO: Board of Commissioners, Union County, Ohio

PROJECT: UNI CR-222D Yearsley Road Bridge Replacement

COMPANY NAME:_____

The undersigned, having full knowledge of the site(s) fo the Project, the specifications applicable to the Project, and the conditions of this Proposal hereby agrees to furnish all services, labor, materials, and equipment necessary to complete the Project in accordance with the Detailed Specifications, within the time specified for completion and to accept payment in accordance with the unit prices stated below as full compensation for all furnished services, labor, materials, and equipment.

REF#	ITEM	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL PRICE
		ROADWAY				
1	201	CLEARING AND GRUBBING	1	LUMP		
2	202	PAVEMENT REMOVED	2,476	SY		
3	202	PIPE REMOVED 12" 8 UNDER	70	FT		
4	202	GUARDRAIL REMOVED	668	FT		
5	203	EXCAVATION	853	CY		
6	203	EMBANKMENT	687	CY		
7	204	SUBGRADE COMPACTION	3,074	SY		
8	204	PROOF ROLLING	2	HR		
9	606	GUARDRAIL, TYPE MGS WITH LONG POSTS	438	FT		
10	606	ANCHOR ASSEMBLY, MGS TYPE E	2	EA		
11	606	ANCHOR ASSEMBLY, MGS TYPE T	2	EA		
12	606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	4	EA		
13	SPECIAL	SPECIAL - MAILBOX SUPPORT	1	EA		
		EROSION CONTROL				
14	659	SEEDING AND MULCHING, AS PER PLAN	1	LUMP		
15	601	ROCK CHANNEL PROTECTION, TYPE C W/ FILTER FABRIC	278	CY		
16	832	STORM WATER POLLUTION PREVENTION PLAN, AS PER PLAN	1	LUMP		
17	832	EROSION CONTROL	15,000	EA	$1.00	$15,000.00
		DRAINAGE				
18	602	CONCRETE MASONRY	0.2	CY		
19	605	AGGREGATE DRAINS	408	FT		
20	611	6" CONDUIT, TYPE F	50	FT		
21	611	8" CONDUIT, TYPE E	50	FT		
22	611	12" CONDUIT, TYPE C	340	FT		
23	611	CATCH BASIN, NO. 2-2B	3	EA		
		PAVEMENT				
24	301	ASPHALT CONCRETE BASE, PG64-22, (449)	448	CY		
25	304	AGGREGATE BASE	529	CY		
26	407	TACK COAT	313	GAL		
27	411	STABILIZED CRUSHED AGGREGATE	200	CY		
28	441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), PG64-22	91	CY		
29	441	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (449)	127	CY		
		TRAFFIC CONTROL				
30	626	BARRIER REFLECTOR, TYPE 2	19	EA		
31	642	EDGE LINE, 4", TYPE 1	0.46	MI		
32	642	CENTER LINE , TYPE 1	0.23	MI		
		GENERAL				
33	614	MAINTAINING TRAFFIC	1	LUMP		
34	614	DETOUR SIGNING	1	LUMP		
35	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	LUMP		
36	624	MOBILIZATION	1	LUMP		

Proposal - ADDENDUM #1 (4/19/2023) Date:_____

TO: Board of Commissioners, Union County, Ohio

PROJECT: UNI CR-222D Yearsley Road Bridge Replacement

COMPANY NAME:_____

The undersigned, having full knowledge of the site(s) fo the Project, the specifications applicable to the Project, and the conditions of this Proposal hereby agrees to furnish all services, labor, materials, and equipment necessary to complete the Project in accordance with the Detailed Specifications, within the time specified for completion and to accept payment in accordance with the unit prices stated below as full compensation for all furnished services, labor, materials, and equipment.

REF#	ITEM	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL PRICE
		STRUCTURE				
37	202	STRUCTURE REMOVED, OVER 20 FOOT SPAN	1	LUMP		
38	503	COFFERDAMS AND EXCAVATION BRACING	1	LUMP		
39	503	UNCLASSIFIED EXCAVATION	1	LUMP		
40	505	PILE DRIVING EQUIPMENT MOBILIZATION	1	LUMP		
41	507	STEEL PILES, HP10X42, DRIVEN	375	FT		
42	507	STEEL PILES, HP10X42, FURNISHED	450	FT		
43	507	STEEL PILES, HP12X53, DRIVEN	305	FT		
44	507	STEEL PILES, HP12X53, FURNISHED	360	FT		
45	SPECIAL	PILE ENCASEMENT	112.0	FT		
46	507	STEEL POINTS OR SHOES	26	EA		
47	509	EPOXY COATED REINFORCING STEEL	96,579	POUNDS		
48	511	CLASS QC2 CONCRETE, SUPERSTRUCTURE (INCLUDING PIER CAPS)	414	CY		
49	511	CLASS QC1 CONCRETE, ABUTMENT INCLUDING FOOTING	65	CY		
50	512	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	128	SY		
51	516	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL	71	FT		
52	516	1/2" PREFORMED EXPANSION JOINT FILLER	58	FT		
53	516	1" PREFORMED EXPANSION JOINT FILLER	88	SF		
54	516	SEMI-INTERGRAL ABUTMENT EXPANSION JOINT SEAL	92	FT		
55	517	RAILING (TWIN STEEL TUBE)	297.19	FT		
56	518	POROUS BACKFILL WITH GEOTEXTILE FABRIC	1	LUMP		
57	518	6" PERFORATED CORRUGATED PLASTIC PIPE	113	FT		
58	518	6" NON-PERFORATED CORRUGATED PLASTIC PIPLE, INCL SPECIALS	51	FT		
59	SPECIAL	STEEL DRIP STRIP	350	FT		
60	526	REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN (T=12")(15' LONG)	111	SY		

TOTAL	**$15,000.00**

CTL Engineering, Inc.
2860 Fisher Road, P.O. Box 44548, Columbus, Ohio 43204-3538
Phone: 614/276-8123; Fax: 614/276-6377
Email: ctl@ctleng.com

AN EMPLOYEE OWNED COMPANY

Consulting Engineers • Testing • Inspection Services • Analytical Laboratories

Established 1927

December 8, 2021

Union County Engineer
233 W. Sixth Street
Marysville, Ohio 43040

Attention: Josh Holtschulte

Reference: Drilling and Laboratory Testing Services
UNI-CR222-3.575 Bridge Replacement
Union County, Ohio
CTL Project No. 21050111COL

Dear Mr. Holtschulte:

CTL Engineering, Inc. has completed the test borings and laboratory testing for the above referenced project.

An electronic copy of this letter, test boring records, laboratory test results and photos of the rock cores are being submitted.

We appreciate the opportunity to work with you on this project. If you have any questions or need further information, please do not hesitate to contact our office.

Respectfully submitted,

CTL ENGINEERING, INC.

Sastry M.V.S

Sastry Malladi, P.E
Department Manager, Geotechnical Services

Enclosures

TEST BORING RECORDS

SOIL DESCRIPTION

Descriptors for soil consistency used in this report are based upon the Standard Penetration Test (SPT), ASTM D 1587, with the penetration (N) values corrected to N_{60}, based upon the efficiency of the SPT Hammer used for the soil sampling.

Descriptors for both non-cohesive and cohesive soils are presented below, with the corresponding range of corrected penetration values.

NON-COHESIVE SOIL DESCRIPTION	CORRECTED PENETRATION VALUES BLOWS PER FOOT (BPF)
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11- 30
Dense	31 – 50
Very Dense	Over 50

COHESIVE SOIL DESCRIPTION	CORRECTED PENETRATION VALUES BLOWS PER FOOT (BPF)
Very Soft	0 – 1
Soft	2 – 4
Medium Stiff	5 – 8
Stiff	9 – 15
Very Stiff	16 –30
Hard	Over 30

Moisture term descriptors for both non-cohesive and cohesive soils are presented below.

