Braun Intertec Corporation
1502 Grumman Lane
Bismarck, ND 58504

Phone: 701.255.7180
Fax: 701.255.7208
Web: braunintertec.com

March 16, 2021 Project B2009724

Scott Middaugh, PE
KLJ Engineering, LLC
3203 32nd Ave S Suite 201
Fargo, ND 58104

Re: Soil Information
High Tension Median Guardrail
HEN-8-029(200)069; PCN 22888
Fargo, North Dakota

Dear Mr. Middaugh:

We are pleased to present the soil information collected for use in designing the high-tension median cable guardrail proposed to be constructed on Interstate I-29 from Fargo to Grand Forks. The project was completed in accordance with our proposal on October 19, 2020 and authorization on October 28, 2020. The purpose of the drilling and laboratory testing is to provide soil information data for KLJ Engineering, the North Dakota Department of Transportation (NDDOT), and the selected contractor to use for further analysis. A boring location sketch, log of borings sheets, grain size accumulation curves and unconsolidated-undrained triaxial strength test reports are enclosed with this letter.

Scope of Services

Our scope of services in the above referenced proposal consisted of the following tasks and subtasks related to the borrow evaluation:

- Engineering and Project Management:
  - Kickoff meeting.
  - Site reconnaissance.
  - Prepare drilling instructions.
  - Drilling oversight.
  - Laboratory testing oversight.
  - Prepare boring logs.
  - Communications.
  - Prepare a DRAFT factual report.
  - Prepare a final factual report upon receipt of comments.
  - Overall project management of drilling, laboratory testing, and engineering.

- Drilling:
  - Drill 176 standard penetration test (SPT) borings to depths varying from 10 to 20 feet for the guardrail system based on an assumed guardrail cable layout.
  - Coordinate with utility companies to locate buried lines.
  - Obtain SPT results at 5-foot vertical intervals and collect thin wall tubes at 7 to 9 feet and 17 to 19 feet, unless conditions dictated otherwise.

- Laboratory Testing:
  - Perform moisture content tests on each sample.
  - Perform one Atterberg Limits and grain size analysis on 50 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 enclosed Boring Location Sketch. 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 20 feet deep. Borings with a prefix “GDRL” are borings performed in between anchor locations and were advanced to 10 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 when they were not frozen and were typically brown and gray in color, though black was occasionally noticed as well.

Groundwater

Groundwater was not observed in any of our borings. 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.

Remarks

In performing its services, 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.

Thank you for making Braun Intertec your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please call Carey Yoder at 701.355.5409 or email cyoder@braunintertec.com.

Sincerely,

BRAUN INTERTEC CORPORATION

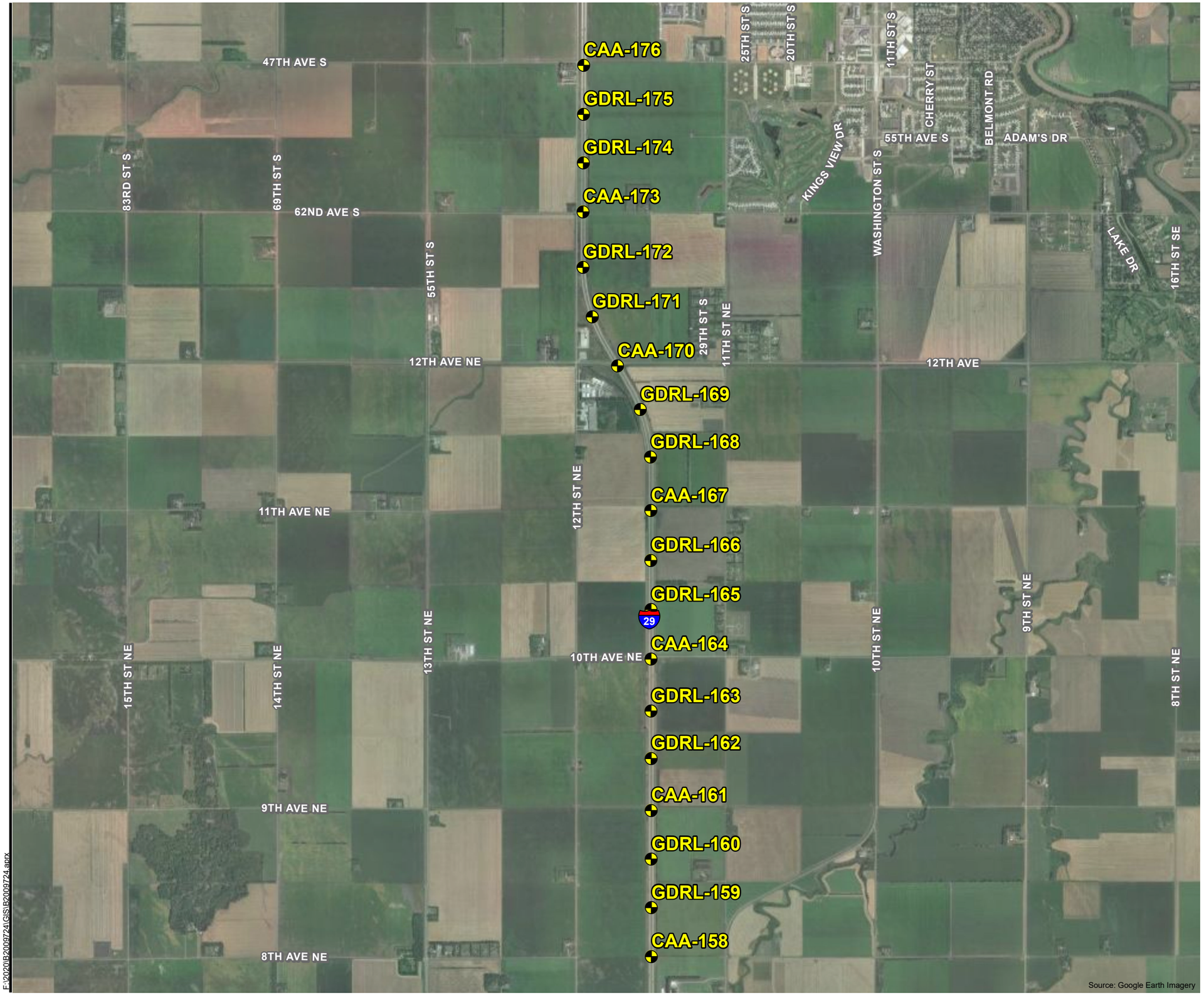
Ezra Ballinger, PE
Business Unit Leader, Senior Engineer

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.

