BRAUN INTERTEC

September 5, 2025 B2009724

Scott Middaugh
KLJ Engineering LLC
728 East Beaton Dr. Suite 101
West Fargo, ND 58078

Re: Addendum No. 1 to Geotechnical Evaluation
8-029(200)069; PCN 22888
Interstate 29
Fargo, ND

Dear Mr. Middaugh:

This letter serves as Addendum No. 1 to our Geotechnical Evaluation Report for this project, dated March 16, 2024. This Addendum addresses the additional borings drilled for further soil information collected for KLJ Engineering, the North Dakota Department of Transportation (NDDOT), and the selected contractor to design the high-tension median cable guardrail proposed to be constructed on Interstate I-29 from Fargo to Grand Forks. for. This soils information should be considered along with our original Geotechnical Evaluation report. A boring location sketch, log of borings sheets, grain size accumulation curves and unconsolidated-undrained triaxial strength test reports are enclosed with this letter.

New Information Collected for this Addendum

- Drilling
  - Drill CAA-177 to CAA-188, 12 standard penetration test (SPT) borings to depths of 21 feet for the guardrail system based on an assumed guardrail cable layout.
  - Coordinate with utility companies to locate buried lines.
  - Obtain SPT results at 2 ½ - foot vertical intervals to 15 feet, then at 5-foot vertical intervals to termination.
  - Collect thin wall tubes at 6 to 8 feet and 19 to 21 feet, unless conditions dictated otherwise.

- Laboratory Testing:
  - Perform moisture content tests on each sample.
  - Perform one Atterberg Limits and grain size analysis on 33 percent of the SPT samples.
  - Performed unconsolidated undrained triaxial strength testing on 50 percent of the thin-walled tubes where samples could be extruded from undamaged tubes.

Boring Logs

The locations of our borings are shown on the six Boring Location Sketches. Log of Boring sheets for our borings also accompany this letter. Borings with a prefix “CAA” are borings performed at an anticipated corner or anchor point and were advanced to 21 feet deep. Borings were numbered sequentially from south to north.

The logs identify and describe the geologic materials that were penetrated, present the results of laboratory tests performed on samples retrieved from them, and note the locations of groundwater measurements.

Strata boundaries were inferred from the SPT and thin-walled tube samples retrieved. The strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may also occur as gradual rather than abrupt transitions.

KLJ Engineering LLC staked the borings and provided us with the coordinates and elevations of the staked locations. Coordinates and elevations of each boring are presented on the Log of Boring sheets.

Site Conditions

The borings were performed near the center of the median between northbound and southbound Interstate 29 from Fargo to Grand Forks. Borings were offset as needed to avoid utilities or allow access. The site conditions are typically grassy median ditch with occasional crossovers, bridges, or overpass abutments within them. The topography of the median was generally gently sloping, matching the profile of the adjacent roadway.

Boring Results

The samples recovered from our borings were initially classified using visual/manual techniques. When laboratory testing was completed on a given sample the results were used for final classification. The laboratory test results are shown on the log of boring sheets or on separate report pages attached. A summary of the soils encountered is provided in the following paragraph.

We encountered predominantly clay soils consisting of fat clay with occasional lean clay. Silts and sands of varying amounts were also encountered, though they were less common. All of the soils were generally in a moist condition and were typically brown and gray in color, though black was occasionally noticed as well below occasional apparent fill.

Groundwater

Groundwater was observed in 3 of our borings listed below. The borings were backfilled immediately after drilling. As the observation periods were relatively short, water can be anticipated in other locations at the time of construction. Seasonal and annual fluctuations in groundwater levels should be anticipated. Elevated water levels should be anticipated following spring thaw and periods of heavy precipitation.

Boring Number	Depth to Groundwater (feet)	Elevation to Groundwater (feet)
CAA-178	15	873
CAA-179	2.5	929.5
CAA-183	8.5	903

Remarks

This Addendum should be attached to and considered a part of our original Geotechnical Evaluation Report. With the exception of any results or recommendations changed by this Addendum, the information contained in our Geotechnical Evaluation Report remains unchanged.

In performing its services, Braun Intertec Corporation (Braun Intertec) used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

If you have any questions about this Addendum, please contact Steve Nagle at 701.238.3425 (SNagle@braunintertec.com).

Sincerely,
Braun Intertec Corporation

Professional Certification:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.

Steven P. Nagle, PE
Vice President, Principal Engineer
Registration Number: PE-3894
September 5, 2025



Jessica Anderson for

Kathleen Dragos
Staff Engineer

Attachments:
Boring Location Sketches (6)
Log of Boring Sheets (12)
Descriptive Terminology
Grain Size Accumulation Curves (26)
Unconsolidated-Undrained Test Results (7)



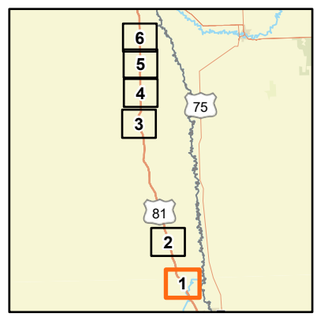
F:\2020\B2009724\GIS\B2009724.aprx

Denotes Approximate Boring Location

N

0 1,500 3,000 Feet

1" = 3,000 Feet



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701.492.5875
braunintertec.com

Project No: B2009724

Drawing No: Boring Location Sketch

Drawn By:	ZS
Date Drawn:	8/22/2025
Checked By:	KD
Last Modified:	8/22/2025

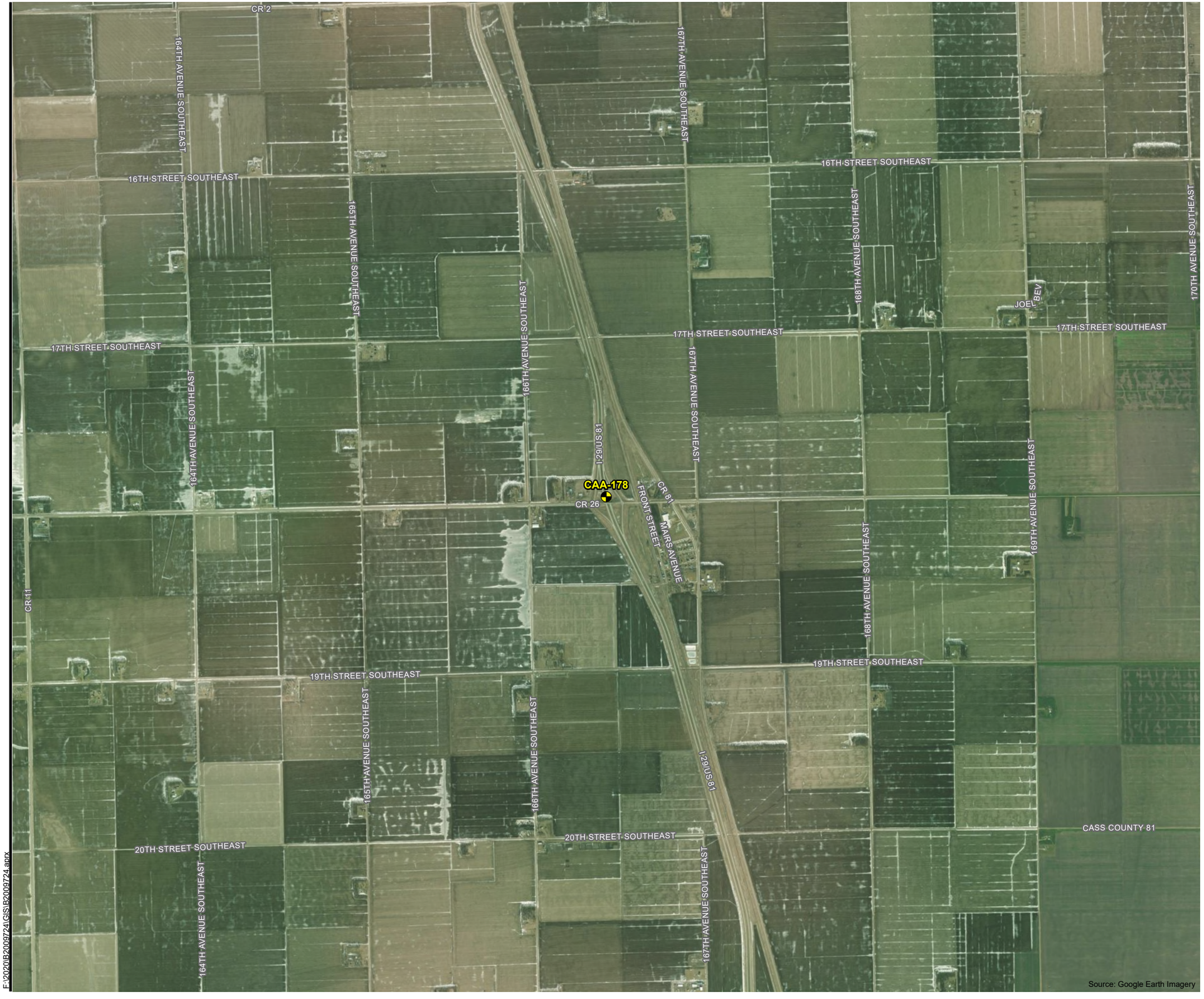
Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 1

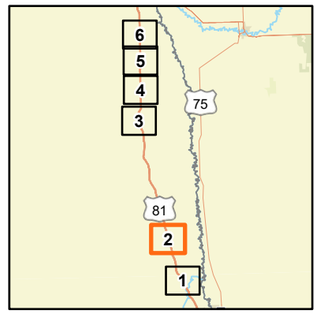


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Last Modified:	8/22/2025

Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 2

F:\2020\B2009724\GIS\B2009724.aprx

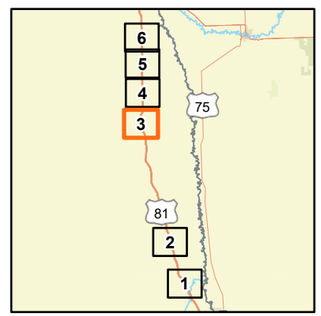


Denotes Approximate Boring Location

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Last Modified:	8/22/2025

Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 3

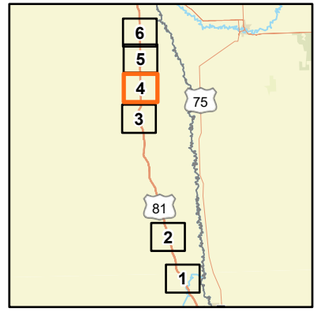


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Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 4

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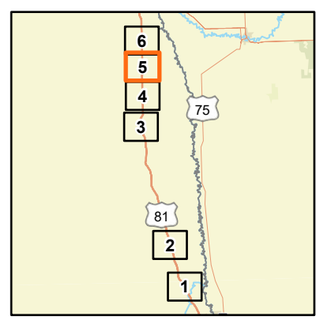


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Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 5

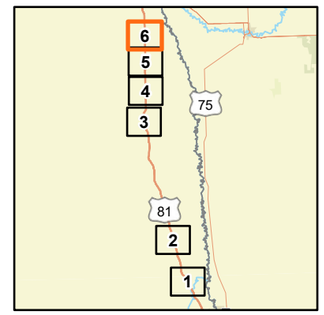


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Drawn By:	ZS
Date Drawn:	8/22/2025
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Last Modified:	8/22/2025

Interstate 29

Interstate 29 from Fargo to Grand Forks

North Dakota

Boring Location Sketch

Figure 6

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-177**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.024906 LONGITUDE: -96.914549
DRILLER: T.Schmidt LOGGED BY: K.Dragos START DATE: 07/10/25 END DATE: 07/10/25
SURFACE ELEVATION: 882.8 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Clear

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
882.3						
0.5	FILL: LEAN CLAY (CL), trace roots, dark brown, moist		1-1-2 (3) 8"		28	
881.3	FILL: LEAN CLAY (CL), trace Sand, brownish gray, moist					
1.5	FAT CLAY (CL), little Silt lenses and mineralization, trace Sand, brownish gray, moist, medium		1-2-4 (6) 10"	1.75	32	LL=71, PL=20, PI=51 A-7-6
878.8						
4.0	FAT CLAY (CH), with Silt lenses, little mineralization, brown with gray, moist, medium, iron oxide staining	5	1-2-4 (6) 10"	2	38	LL=29, PL=26, PI=3 A-4
			TW 13"	1.25		See additional testing in appendix
873.8						
9.0	FAT CLAY (CH), trace mineralization, brownish gray, moist, medium to soft, iron oxide staining	10	1-2-4 (6) 18"	1.25	49	
			1-1-2 (3) 15"	0.75	58	LL=97, PL=24, PI=73 A-7-6
	Gray below 14 1/2 feet	15	1-1-2 (3) 18"	0.75	58	LL=87, PL=22, PI=65 A-7-6
			TW 24"	1.25	55	
		20	1-1-2 (3) 18"	1.5	50	LL=92, PL=24, PI=68 A-7-6
861.8						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings	25				
		30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-178**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.152276 LONGITUDE: -96.974760
DRILLER: T.Schmidt LOGGED BY: K.Dragos START DATE: 07/10/25 END DATE: 07/10/25
SURFACE ELEVATION: 887.8 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Clear

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
887.3						
0.5	FILL: LEAN CLAY (CL), trace roots, trace Sand, dark brown and brown, moist		2-3-4 (7) 10"		31	
	FILL: LEAN CLAY (CL), trace roots, dark brown and brown, moist					
	Trace Sand and Gravel below 4 1/2 feet	5	2-3-4 (7) 3"		32	A-6
881.3						
6.5	FAT CLAY (CH), trace Silt lenses, brown and gray, moist, medium to soft, iron oxide staining		TW 15"	1.75		
		10	1-1-3 (4) 18"	1.25	44	A-7-6
			1-2-3 (5) 18"	1.5	42	
		15	1-2-3 (5) 18"	1.25	48	
			TW 24"	1.25		
		20	1-2-2 (4) 18"	1.5	43	
866.8						
21.0	END OF BORING					Water observed at 15.0 feet while drilling.
	Boring then backfilled with auger cuttings					Water not observed at end of drilling.
		25				
		30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **CAA-179**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.512620 LONGITUDE: -97.091091
DRILLER: T.Schmidt LOGGED BY: K.Dragos START DATE: 07/10/25 END DATE: 07/10/25
SURFACE ELEVATION: 932.0 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Clear

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
931.5							
0.5		LEAN CLAY (CL), trace Sand, trace roots, dark brown, moist (TOPSOIL)		AU			
	▽	SILT (ML), little Clay lenses and seams, trace Sand, brown and gray, wet, iron oxide staining		1-1-1 (2) 10"	0.25	39	
			5	1-1-2 (3) 10"	0.25	33	LL=29, PL=26, PI=3 A-4
925.5							
6.5		FAT CLAY (CH), trace Sand, brownish gray, moist, iron oxide staining		TW 18"	2	34	
923.0							
9.0		FAT CLAY (CH), gray, moist	10	1-1-1 (2) 10"	0.25	55	A-7-6
				1-1-1 (2) 18"	0.25	77	
			15	1-1-1 (2) 18"	0.25	77	LL=87, PL=22, PI=65 A-7-6
				TW 20"	0.25	62	See additional testing in appendix
			20	1-1-1 (2) 18"	0.25		
911.0							
21.0		END OF BORING					Water observed at 2.5 feet while drilling.
		Boring then backfilled with auger cuttings					Water not observed at end of drilling.
			25				
			30				

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Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **CAA-180**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.577523 LONGITUDE: -97.080785
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 914.9 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
914.1	LEAN CLAY (CL), trace Sand and roots, black, moist (TOPSOIL)		1-3-4 (7) 9"		35	
0.8	FAT CLAY (CH), brown with gray, moist, medium to stiff, iron oxide staining		1-4-4 (8) 14"	1.75	27	LL=58, PL=18, PI=40 A-7-6
		5	2-3-5 (8) 10"	1.75	28	
			TW 24"		30	
	Brown and gray with trace Silt lenses and Gravel below 9 feet	10	2-3-5 (8) 18"	2.25	29	
	Little Sand lenses below 12 feet		2-4-4 (8) 18"	1.5	34	LL=57, PL=20, PI=37 A-7-6
	With mineralization below 15 feet	15	2-5-4 (9) 18"	1.5	31	
		20	TW 22"		33	
893.9						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
		25				
		30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-181**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.599434 LONGITUDE: -97.080202
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 917.5 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
916.0		FILL: SANDY LEAN CLAY (CL), trace roots, gray, moist		3-4-3 (7) 18"		13	
1.5		SANDY LEAN CLAY (CL), gray, moist, stiff		5-6-8 (14) 18"	0.5	13	
			5	1-3-5 (8) 16"	0.5	27	LL=32, PL=13, PI=19 A-6
				TW 24"			See additional testing in appendix
908.0							
9.5		FAT CLAY (CH), little Sand and mineralization, brownish gray, moist, medium	10	2-3-3 (6) 16"	1	35	
				1-3-3 (6) 17"	1	35	
			15	1-3-3 (6) 18"	1	33	LL=53, PL=18, PI=35 A-7-6
			20	TW 21"		37	
896.5							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **CAA-182**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.607796 LONGITUDE: -97.080123
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 916.3 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
914.8	FILL: SILTY SAND (SM), fine to coarse-grained, trace Gravel, dark brown, moist		6-8-5 (13) 16"		6	
1.5	SILTY SAND (SM), fine-grained, blackish gray, moist, medium dense		8-9-10 (19) 17"		12	Non-plastic A-3
		5	7-11-12 (23) 17"		12	
907.3			TW 0"			
9.0	FAT CLAY (CH), little Sand, brown, moist, stiff	10	2-5-6 (11) 18"	2.25	23	LL=51, PL=18, PI=33 A-7-6
	Trace iron oxide staining below 12 feet		1-4-5 (9) 18"	2.25	27	
	Brown with gray and trace Gravel below 14 feet	15	4-4-5 (9) 12"	2.5	30	
		20	TW 24"		30	
895.3						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
		25				
		30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-183**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.625339 LONGITUDE: -97.080282
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 911.3 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
909.8		FILL: CLAYEY SAND (SC), fine-grained, trace roots, black and brown, moist		2-3-5 (8) 18"		14	
1.5 908.3		LEAN CLAY with SAND (CL), brown with gray, moist, medium		2-4-4 (8) 16"	1.5	23	A-6
3.0		SANDY SILT (ML), brown, moist, loose		2-3-4 (7) 16"		31	LL=38, PL=29, PI=9 A-4
902.3	▽			TW 24"		16	
9.0		LEAN CLAY with SAND (CL), trace Silt lenses, brown with gray, moist, soft, iron oxide staining	10	0-2-1 (3) 15"	0.75	29	
		Trace Gravel below 12 feet		0-1-3 (4) 14"	1.5	30	
			15	1-2-3 (5) 18"	1.5	29	LL=48, PL=18, PI=30 A-7-6
				TW 18"			See additional testing in appendix
890.3			20				
21.0		END OF BORING					Water observed at 8.5 feet while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-184**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.634114 LONGITUDE: -97.080374
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 910.0 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
908.0		FILL: CLAYEY SAND (SC), fine-grained, black, moist		1-2-3 (5) 18"		16	
2.0 906.0		FILL: SILT (ML), little Sand, brown, moist		2-2-4 (6) 16"		22	LL=34, PL=26, PI=8 A-4
4.0		LEAN CLAY (CL), little Sand, trace Silt lenses and seams, brown with gray, moist, very soft, iron oxide staining	5	0-1-0 (1) 18"	1	45	
				TW 16"		29	
898.5			10	2-3-3 (6) 14"	1	29	LL=46, PL=19, PI=27 A-7-6
11.5		LEAN CLAY with SAND (CL), gray, moist, medium to soft		1-2-3 (5) 18"	0.75	30	A-7-6
			15	11-1-2 (3) 18"	0.5	31	
889.0			20	TW 20"		26	
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-185**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.671874 LONGITUDE: -97.079130
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 889.6 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
888.3	LEAN CLAY with SAND (CL), trace roots, dark brown, moist		1-2-3 (5) 15"		17	
1.3	SILTY CLAY with SAND (CL-ML), fine-grained, brown, moist, medium to soft, iron oxide staining		3-3-2 (5) 16"	0.25	24	LL=27, PL=21, PI=6 A-4
		5	1-2-2 (4) 15"	0.25	36	
			TW 18"		27	See additional testing in appendix
880.6						
9.0	LEAN CLAY with SAND (CL), trace Silt lenses, brown with gray, moist, medium, iron oxide staining	10	1-3-5 (8) 16"	2.5	27	
			1-4-4 (8) 14"	2.25	29	
		15	1-4-6 (10) 17"	2.25	26	LL=46, PL=18, PI=28 A-7-6
		20	TW 13"		27	
868.6						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
		25				
		30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-186**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.694958 LONGITUDE: -97.077607
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 882.4 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
881.4	LEAN CLAY (CL), trace Sand and roots, dark brown, moist		2-5-7 (12) 14"		24	
1.0	FILL: LEAN CLAY with SAND (CL), gray, moist					
880.9	LEAN CLAY (CL), trace roots, black, moist		1-3-5 (8) 18"		20	A-6
1.5						
878.4	LEAN CLAY (CL), little Silt lenses and seams, gray with brown, moist, soft, iron oxide staining		1-2-2 (4) 16"	0.5	35	LL=37, PL=18, PI=19 A-6
4.0		5	TW 24"		32	
		10	0-2-2 (4) 15"	0.5	37	
870.9						
11.5	LEAN CLAY (CL), trace fine Sand, brown, moist, loose		1-2-3 (5) 14"		35	LL=31, PL=17, PI=14 A-6
868.4						
14.0	LEAN CLAY with SAND (CL), gray, moist, medium	15	1-2-4 (6) 17"	0.5	30	
		20	TW 24"			See additional testing in appendix
861.4						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
		25				
		30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-187**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.705375 LONGITUDE: -97.077646
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 876.1 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
875.2	LEAN CLAY (CL), trace roots, black, moist		0-1-2 (3) 18"		28	
0.9 874.1	LEAN CLAY (CL), trace Sand, brown with gray, moist		0-0-1 (1) 16"	0.5	38	LL=45, PL=17, PI=28 A-7-6
2.0	LEAN CLAY (CL), trace Sand and Silt lenses and seams, gray with brown, moist, very soft, iron oxide staining		0-0-1 (1) 14"	0.25	47	
5			TW 14"		40	
10			0-1-2 (3) 16"	0.5	39	LL=44, PL=25, PI=19 A-7-6
			0-1-2 (3) 16"	0.25	41	
862.1 14.0	SILTY SAND (SM), fine to medium-grained, brown with gray, moist, very stiff, iron oxide staining		3-7-10 (17) 16"		26	A-3
20			TW 24"			See additional testing in appendix
855.1 21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
25						
30						

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
8-029(200)069;PCN22888
Interstate 29
Fargo, North Dakota

BORING: **CAA-188**
LOCATION: Captured with RTK GPS.
DATUM: WGS84
LATITUDE: 47.773870 LONGITUDE: -97.077760
DRILLER: A.Schmidt LOGGED BY: K.Dragos START DATE: 07/30/25 END DATE: 07/30/25
SURFACE ELEVATION: 857.0 ft RIG: 7509 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Overcast

Elev./ Depth ft	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
856.2						
0.8	LEAN CLAY (CL), trace roots and Sand, black, moist		2-3-2 (5) 18"		27	
	LEAN CLAY (CL), little Silt lenses and Sand, brown with gray, moist, soft to medium, iron oxide staining		1-2-1 (3) 15"	0.5	56	LL=41, PL=20, PI=21 A-7-6
		5	4-5-3 (8) 16"	2.25	26	
			TW 17"	2.25	38	
847.5						
9.5	FAT CLAY (CH), gray, moist, soft	10	1-2-2 (4) 18"	1.25	38	LL=56, PL=23, PI=33 A-7-6
			1-2-3 (5) 18"	0.25	37	
842.0		15	1-1-3 (4) 18"	0.5	44	A-7-6
15.0	LEAN CLAY (CL), brown, moist, medium, iron oxide staining					
		20	TW 21"			
836.0						
21.0	END OF BORING					Water not observed while drilling.
	Boring then backfilled with auger cuttings					
		25				
		30				