NON-COHESIVE SOIL DESCRIPTION	MOISTURE TERMS	COHESIVE SOIL DESCRIPTION
Powdery	Dry	Powdery
Some Moisture	Damp	Below Plastic Limit
Damp to the Touch	Moist	Above Plastic, Below Liquid Limit
Free Water	Wet	Above Liquid Limit

GTL ENGINEERING INC

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/8/21 15:43 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL

PROJECT: UNI-CR222-3.575	DRILLING FIRM / OPERATOR: CTL / JS	DRILL RIG: CME 550X #489 ATV	STATION / OFFSET:
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: CTL / J.S	HAMMER: CME AUTOMATIC	ALIGNMENT:
PID: N/A SFN:	DRILLING METHOD: 3.25" HSA / NQ	CALIBRATION DATE: 10/13/21	ELEVATION: 100.0 (ft) EOB: 36.2 ft.
START: 11/19/21 END: 11/19/21	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 80.2	COORD: Not Recorded

EXPLORATION ID B-001-0-21

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT (5")	99.6																	
AGGREGATE BASE (6")	99.1																	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		1 2 3	3 2 3	7	100	SS-1	1.00	1	3	24	43	29	30	18	12	18	A-6a (8)	
@3.5'; HARD		4 5	3 2 6	11	100	SS-2	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
		6 7	5 7 10	23	100	SS-3	4.50	-	-	-	-	-	-	-	-	17	A-6a (V)	
	91.5	8																
HARD, GRAY, **SILTY CLAY**, LITTLE SAND, LITTLE GRAVEL, TILL, DAMP		9	5 11 12	31	100	SS-4	4.50	13	5	9	30	43	37	19	18	15	A-6b (11)	
@10.0'; TRACE SAND, TRACE GRAVEL		10 11	9 11 14	33	100	SS-5	4.50	2	3	6	34	55	37	20	17	16	A-6b (11)	
	88.5																	
HARD, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS SHALE FRAGMENTS, TILL, DAMP	87.0	W 87.5 12	6 7 9	21	100	SS-6	4.50	3	4	7	37	49	35	21	14	17	A-6a (10)	
STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS SHALE FRAGMENTS, TILL, MOIST		13 14	6 8 14	29	67	SS-7	1.50	-	-	-	-	-	-	-	-	23	A-6b (V)	
@16.0'; VERY STIFF		15 16 17	6 7 8	20	11	SS-8	-	4	7	10	30	49	38	19	19	21	A-6b (12)	
	81.5	18																
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, LITTLE CLAY, LITTLE SILT, CONTAINS COBBLES, WET		19 20	4 5 16	28	89	SS-9	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
		21	50/4"	-	100	SS-10	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	
		22 23 24	41 21 25	61	78	SS-11	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	73.8	25																
DOLOMITE, GRAY, UNWEATHERED, VERY STRONG; RQD 40%, REC 80%. @ 27.3' - 27.6'; Qu= 15,410 psi		TR 26 27 28 29	50/2"	-	50	SS-12	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
			14		67	NQ-1											CORE	

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/8/21 15:43 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL

PID: N/A	SFN:	PROJECT: UNI-CR222-3.575	STATION / OFFSET:	START: 11/19/21	END: 11/19/21	PG 2 OF 2	B-001-0-21

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
DOLOMITE, GRAY, UNWEATHERED, VERY STRONG; RQD 40%, REC 80%. *(continued)*	70.0																	
		31																
		32																
		33																
		34	65		93	NQ-2											CORE	
		35																
	63.8	EOB 36																

NOTES: CAVED AT 5.3', GROUND SURFACE ELEVATION AT TEST BORING LOCATION WAS ASSUMED AS 100 FEET

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED ASPHALT PATCH; BACKFILLED WITH BENTONITE GROUT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/8/21 15:43 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL

PROJECT: UNI-CR222-3.575	DRILLING FIRM / OPERATOR: CTL / JS	DRILL RIG: CME 550X #489 ATV	STATION / OFFSET:
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: CTL / J.S	HAMMER: CME AUTOMATIC	ALIGNMENT:
PID: N/A SFN:	DRILLING METHOD: 3.25" HSA / NQ	CALIBRATION DATE: 10/13/21	ELEVATION: 100.0 (ft) EOB: 39.2 ft.
START: 11/18/21 END: 11/18/21	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 80.2	COORD: Not Recorded

EXPLORATION ID B-002-0-21

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
ASPHALT (5")	99.6																	
AGGREGATE BASE (13")	98.5																	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST		1 2 3	3 2 3	7	56	SS-1	3.25	2	6	23	37	32	36	21	15	23	A-6a (9)	
@3.5'; DAMP		4 5	3 3 3	8	67	SS-2	4.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
@6.0'; MOIST		6 7	3 3 5	11	100	SS-3	3.00	-	-	-	-	-	-	-	-	31	A-6a (V)	
	91.5	8																
VERY STIFF, BROWN, **CLAY**, "AND" SILT, TRACE SAND, DAMP		9	2 3 3	8	67	SS-4	2.50	0	0	9	52	39	44	22	22	14	A-7-6 (14)	
@10.0'; STIFF		W 90.0 10 11	3 2 5	9	0	SS-5	-	-	-	-	-	-	-	-	-	-	A-7-6 (V)	
	88.5																	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, SOME GRAVEL, TILL, MOIST	87.0	12	2 5 9	19	100	SS-6	1.00	25	13	13	23	26	28	17	11	20	A-6a (3)	
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, LITTLE SAND, TRACE SILT, TRACE CLAY, CONTAINS COBBLES, WET		13 14	4 6 4	13	89	SS-7	-	73	14	5	4	4	NP	NP	NP	12	A-1-a (0)	
@15.5'; DENSE, MOIST		15 16 17	9 15 15	40	100	SS-8	-	-	-	-	-	-	-	-	-	9	A-1-a (V)	
		18 19 20	17 16 10	35	78	SS-9	-	-	-	-	-	-	-	-	-	10	A-1-a (V)	
	79.0																	
DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, CONTAINS COBBLES, WET		21 22	17 25 6	41	100	SS-10	-	-	-	-	-	-	-	-	-	18	A-1-b (V)	
		23 24 25	19 17 13	40	44	SS-11	-	15	38	27	13	7	NP	NP	NP	24	A-1-b (0)	
	74.0																	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, CONTAINS COBBLES AND HEAVING SANDS, WET		26 27 28	14 9 11	27	78	SS-12	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	
	70.8	TR 29	34 50/2"	-	63	SS-13	-	-	-	-	-	-	-	-	-	9	A-2-4 (V)	

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/8/21 15:43 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL

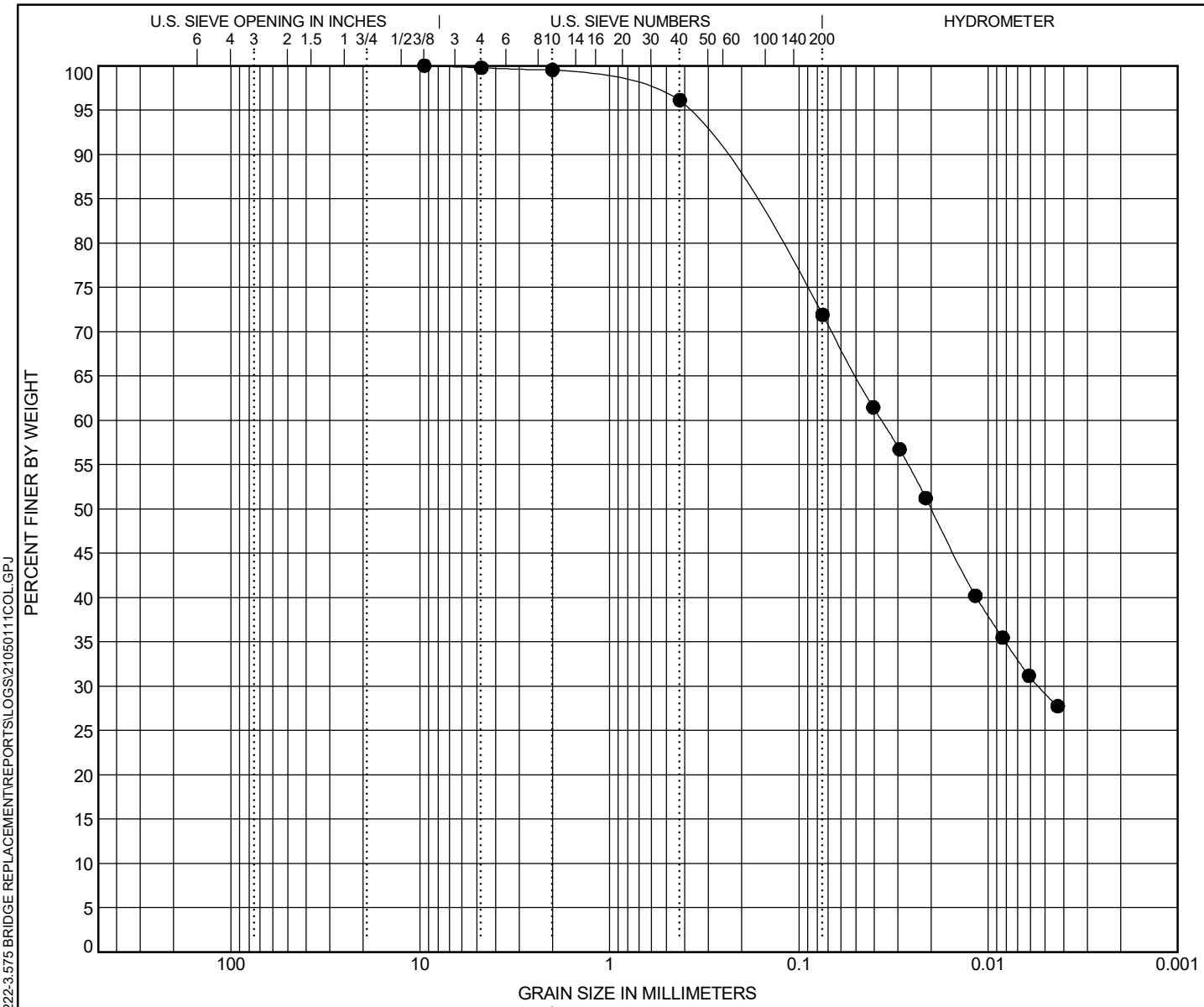
PID: N/A	SFN:	PROJECT: UNI-CR222-3.575	STATION / OFFSET:	START: 11/18/21	END: 11/18/21	PG 2 OF 2	B-002-0-21

MATERIAL DESCRIPTION AND NOTES	ELEV. 70.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
DOLOMITE, GRAY, UNWEATHERED, STRONG; RQD 38%, REC 91%. *(continued)*		31, 32, 33, 34	38		90	NQ-1											CORE	
@ 34.4' - 34.8'; Qu= 10,220 psi		35, 36, 37, 38, 39	38		93	NQ-2											CORE	
	60.8	EOB																

NOTES: CAVED AT 9.3', GROUND SURFACE ELEVATION AT TEST BORING LOCATION WAS ASSUMED AS 100 FEET

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED ASPHALT PATCH; BACKFILLED WITH BENTONITE GROUT

LABORATORY TEST RESULTS



COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-001-0-21	**1.0**	**A-6a(8)**	**18**	**30**	**18**	**12**		

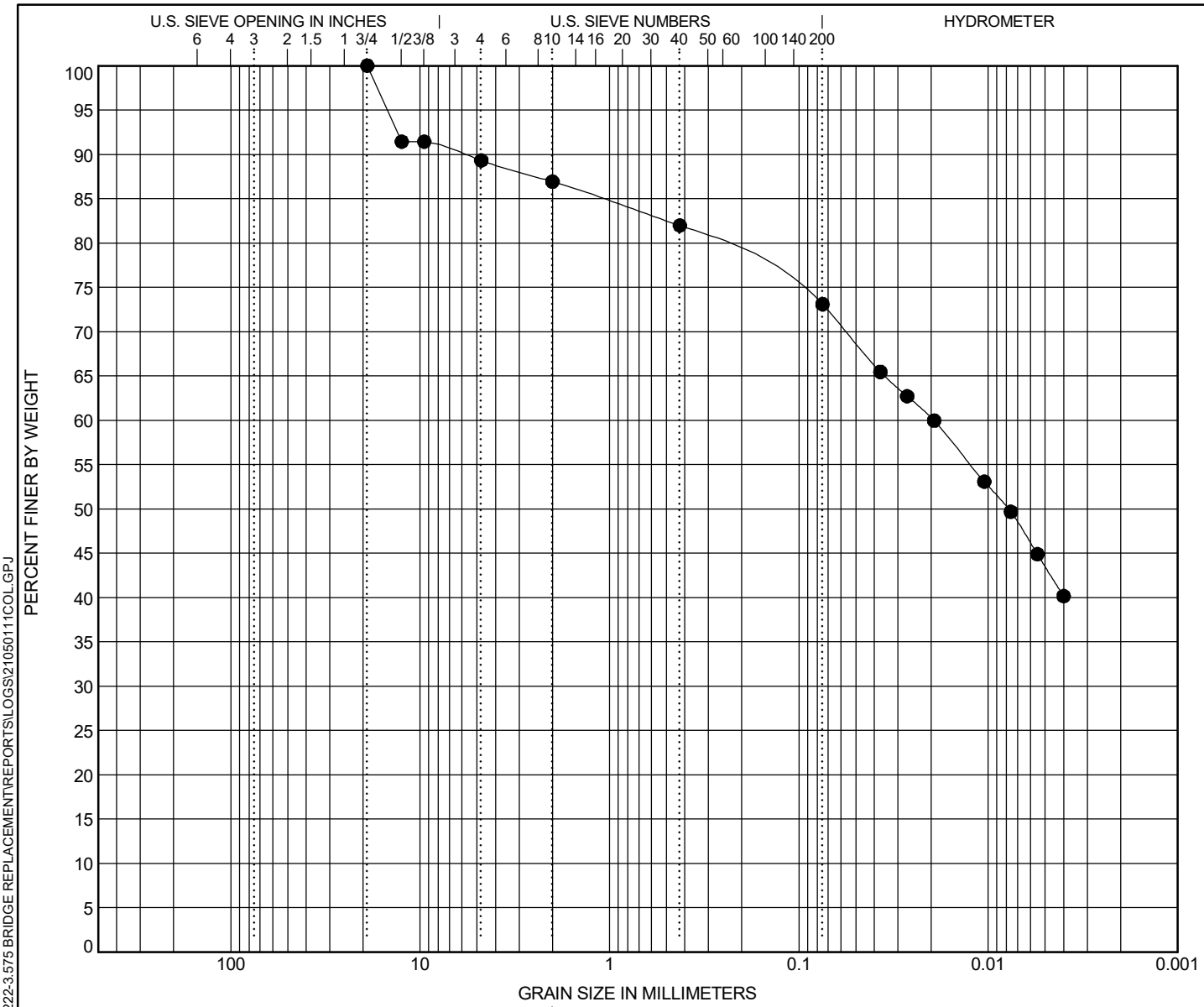
Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-001-0-21	**1.0**	**9.5**	**0.037**	**0.02**	**0.005**		**1**	**3**	**24**	**43**	**29**

CTL Engineering, Inc.
2860 Fisher Road
Columbus, Ohio 43204
Telephone: 614-276-8123
Fax: 614-276-6377

GRAIN SIZE DISTRIBUTION

Project: UNI-CR222-3.575
Location:UNI COUNTY
CTL Project Number:

CTL GRADATION - 2014 ODOT.GDT - 12/7/21 16:14 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL.GPJ



COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-001-0-21	**8.5**	**A-6b(11)**	**15**	**37**	**19**	**18**		