REGISTERED PROFESSIONAL ENGINEER
CAREY C. YODER
PE-7129
DATE 3-16-2021
NORTH DAKOTA

Carey C. Yoder, PE
Project Engineer
Registration Number: PE-7129
March 16, 2021

Attachments:
Boring Location Sketch
Log of Boring Sheets
Descriptive Terminology
Grain Size Accumulation Curves
Unconsolidated-Undrained Test Results

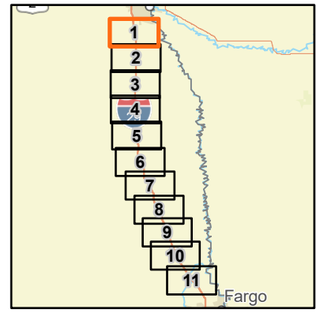


Approximate Location of Boring

N

0 2,500 5,000 Feet

1" = 5,000 Feet



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Drawing Information

Project No: B2009724

Drawing No: BoringLocationSketch

Drawn By:	ZS
Drawn Drawn:	3/1/2021
Checked By:	CCY
Last Modified:	3/1/2021

Project Information

High Tension Median Guardrail 8-029(200)069; PCN 22888

Interstate 29

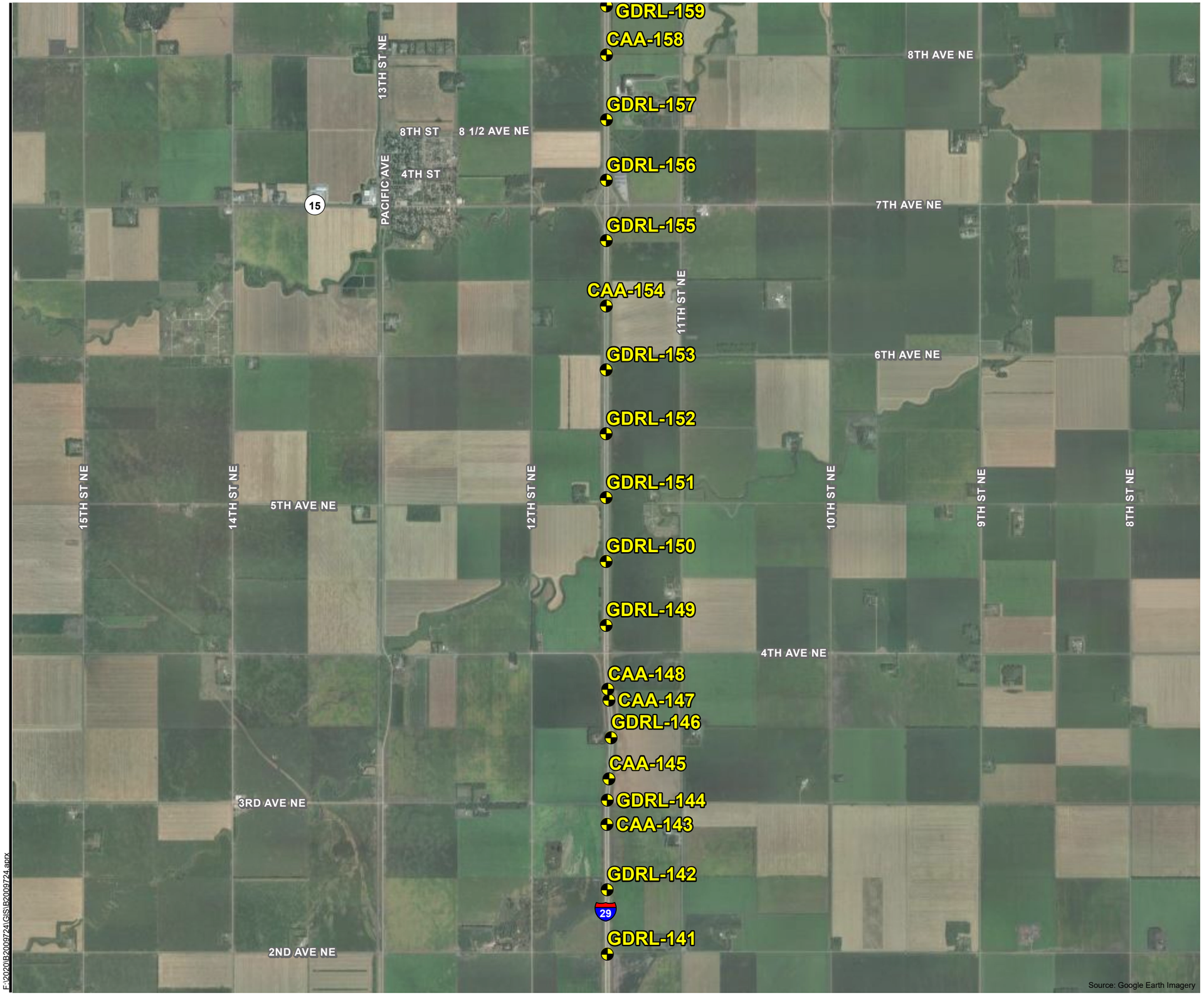
Fargo, North Dakota

Boring Location Sketch

Sheet: 1 of 11

Figure A-1

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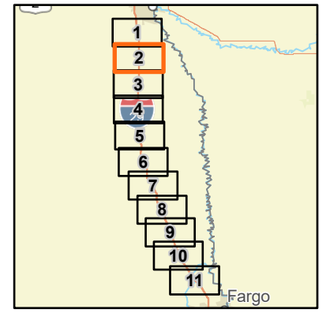