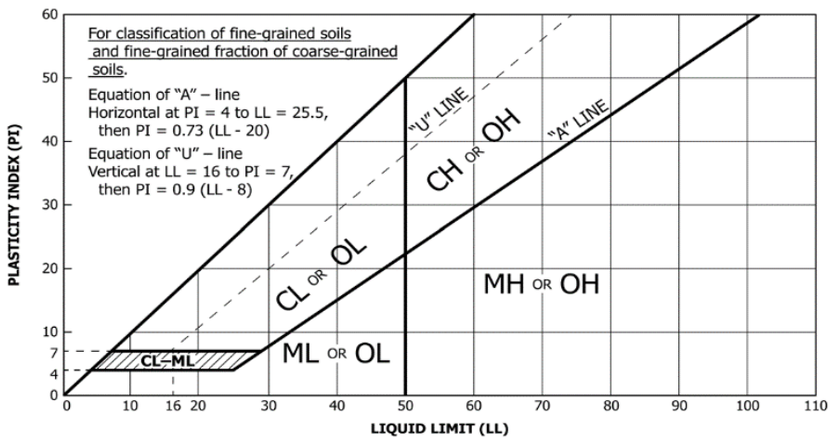
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Descriptive Terminology of Soil

Based on Standards ASTM D2487/2488
(Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines[C])	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel[E]
			$C_u < 4$ and/or ($C_c < 1$ or $C_c > 3$)[D]	GP	Poorly graded gravel[E]
		Gravels with Fines (More than 12% fines[C])	Fines classify as ML or MH	GM	Silty gravel[E F G]
			Fines Classify as CL or CH	GC	Clayey gravel[E F G]
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines[H])	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand[I]
			$C_u < 6$ and/or ($C_c < 1$ or $C_c > 3$)[D]	SP	Poorly graded sand[I]
		Sands with Fines (More than 12% fines[H])	Fines classify as ML or MH	SM	Silty sand[F G I]
			Fines classify as CL or CH	SC	Clayey sand[F G I]
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K L M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K L M]
		Organic	Liquid Limit – oven dried / Liquid Limit – not dried <0.75	OL	Organic clay[K L M N] / Organic silt[K L M O]
	Silts and Clays (Liquid limit 50 or more)	Inorganic	PI plots on or above "A" line	CH	Fat clay[K L M]
			PI plots below "A" line	MH	Elastic silt[K L M]
		Organic	Liquid Limit – oven dried / Liquid Limit – not dried <0.75	OH	Organic clay[K L M P] / Organic silt[K L M Q]
Highly Organic Soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

A. Based on the material passing the 3-inch (75-mm) sieve.
B. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
C. Gravels with 5 to 12% fines require dual symbols:
   GW-GM well-graded gravel with silt
   GW-GC well-graded gravel with clay
   GP-GM poorly graded gravel with silt
   GP-GC poorly graded gravel with clay
D. $C_u = D_{60} / D_{10}$ $C_c = (D_{30})^2 / (D_{10} \times D_{60})$
E. If soil contains ≥ 15% sand, add "with sand" to group name.
F. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
G. If fines are organic, add "with organic fines" to group name.
H. Sands with 5 to 12% fines require dual symbols:
   SW-SM well-graded sand with silt
   SW-SC well-graded sand with clay
   SP-SM poorly graded sand with silt
   SP-SC poorly graded sand with clay
I. If soil contains ≥ 15% gravel, add "with gravel" to group name.
J. If Atterberg limits plot in hatched area, soil is CL-ML, silty clay.
K. If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
L. If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.
M. If soil contains ≥ 30% plus No. 200 predominantly gravel, add "gravelly" to group name.
N. PI ≥ 4 and plots on or above "A" line.
O. PI < 4 or plots below "A" line.
P. PI plots on or above "A" line.
Q. PI plots below "A" line.



Laboratory Tests

DD	Dry density, pcf	**q_p**	Pocket penetrometer strength, tsf
WD	Wet density, pcf	**q_U**	Unconfined compression test, tsf
P200	% Passing #200 sieve	**LL**	Liquid limit
MC	Moisture content, %	**PL**	Plastic limit
OC	Organic content, %	**PI**	Plasticity index

Particle Size Identification

Boulders..... over 12"
Cobbles..... 3" to 12"
Gravel
  Coarse..... 3/4" to 3" (19.00 mm to 75.00 mm)
  Fine..... No. 4 to 3/4" (4.75 mm to 19.00 mm)
Sand
  Coarse..... No. 10 to No. 4 (2.00 mm to 4.75 mm)
  Medium..... No. 40 to No. 10 (0.425 mm to 2.00 mm)
  Fine..... No. 200 to No. 40 (0.075 mm to 0.425 mm)
Silt..... No. 200 (0.075 mm) to .005 mm
Clay..... < .005 mm

Relative Proportions[L,M]

trace..... 0 to 5%
little..... 6 to 14%
with..... ≥ 15%

Inclusion Thicknesses

lens..... 0 to 1/8"
seam..... 1/8" to 1"
layer..... over 1"

Apparent Relative Density of Cohesionless Soils

Very loose ..... 0 to 4 BPF
Loose ..... 5 to 10 BPF
Medium dense..... 11 to 30 BPF
Dense..... 31 to 50 BPF
Very dense..... over 50 BPF

Consistency of Cohesive Soils	Blows Per Foot	Approximate Unconfined Compressive Strength
Very soft	0 to 1 BPF	< 0.25 tsf
Soft	2 to 4 BPF	0.25 to 0.5 tsf
Medium	5 to 8 BPF	0.5 to 1 tsf
Stiff	9 to 15 BPF	1 to 2 tsf
Very Stiff	16 to 30 BPF	2 to 4 tsf
Hard	over 30 BPF	> 4 tsf

Moisture Content:

Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp but no visible water.
Wet: Visible free water, usually soil is below water table.

Drilling Notes:

Blows/N-value: Blows indicate the driving resistance recorded for each 6-inch interval. The reported N-value is the blows per foot recorded by summing the second and third interval in accordance with the Standard Penetration Test, ASTM D1586.

Partial Penetration: If the sampler could not be driven through a full 6-inch interval, the number of blows for that partial penetration is shown as #/x" (i.e. 50/2"). The N-value is reported as "REF" indicating refusal.

Recovery: Indicates the inches of sample recovered from the sampled interval. For a standard penetration test, full recovery is 18", and is 24" for a thinwall/shelby tube sample.

WOH: Indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WOR: Indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

Water Level: Indicates the water level measured by the drillers either while drilling (▽), at the end of drilling (▼), or at some time after drilling (▽).

Sample Symbols

Standard Penetration Test
Modified California (MC)
Auger
Grab Sample
Rock Core
Thinwall (TW)/Shelby Tube (SH)
Texas Cone Penetrometer
Dynamic Cone Penetrometer

5/2021

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526 10th St NE, Suite 300
PO Box 485
West Fargo, ND 58078
Phone: 701-232-8701

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

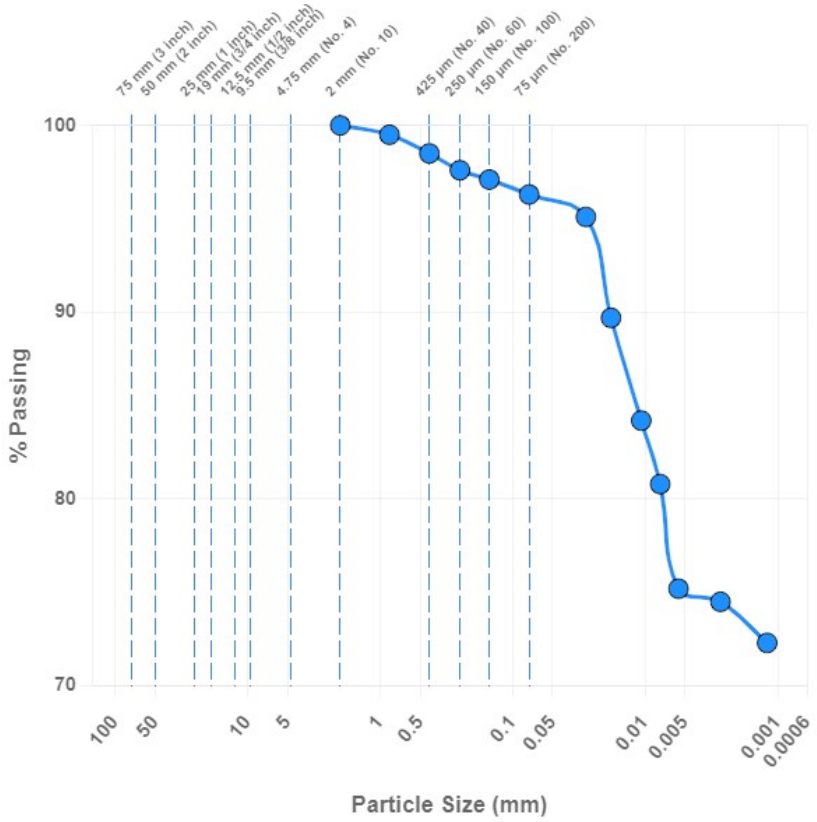
Sample Information

Sample Number:	677115	**Alternate ID:**	2
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-177	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.5	-
425 µm (No. 40)	98.5	-
250 µm (No. 60)	97.6	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	96.3	-
28.0 (µm)	95.1	-
18.1 (µm)	89.7	-
10.7 (µm)	84.2	-
7.7 (µm)	80.8	-
5.6 (µm)	75.2	-
2.7 (µm)	74.5	-
1.2 (µm)	72.3	-



Soil Classification: CH Fat Clay, brown, A-7-6(55)

Gravel (%): 0 **Sand (%):** 3.7 **Silt (%):** 21.2 **Clay (%):** 75.1

General

Remarks: LL=71, PL=20, PI=51

Uncertainty was not taken into account in determining whether the test results meet the requirements. The results included in this report relate only to the items inspected or tested. Sampled per project specifications or industry standards. Also, this report is for the exclusive use of the addressed parties. We assume no responsibility to other parties regarding this report. The information indicated in this report shall not be reproduced, except in full, without prior written approval.

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526 10th St NE, Suite 300
PO Box 485
West Fargo, ND 58078
Phone: 701-232-8701

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

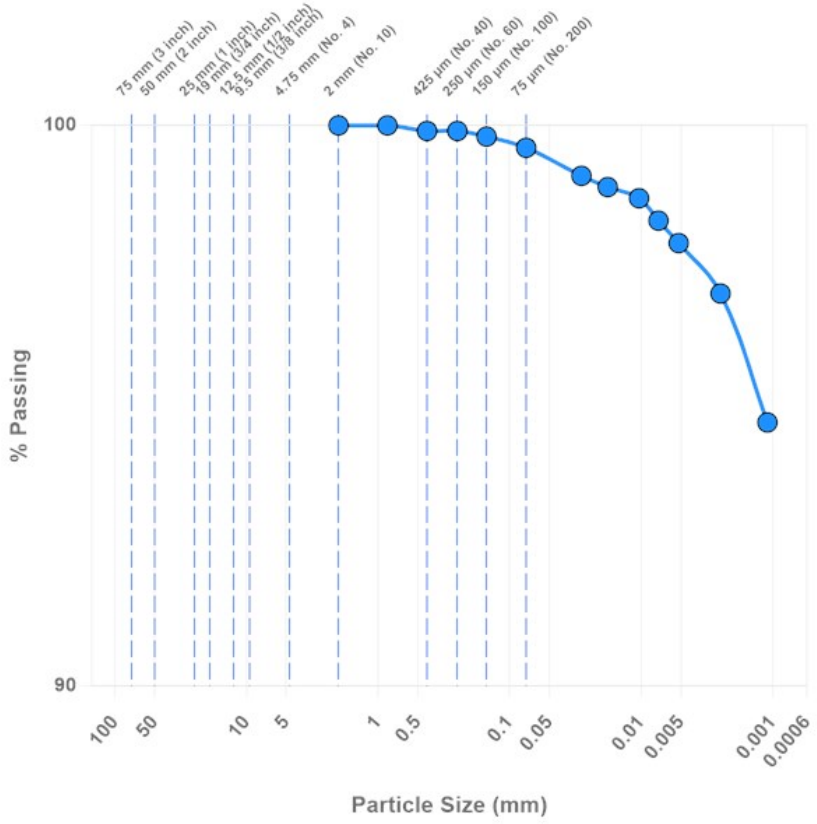
Sample Information

Sample Number:	677098	**Alternate ID:**	6
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	12-13.5
Boring Number:	CAA-177	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.9	-
250 µm (No. 60)	99.9	-
150 µm (No. 100)	99.8	-
75 µm (No. 200)	99.6	-
28.5 (µm)	99.1	-
18.0 (µm)	98.9	-
10.4 (µm)	98.7	-
7.4 (µm)	98.3	-
5.2 (µm)	97.9	-
2.5 (µm)	97.0	-
1.1 (µm)	94.7	-



Soil Classification: CH Fat Clay, brown, A-7-6(85)

Gravel (%): 0 **Sand (%):** 0.4 **Silt (%):** 1.8 **Clay (%):** 97.8

General

Remarks: LL=97, PL=24, PI=73

Uncertainty was not taken into account in determining whether the test results meet the requirements. The results included in this report relate only to the items inspected or tested. Sampled per project specifications or industry standards. Also, this report is for the exclusive use of the addressed parties. We assume no responsibility to other parties regarding this report. The information indicated in this report shall not be reproduced, except in full, without prior written approval.

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West Fargo, ND 58078
Phone: 701-232-8701

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

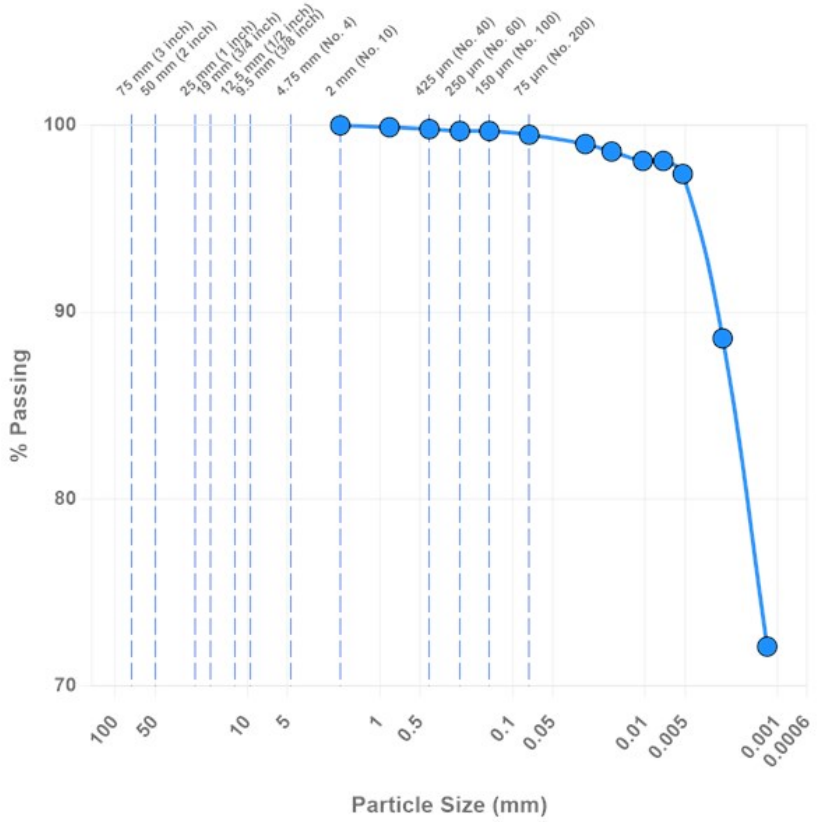
Sample Information

Sample Number:	677101	**Alternate ID:**	9
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	19.5-21
Boring Number:	CAA-177	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.7	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.5	-
28.3 (µm)	99.0	-
17.9 (µm)	98.6	-
10.4 (µm)	98.1	-
7.3 (µm)	98.1	-
5.2 (µm)	97.4	-
2.6 (µm)	88.6	-
1.2 (µm)	72.1	-



Soil Classification: CH Fat Clay, brown, A-7-6(79)

Gravel (%): 0 **Sand (%):** 0.5 **Silt (%):** 2.8 **Clay (%):** 96.7

General

Remarks: LL=92, PL=24, PI=68

Uncertainty was not taken into account in determining whether the test results meet the requirements. The results included in this report relate only to the items inspected or tested. Sampled per project specifications or industry standards. Also, this report is for the exclusive use of the addressed parties. We assume no responsibility to other parties regarding this report. The information indicated in this report shall not be reproduced, except in full, without prior written approval.

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11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:

KLJ Engineering LLC
3203 32nd Avenue South
Suite 201
Fargo, ND 58106

Project:

B2009724
8-029(200)069; PCN 22888
Interstate 29
Fargo, ND

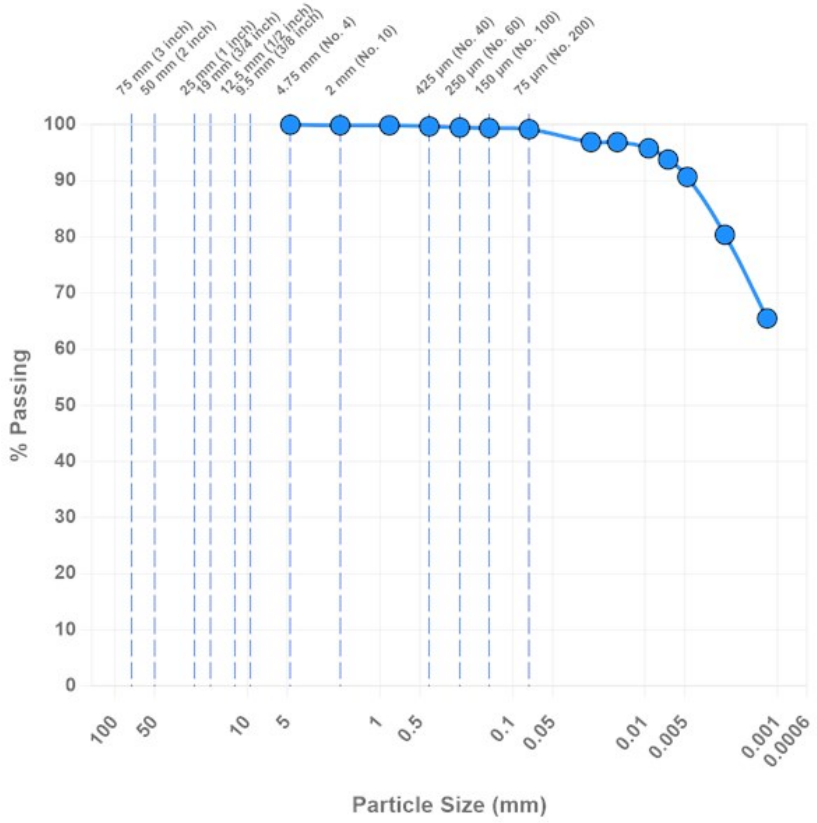
Sample Information

Sample Number:	676576	**Depth (ft):**	6-8
Boring Number:	CAA-178	**Sampled By:**	Drill Crew
Sample Date:	08/13/2025		
Received Date:	08/13/2025	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	08/25/2025	**Tested By:**	Streier, Jim

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.9	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
25.6 (µm)	96.9	-
16.2 (µm)	96.9	-
9.4 (µm)	95.8	-
6.7 (µm)	93.8	-
4.8 (µm)	90.7	-
2.5 (µm)	80.4	-
1.2 (µm)	65.5	-



Soil Classification: CH Fat Clay

Gravel (%): 0.0 **Sand (%):** 0.8 **Silt (%):** 8.2 **Clay (%):** 91.0

General

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11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

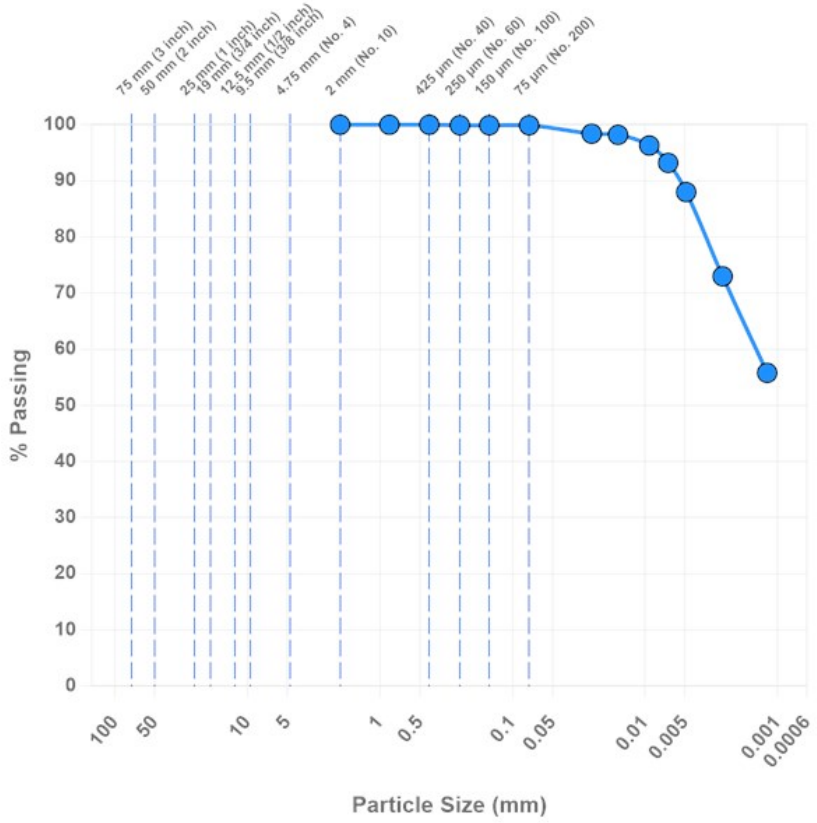
Sample Information

Sample Number:	676577	**Depth (ft):**	16-18
Boring Number:	CAA-178	**Sampled By:**	Drill Crew
Sample Date:	08/13/2025		
Received Date:	08/13/2025	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	08/25/2025	**Tested By:**	Streier, Jim

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	99.9	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
25.3 (µm)	98.4	-
16.0 (µm)	98.2	-
9.3 (µm)	96.3	-
6.7 (µm)	93.2	-
4.9 (µm)	88.0	-
2.6 (µm)	73.0	-
1.2 (µm)	55.8	-



Soil Classification: CH Fat Clay

Gravel (%):	0	**Sand (%):**	0.1	**Silt (%):**	11.6	**Clay (%):**	88.3
D_{60} (µm):	1.5						

General

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Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