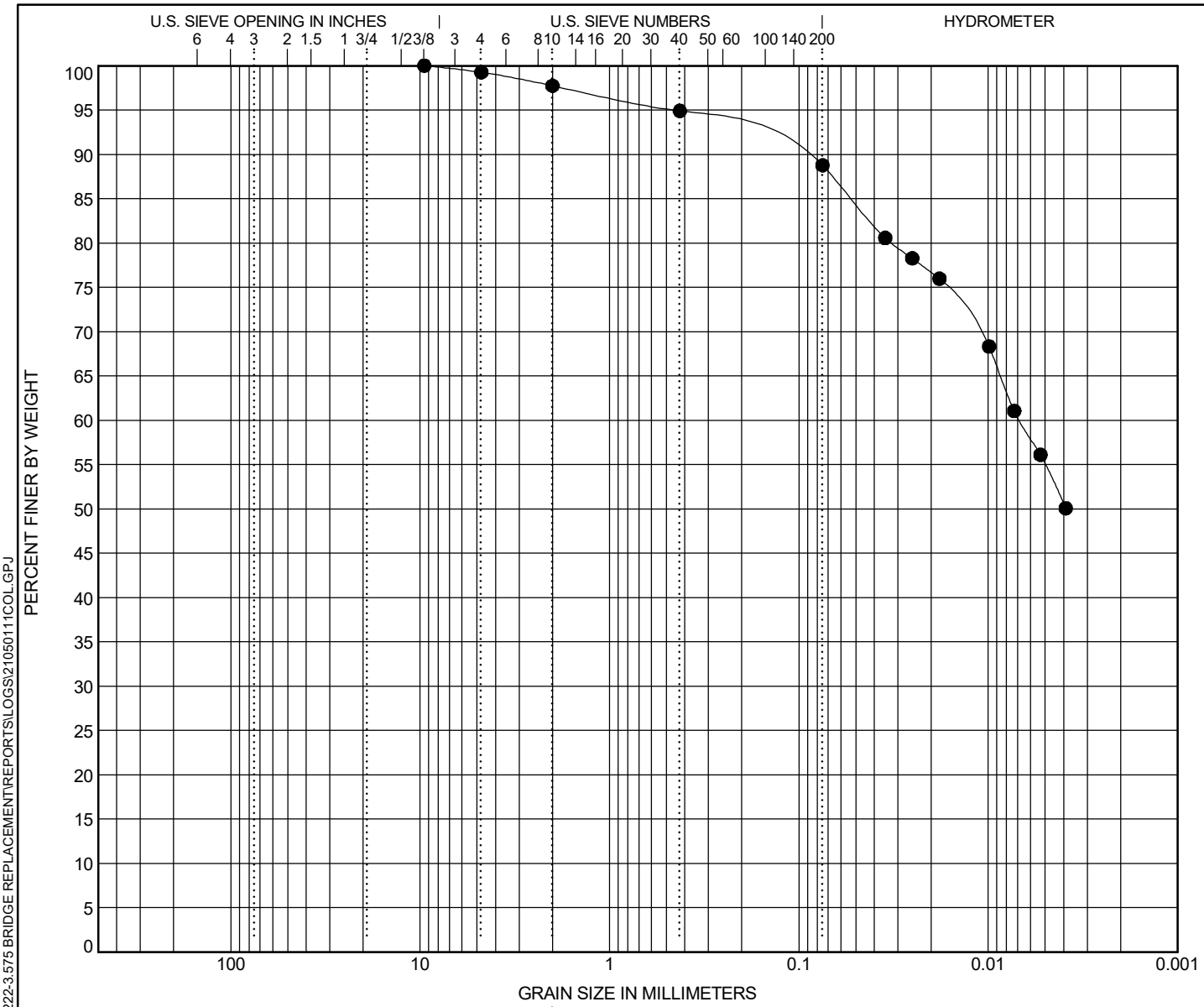
Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-001-0-21	**8.5**	**19**	**0.019**	**0.008**			**13**	**5**	**9**	**30**	**43**

CTL Engineering, Inc.
2860 Fisher Road
Columbus, Ohio 43204
Telephone: 614-276-8123
Fax: 614-276-6377

GRAIN SIZE DISTRIBUTION

Project: UNI-CR222-3.575
Location:UNI COUNTY
CTL Project Number:

CTL GRADATION - 2014 ODOT.GDT - 12/7/21 16:14 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL.GPJ



COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-001-0-21	**10.0**	**A-6b(11)**	**16**	**37**	**20**	**17**		

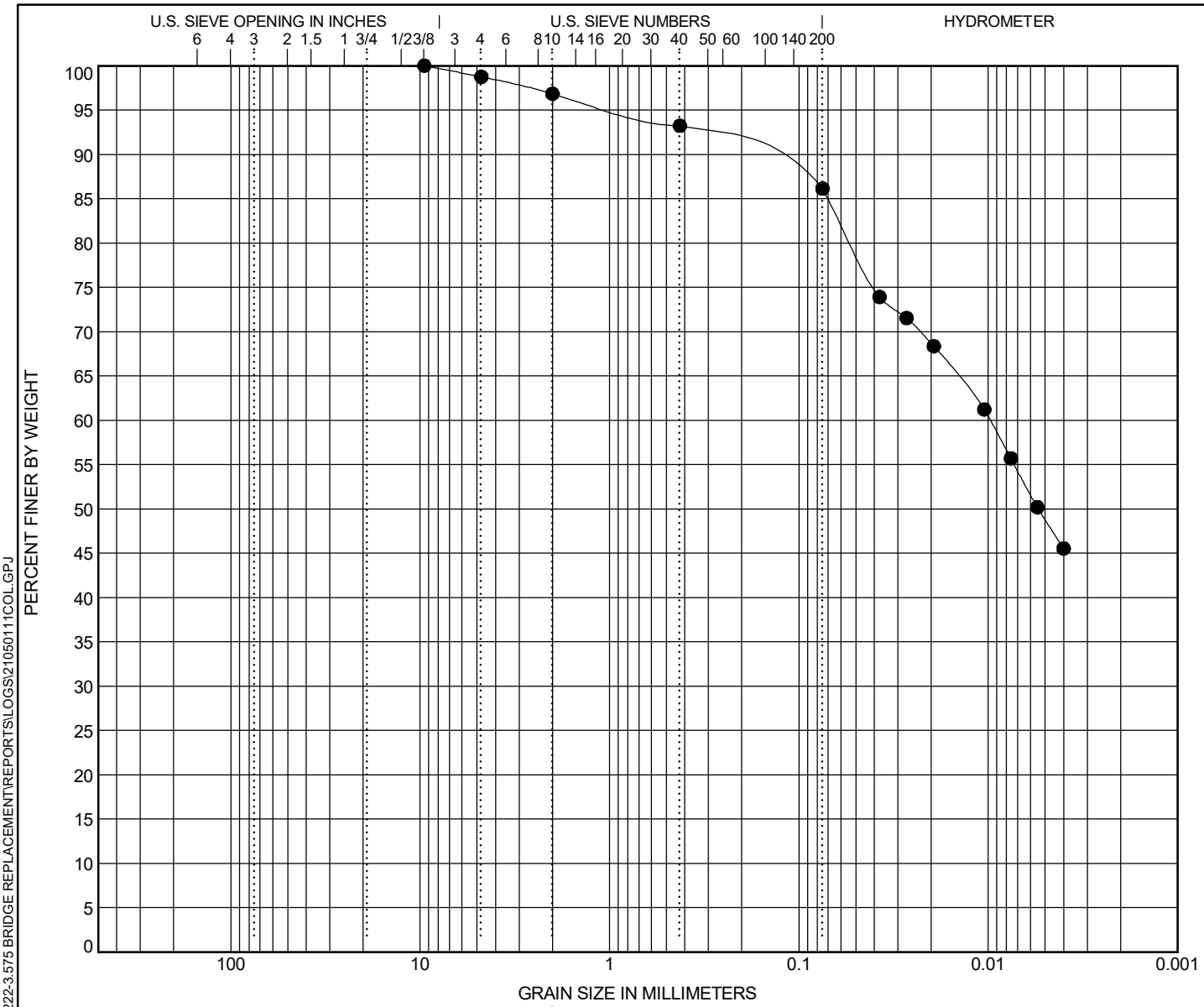
Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-001-0-21	**10.0**	**9.5**	**0.007**				**2**	**3**	**6**	**34**	**55**

CTL Engineering, Inc.
2860 Fisher Road
Columbus, Ohio 43204
Telephone: 614-276-8123
Fax: 614-276-6377