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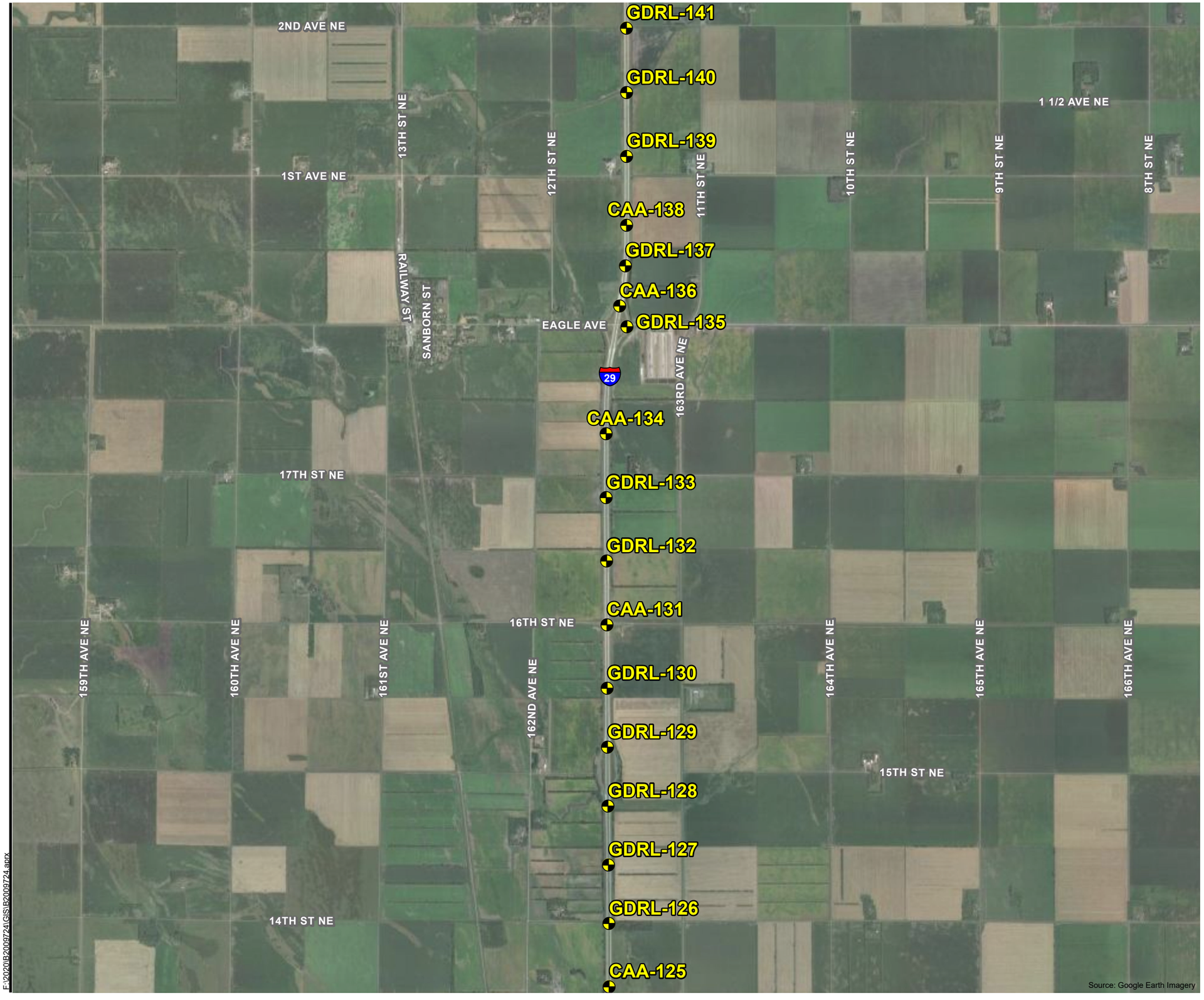
Fargo, North Dakota

Boring Location Sketch

Sheet: 2 of 11

Figure A-1

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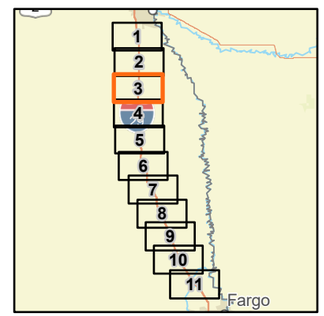


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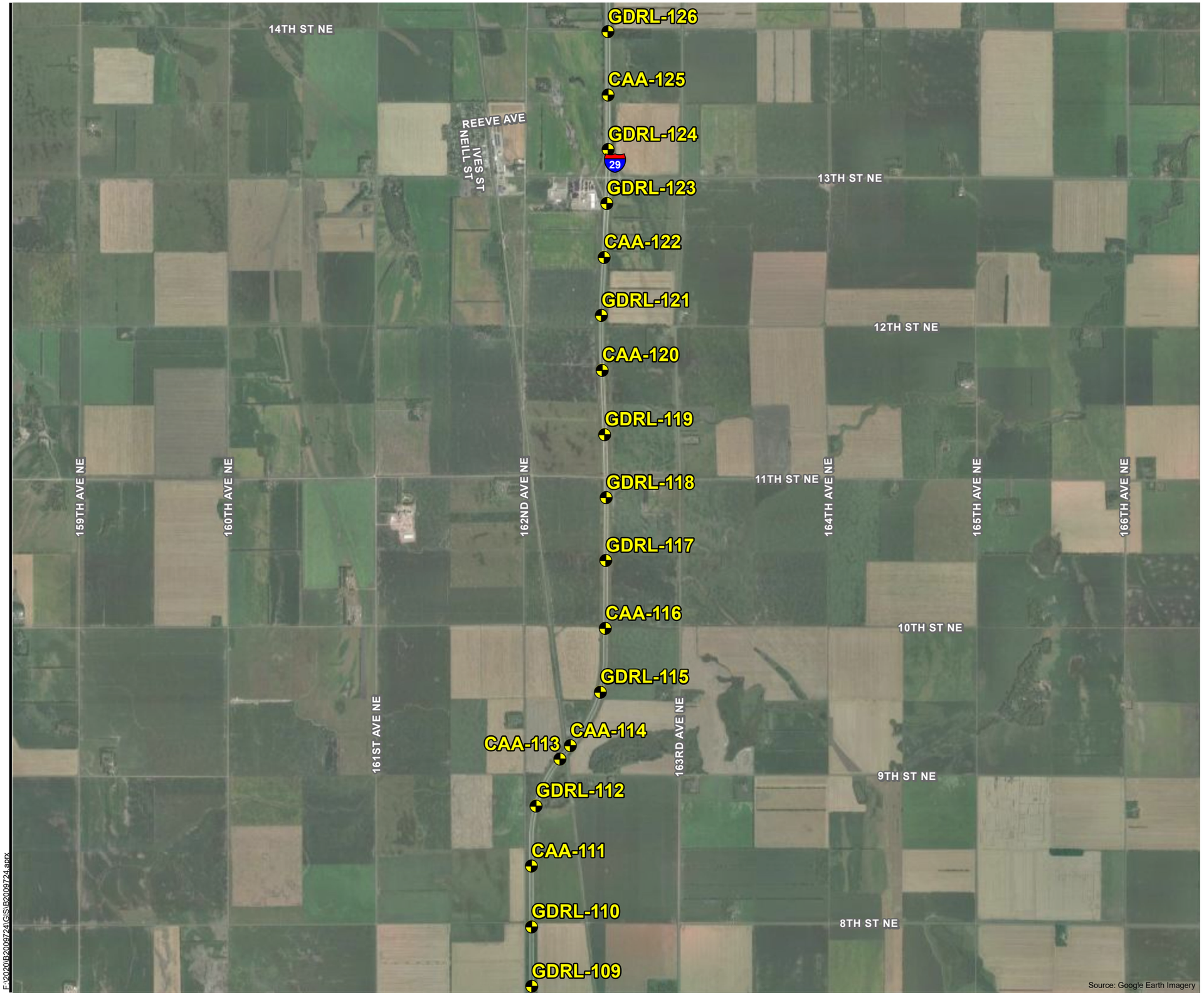
Fargo, North Dakota