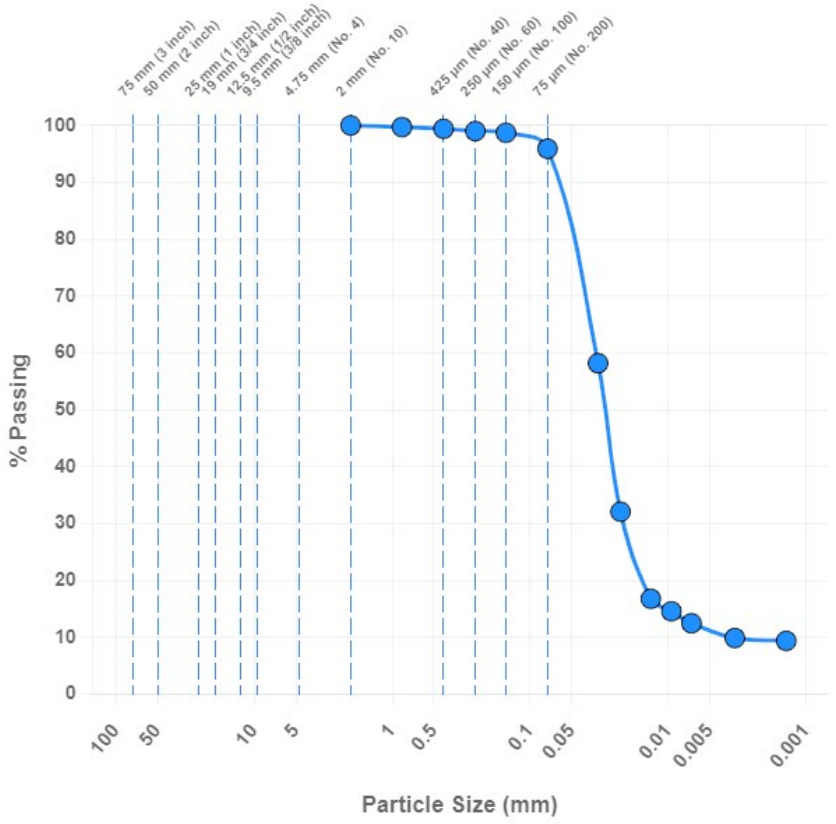
Sample Information

Sample Number:	677106	**Alternate ID:**	21
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	4.5-6
Boring Number:	CAA-179	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.7	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	95.9	-
32.3 (µm)	58.2	-
22.2 (µm)	32.1	-
13.4 (µm)	16.8	-
9.5 (µm)	14.6	-
6.8 (µm)	12.5	-
3.3 (µm)	9.9	-
1.4 (µm)	9.4	-



Soil Classification: ML Silt, brown, A-4(3)

Gravel (%):	0	**Sand (%):**	4.1	**Silt (%):**	84.7	**Clay (%):**	11.2		
D_{60} (µm):	34.3	**D_{30} (µm):**	21.0	**D_{10} (µm):**	3.4	**C_u:**	10.09	**C_c:**	3.78

General

Remarks: LL=29, PL=26, PI=3

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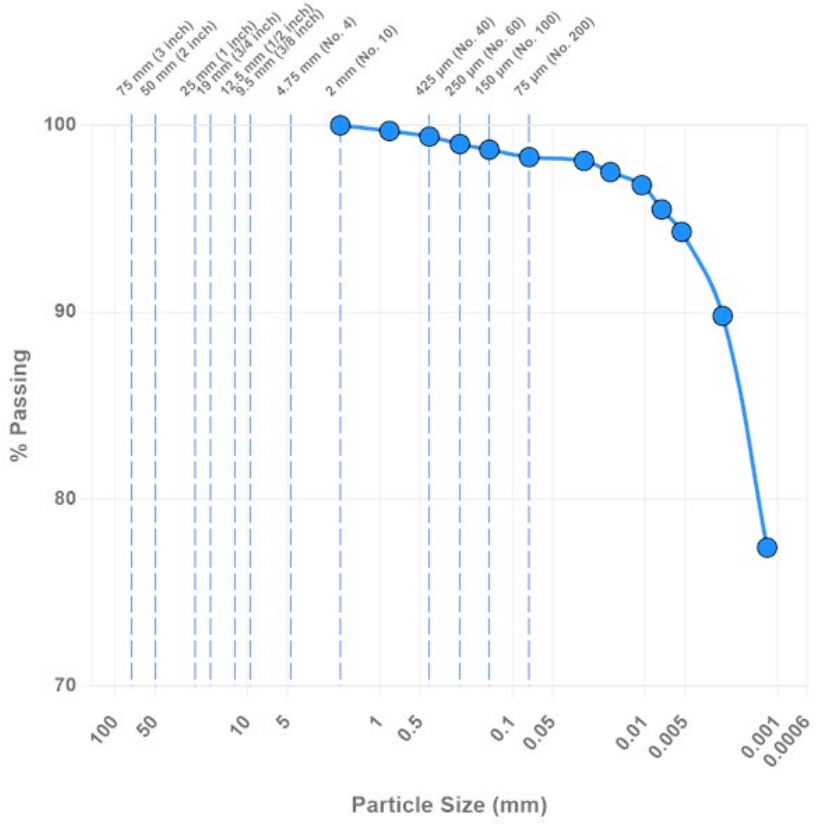
Sample Information

Sample Number:	679815	**Alternate ID:**	25
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	14.5-16
Boring Number:	CAA-179	**Sampled By:**	Drill Crew
Sample Date:	07/10/2025		
Received Date:	08/14/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/25/2025	**Tested By:**	Jacquemart, Trevor

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.7	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.3	-
28.9 (µm)	98.1	-
18.3 (µm)	97.5	-
10.6 (µm)	96.8	-
7.5 (µm)	95.5	-
5.3 (µm)	94.3	-
2.6 (µm)	89.8	-
1.2 (µm)	77.4	-



Soil Classification: CH Fat Clay, brown, A-7-6(73)

Gravel (%): 0 **Sand (%):** 1.7 **Silt (%):** 4.5 **Clay (%):** 93.8

General

Remarks: LL=87, PL=22, PI=65

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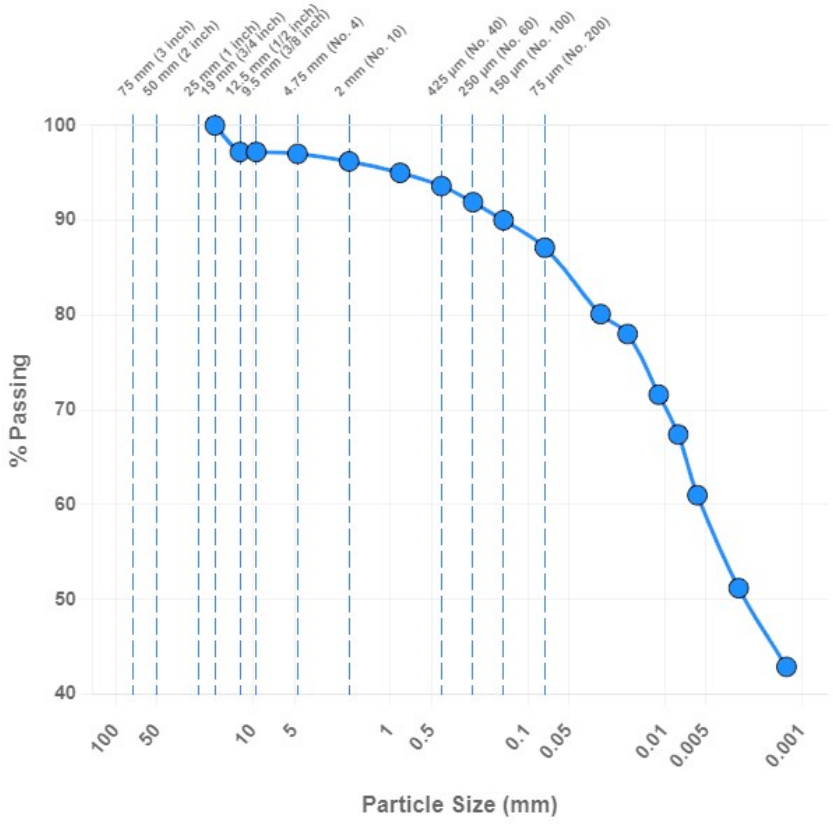
Sample Information

Sample Number:	677112	**Alternate ID:**	66
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-180	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	97.2	-
9.5 mm (3/8 inch)	97.2	-
4.75 mm (No. 4)	97.0	-
2 mm (No. 10)	96.2	-
850 µm (No. 20)	95.0	-
425 µm (No. 40)	93.6	-
250 µm (No. 60)	91.9	-
150 µm (No. 100)	90.0	-
75 µm (No. 200)	87.1	-
29.4 (µm)	80.1	-
18.7 (µm)	78.0	-
11.1 (µm)	71.6	-
8.0 (µm)	67.4	-
5.8 (µm)	61.0	-
2.9 (µm)	51.2	-
1.3 (µm)	42.9	-



Soil Classification: CH Fat Clay, brown, A-7-6(37)

Gravel (%):	3.0	**Sand (%):**	9.9	**Silt (%):**	28.8	**Clay (%):**	58.3
D_{60} (µm):	5.5						

General

Remarks: LL=58, PL=18, PI=40

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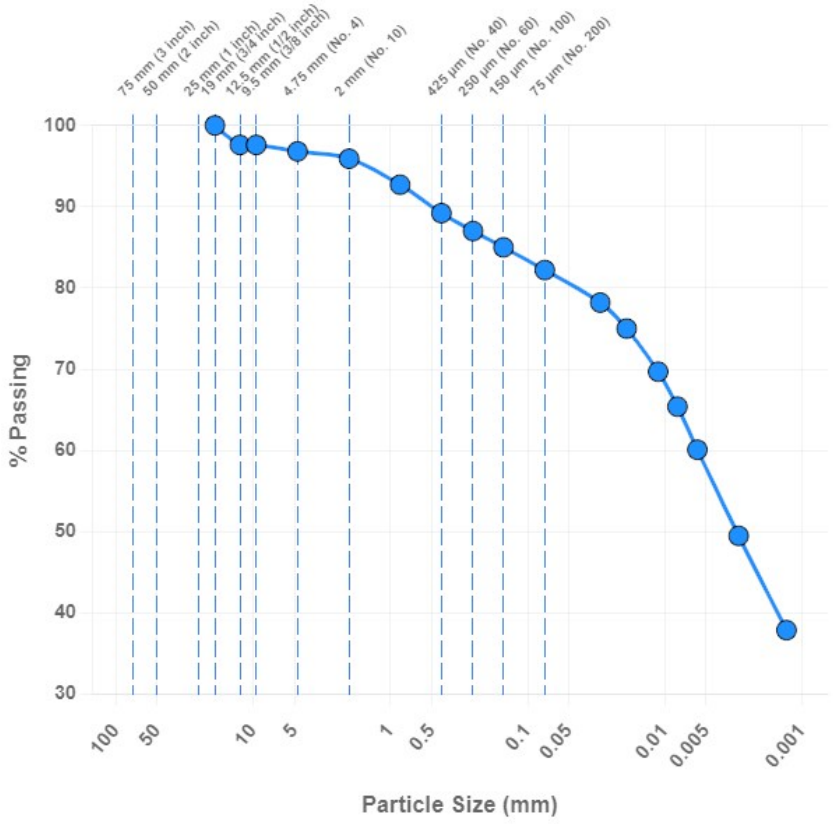
Sample Information

Sample Number:	677111	**Alternate ID:**	70
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	12-13.5
Boring Number:	CAA-180	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	97.6	-
9.5 mm (3/8 inch)	97.6	-
4.75 mm (No. 4)	96.8	-
2 mm (No. 10)	95.9	-
850 µm (No. 20)	92.7	-
425 µm (No. 40)	89.2	-
250 µm (No. 60)	87.0	-
150 µm (No. 100)	85.0	-
75 µm (No. 200)	82.2	-
29.6 (µm)	78.2	-
19.0 (µm)	75.0	-
11.2 (µm)	69.7	-
8.0 (µm)	65.4	-
5.8 (µm)	60.1	-
2.9 (µm)	49.5	-
1.3 (µm)	37.9	-



Soil Classification: , CH Fat Clay little sand, brown, A-7-6(32)

Gravel (%):	3.2	**Sand (%):**	14.6	**Silt (%):**	25.0	**Clay (%):**	57.2
D_{60} (µm):	5.8						

General

Remarks: LL=57, PL=20, PI=37

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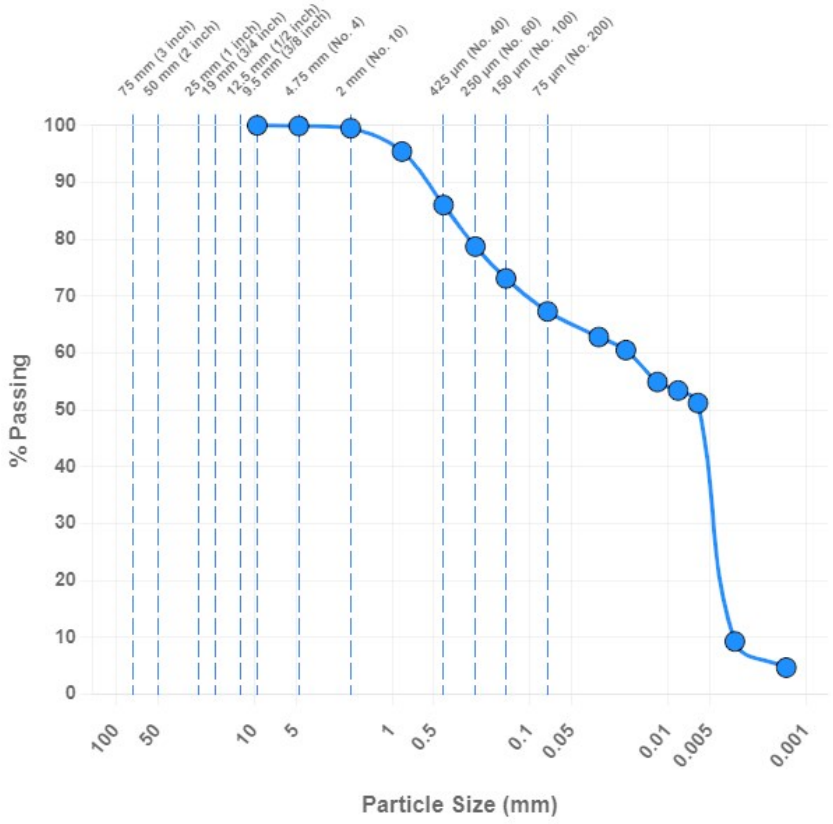
Sample Information

Sample Number:	677114	**Alternate ID:**	59
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	4.5-6
Boring Number:	CAA-181	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.9	-
2 mm (No. 10)	99.5	-
850 µm (No. 20)	95.4	-
425 µm (No. 40)	86.0	-
250 µm (No. 60)	78.7	-
150 µm (No. 100)	73.1	-
75 µm (No. 200)	67.3	-
31.9 (µm)	62.8	-
20.3 (µm)	60.5	-
12.0 (µm)	54.9	-
8.5 (µm)	53.4	-
6.1 (µm)	51.2	-
3.3 (µm)	9.3	-
1.4 (µm)	4.7	-



Soil Classification: CL Sandy Lean Clay, brown, A-6(9)

Gravel (%):	0.1	**Sand (%):**	32.6	**Silt (%):**	32.6	**Clay (%):**	34.7		
D_{60} (µm):	19.6	**D_{30} (µm):**	4.7	**D_{10} (µm):**	3.3	**C_u:**	5.94	**C_c:**	0.34

General

Remarks: LL=32, PL=13, PI=19

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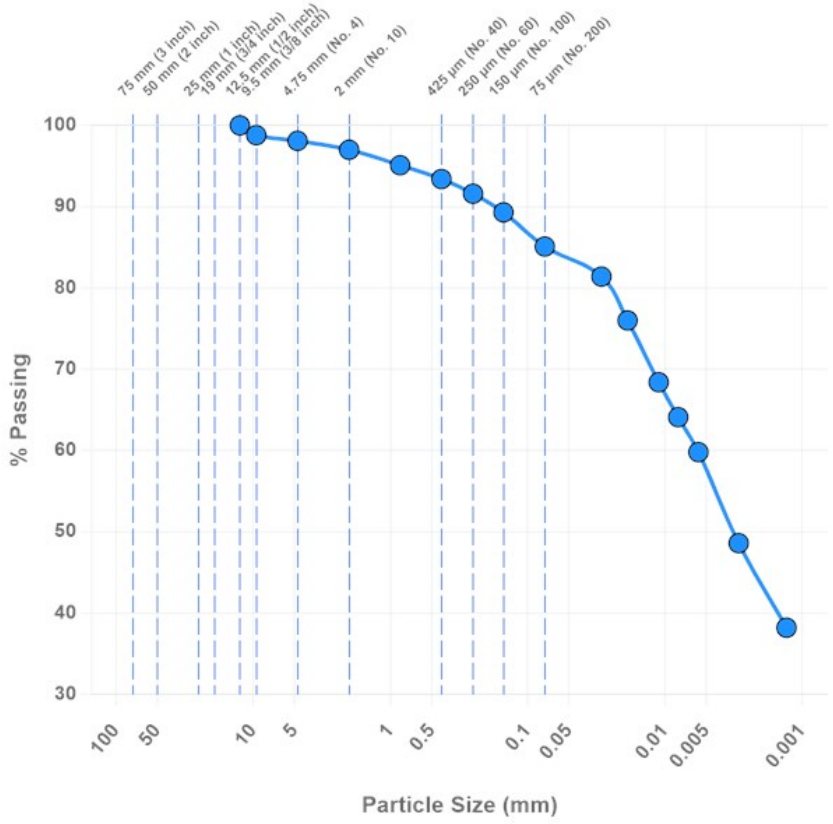
Sample Information

Sample Number:	677826	**Alternate ID:**	63
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	14.5-16
Boring Number:	CAA-181	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
12.5 mm (1/2 inch)	100.0	-
9.5 mm (3/8 inch)	98.8	-
4.75 mm (No. 4)	98.1	-
2 mm (No. 10)	97.0	-
850 µm (No. 20)	95.1	-
425 µm (No. 40)	93.4	-
250 µm (No. 60)	91.6	-
150 µm (No. 100)	89.3	-
75 µm (No. 200)	85.1	-
29.0 (µm)	81.4	-
18.7 (µm)	76.0	-
11.1 (µm)	68.4	-
8.0 (µm)	64.1	-
5.7 (µm)	59.8	-
2.9 (µm)	48.6	-
1.3 (µm)	38.2	-



Soil Classification: CH Fat Clay little sand, brown, A-7-6(31)

Gravel (%):	1.9	**Sand (%):**	13.0	**Silt (%):**	28.1	**Clay (%):**	57.0
D_{60} (µm):	5.8						

General

Remarks: LL=53, PL=18, PI=35

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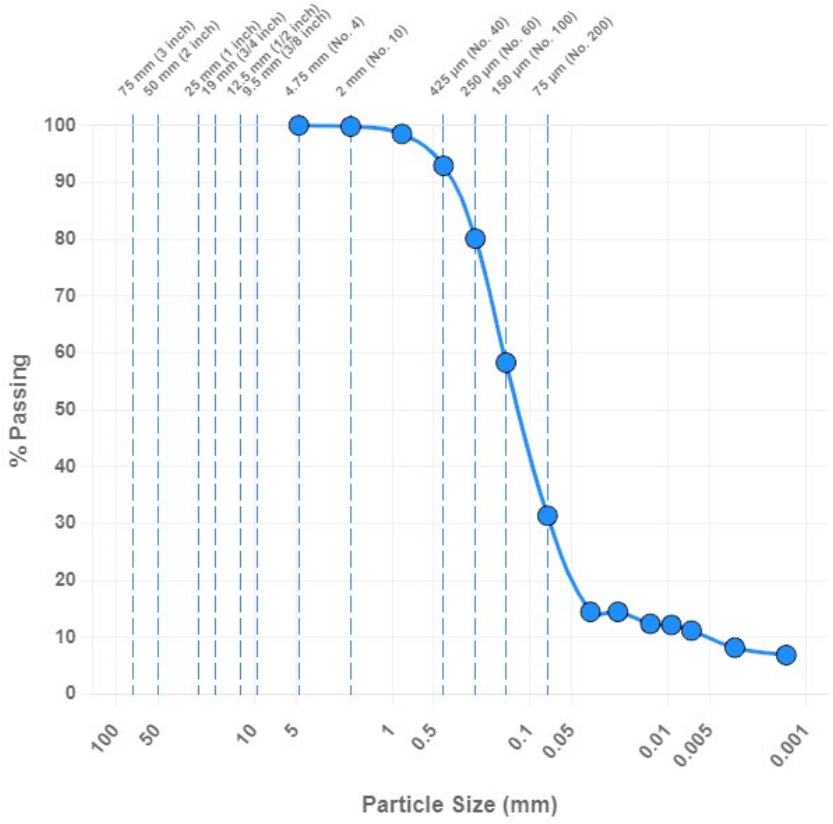
Sample Information

Sample Number:	677118	**Alternate ID:**	50
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-182	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.8	-
850 µm (No. 20)	98.5	-
425 µm (No. 40)	92.9	-
250 µm (No. 60)	80.1	-
150 µm (No. 100)	58.3	-
75 µm (No. 200)	31.4	-
36.7 (µm)	14.5	-
23.2 (µm)	14.5	-
13.5 (µm)	12.4	-
9.5 (µm)	12.2	-
6.8 (µm)	11.2	-
3.3 (µm)	8.2	-
1.4 (µm)	6.9	-



Soil Classification: SM Silty Sandy, brown, A-3

Gravel (%):	0.0	**Sand (%):**	68.6	**Silt (%):**	21.7	**Clay (%):**	9.7		
D_{60} (µm):	157.8	**D_{30} (µm):**	71.8	**D_{10} (µm):**	5.4	**C_u:**	29.22	**C_c:**	6.05

General

Remarks: Non- Plastic

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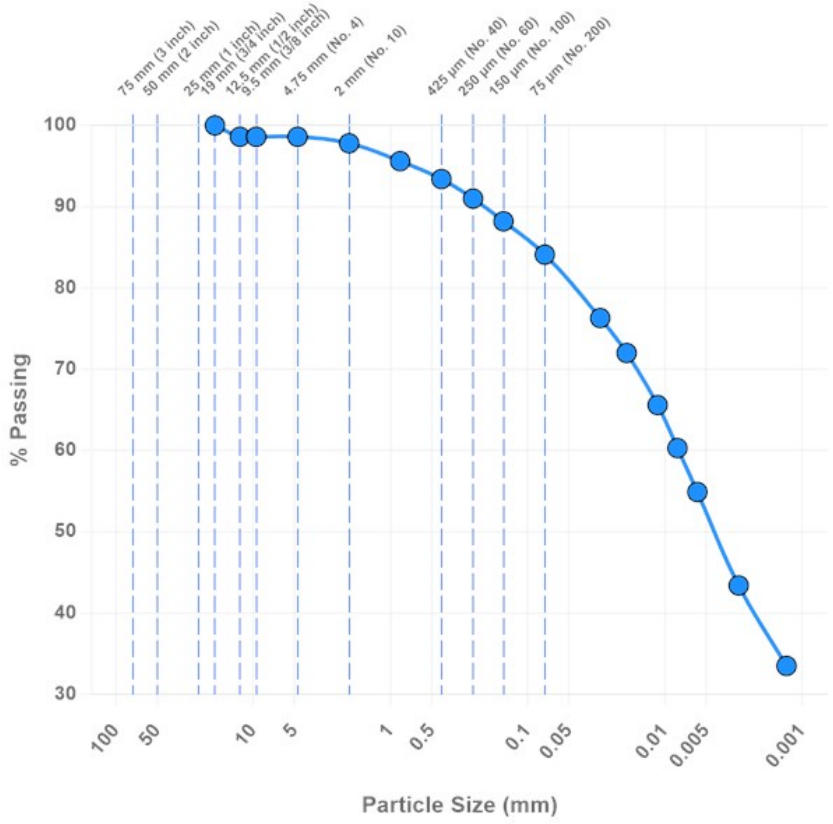
Sample Information

Sample Number:	677823	**Alternate ID:**	53
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	9.5-11
Boring Number:	CAA-182	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	98.6	-
9.5 mm (3/8 inch)	98.6	-
4.75 mm (No. 4)	98.6	-
2 mm (No. 10)	97.8	-
850 µm (No. 20)	95.6	-
425 µm (No. 40)	93.4	-
250 µm (No. 60)	91.0	-
150 µm (No. 100)	88.2	-
75 µm (No. 200)	84.1	-
29.6 (µm)	76.3	-
19.0 (µm)	72.0	-
11.3 (µm)	65.6	-
8.1 (µm)	60.3	-
5.8 (µm)	54.9	-
2.9 (µm)	43.4	-
1.3 (µm)	33.5	-



Soil Classification: CH Fat Clay little sand, brown, A-7-6(28)