GRAIN SIZE DISTRIBUTION

Project: UNI-CR222-3.575
Location:UNI COUNTY
CTL Project Number:

CTL GRADATION - 2014 ODOT.GDT - 12/7/21 16:14 - J:\DEPT5\21 PROJECTS\21050111COL-UNI-CR222-3.575 BRIDGE REPLACEMENT\REPORTS\LOGS\21050111COL.GPJ



COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-001-0-21	**11.5**	**A-6a(10)**	**17**	**35**	**21**	**14**		

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-001-0-21	**11.5**	**9.5**	**0.01**	**0.005**			**3**	**4**	**7**	**37**	**49**

CTL Engineering, Inc.
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Fax: 614-276-6377

GRAIN SIZE DISTRIBUTION

Project: UNI-CR222-3.575
Location:UNI COUNTY
CTL Project Number:

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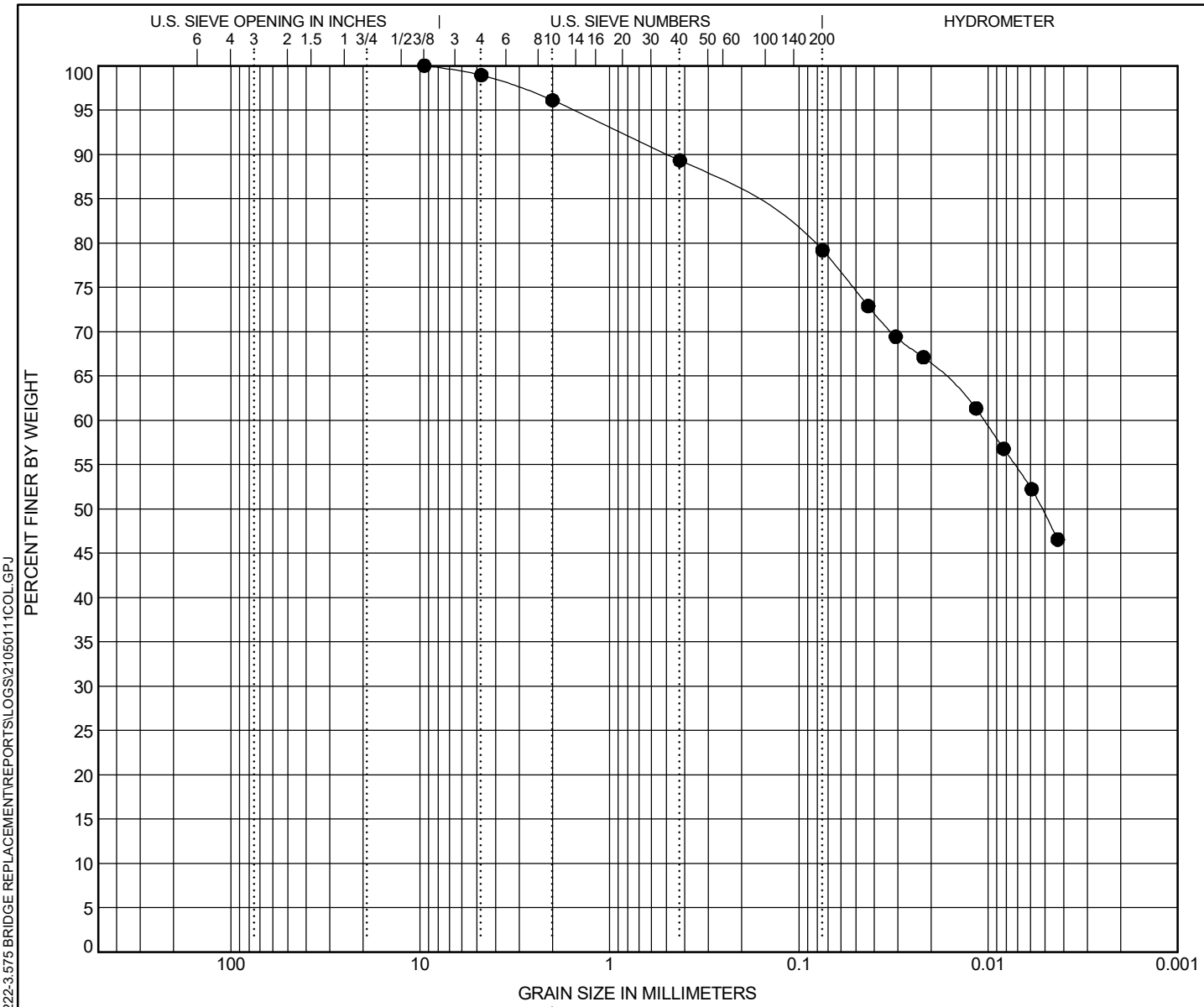

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-001-0-21	**16.0**	**A-6b(12)**	**21**	**38**	**19**	**19**		

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-001-0-21	**16.0**	**9.5**	**0.011**	**0.005**			**4**	**7**	**10**	**30**	**49**

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GRAIN SIZE DISTRIBUTION

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Location:UNI COUNTY
CTL Project Number:

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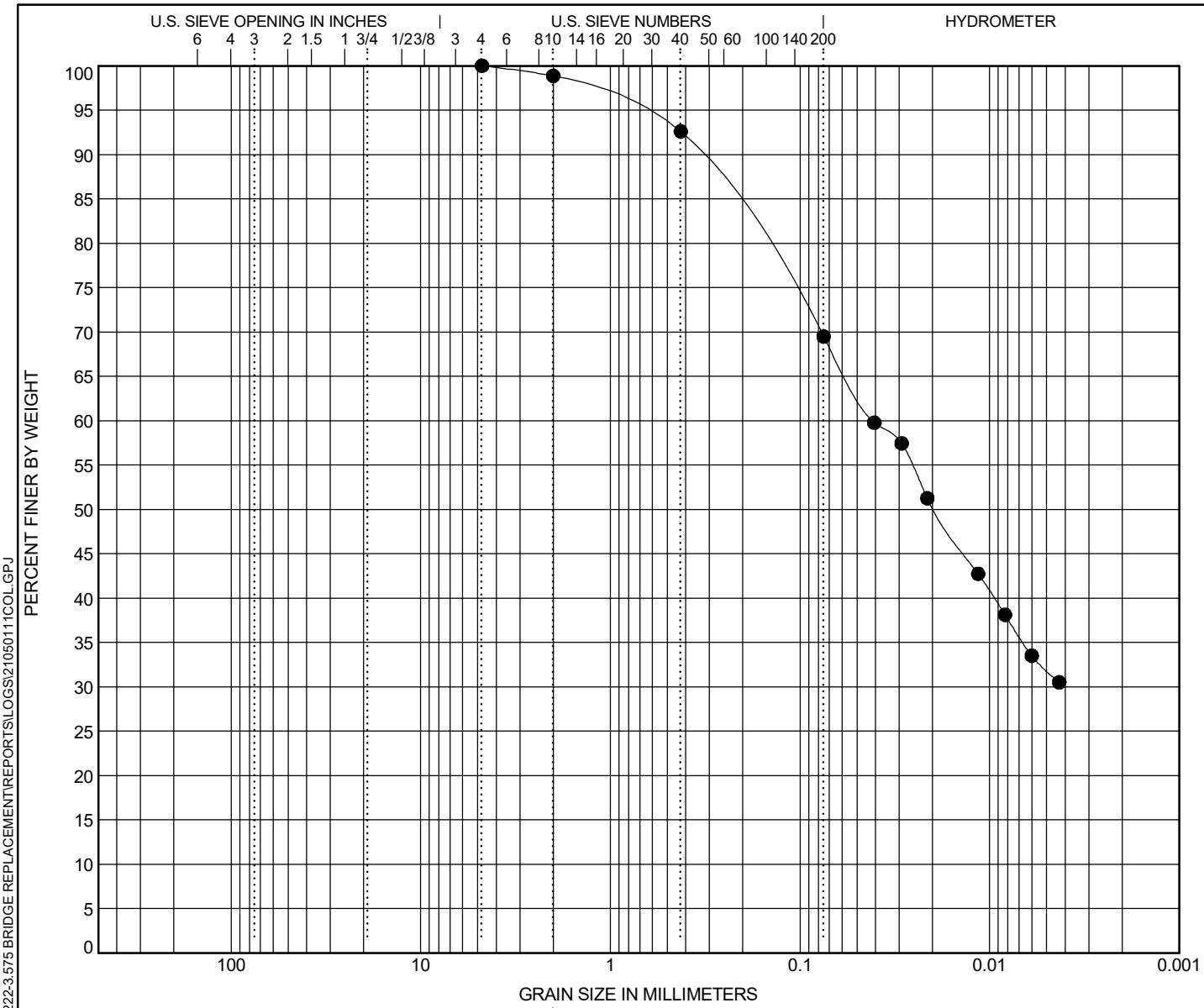