Boring Location Sketch

Sheet: 3 of 11

Figure A-1

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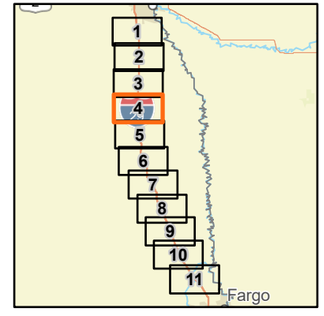


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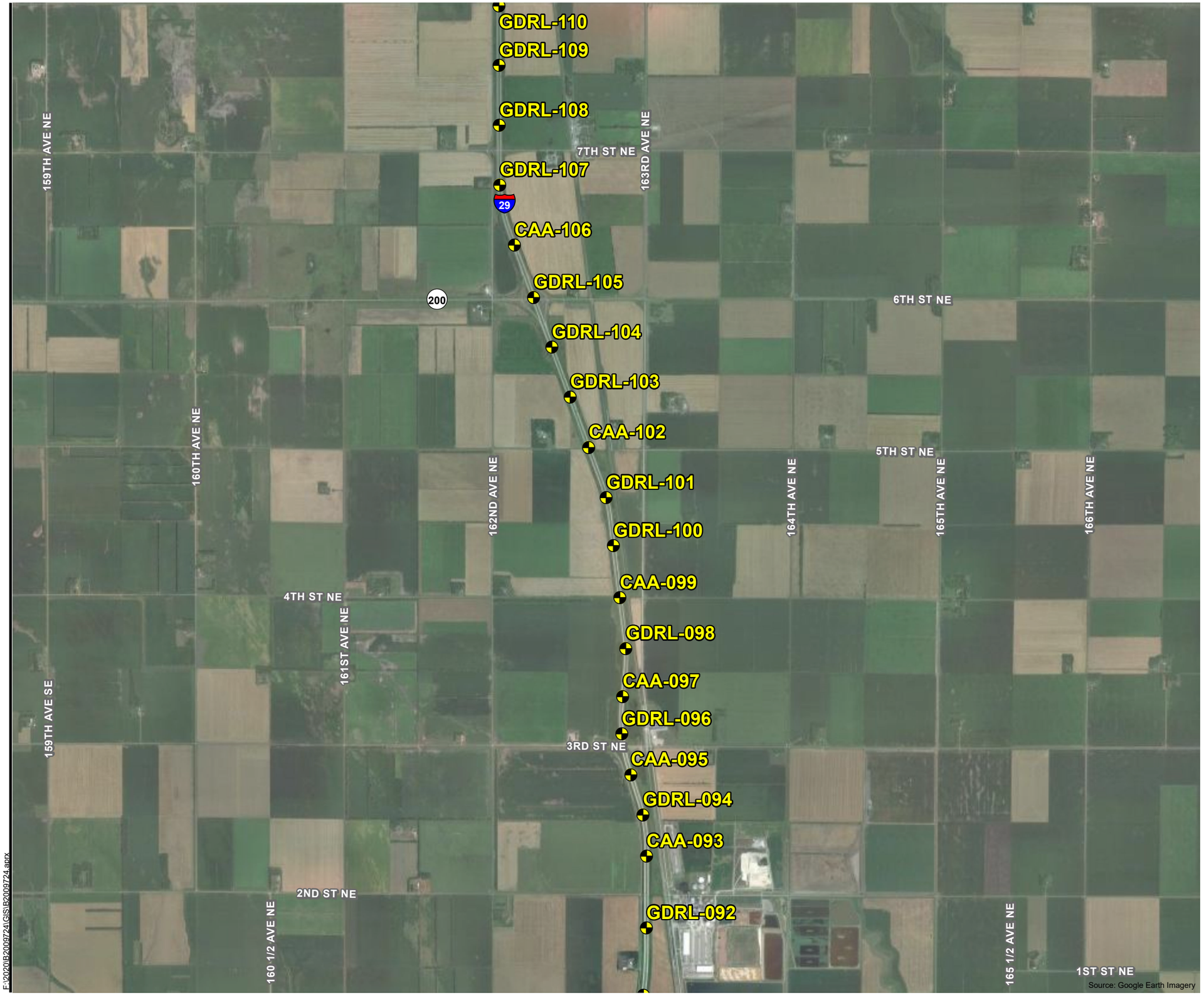
Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 4 of 11

Figure A-1

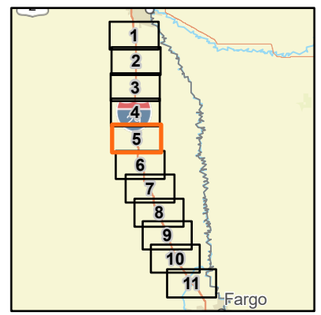


Approximate Location of Boring

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Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 5 of 11