Gravel (%): 1.4 **Sand (%):** 14.5 **Silt (%):** 32.4 **Clay (%):** 51.7

D_{60} (µm): 8.0

General

Remarks: LL=51, PL=18, PI=33

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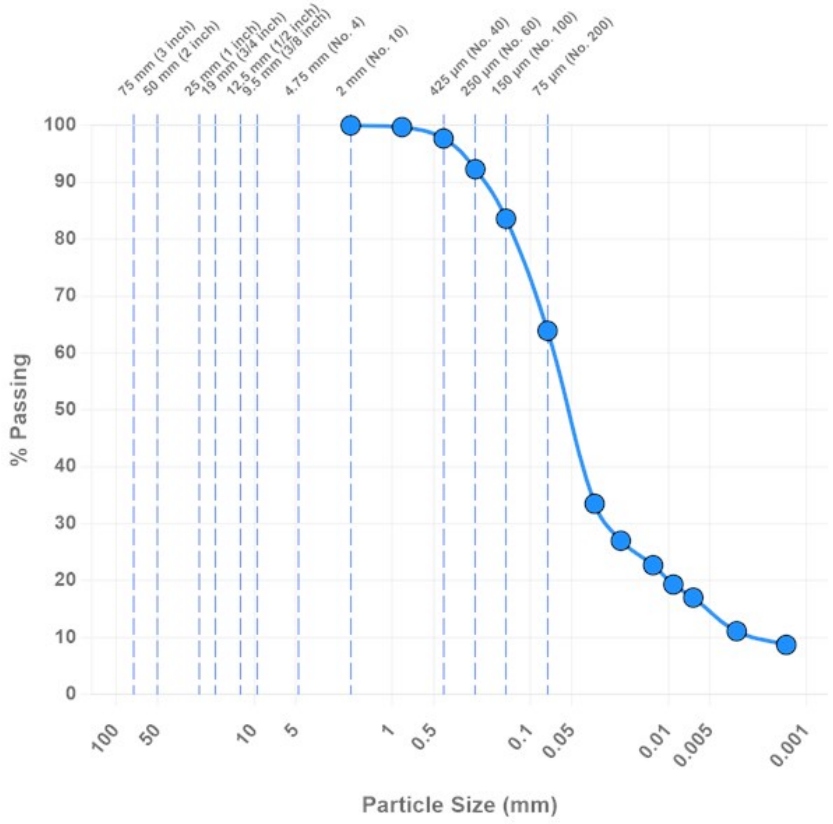
Sample Information

Sample Number:	677825	**Alternate ID:**	43
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	4-.5-6
Boring Number:	CAA-183	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.7	-
425 µm (No. 40)	97.7	-
250 µm (No. 60)	92.3	-
150 µm (No. 100)	83.6	-
75 µm (No. 200)	63.9	-
34.2 (µm)	33.5	-
22.1 (µm)	27.0	-
12.9 (µm)	22.7	-
9.2 (µm)	19.3	-
6.6 (µm)	17.0	-
3.2 (µm)	11.1	-
1.4 (µm)	8.7	-



Soil Classification: ML Sandy Silt, brown, A-4(5)

Gravel (%):	0	**Sand (%):**	36.1	**Silt (%):**	49.7	**Clay (%):**	14.2		
D_{60} (µm):	69.8	**D_{30} (µm):**	27.7	**D_{10} (µm):**	2.4	**C_u:**	29.08	**C_c:**	4.58

General

Remarks: LL=38, PL=29, PI=9

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Phone: 701-232-8701

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

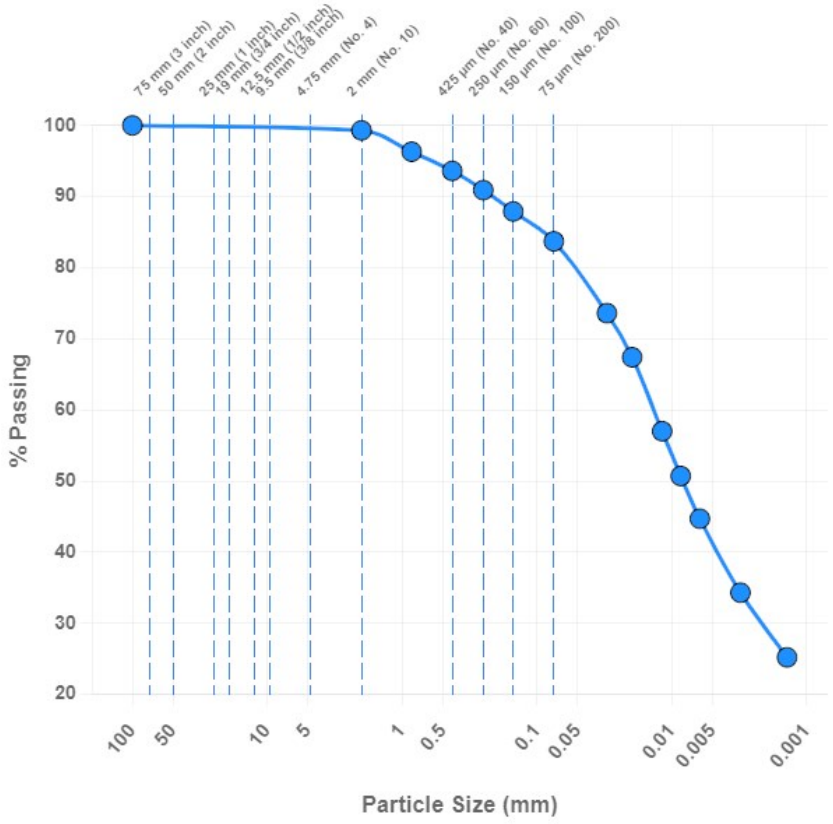
Sample Information

Sample Number:	677116	**Alternate ID:**	47
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	14.5-16
Boring Number:	CAA-183	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
100 mm (4 inch)	100.0	-
2 mm (No. 10)	99.3	-
850 µm (No. 20)	96.3	-
425 µm (No. 40)	93.6	-
250 µm (No. 60)	90.9	-
150 µm (No. 100)	87.9	-
75 µm (No. 200)	83.7	-
30.3 (µm)	73.6	-
19.7 (µm)	67.4	-
11.8 (µm)	57.0	-
8.6 (µm)	50.7	-
6.2 (µm)	44.7	-
3.1 (µm)	34.3	-
1.4 (µm)	25.2	-



Soil Classification: CL Lean Clay with sand, brown, A-7-6(25)

Gravel (%):	0	**Sand (%):**	16.3	**Silt (%):**	43.0	**Clay (%):**	40.7
D_{60} (µm):	14.1	**D_{30} (µm):**	2.3				

General

Remarks: LL=48, PL=18, PI=30

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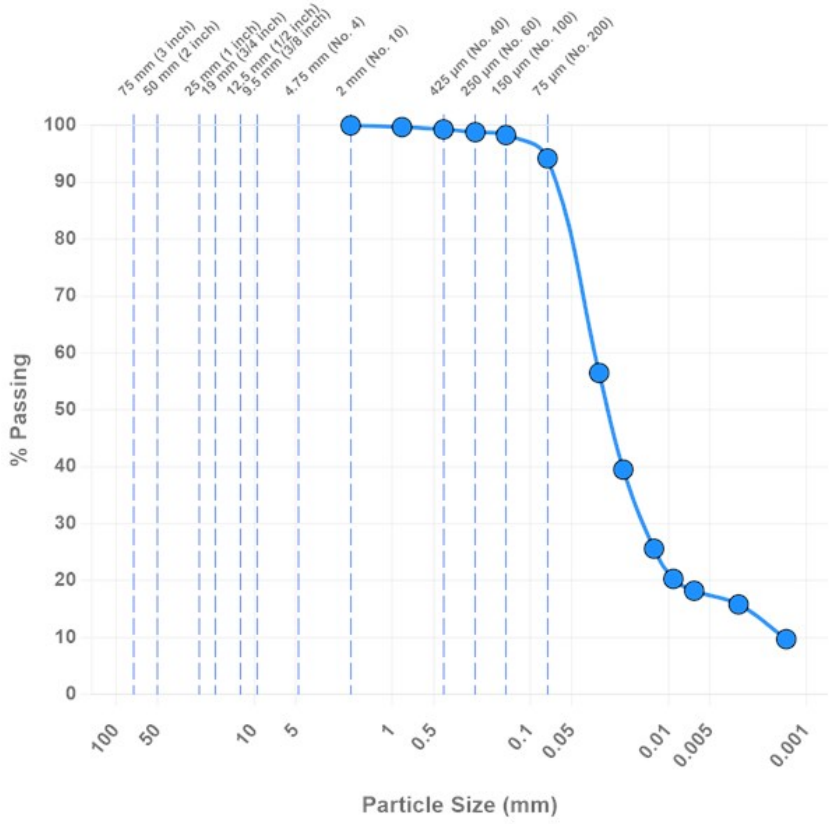
Sample Information

Sample Number:	677824	**Alternate ID:**	34
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-184	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.7	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	94.2	-
31.7 (µm)	56.5	-
21.2 (µm)	39.5	-
12.7 (µm)	25.6	-
9.1 (µm)	20.3	-
6.5 (µm)	18.2	-
3.1 (µm)	15.8	-
1.4 (µm)	9.7	-



Soil Classification: ML Silt little sand, brown, A-4(8)

Gravel (%):	0	**Sand (%):**	5.8	**Silt (%):**	77.1	**Clay (%):**	17.1		
D_{60} (µm):	35.7	**D_{30} (µm):**	15.4	**D_{10} (µm):**	1.5	**C_u:**	23.80	**C_c:**	4.43

General

Remarks: LL=34, PL=26, PI=8

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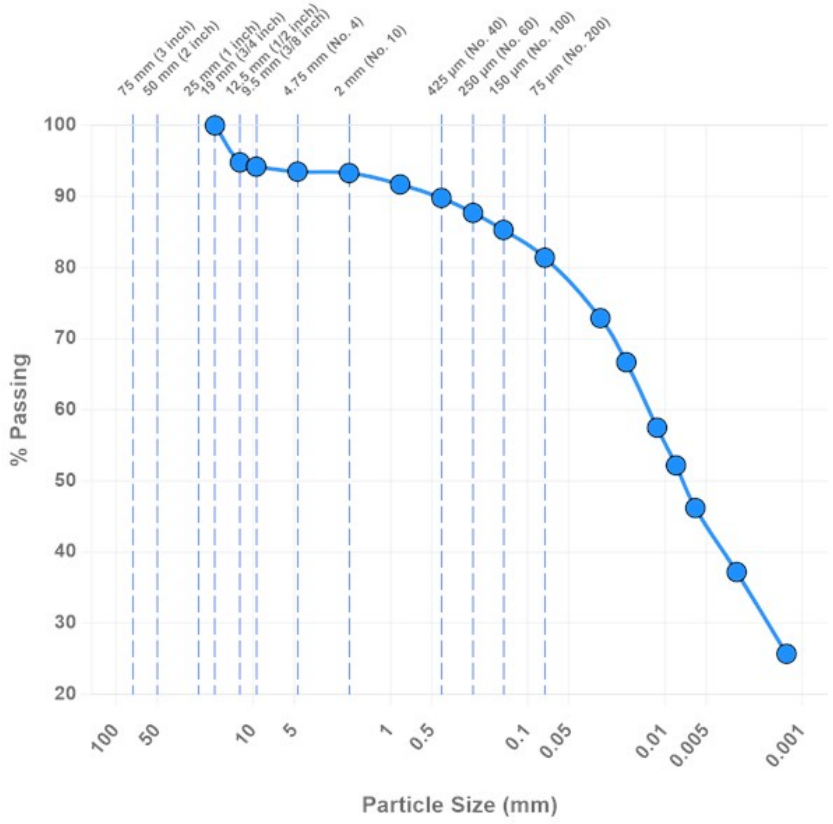
Sample Information

Sample Number:	677827	**Alternate ID:**	37
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	9.5-11
Boring Number:	CAA-184	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	94.8	-
9.5 mm (3/8 inch)	94.2	-
4.75 mm (No. 4)	93.5	-
2 mm (No. 10)	93.3	-
850 µm (No. 20)	91.7	-
425 µm (No. 40)	89.8	-
250 µm (No. 60)	87.7	-
150 µm (No. 100)	85.3	-
75 µm (No. 200)	81.4	-
29.5 (µm)	72.9	-
19.1 (µm)	66.7	-
11.4 (µm)	57.5	-
8.3 (µm)	52.2	-
6.0 (µm)	46.2	-
3.0 (µm)	37.2	-
1.3 (µm)	25.7	-



Soil Classification: CL Lean Clay little sand, brown, A-7-6(22)

Gravel (%):	6.5	**Sand (%):**	12.1	**Silt (%):**	38.2	**Clay (%):**	43.2
D_{60} (µm):	13.5	**D_{30} (µm):**	1.9				

General

Remarks: LL=46, PL=19, PI=27

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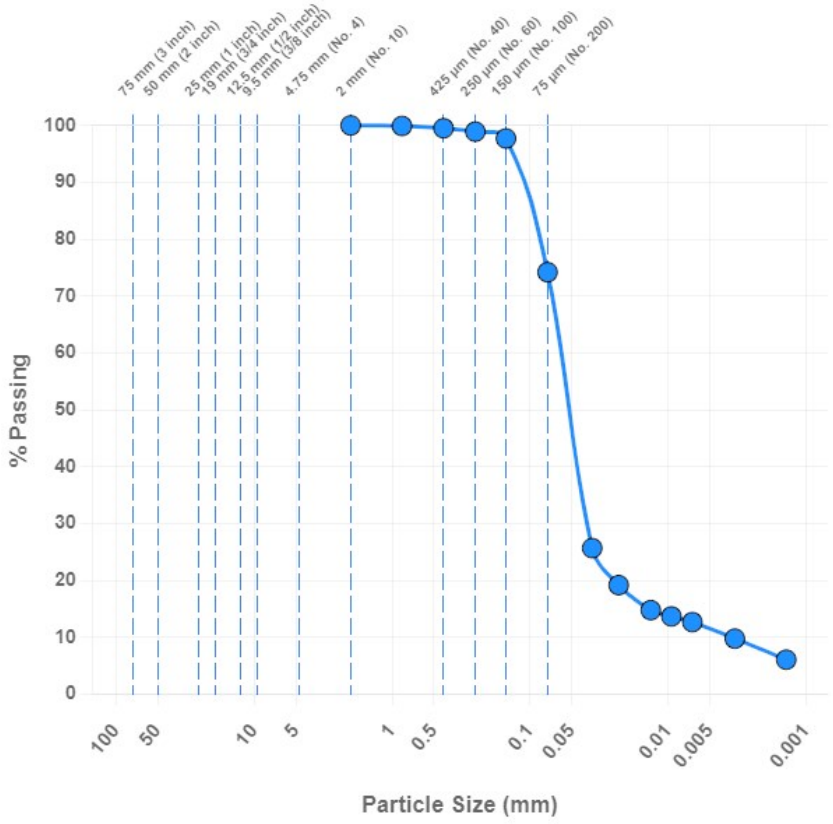
Sample Information

Sample Number:	677108	**Alternate ID:**	26
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-185	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.5	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	97.7	-
75 µm (No. 200)	74.2	-
35.6 (µm)	25.7	-
22.9 (µm)	19.2	-
13.4 (µm)	14.8	-
9.5 (µm)	13.7	-
6.7 (µm)	12.7	-
3.3 (µm)	9.8	-
1.4 (µm)	6.1	-



Soil Classification: CL-ML Silty Clay with sand, brown, A-4(3)

Gravel (%):	0	**Sand (%):**	25.8	**Silt (%):**	62.9	**Clay (%):**	11.3		
D_{60} (µm):	63.5	**D_{30} (µm):**	39.1	**D_{10} (µm):**	3.5	**C_u:**	18.14	**C_c:**	6.88

General

Remarks: LL=27, PL=21, PI=6

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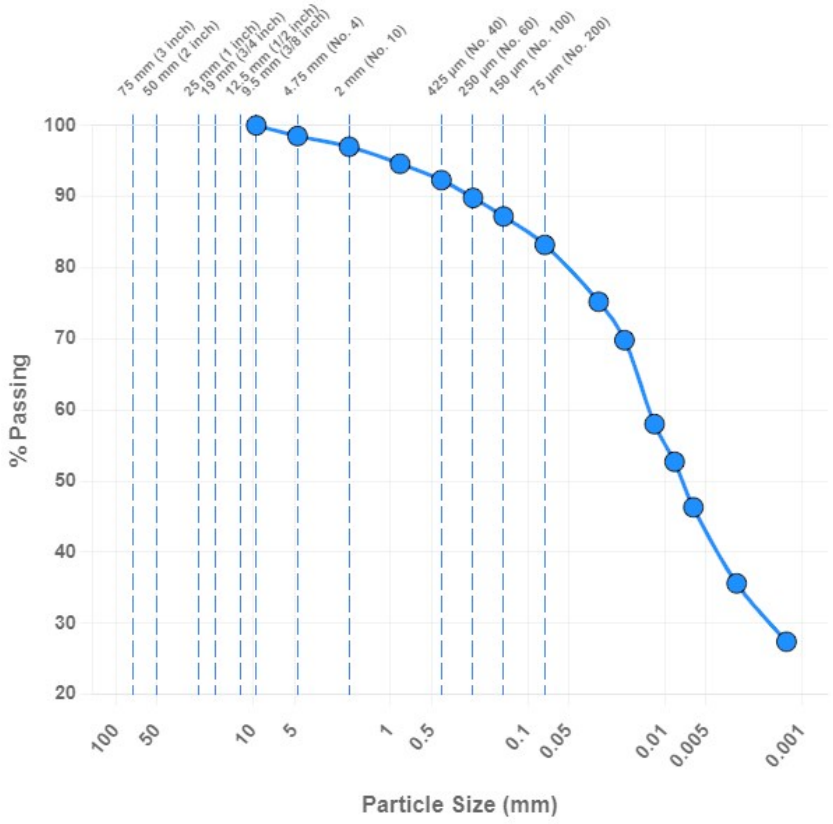
Sample Information

Sample Number:	677110	**Alternate ID:**	31
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	14.5-16
Boring Number:	CAA-185	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.5	-
2 mm (No. 10)	97.0	-
850 µm (No. 20)	94.6	-
425 µm (No. 40)	92.3	-
250 µm (No. 60)	89.8	-
150 µm (No. 100)	87.2	-
75 µm (No. 200)	83.2	-
30.4 (µm)	75.2	-
19.7 (µm)	69.8	-
11.9 (µm)	58.0	-
8.5 (µm)	52.7	-
6.2 (µm)	46.3	-
3.0 (µm)	35.6	-
1.3 (µm)	27.4	-



Soil Classification: CL Lean Clay with sand, brown, A-7-6(24)

Gravel (%):	1.5	**Sand (%):**	15.3	**Silt (%):**	40.9	**Clay (%):**	42.3
D_{60} (µm):	13.2	**D_{30} (µm):**	1.8				

General

Remarks: LL=46, PL=18, PI=28

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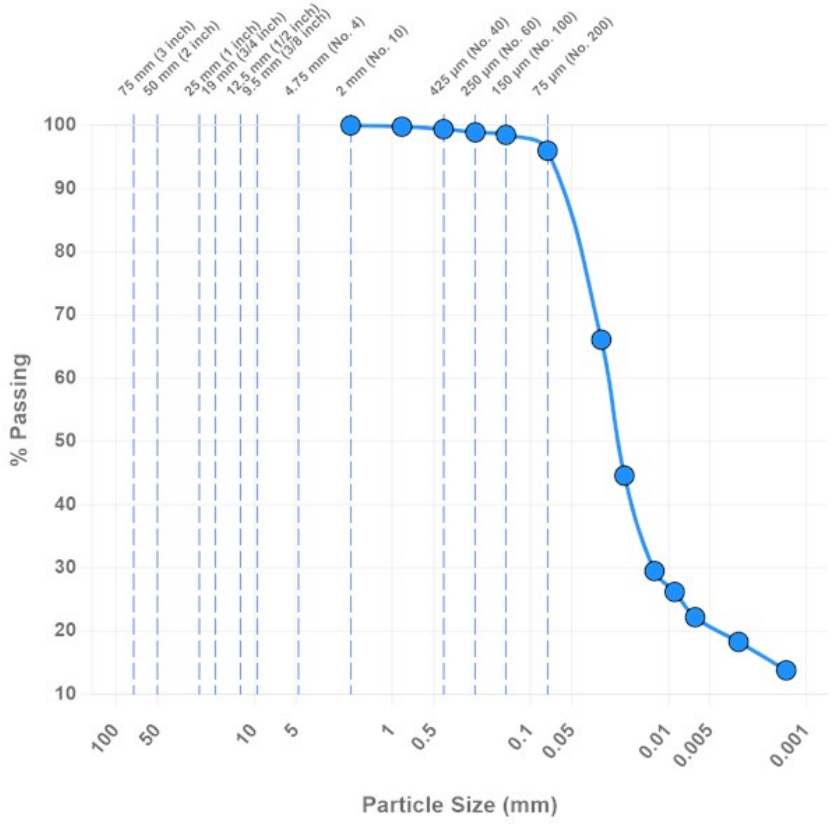
Sample Information

Sample Number:	679817	**Alternate ID:**	19
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	4.5-6
Boring Number:	CAA-186	**Sampled By:**	Drill Crew
Sample Date:	07/30/2025		
Received Date:	08/14/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/25/2025	**Tested By:**	Jacquemart, Trevor

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	96.0	-
30.6 (µm)	66.1	-
20.8 (µm)	44.6	-
12.6 (µm)	29.5	-
9.0 (µm)	26.2	-
6.4 (µm)	22.2	-
3.1 (µm)	18.3	-
1.4 (µm)	13.8	-



Soil Classification: CL Lean Clay, brown, A-6(19)

Gravel (%):	0	**Sand (%):**	4.0	**Silt (%):**	75.4	**Clay (%):**	20.6
D_{60} (µm):	27.8	**D_{30} (µm):**	12.9				

General

Remarks: LL=37, PL=18, PI=19

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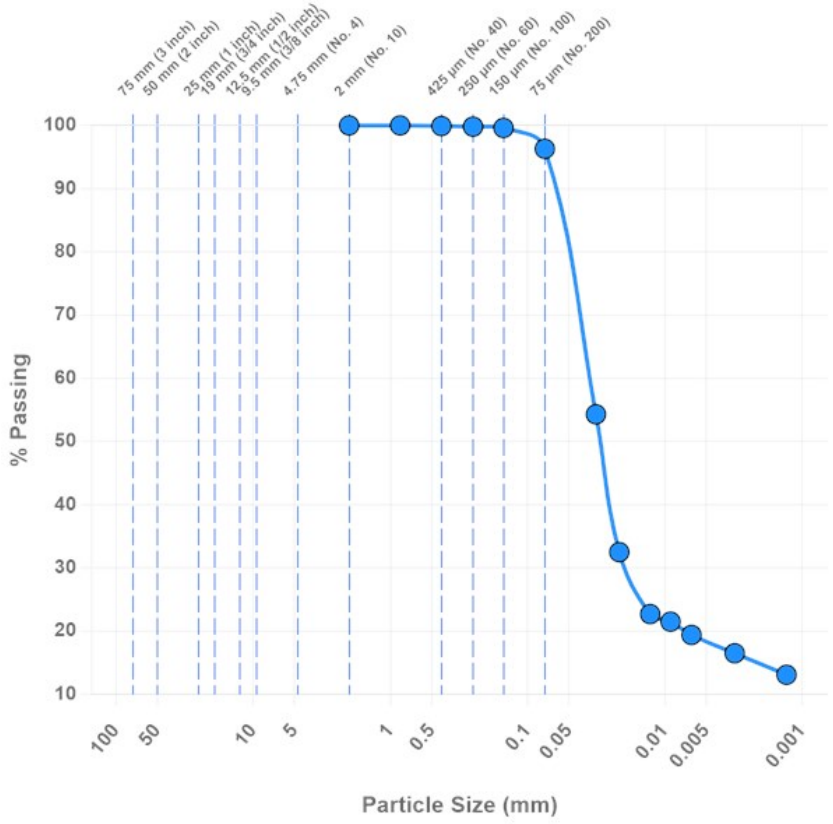
Sample Information