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-002-0-21	**1.0**	**A-6a(9)**	**23**	**36**	**21**	**15**		

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-002-0-21	**1.0**	**4.75**	**0.041**	**0.019**			**2**	**6**	**23**	**37**	**32**

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GRAIN SIZE DISTRIBUTION

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Location:UNI COUNTY
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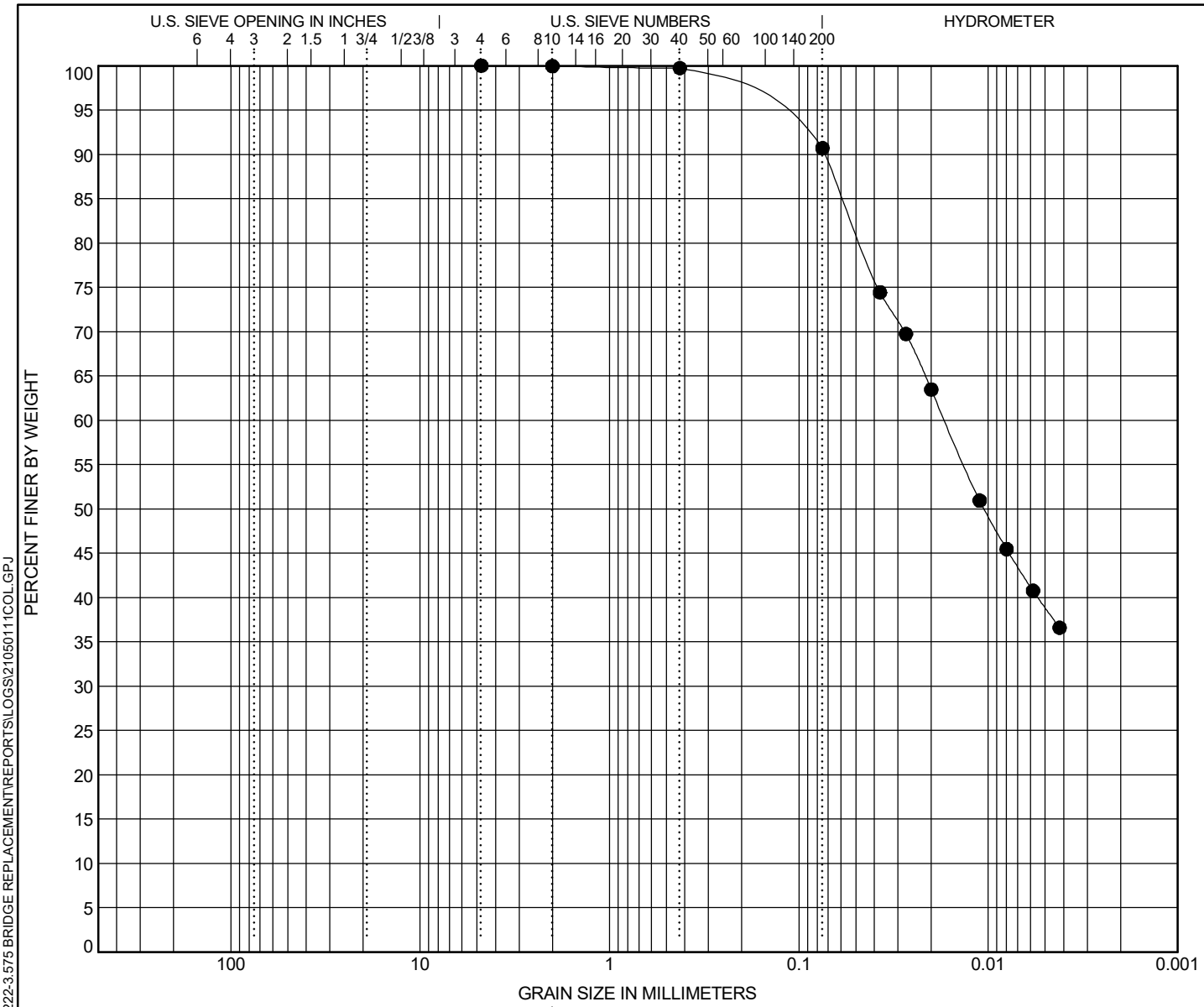

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-002-0-21	**8.5**	**A-7-6(14)**	**14**	**44**	**22**	**22**		

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-002-0-21	**8.5**	**4.75**	**0.017**	**0.011**			**0**	**0**	**9**	**52**	**39**

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GRAIN SIZE DISTRIBUTION

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Location:UNI COUNTY
CTL Project Number:

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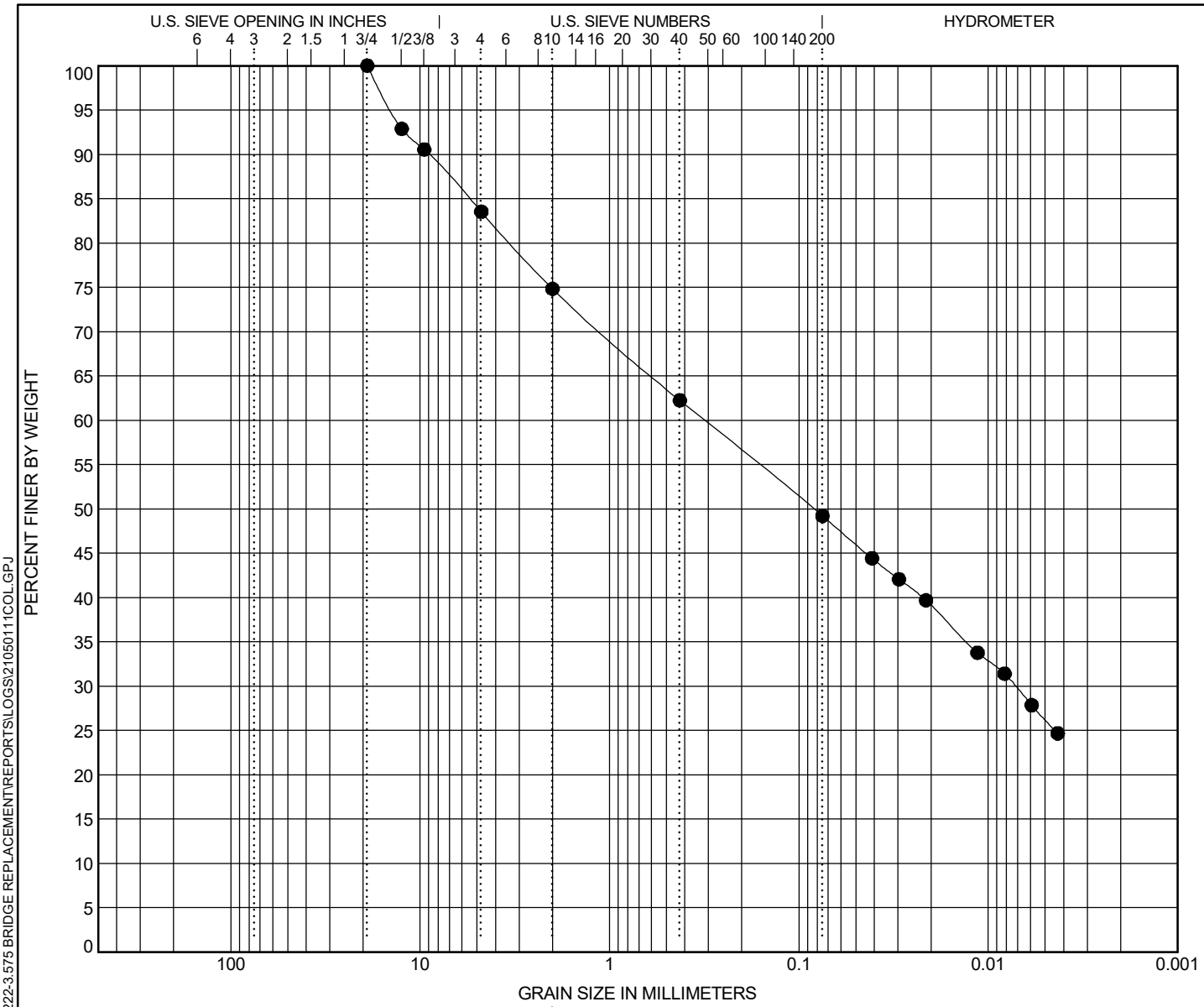