Figure A-1

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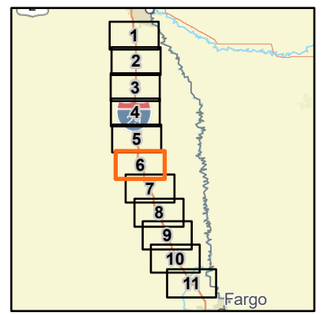


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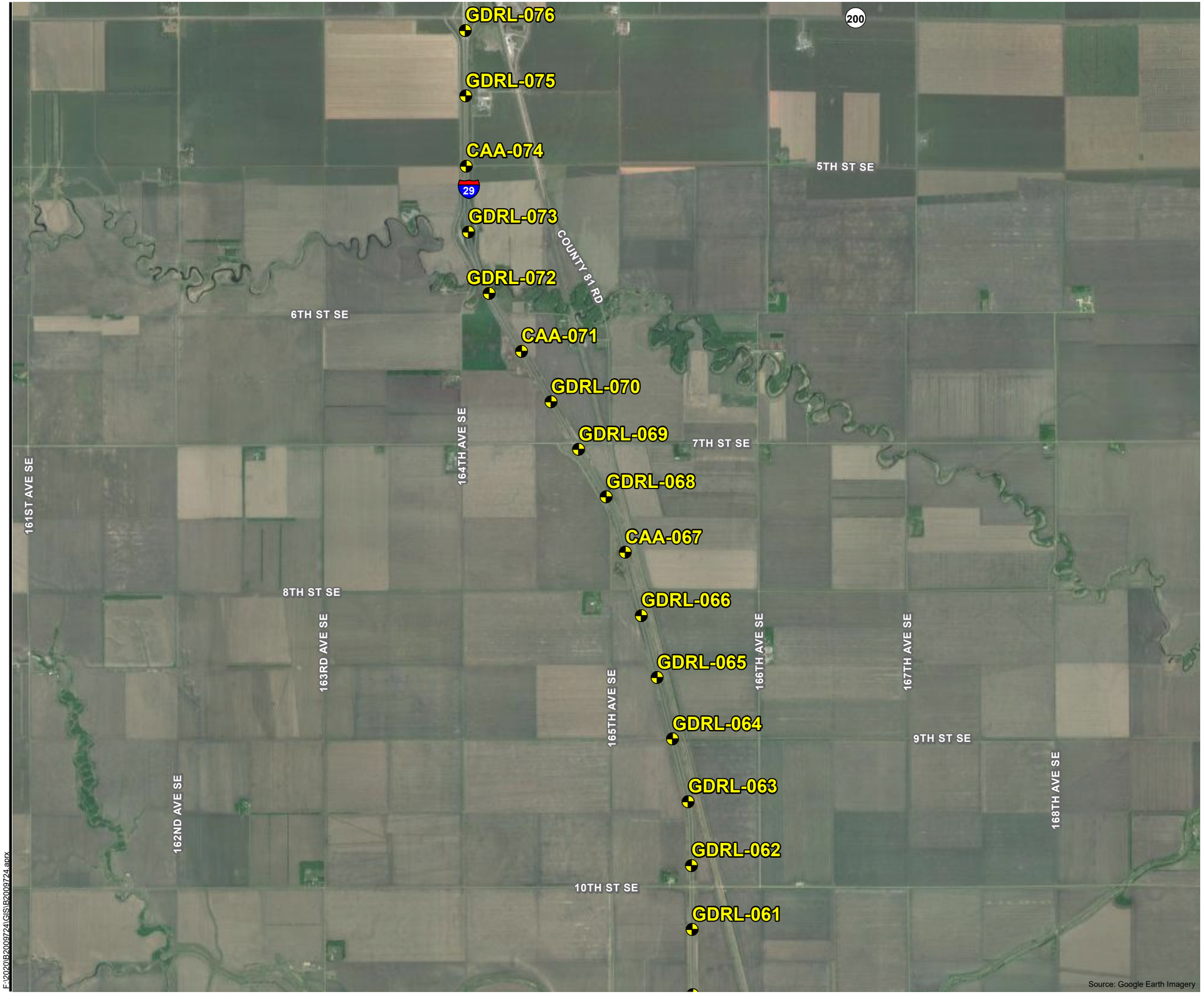
Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 6 of 11

Figure A-1

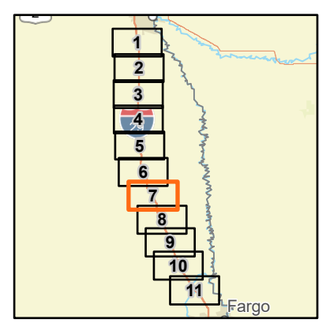


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8-029(200)069;
PCN 22888

Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 7 of 11

Figure A-1

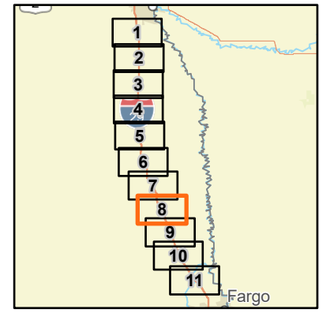


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Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 8 of 11