Sample Number:	679820	**Alternate ID:**	22
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	12-13.5
Boring Number:	CAA-186	**Sampled By:**	Drill Crew
Sample Date:	07/30/2025		
Received Date:	08/14/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/25/2025	**Tested By:**	Jacquemart, Trevor

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.9	-
250 µm (No. 60)	99.8	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	96.3	-
31.8 (µm)	54.3	-
21.5 (µm)	32.5	-
12.8 (µm)	22.7	-
9.1 (µm)	21.5	-
6.4 (µm)	19.4	-
3.1 (µm)	16.5	-
1.3 (µm)	13.1	-



Soil Classification: CL Lean Clay, brown, A-6(13)

Gravel (%):	0	**Sand (%):**	3.7	**Silt (%):**	78.1	**Clay (%):**	18.2
D_{60} (µm):	37.7	**D_{30} (µm):**	19.3				

General

Remarks: LL=31, PL=17, PI=14

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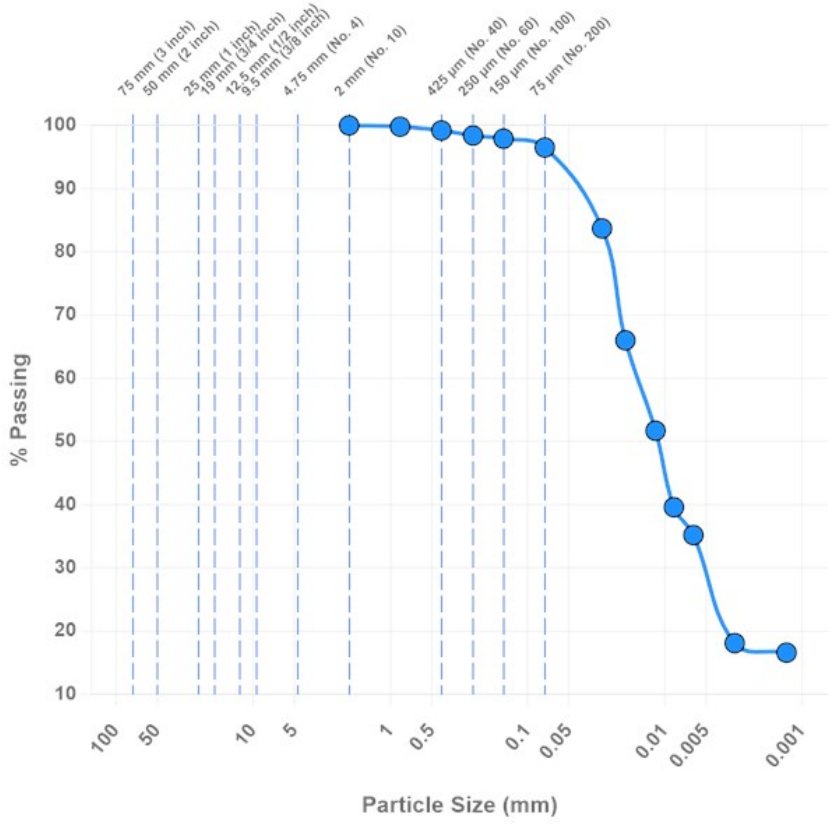
Sample Information

Sample Number:	679826	**Alternate ID:**	10
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-187	**Sampled By:**	Drill Crew
Sample Date:	07/30/2025		
Received Date:	08/14/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/25/2025	**Tested By:**	Jacquemart, Trevor

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.2	-
250 µm (No. 60)	98.4	-
150 µm (No. 100)	97.9	-
75 µm (No. 200)	96.5	-
28.7 (µm)	83.7	-
19.4 (µm)	66.0	-
11.7 (µm)	51.7	-
8.6 (µm)	39.6	-
6.2 (µm)	35.2	-
3.1 (µm)	18.1	-
1.3 (µm)	16.6	-



Soil Classification: CL Lean Clay, brown, A-7-6(29)

Gravel (%):	0	**Sand (%):**	3.5	**Silt (%):**	67.9	**Clay (%):**	28.6
D_{60} (µm):	16.2	**D_{30} (µm):**	5.3				

General

Remarks: LL=45, PL=17, PI=28

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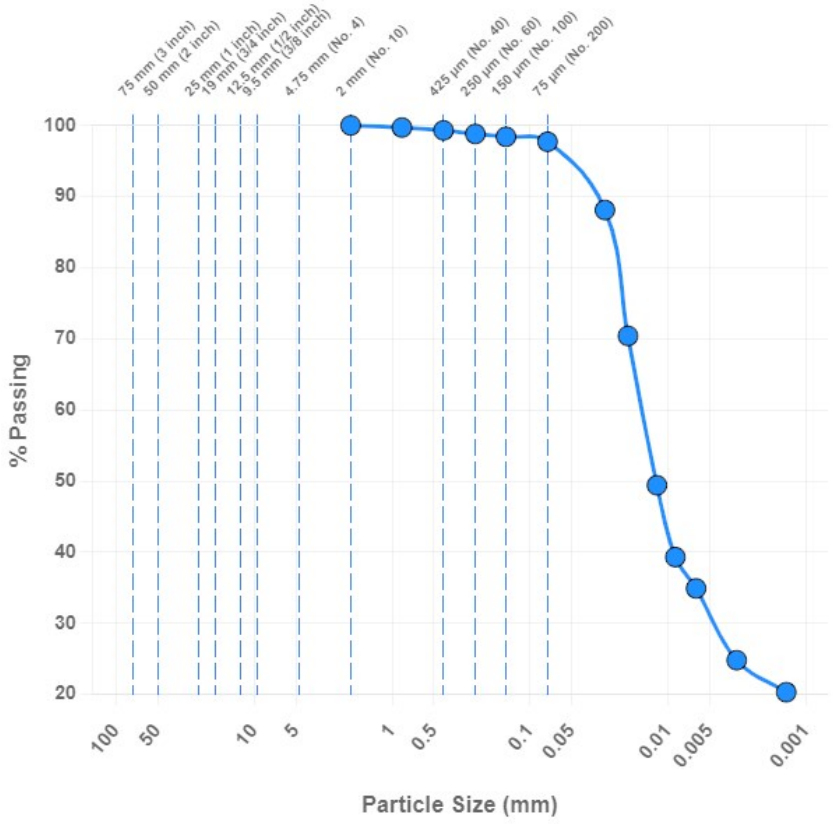
Sample Information

Sample Number:	677113	**Alternate ID:**	13
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	9.5-11
Boring Number:	CAA-187	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/12/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.7	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	98.4	-
75 µm (No. 200)	97.7	-
28.8 (µm)	88.1	-
19.6 (µm)	70.4	-
12.1 (µm)	49.4	-
8.9 (µm)	39.3	-
6.3 (µm)	34.9	-
3.2 (µm)	24.8	-
1.4 (µm)	20.3	-



Soil Classification: CL Lean Clay, brown, A-7-6(21)

Gravel (%):	0	**Sand (%):**	2.3	**Silt (%):**	67.0	**Clay (%):**	30.7
D_{60} (µm):	15.9	**D_{30} (µm):**	4.8				

General

Remarks: LL=44, PL=25, PI=19

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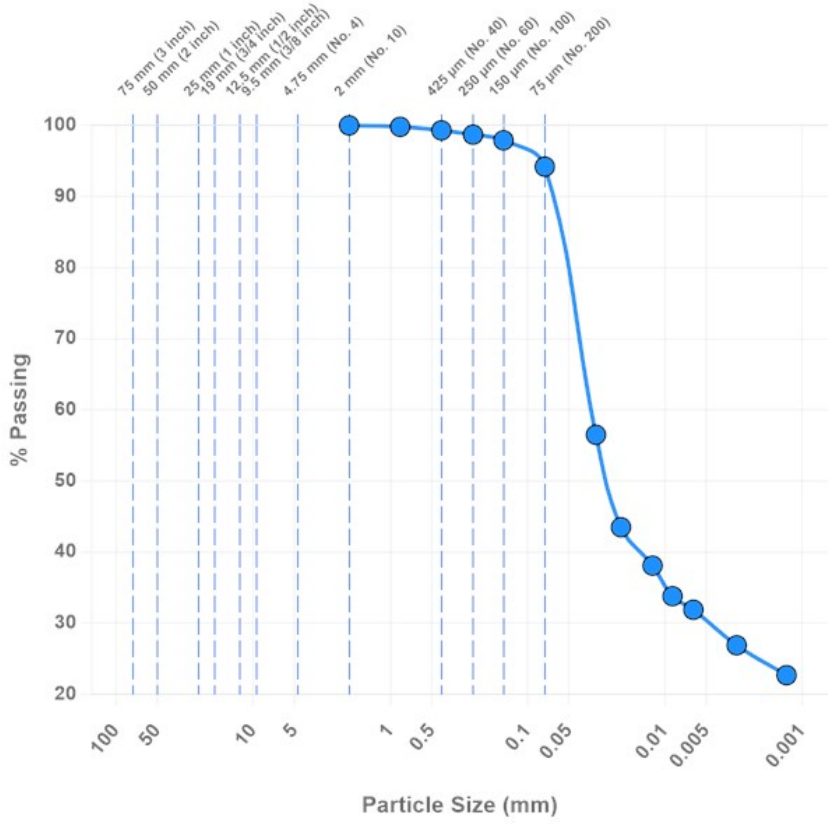
Sample Information

Sample Number:	677821	**Alternate ID:**	2
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	2-3.5
Boring Number:	CAA-188	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	98.7	-
150 µm (No. 100)	97.9	-
75 µm (No. 200)	94.2	-
31.7 (µm)	56.5	-
20.9 (µm)	43.5	-
12.3 (µm)	38.1	-
8.8 (µm)	33.8	-
6.2 (µm)	31.9	-
3.0 (µm)	26.9	-
1.3 (µm)	22.7	-



Soil Classification: CL Lean Clay little sand, brown, A-7-6(21)

Gravel (%):	0	**Sand (%):**	5.8	**Silt (%):**	64.2	**Clay (%):**	30.0
D_{60} (µm):	35.8	**D_{30} (µm):**	5.0				

General

Remarks: LL=41, PL=20, PI=21

Uncertainty was not taken into account in determining whether the test results meet the requirements. The results included in this report relate only to the items inspected or tested. Sampled per project specifications or industry standards. Also, this report is for the exclusive use of the addressed parties. We assume no responsibility to other parties regarding this report. The information indicated in this report shall not be reproduced, except in full, without prior written approval.

BRAUN INTERTEC
the science you build on
526 10th St NE, Suite 300
PO Box 485
West Fargo, ND 58078
Phone: 701-232-8701

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

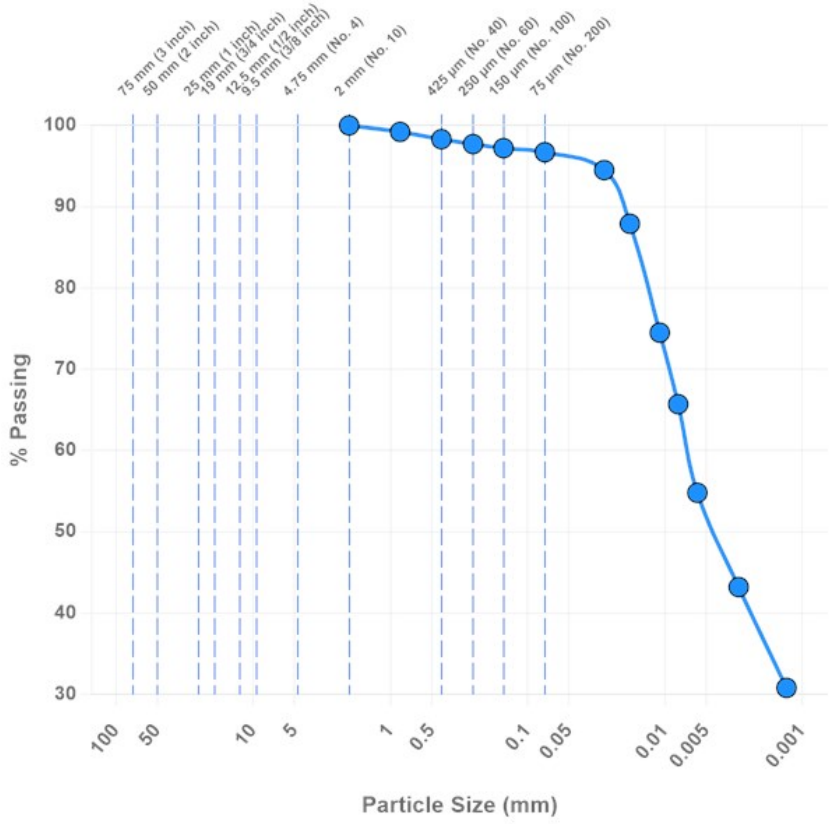
Sample Information

Sample Number:	677822	**Alternate ID:**	5
Sampling Method:	Auger Boring ASTM D1452	**Depth (ft):**	9.5-11
Boring Number:	CAA-188	**Sampled By:**	Drill Crew
Sample Date:	07/29/2025		
Received Date:	08/04/2025	**Lab:**	526 10th Street NE, Suite 300, West Fargo, ND
Tested Date:	08/15/2025	**Tested By:**	Lage, Caleb

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.2	-
425 µm (No. 40)	98.3	-
250 µm (No. 60)	97.7	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	96.7	-
27.7 (µm)	94.5	-
18.0 (µm)	87.9	-
10.9 (µm)	74.5	-
8.0 (µm)	65.7	-
5.8 (µm)	54.8	-
2.9 (µm)	43.2	-
1.3 (µm)	30.8	-



Soil Classification: CH Fat Clay, brown, A-7-6(36)

Gravel (%):	0	**Sand (%):**	3.3	**Silt (%):**	45.1	**Clay (%):**	51.6
D_{60} (µm):	6.8						

General

Remarks: LL=56, PL=23, PI=33

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the science you build on
11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Hydrometer And Sieve Analysis

ASTM D422

Report Date: 08/25/2025

Client:	**Project:**
KLJ Engineering LLC 3203 32nd Avenue South Suite 201 Fargo, ND 58106	B2009724 8-029(200)069; PCN 22888 Interstate 29 Fargo, ND

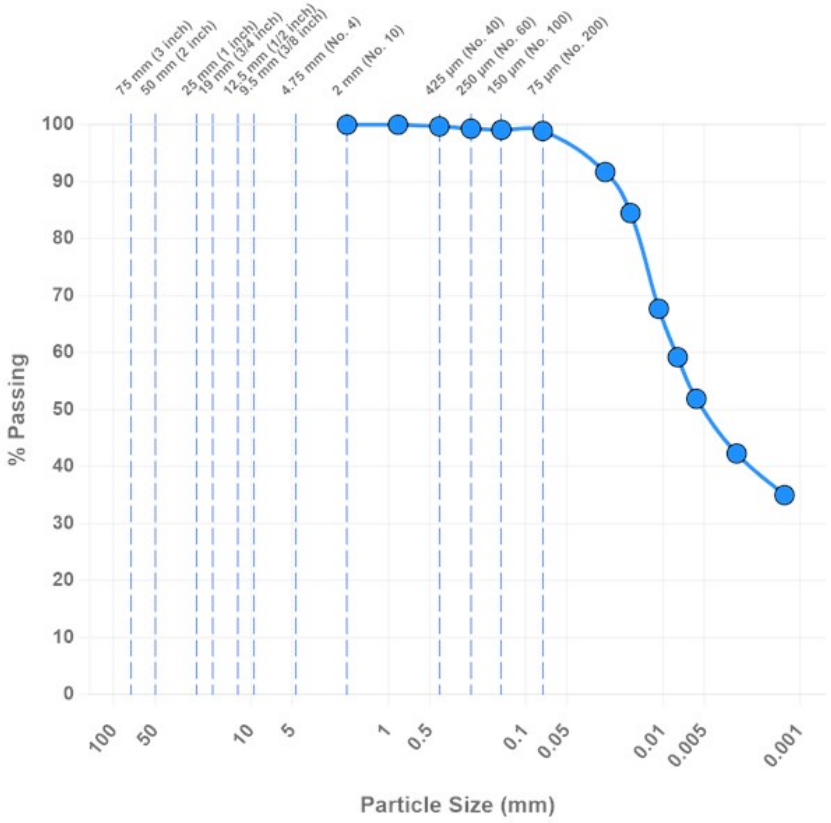
Sample Information

Sample Number:	676579	**Depth (ft):**	19-25
Boring Number:	CAA-188	**Sampled By:**	Drill Crew
Sample Date:	08/13/2025		
Received Date:	08/13/2025	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	08/25/2025	**Tested By:**	Streier, Jim

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.7	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	99.1	-
75 µm (No. 200)	98.9	-
26.3 (µm)	91.7	-
17.2 (µm)	84.5	-
10.7 (µm)	67.7	-
7.8 (µm)	59.2	-
5.7 (µm)	51.9	-
2.9 (µm)	42.3	-
1.3 (µm)	35.0	-

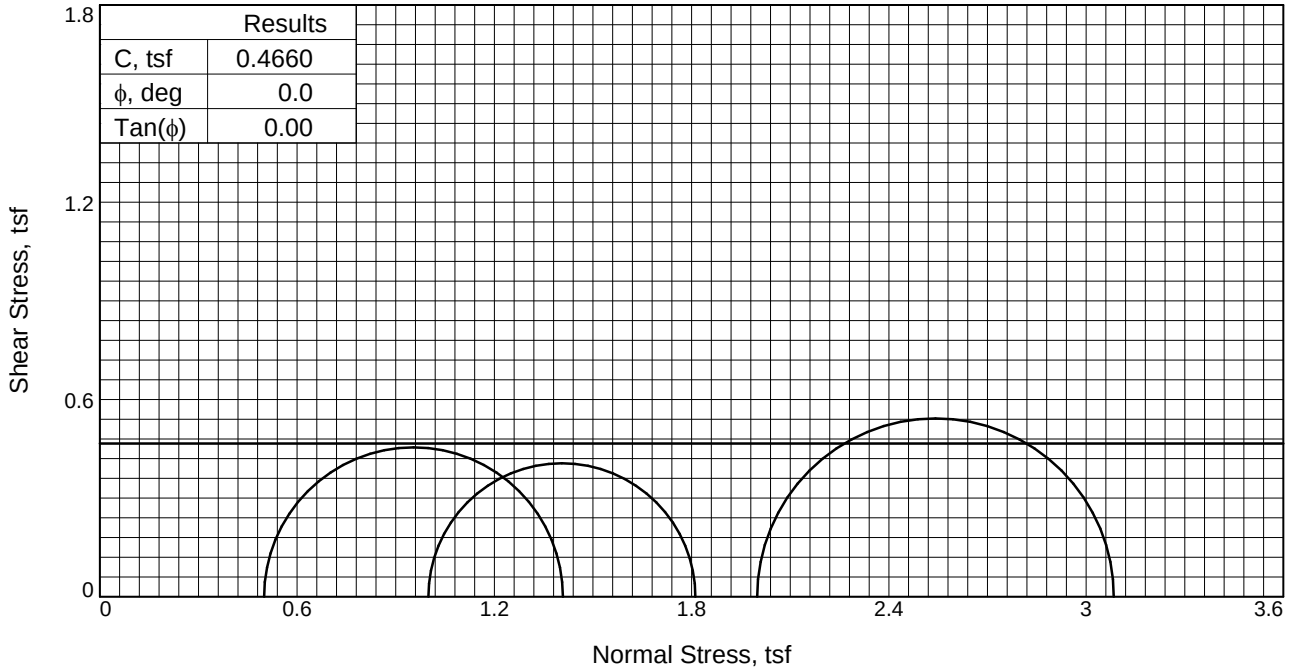


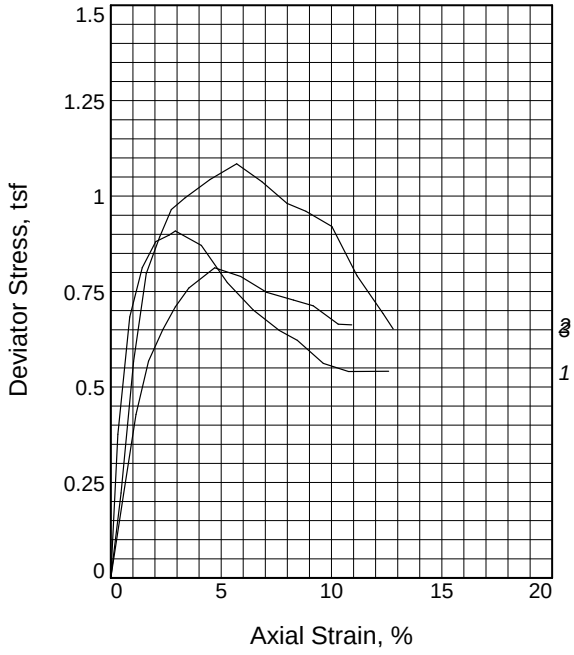
Soil Classification: CL Lean clay

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	49.4	**Clay (%):**	49.5
D_{60} (µm):	8.1						

General

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Sample No.		1	2	3
Initial	Water Content, %	41.0	42.5	40.1
	Dry Density, pcf	74.4	72.3	74.1
	Saturation, %	87.5	86.2	84.9
	Void Ratio	1.2641	1.3315	1.2758
	Diameter, in.	1.403	1.403	1.403
	Height, in.	2.803	2.803	2.805
At Test	Water Content, %	41.0	42.0	40.3
	Dry Density, pcf	74.4	72.3	74.1
	Saturation, %	87.5	85.2	85.2
	Void Ratio	1.2641	1.3315	1.2758
	Diameter, in.	1.403	1.403	1.403
	Height, in.	2.803	2.803	2.805
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		0.909	0.812	1.085
Ult. Stress, tsf		0.541	0.663	0.652
σ_1 Failure, tsf		1.408	1.811	3.084
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

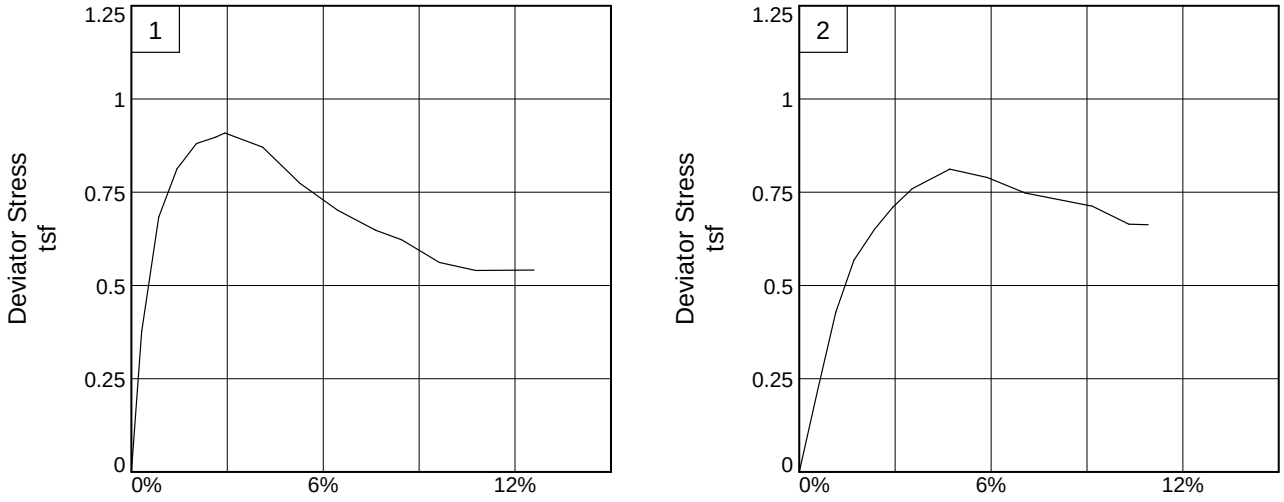
Client: KLJ Engineering LLC

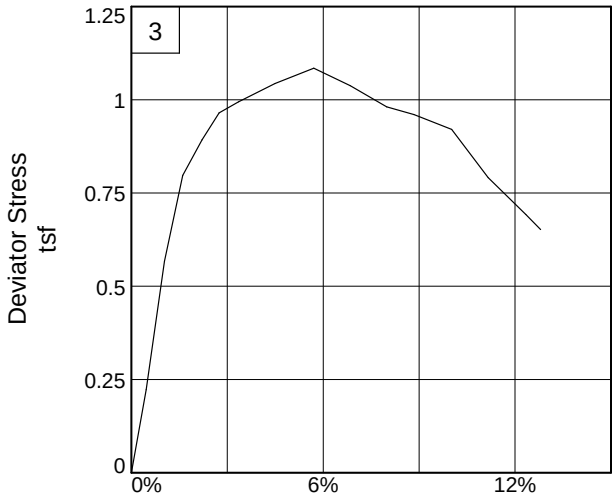
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