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-002-0-21	**11.5**	**A-6a(3)**	**20**	**28**	**17**	**11**		

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-002-0-21	**11.5**	**19**	**0.315**	**0.083**	**0.007**		**25**	**13**	**13**	**23**	**26**

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GRAIN SIZE DISTRIBUTION

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Location:UNI COUNTY
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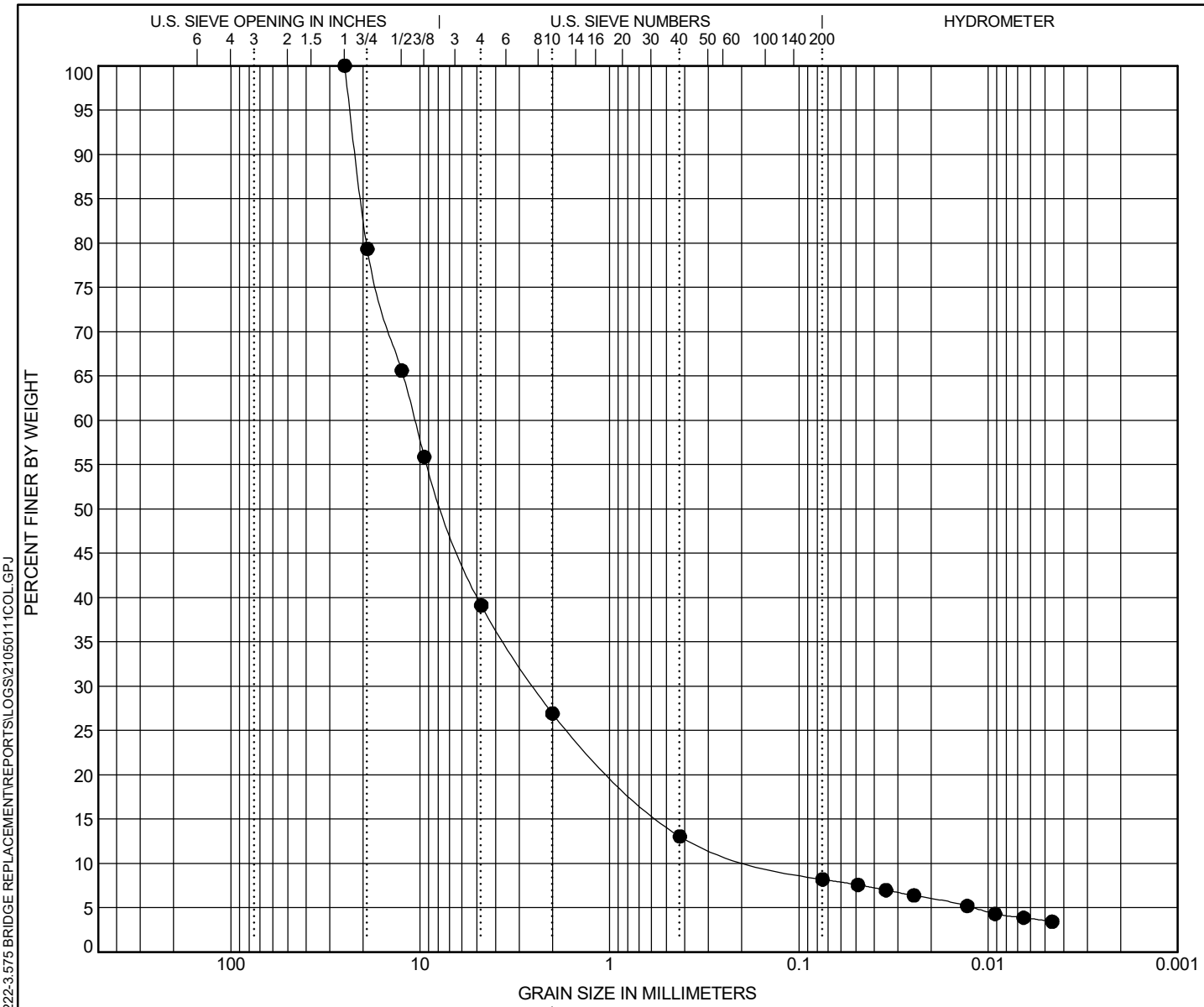

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-002-0-21	**13.0**	**A-1-a(0)**	**12**	**NP**	**NP**	**NP**	**4.04**	**74.18**

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-002-0-21	**13.0**	**25**	**10.677**	**7.457**	**2.491**	**0.144**	**73**	**14**	**5**	**4**	**4**

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GRAIN SIZE DISTRIBUTION

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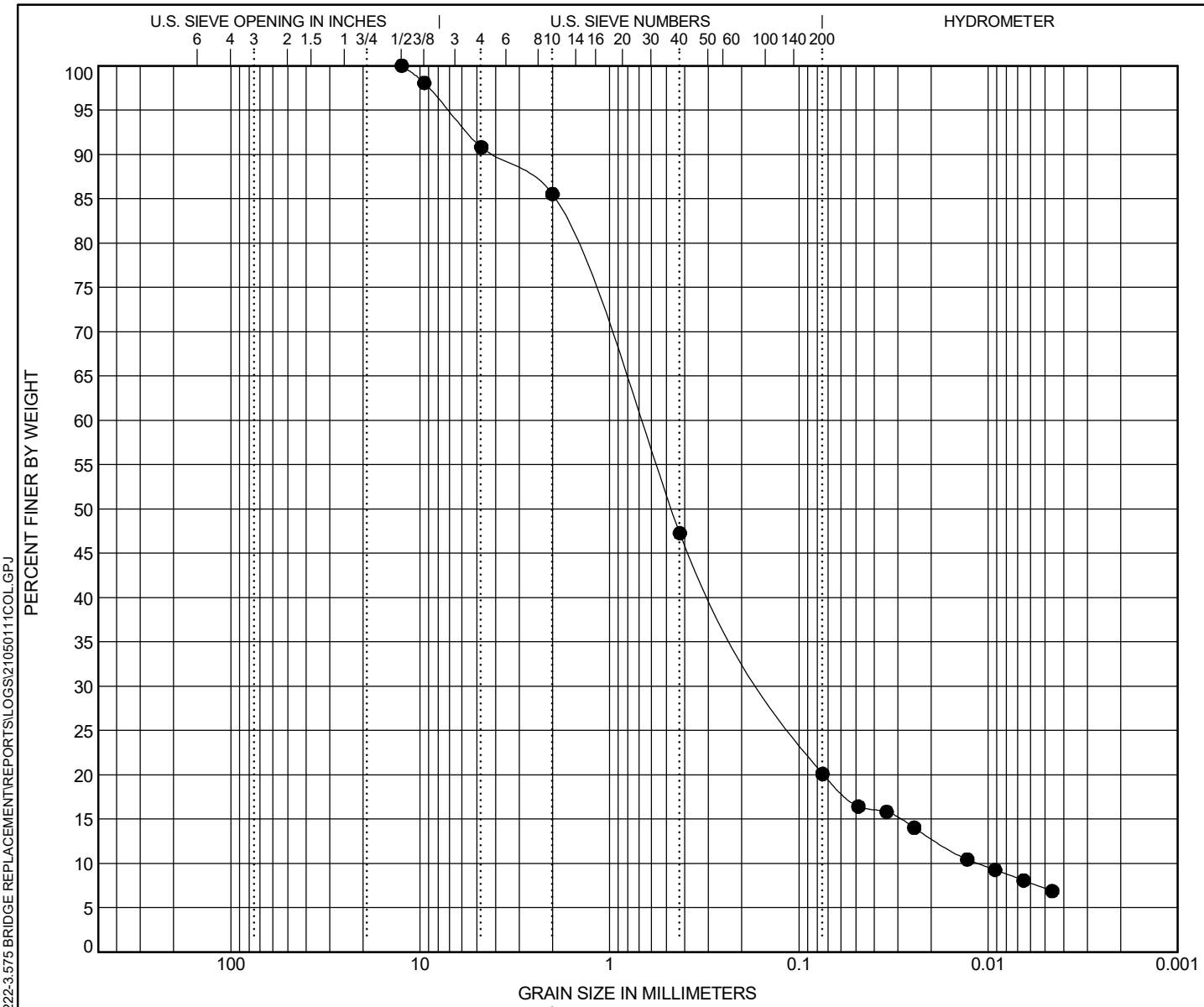