Figure A-1



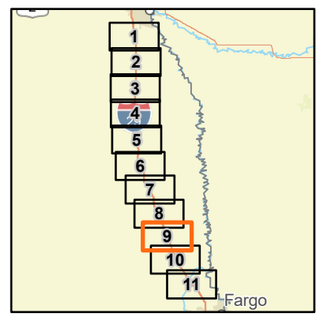
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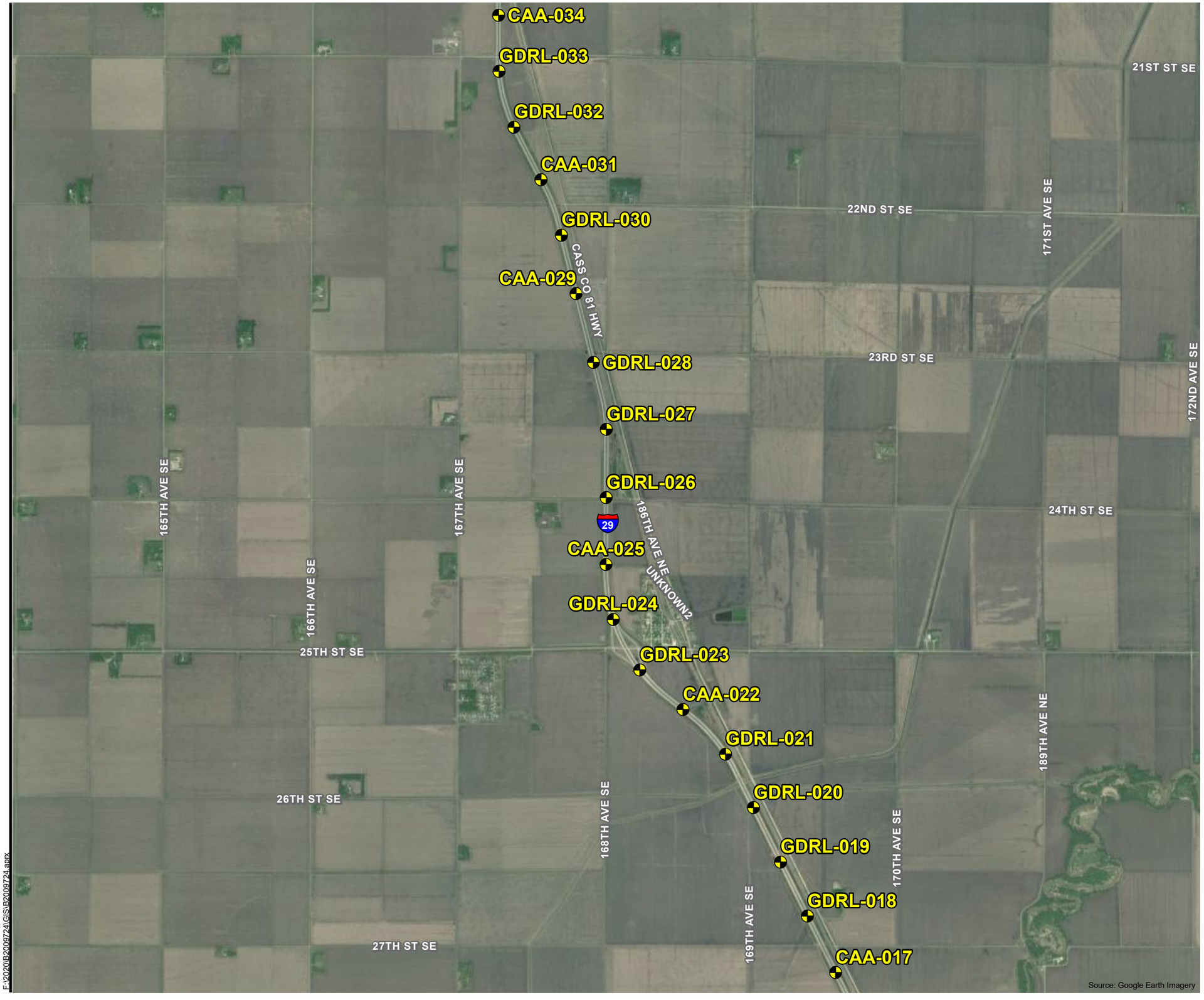
Interstate 29