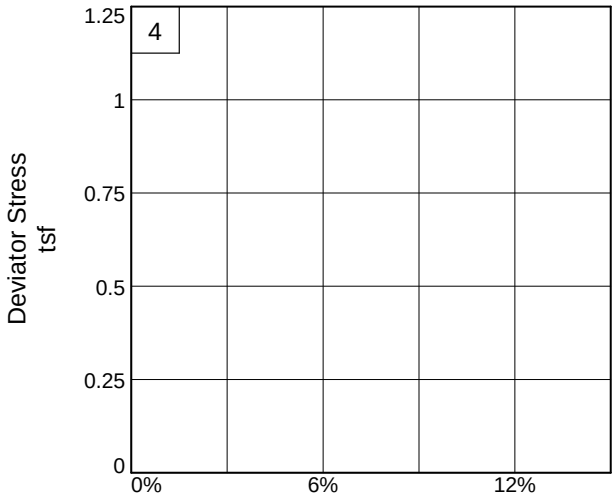
Source of Sample: CAA-177 **Depth:** 6-8'

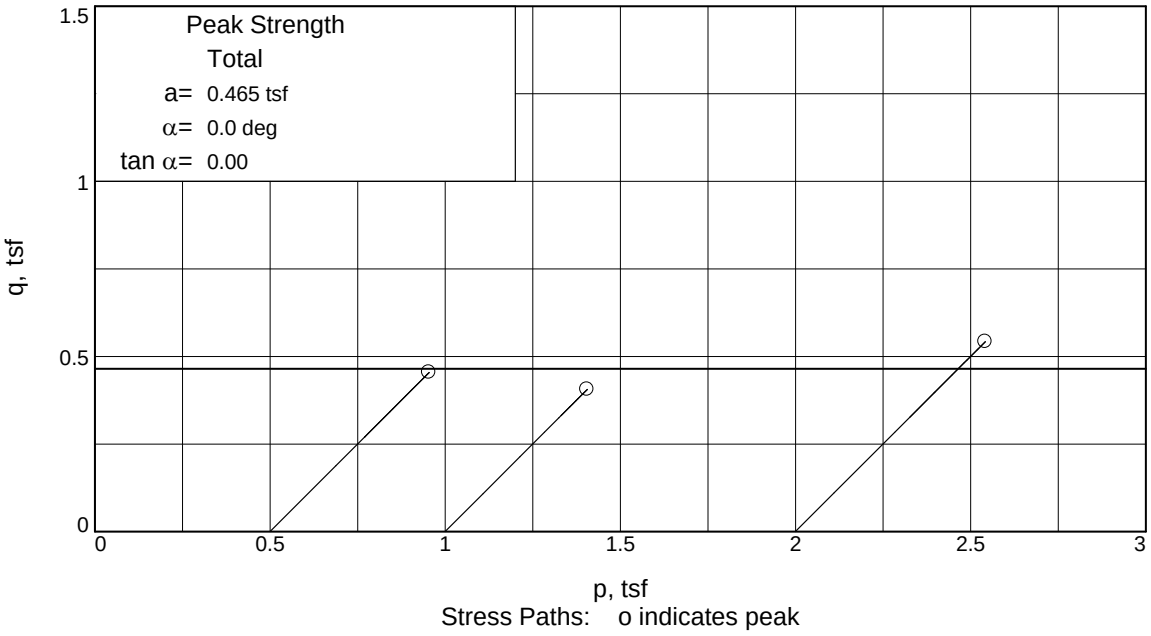
Proj. No.: B2009724 **Date Sampled:**

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Stress Paths: o indicates peak

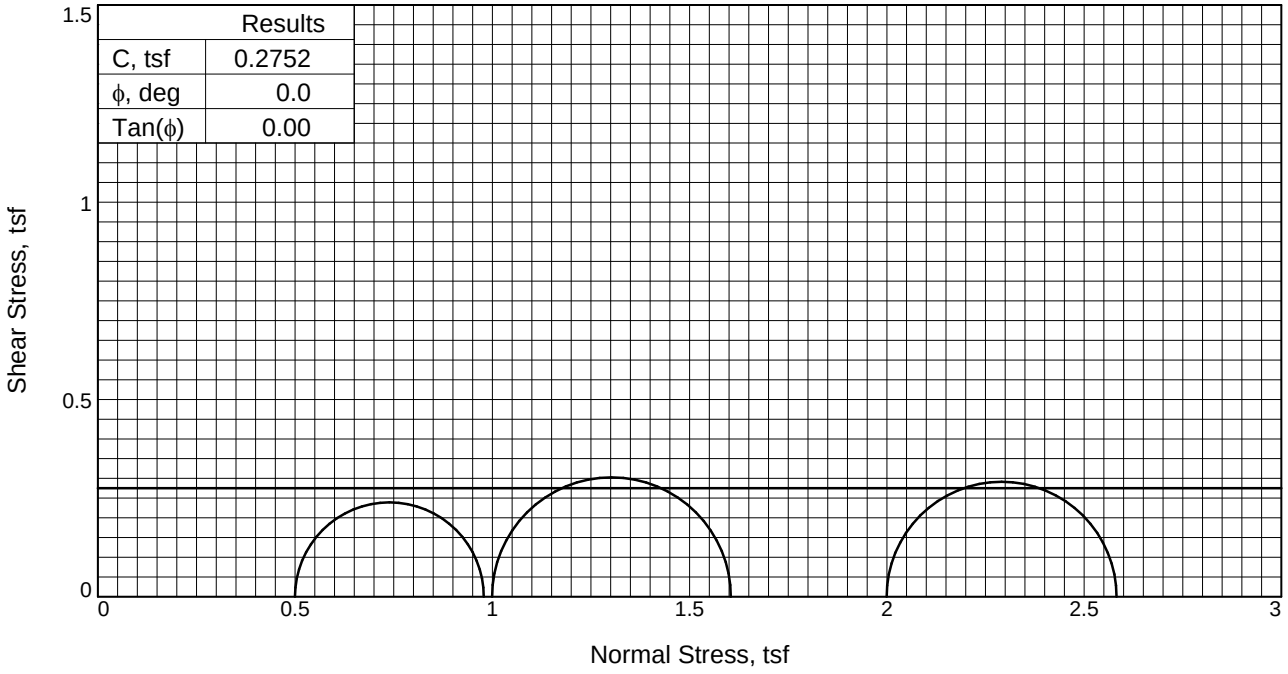
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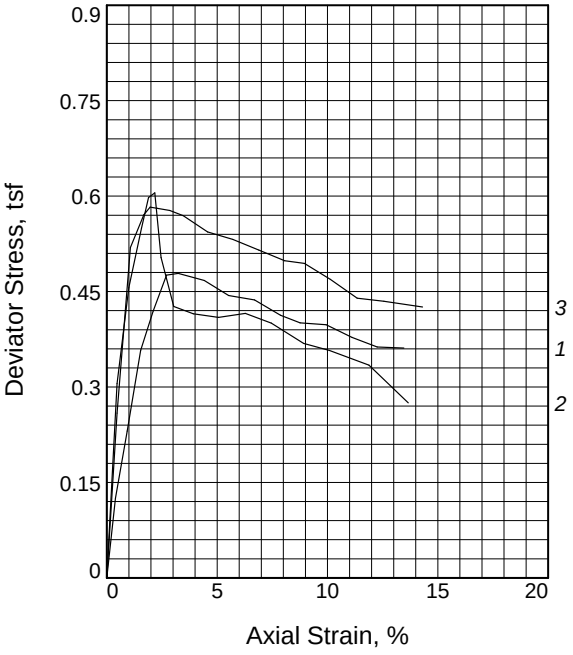
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-177 **Depth:** 6-8'

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	64.3	57.3	39.3
	Dry Density, pcf	59.0	59.6	68.3
	Saturation, %	93.5	84.8	72.4
	Void Ratio	1.8573	1.8263	1.4672
	Diameter, in.	1.403	1.404	1.405
	Height, in.	2.808	2.804	2.803
At Test	Water Content, %	68.4	64.6	68.4
	Dry Density, pcf	59.0	59.6	68.3
	Saturation, %	99.5	95.5	126.0
	Void Ratio	1.8573	1.8263	1.4672
	Diameter, in.	1.403	1.404	1.405
	Height, in.	2.808	2.804	2.803
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		0.479	0.605	0.583
Ult. Stress, tsf		0.361	0.275	0.426
σ_1 Failure, tsf		0.978	1.604	2.582
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

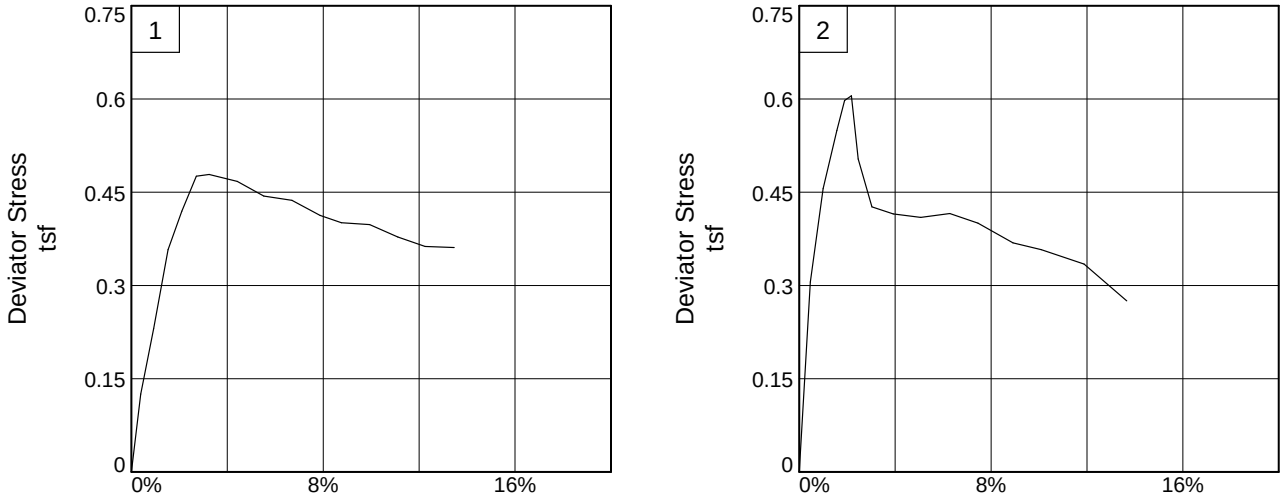
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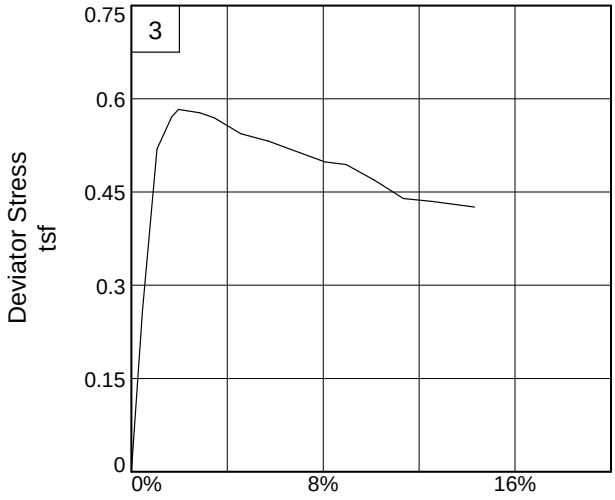
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

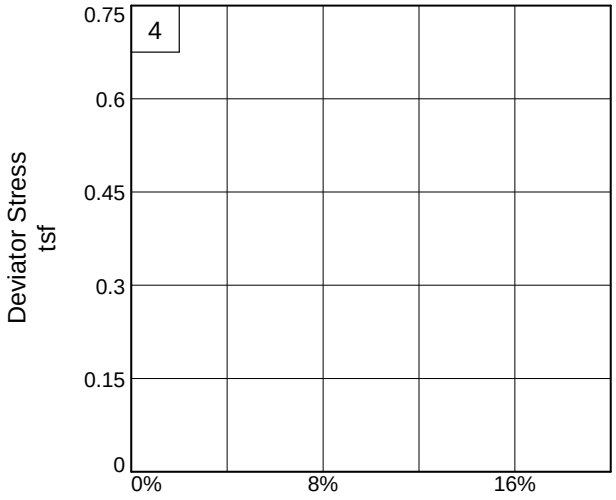
Source of Sample: CAA-179 **Depth:** 16-18'

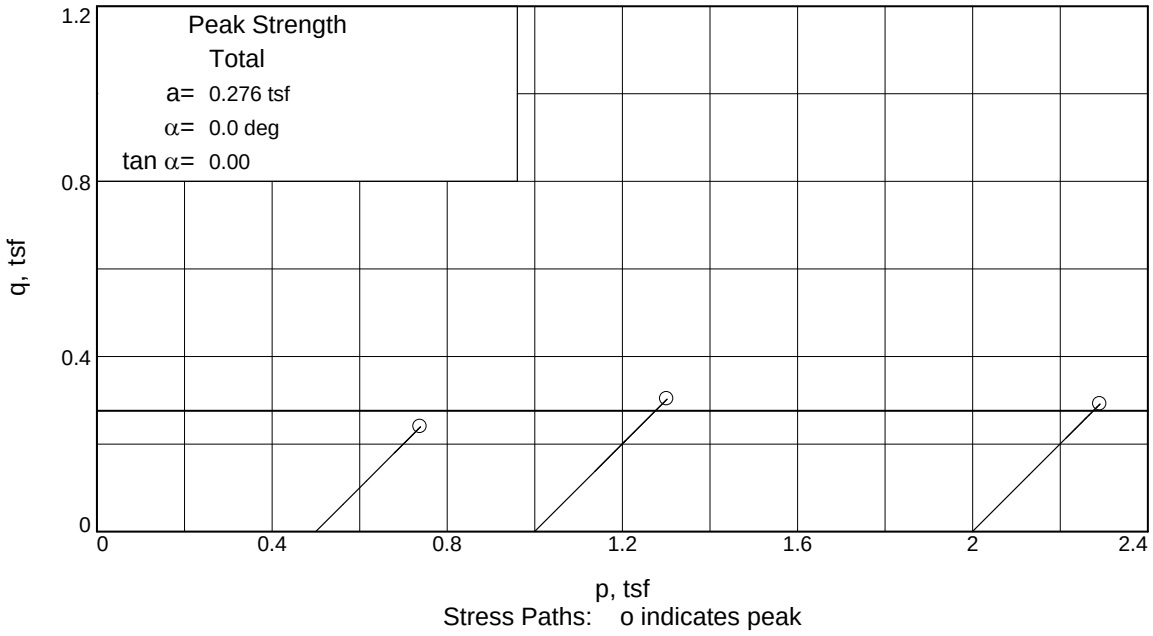
Proj. No.: B2009724 **Date Sampled:**

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Stress Paths: o indicates peak

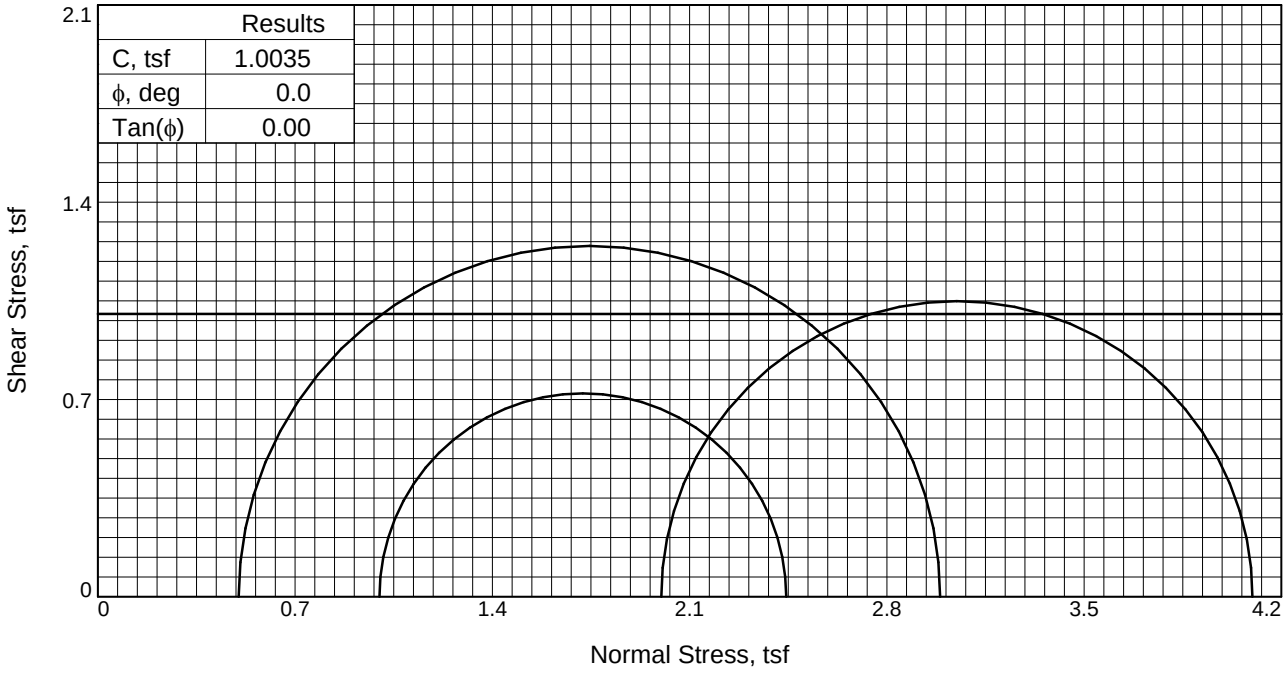
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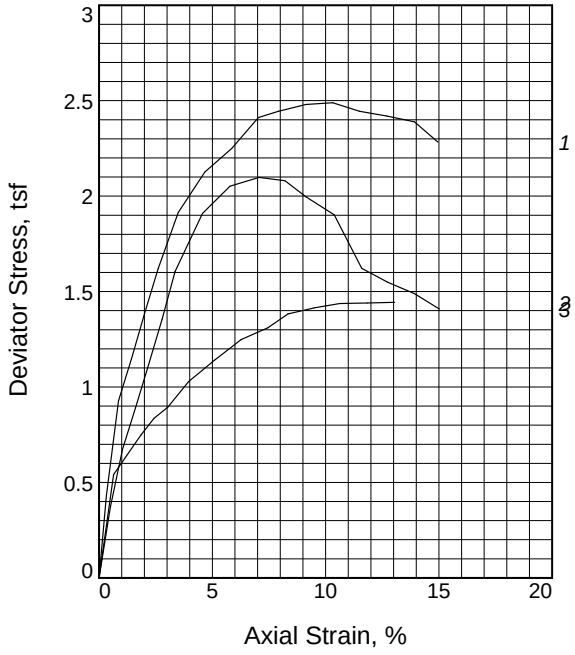
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-179 **Depth:** 16-18'

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	24.7	24.4	26.3
	Dry Density, pcf	85.6	87.4	85.2
	Saturation, %	68.7	70.9	72.5
	Void Ratio	0.9698	0.9291	0.9793
	Diameter, in.	1.403	1.403	1.402
	Height, in.	2.802	2.805	2.803
At Test	Water Content, %	28.0	24.1	26.3
	Dry Density, pcf	85.6	87.4	85.2
	Saturation, %	77.9	70.1	72.4
	Void Ratio	0.9698	0.9291	0.9793
	Diameter, in.	1.403	1.403	1.402
	Height, in.	2.802	2.805	2.803
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		2.489	1.444	2.098
Ult. Stress, tsf		2.283	1.444	1.408
σ_1 Failure, tsf		2.989	2.443	4.097
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

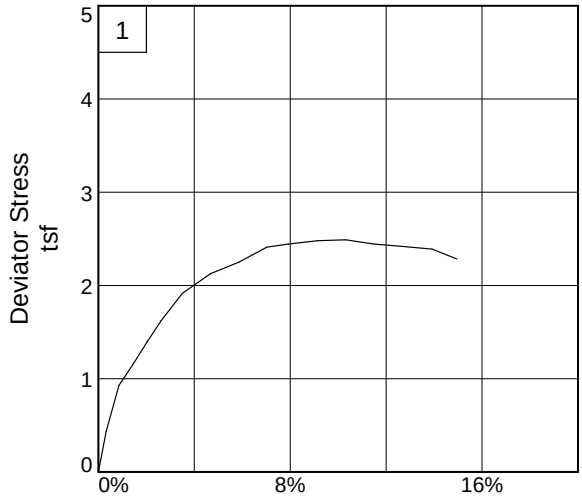
Client: KLJ Engineering LLC

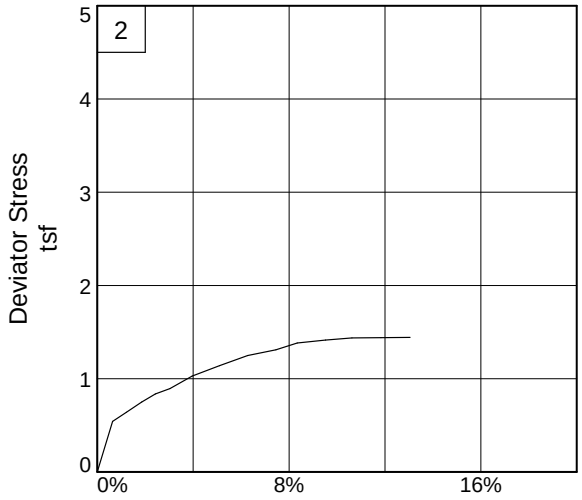
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

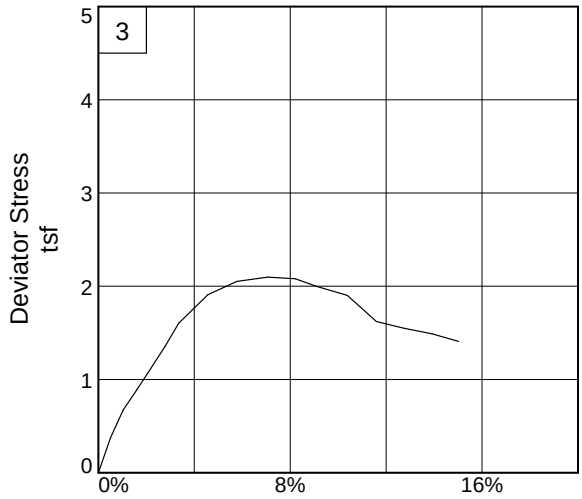
Source of Sample: CAA-181 **Depth:** 6-8'