COBBLES	GRAVEL		SAND		SILT OR CLAY
	coarse	fine	coarse	fine	

Specimen Identification	Depth	Classification	MC	LL	PL	PI	Cc	Cu
B-002-0-21	**23.5**	**A-1-b(0)**	**24**	**NP**	**NP**	**NP**	**2.45**	**62.35**

Specimen Identification	Depth	D100	D60	D50	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
B-002-0-21	**23.5**	**12.5**	**0.712**	**0.475**	**0.141**	**0.011**	**15**	**38**	**27**	**13**	**7**

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GRAIN SIZE DISTRIBUTION

Project: UNI-CR222-3.575
Location:UNI COUNTY
CTL Project Number:

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PROJECT NO:	21050111COL
DATE:	12/2/2021

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE - ASTM D 7012

Method C

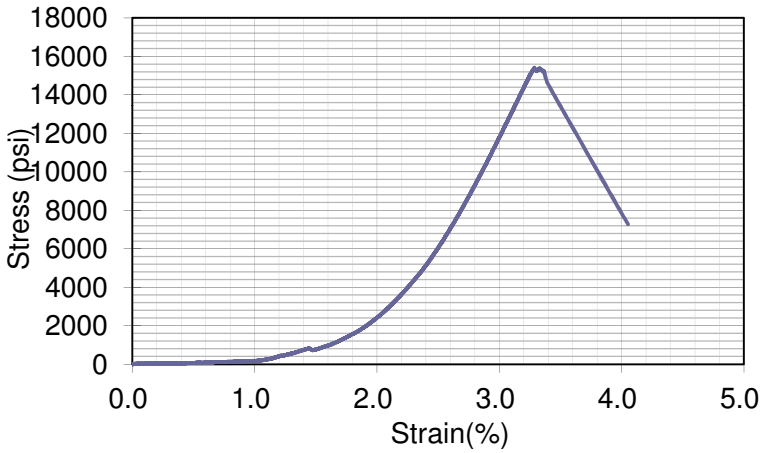
BORING NUMBER	B-001-0-21	TOP DEPTH(FT)	27.3	BOTTOM DEPTH(FT)	27.6
SAMPLE NUMBER	NQ-1	DISTRICT	6	PID NO.	NA
COUNTY	Union	ROUTE	CR222	SECTION	3.58

FORMATION	Silurian age, Tymochtee and Greenfield Formations, Undivided
DESCRIPTION	Dolomite, Gray, Unweathered, Very Strong
MOISTURE CONDITION	As Received

MEASUREMENT	LENGTH(INCHES)	DIAMETER(INCHES)
1	4.053	1.975
2	4.051	1.970
3	4.051	1.977
AVERAGE	4.052	1.974

LENGTH/DIAMETER	2.1
CORRECTION FACTOR	1
AREA(IN^2)	3.1
MASS (GRAMS)	533.5
UNIT WEIGHT(LBS/FT^3)	163.9

RATE OF LOADING (in/min)
0.08
COMPRESSIVE STRENGTH (PSI)
15,410
Equip. ID - 68897
NON-CONFORMANCES - None
TIME OF TEST (MINUTES)
2.11
LOADING DIRECTION
PERP. TO BEDDING
TECHNICIAN - MW
TEMPERATURE - Room



BEFORE TESTING

AFTER TESTING

PROJECT NO:	21050111COL
DATE:	12/2/2021

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE - ASTM D 7012

Method C

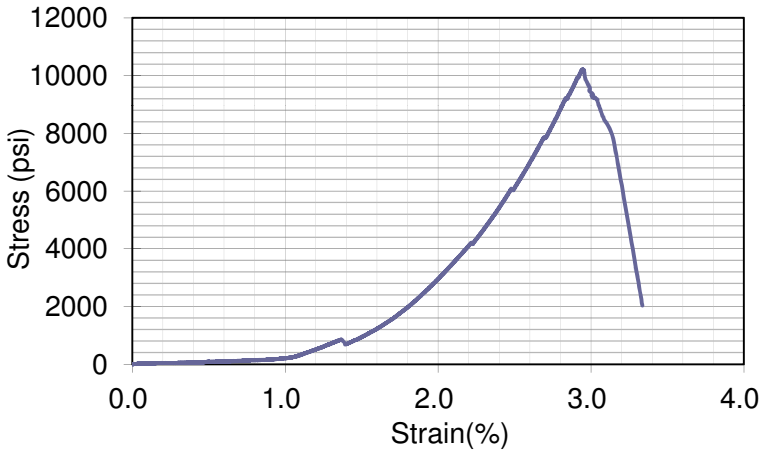
BORING NUMBER	B-002-0-21	TOP DEPTH(FT)	34.4	BOTTOM DEPTH(FT)	34.8
SAMPLE NUMBER	NQ-2	DISTRICT	6	PID NO.	NA
COUNTY	Union	ROUTE	CR222	SECTION	3.58

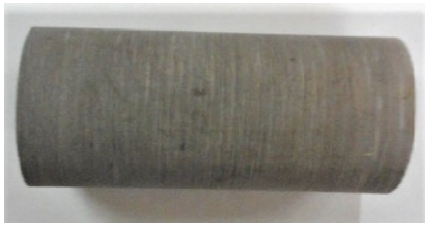
FORMATION	Silurian age, Tymochtee and Greenfield Formations, Undivided
DESCRIPTION	Dolomite, Gray, Unweathered, Strong
MOISTURE CONDITION	As Received

MEASUREMENT	LENGTH(INCHES)	DIAMETER(INCHES)
1	4.081	1.975
2	4.083	1.977
3	4.083	1.977
AVERAGE	4.082	1.976

LENGTH/DIAMETER	2.1
CORRECTION FACTOR	1
AREA(IN^2)	3.1
MASS (GRAMS)	533.5
UNIT WEIGHT(LBS/FT^3)	162.3

RATE OF LOADING (in/min)
0.08
COMPRESSIVE STRENGTH (PSI)
10,220
Equip. ID - 68897
NON-CONFORMANCES - None
TIME OF TEST (MINUTES)
1.77
LOADING DIRECTION
PERP. TO BEDDING
TECHNICIAN - MW
TEMPERATURE - Room





BEFORE TESTING

AFTER TESTING

ROCK CORE PHOTOS

B-001-0-21

Run #	Depth (ft)		Recovery (in)		RQD (in)	
NQ-1	26.2	31.2	40/60	67%	8.5/60	14%
NQ-2	31.2	36.2	55.5/60	92%	39/60	65%

B-002-0-21

Run #	Depth (ft)		Recovery (in)		RQD (in)	
NQ-1	29.2	34.0	54/60	90%	23/60	38%
NQ-2	34.2	39.0	55.5/60	93%	22.5/60	38%