Fargo, North Dakota

Boring Location Sketch

Sheet: 9 of 11

Figure A-1

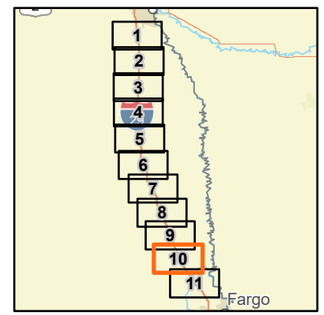


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Project Information

High Tension Median Guardrail
8-029(200)069;
PCN 22888

Interstate 29

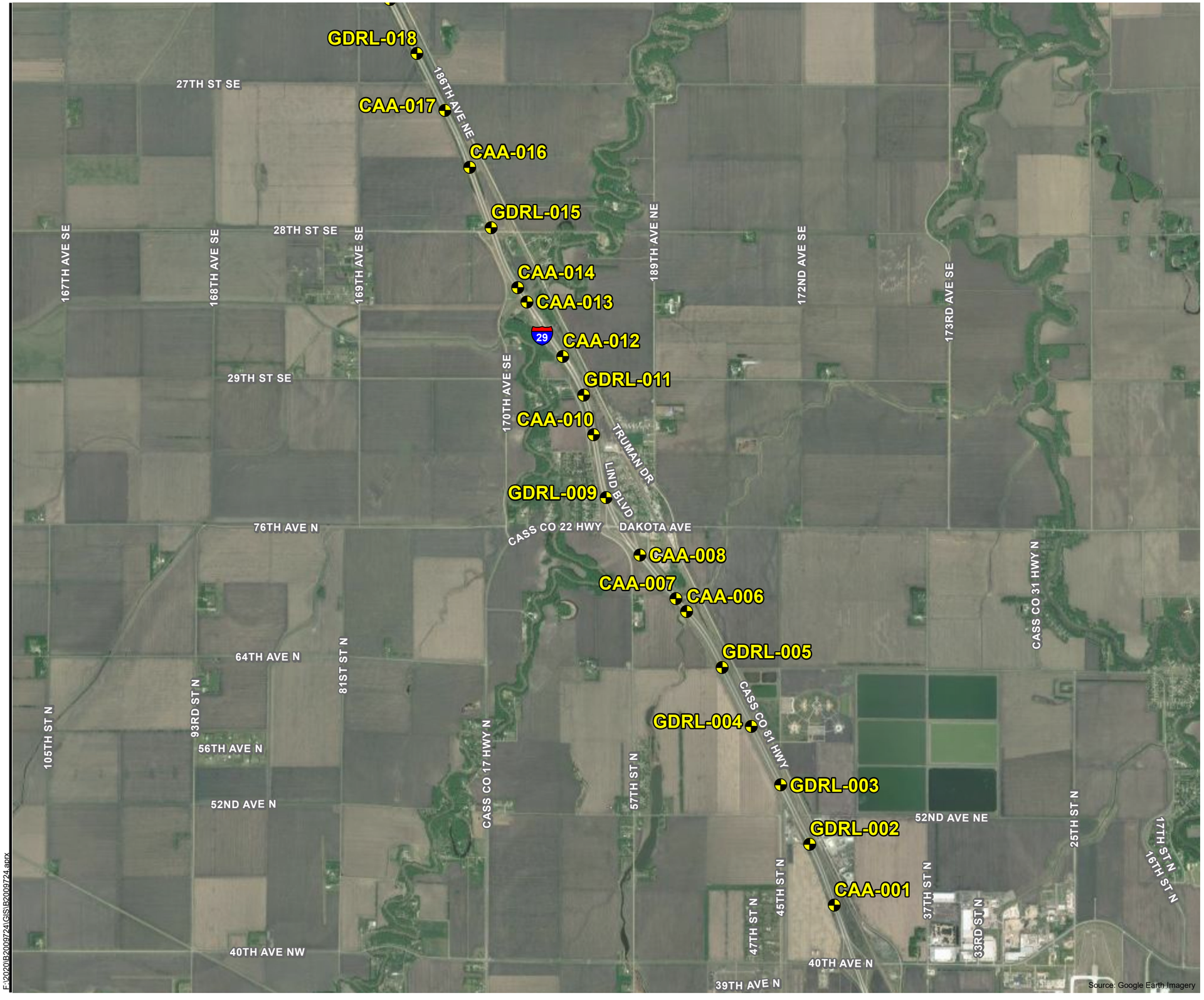
Fargo, North Dakota

Boring Location Sketch

Sheet: 10 of 11

Figure A-1

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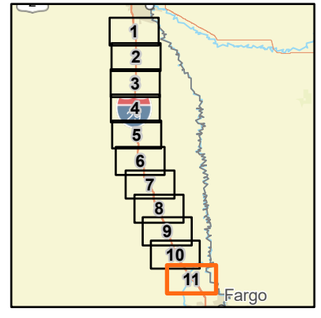


Approximate Location of Boring

N

0 2,500 5,000 Feet

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Drawing Information

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Drawing No: BoringLocationSketch

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Drawn Drawn:	3/1/2021
Checked By:	CCY
Last Modified:	3/1/2021

Project Information

High Tension Median Guardrail 8-029(200)069; PCN 22888

Interstate 29

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Boring Location Sketch

Sheet: 11 of 11

Figure A-1

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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-001**

LOCATION: See attached sketch

LATITUDE:	46.93987	LONGITUDE:	-96.85360
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/15/20	END DATE: 12/15/20
SURFACE ELEVATION: 892.5 ft	RIG: 7521	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
891.0		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		6-5-5 (10*) 18"		30	*Influenced by frost to 16 inches
1.5		FAT CLAY (CH), brown and gray, moist, soft to stiff					
		Iron oxide staining and Silt lenses from 5 to 18 feet	5	4-4-5 (9) 18"		35	LL=80, PL=30, PI=50 A-7-5
				TW 21"		44	DD=76 pcf WD=110 pcf
			10	2-2-2 (4) 18"		45	
			15	2-3-2 (5) 18"		46	LL=76, PL=27, PI=49 A-7-6
				TW 24"		35	DD=87 pcf WD=117 pcf
			20	2-3-4 (7) 18"		48	
871.5							
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: **GDRL-002**

LOCATION: See attached sketch

LATITUDE:	46.94590	LONGITUDE:	-96.85713
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/15/20	END DATE: 12/15/20
SURFACE ELEVATION: 890.8 ft	RIG: 7521	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
889.6		FAT CLAY (CH), trace roots, trace Sand, black, frozen (moist when thawed)		4-3-4 (7*) 18"		38	*Influenced by frost to 14 inches LL=81, PL=29, PI=52 A-7-6
1.2		FAT CLAY (CH), brown and gray, moist, medium					
		Iron oxide staining and Silt lenses below 5 feet	5	5-4-4 (8) 18"	0.75	50	
				TW 24"		51	
			10	2-2-3 (5) 18"	0.5	45	LL=59, PL=25, PI=34 A-7-6 Water not observed while drilling.
879.8							
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			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: **GDRL-003**

LOCATION: See attached sketch

LATITUDE:	46.95172	LONGITUDE:	-96.86133
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/15/20	END DATE:	12/15/20
SURFACE ELEVATION:	890.9 ft	RIG:	7521
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
889.9		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-4-5 (9*) 18"		32	*Influenced by frost to 14 inches
1.0		FAT CLAY (CH), with Silt lenses, brown and gray, moist, medium, iron oxide staining					
			5	4-3-3 (6) 0"			
				TW 22"		47	DD=73 pcf WD=107 pcf
			10	2-2-3 (5) 18"	0.75	39	
879.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-004**

LOCATION: See attached sketch

LATITUDE:	46.95752	LONGITUDE:	-96.86555
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/15/20	END DATE:	12/15/20
SURFACE ELEVATION:	888.0 ft	RIG:	7521
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
887.0		FAT CLAY (CH), trace Sand, trace Gravel, trace roots, black, frozen (moist when thawed)		5-4-4 (8*) 18"		26	*Influenced by frost to 14 inches LL=79, PL=35, PI=44 A-7-5
1.0		FAT CLAY (CH), trace mineralization, brown and gray, frozen (moist when thawed) to moist, soft to medium, iron oxide staining					
		Silt lenses from 5 to 10 feet	5	3-3-4 (7) 10"		44	
				TW 24"		54	
		Gray below 10 feet	10	1-2-2 (4) 18"		50	LL=74, PL=27, PI=47 A-7-6 Water not observed while drilling.
877.0							
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-005**

LOCATION: See attached sketch

LATITUDE:	46.96333	LONGITUDE:	-96.86976
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/15/20	END DATE:	12/15/20
SURFACE ELEVATION:	886.8 ft	RIG:	7521
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
885.8		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-4-4 (8*) 18"		33	*Influenced by frost to 14 inches
1.0		FAT CLAY (CH), brown and gray, frozen (moist when thawed) to moist, medium					
		With Silt lenses and iron oxide staining from 5 to 10 feet	5	2-2-3 (5) 18"	0.75	47	LL=83, PL=26, PI=57 A-7-6
				TW 23"		46	DD=76 pcf WD=111 pcf
			10	1-2-3 (5) 18"	0.5	43	
875.8							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-006**