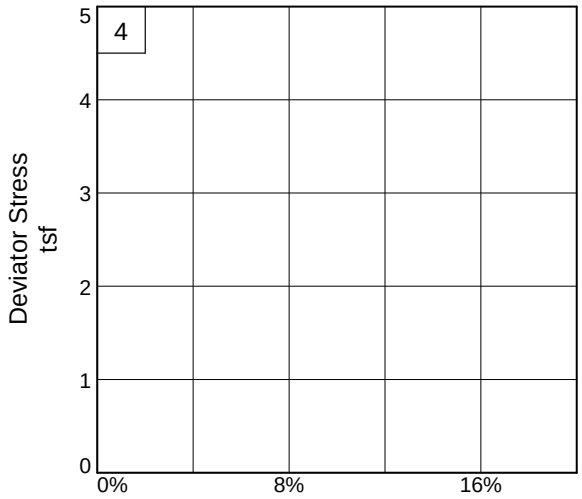
Proj. No.: B2009724 **Date Sampled:**

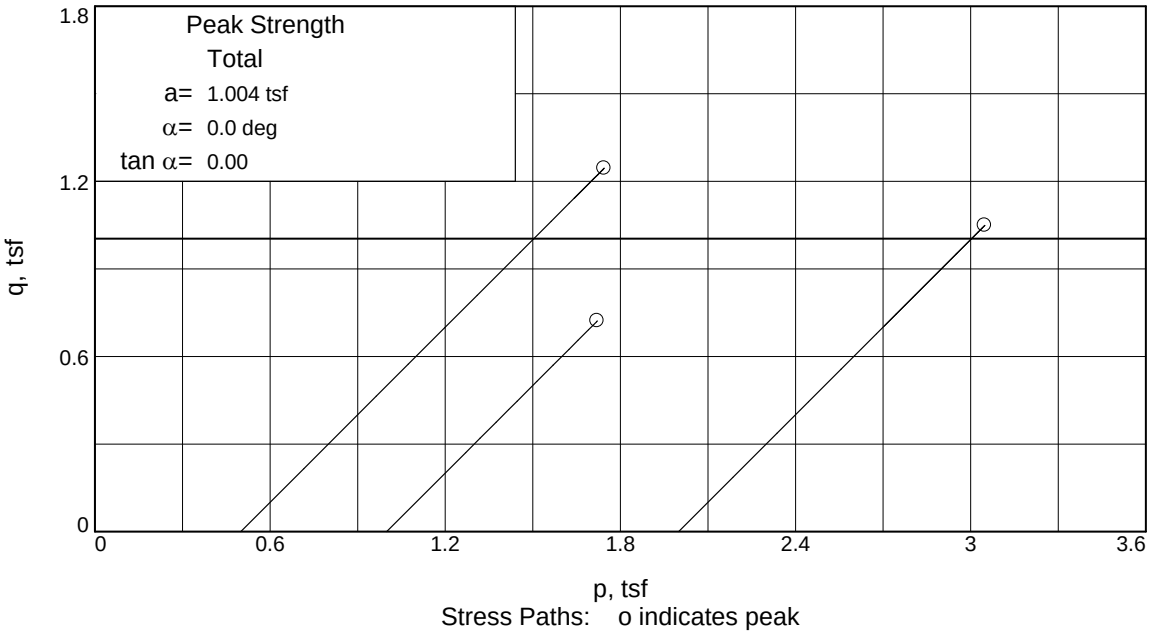
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Stress Paths: o indicates peak

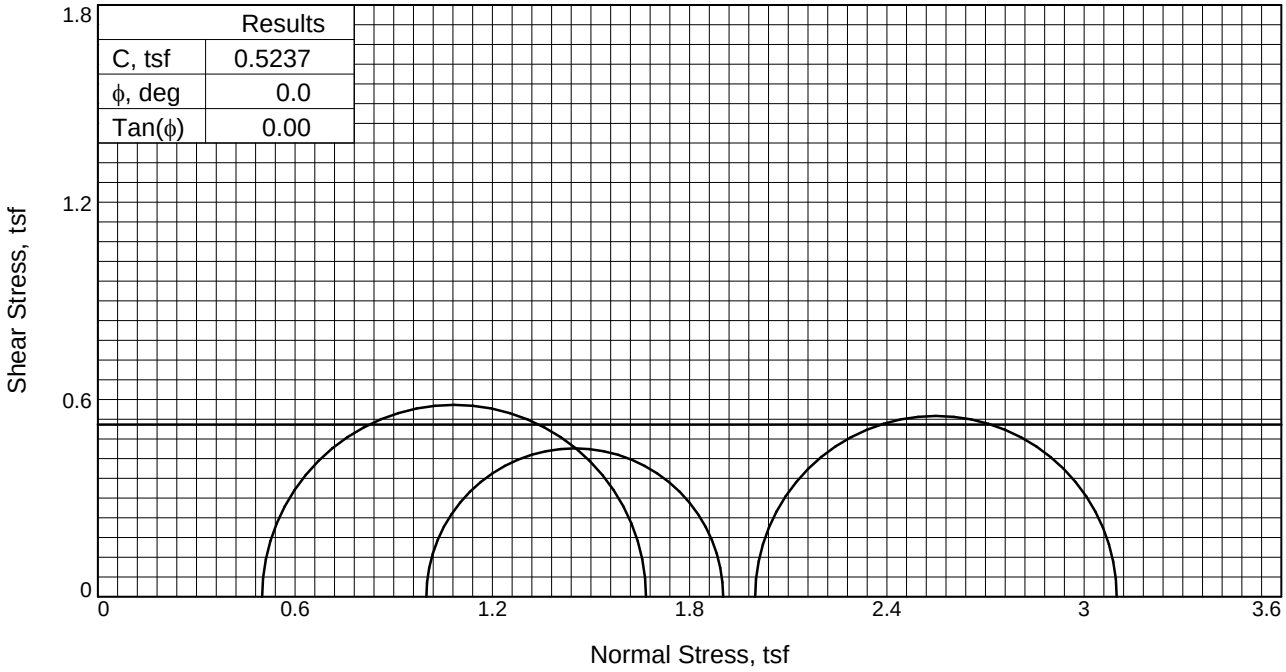
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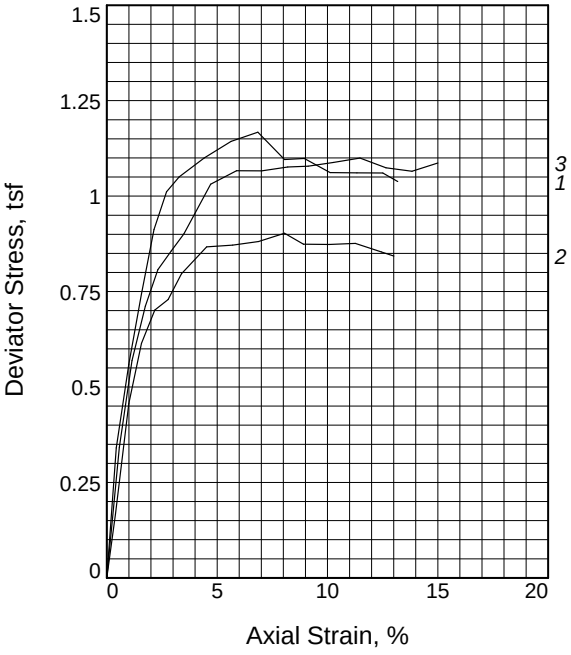
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-181 **Depth:** 6-8'

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	31.9	32.3	31.5
	Dry Density, pcf	80.9	83.3	82.9
	Saturation, %	79.5	85.2	82.5
	Void Ratio	1.0840	1.0223	1.0320
	Diameter, in.	1.404	1.403	1.405
	Height, in.	2.806	2.806	2.806
At Test	Water Content, %	32.1	32.8	31.5
	Dry Density, pcf	80.9	83.3	82.9
	Saturation, %	80.0	86.6	82.3
	Void Ratio	1.0840	1.0223	1.0320
	Diameter, in.	1.404	1.403	1.405
	Height, in.	2.806	2.806	2.806
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		1.168	0.903	1.100
Ult. Stress, tsf		1.038	0.843	1.065
σ_1 Failure, tsf		1.667	1.902	3.099
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

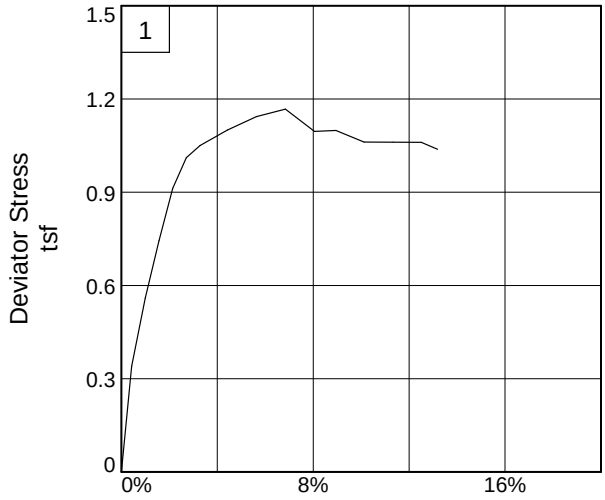
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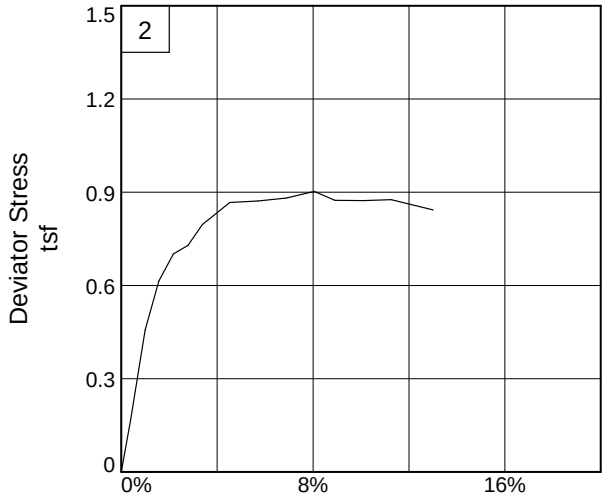
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

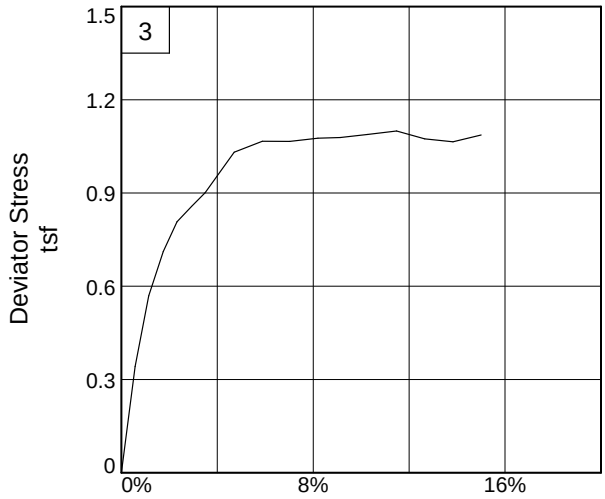
Source of Sample: CAA-183 **Depth:** 17-19'

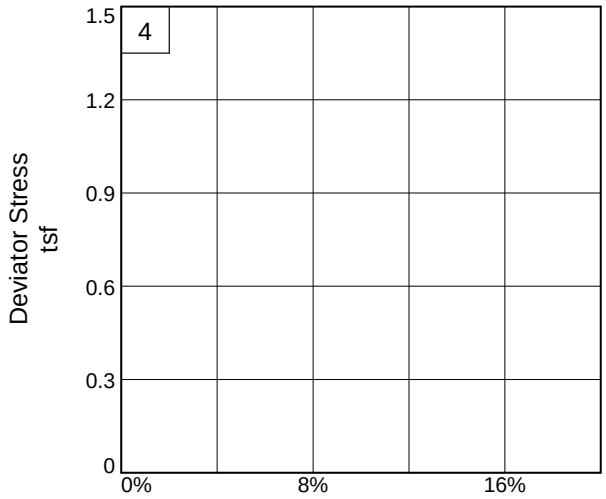
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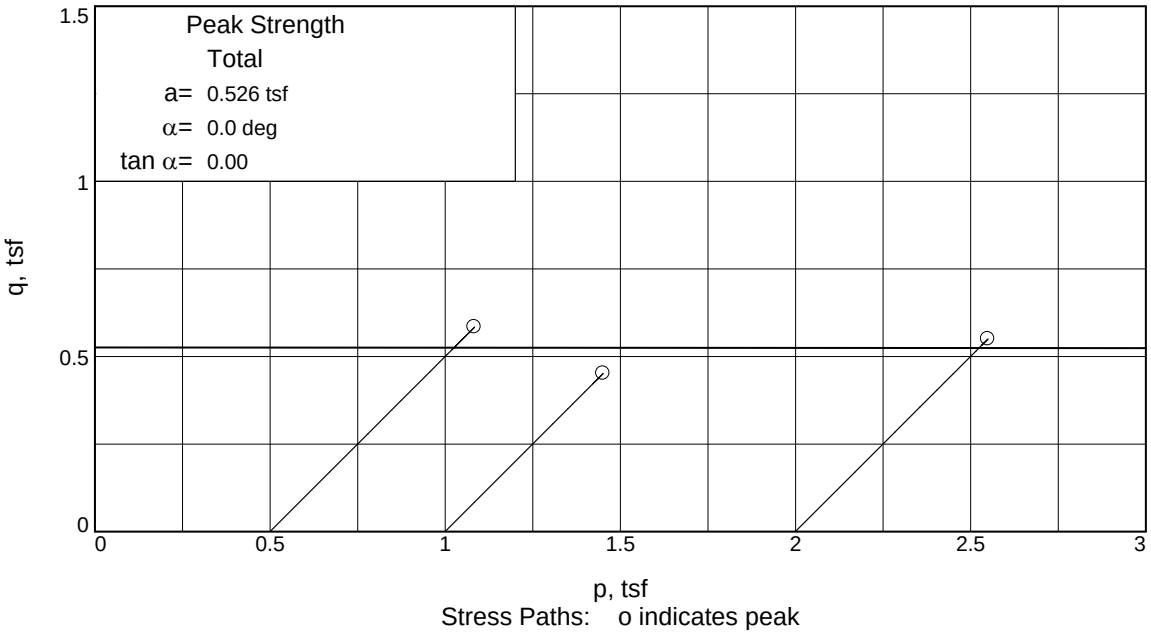
BRAUN INTERTEC











Stress Paths: o indicates peak

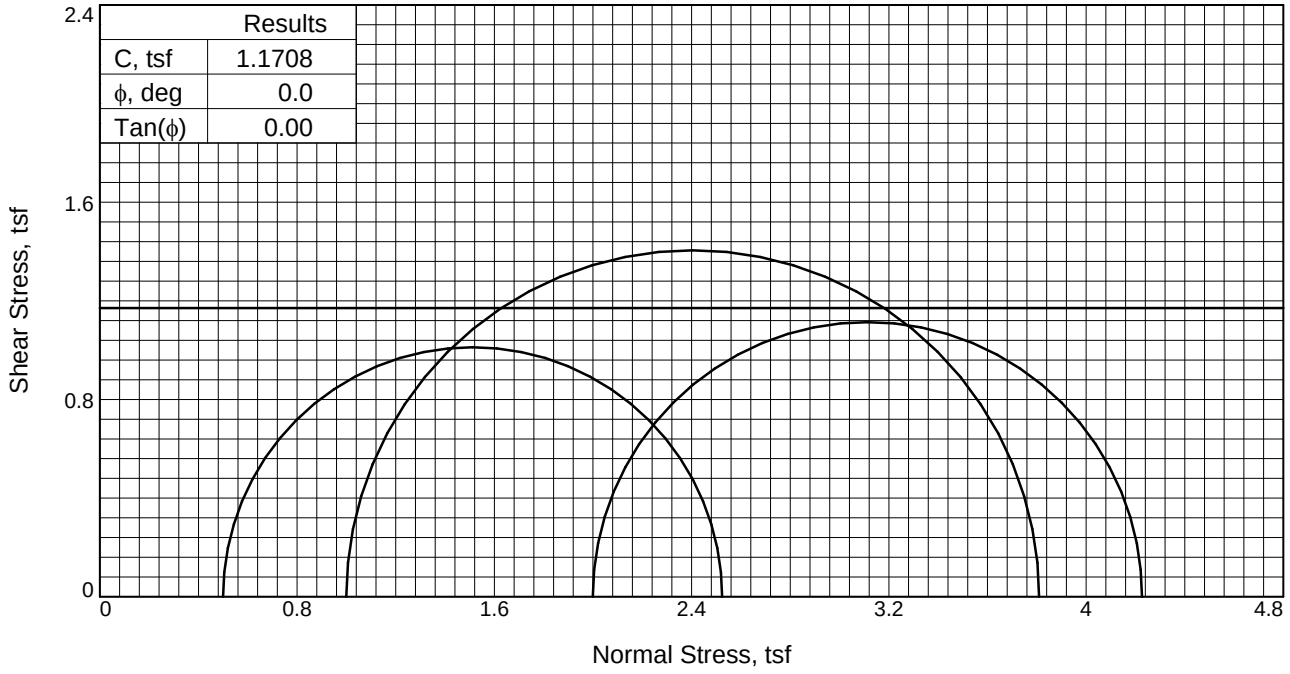
Client: KLJ Engineering LLC

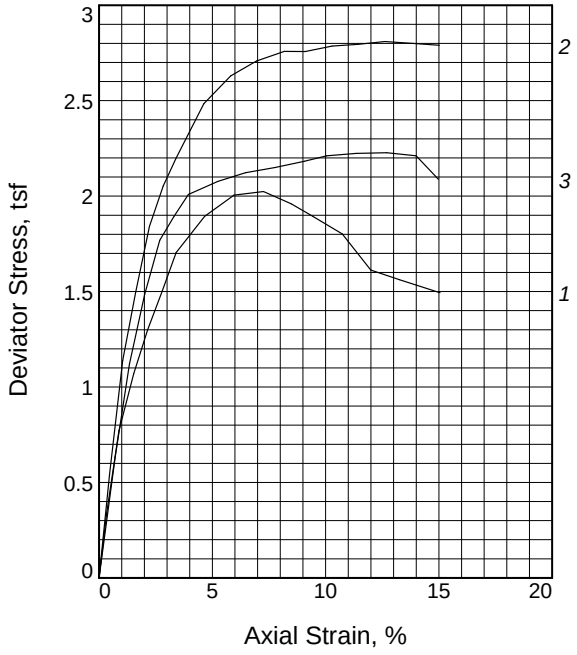
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-183 **Depth:** 17-19'

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	26.8	25.8	27.3
	Dry Density, pcf	97.0	98.7	90.0
	Saturation, %	98.2	98.3	84.6
	Void Ratio	0.7380	0.7085	0.8725
	Diameter, in.	1.420	1.470	1.540
	Height, in.	2.618	2.790	2.537
At Test	Water Content, %	28.2	26.1	26.8
	Dry Density, pcf	97.0	98.7	90.0
	Saturation, %	103.1	99.6	83.0
	Void Ratio	0.7380	0.7085	0.8725
	Diameter, in.	1.420	1.470	1.540
	Height, in.	2.618	2.790	2.537
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		2.024	2.810	2.227
Ult. Stress, tsf		1.494	2.790	2.088
σ_1 Failure, tsf		2.524	3.809	4.227
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

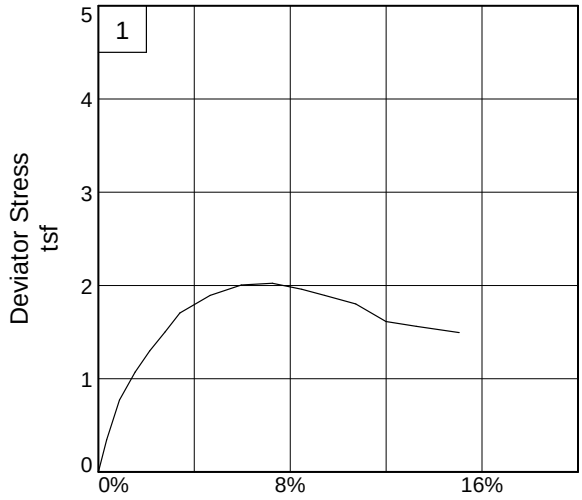
Client: KLJ Engineering LLC

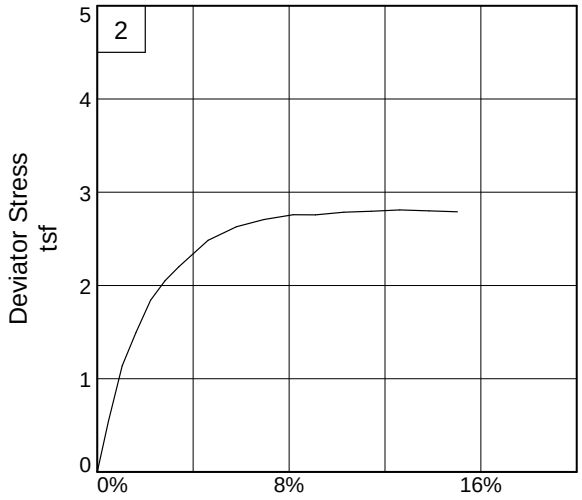
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

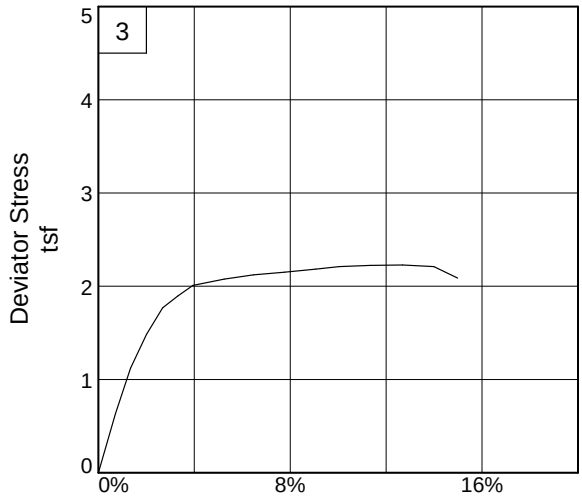
Source of Sample: CAA-185 **Depth:** 6-8'

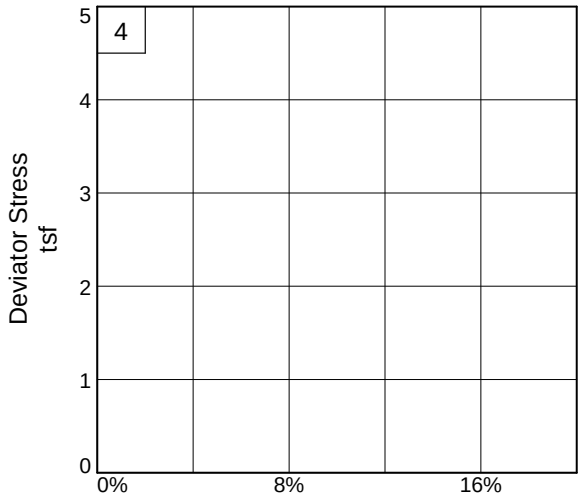
Proj. No.: B2009724 **Date Sampled:**

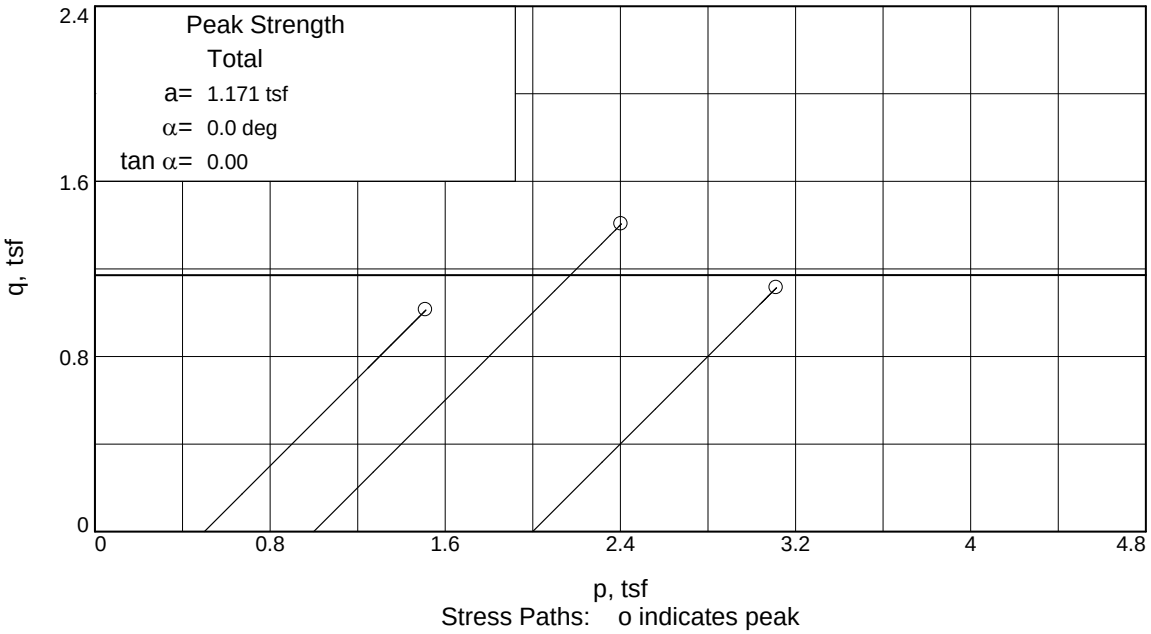
BRAUN INTERTEC











Stress Paths: o indicates peak

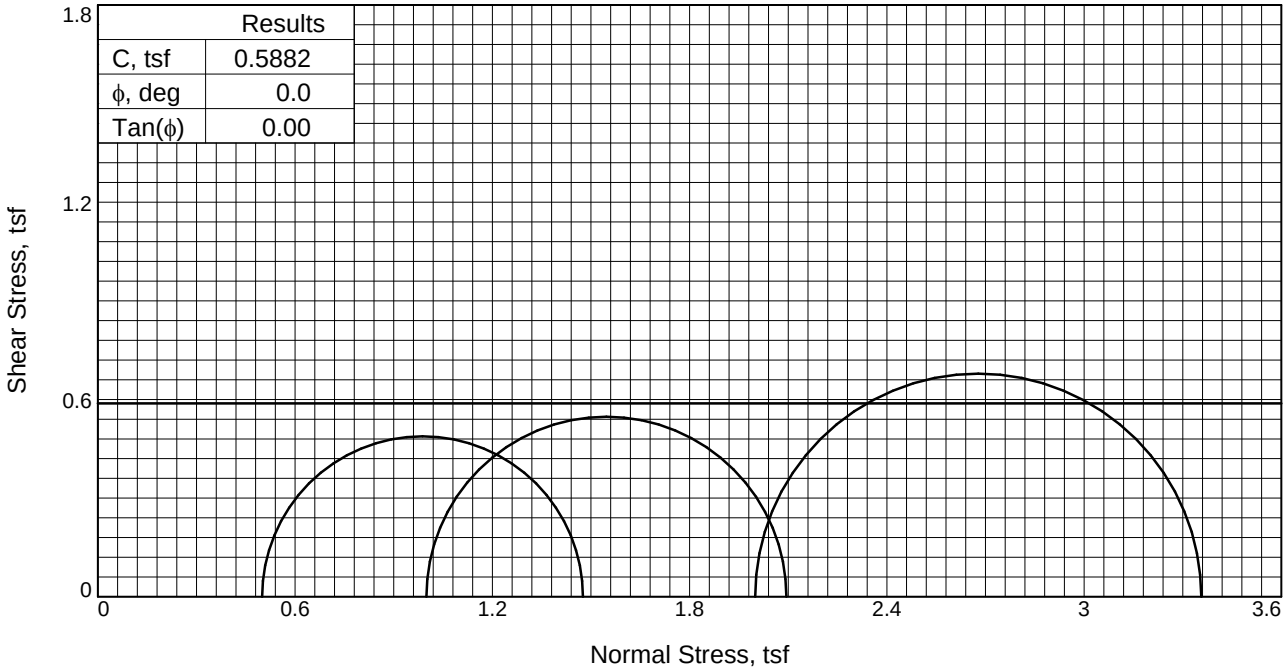
Client: KLJ Engineering LLC

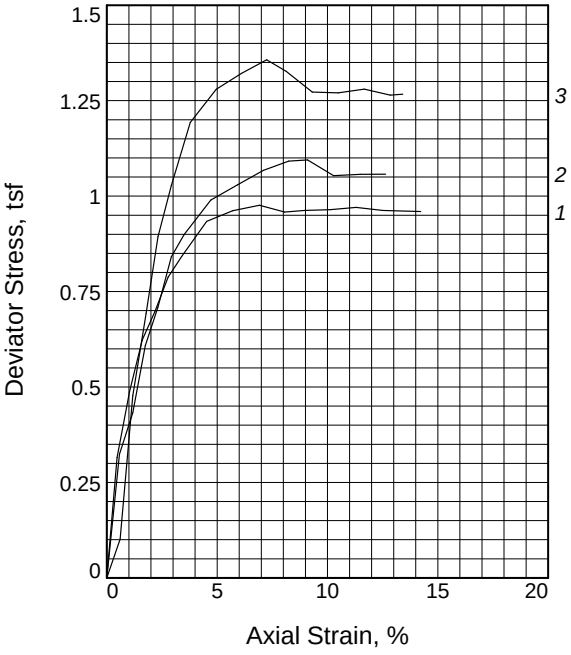
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-185 **Depth:** 6-8'

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	26.9	30.2	30.1
	Dry Density, pcf	91.2	82.8	88.1
	Saturation, %	85.7	78.7	89.0
	Void Ratio	0.8482	1.0354	0.9138
	Diameter, in.	1.403	1.403	1.405
	Height, in.	2.805	2.803	2.803
At Test	Water Content, %	26.1	30.1	30.8
	Dry Density, pcf	91.2	82.8	88.1
	Saturation, %	83.2	78.4	90.9
	Void Ratio	0.8482	1.0354	0.9138
	Diameter, in.	1.403	1.403	1.405
	Height, in.	2.805	2.803	2.803
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		0.976	1.095	1.357
Ult. Stress, tsf		0.960	1.054	1.264
σ_1 Failure, tsf		1.476	2.094	3.356
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (C), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

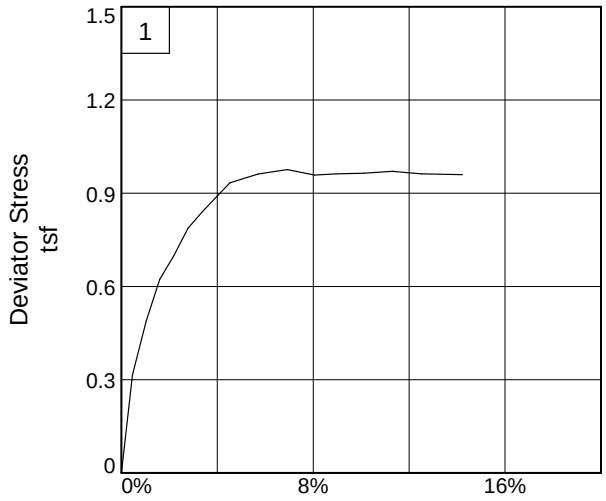
Client: KLJ Engineering LLC

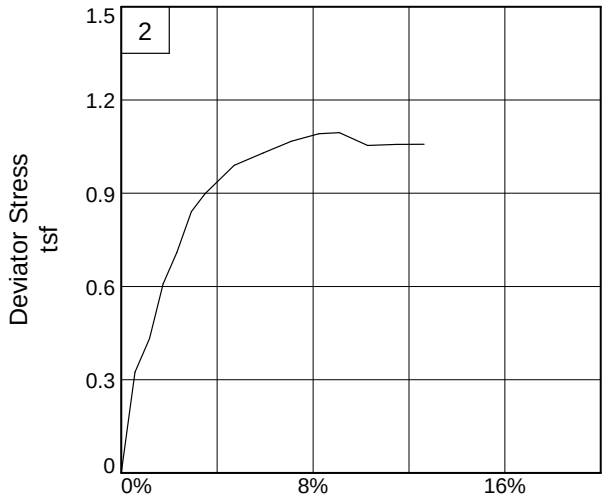
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

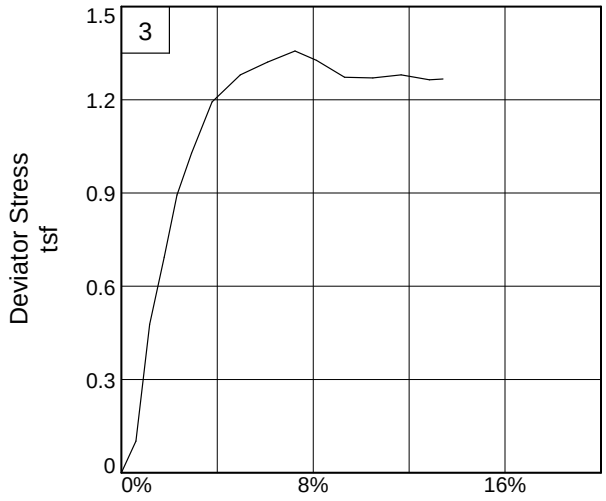
Source of Sample: CAA-186 **Depth:** 19-21'

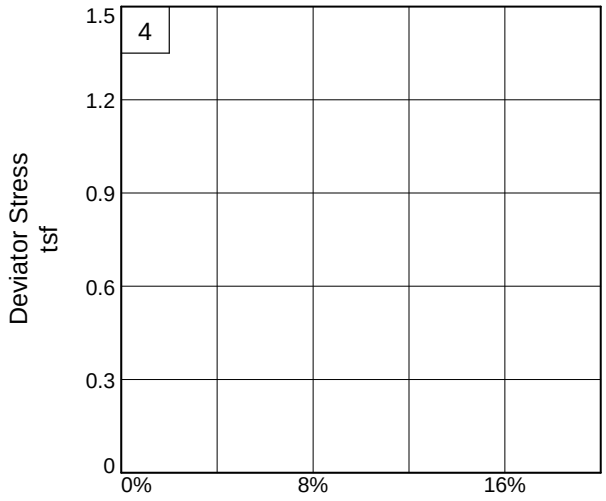
Proj. No.: B2009724 **Date Sampled:**

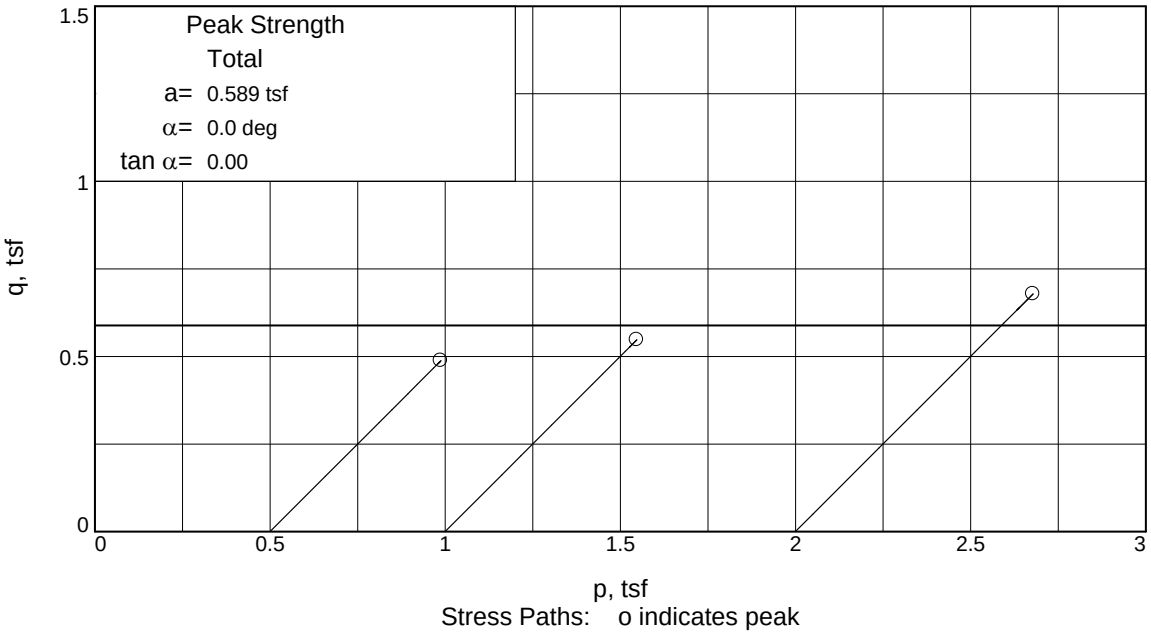
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Stress Paths: o indicates peak

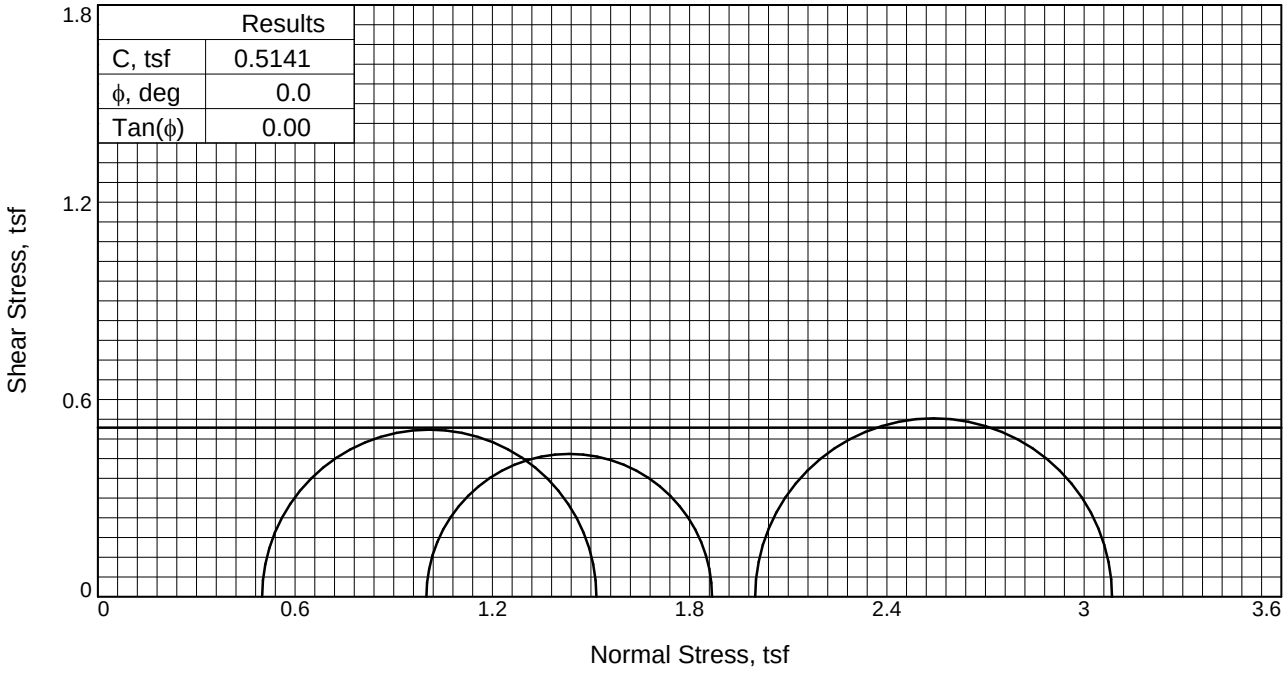
Client: KLJ Engineering LLC

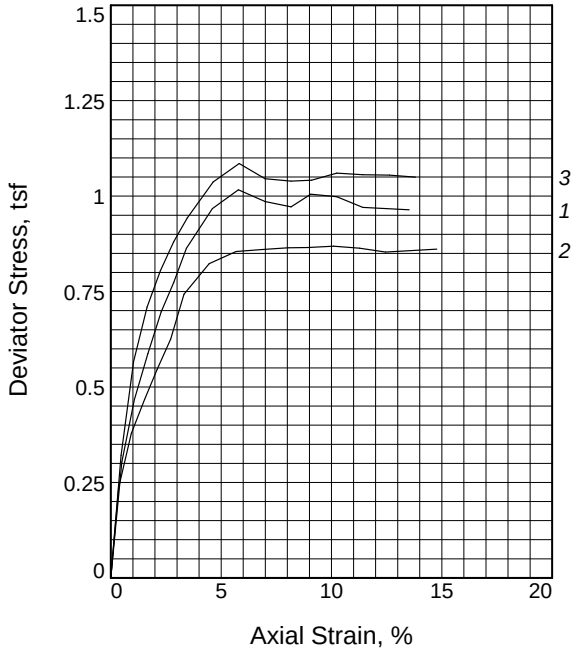
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-186 **Depth:** 19-21'

Project No.: B2009724 **Figure** _____

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Sample No.		1	2	3
Initial	Water Content, %	29.7	30.2	29.9
	Dry Density, pcf	88.8	85.6	84.6
	Saturation, %	89.4	84.1	81.2
	Void Ratio	0.8977	0.9689	0.9932
	Diameter, in.	1.407	1.403	1.406
	Height, in.	2.803	2.803	2.803
At Test	Water Content, %	30.7	29.7	30.1
	Dry Density, pcf	88.8	85.6	84.6
	Saturation, %	92.5	82.8	81.9
	Void Ratio	0.8977	0.9689	0.9932
	Diameter, in.	1.407	1.403	1.406
	Height, in.	2.803	2.803	2.803
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	0.999	1.999
Fail. Stress, tsf		1.017	0.869	1.085
Ult. Stress, tsf		0.964	0.853	1.039
σ_1 Failure, tsf		1.516	1.868	3.085
σ_3 Failure, tsf		0.500	0.999	1.999

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: Fat Clay (CH), brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

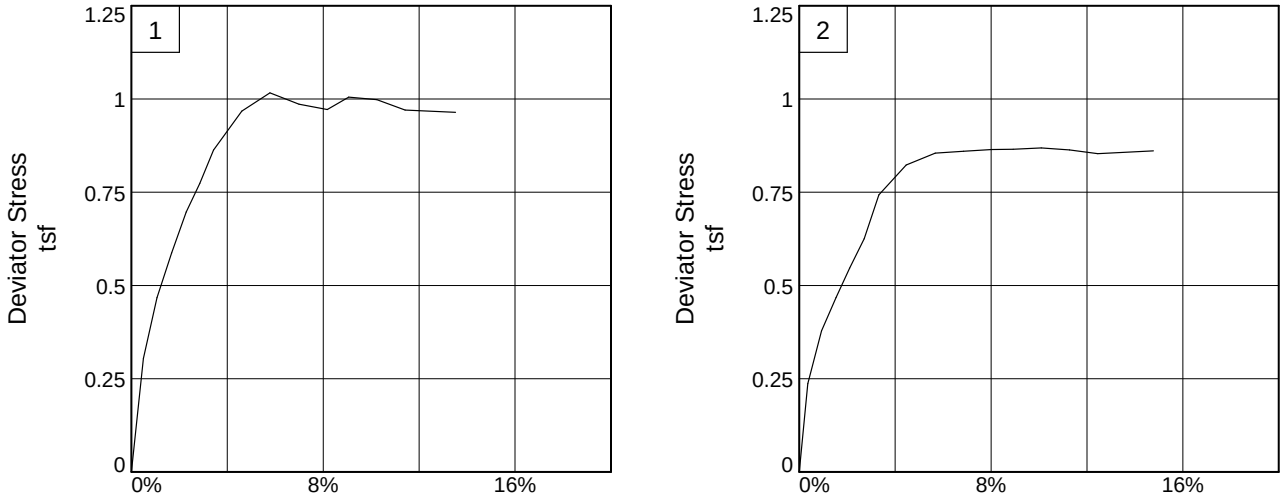
Client: KLJ Engineering LLC

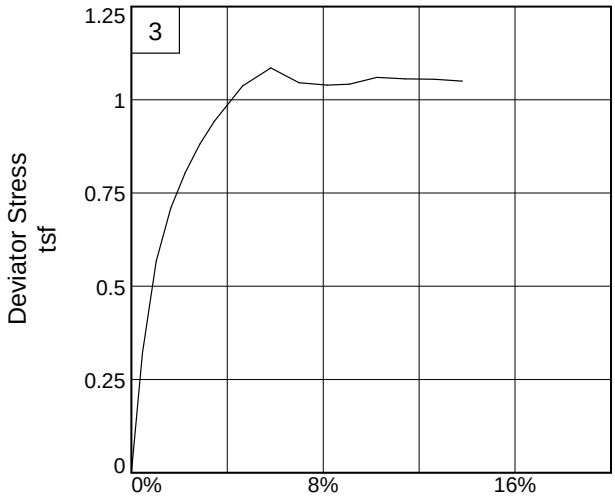
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

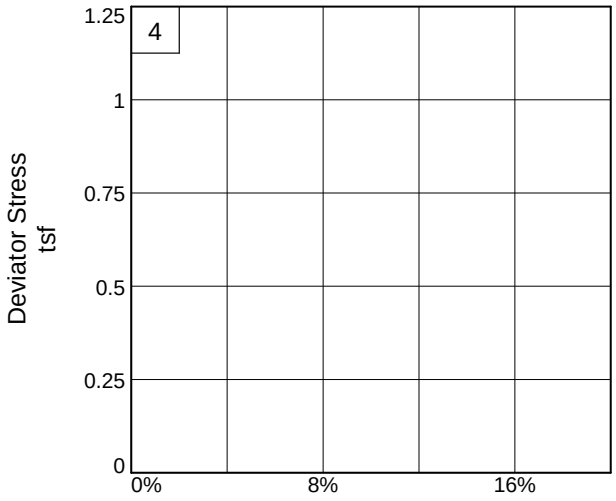
Source of Sample: CAA-187 **Depth:** 19-21'

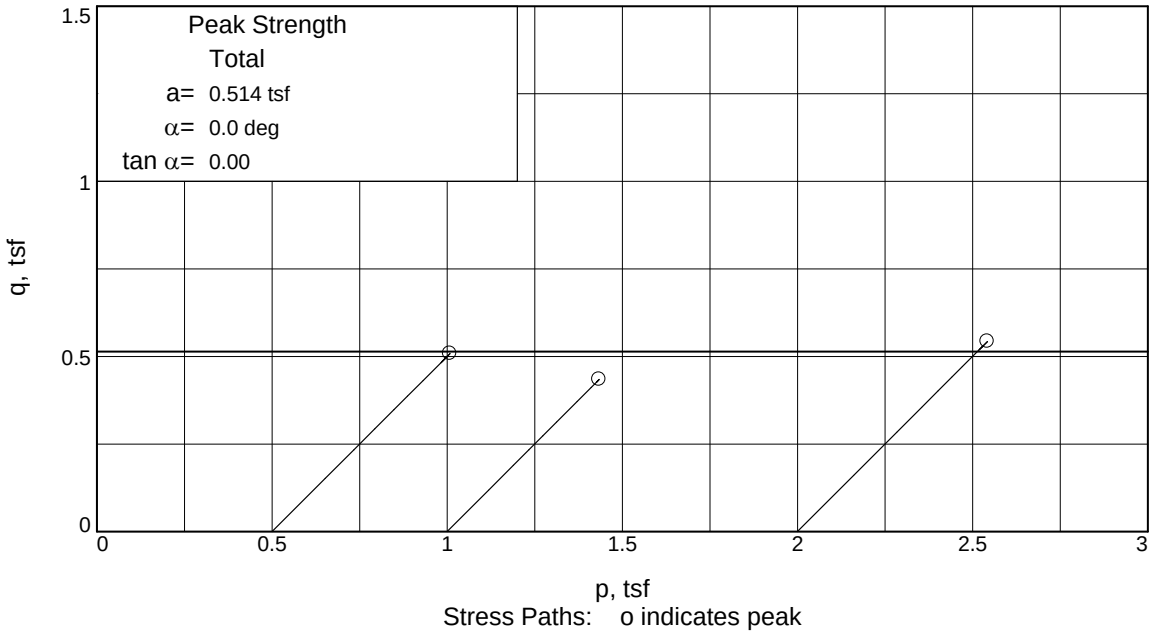
Proj. No.: B2009724 **Date Sampled:**

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Stress Paths: o indicates peak

Client: KLJ Engineering LLC

Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-187 **Depth:** 19-21'

Project No.: B2009724 **Figure** _____

Braun Intertec