LOCATION: See attached sketch

LATITUDE:	46.96880	LONGITUDE:	-96.87487
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/15/20	END DATE: 12/15/20
SURFACE ELEVATION: 888.8 ft	RIG: 7521	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
		FAT CLAY with SAND (CH), with Gravel, trace roots, dark gray and brown, frozen (moist when thawed) to moist, medium		4-3-4 (7*) 8"		40	*Influenced by frost to 14 inches LL=72, PL=25, PI=47 A-7-6
			5	3-3-4 (7) 18"		43	
879.8				TW 15"		34	DD=88 pcf WD=118 pcf
9.0		FAT CLAY (CH), black, moist, medium	10	2-3-3 (6) 18"	0.5	48	LL=95, PL=39, PI=56 A-7-5
875.8							
13.0		FAT CLAY (CH), brown and gray, moist, medium	15	2-2-4 (6) 18"	0.75	36	
				TW 16"		44	DD=76 pcf WD=109 pcf
867.8			20	1-2-3 (5) 18"	0.5	61	LL=98, PL=35, PI=63 A-7-5
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
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BORING: **CAA-007**

LOCATION: See attached sketch

LATITUDE:	46.97007	LONGITUDE:	-96.87641
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 889.2 ft	RIG: 7521	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
		FAT CLAY (CH), trace roots to 2 feet, black to gray and brown, frozen (moist when thawed) to moist, stiff		5-6-6 (12*) 18"		35	*Influenced by frost to 12 inches
			5	3-4-5 (9) 18"		32	LL=82, PL=30, PI=52 A-7-5
882.2 7.0		FAT CLAY (CH), brown and gray, moist, soft to medium, iron oxide staining *Silt lenses and iron oxide staining from 7 to 18 feet*		TW 15"		44	
			10	2-2-3 (5) 18"		47	
			15	3-3-3 (6) 18"		41	LL=75, PL=31, PI=44 A-7-5
				TW 24"		62	
868.2		*Gray below 20 feet*	20	1-2-2 (4) 18"		59	
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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Project Number B2009724
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BORING: **CAA-008**

LOCATION: See attached sketch

LATITUDE:	46.97438	LONGITUDE:	-96.88160
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 888.2 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Overcast, 20 mph S wind

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
887.2		FAT CLAY (CH), black, frozen (moist when thawed)		3-3-4 (7*) 18"		33	*Influenced by frost to 14 inches LL=76, PL=30, PI=46 A-7-5
1.0		FAT CLAY (CH), gray and brown, frozen (moist when thawed) to moist, medium					
			5	3-3-4 (7) 18"		34	
		Silt lenses from 8 to 16 feet		TW 20"		46	DD=75 pcf WD=110 pcf
			10	2-3 (5) 18"		48	LL=82, PL=29, PI=53 A-7-6
			15	1-3-2 (5) 18"		38	
		Gray below 19 feet		TW 17"		42	DD=78 pcf WD=112 pcf
			20	2-3-3 (6) 18"		63	LL=107, PL=35, PI=72 A-7-5 Water not observed while drilling.
867.2							
21.0		END OF BORING Boring then backfilled with auger cuttings					
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-009**

LOCATION: See attached sketch

LATITUDE:	46.98005	LONGITUDE:	-96.88646
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 890.8 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Overcast, 20 mph S wind

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
889.8		FAT CLAY (CH), black, frozen (moist when thawed)		4-4-5 (9*) 18"		31	*Influenced by frost to 14 inches
1.0		FAT CLAY (CH), gray and brown, frozen (moist when thawed) to moist, soft to medium					
		Silt lenses from 5 1/2 to 11 feet *Iron oxide staining from 5 1/2 to 10 feet*	5	3-2-4 (6) 3"	1	44	LL=90, PL=33, PI=57 A-7-5
				TW 23"		49	
			10	2-2-2 (4) 18"	0.5	41	
879.8							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-010**

LOCATION: See attached sketch

LATITUDE:	46.98624	LONGITUDE:	-96.88827
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 888.7 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass
WEATHER: Overcast, 20 mph S wind			

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
887.4		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		4-5-5 (10*) 16"		38	*Influenced by frost to 14 inches
1.3		FAT CLAY (CH), brown and gray, moist, soft to medium					LL=72, PL=39, PI=33 A-7-5
		Silt lenses from 5 1/2 to 11 feet	5	3-3-5 (8) 18"	1.5	33	
		Trace mineralization at 6 feet		TW 18"		37	DD=84 pcf WD=115 pcf
			10	4-4 (4) 2"	1.75	43	LL=90, PL=36, PI=54 A-7-5
			15	3-2-3 (5) 18"	<0.5	39	
				TW 18"		49	DD=71 pcf WD=107 pcf
867.7		*Gray below 20 feet*	20	2-3-3 (6) 18"		58	LL=93, PL=29, PI=64 A-7-6
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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BORING: **GDRL-011**

LOCATION: See attached sketch

LATITUDE:	46.99016	LONGITUDE:	-96.88969
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 888.4 ft	RIG: 7521	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
886.9		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		2-3-4 (7*) 18"		39	*Influenced by frost to 12 inches
1.5		FAT CLAY (CH), gray and brown, moist, medium					
			5	2-3-5 (8) 18"	2	29	LL=68, PL=40, PI=28 A-7-5
				TW 16"		42	
		Silt lenses and iron oxide staining at 10 1/2 feet	10	3-3-3 (6) 18"	1.25	44	
877.4							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-012**

LOCATION: See attached sketch

LATITUDE:	46.99397	LONGITUDE:	-96.89272
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/16/20	END DATE:	12/16/20
SURFACE ELEVATION:	888.7 ft	RIG:	7521
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
		FAT CLAY with SAND (CH), trace roots, gray and brown, frozen (moist when thawed) to moist, medium to stiff		5-3-7 (10*) 18"		22	*Influenced by frost to 14 inches LL=105, PL=37, PI=68 A-7-5
		Mineralization at 5 1/2 feet	5	3-5-6 (11) 18"		33	
				TW 12"		32	DD=90 pcf WD=118 pcf
			10	2-2-3 (5) 18"	1	29	LL=58, PL=26, PI=32 A-7-6
		Silt lenses below 15 1/2 feet	15	2-3-3 (6) 18"		37	
871.7							
17.0		LEAN CLAY (CL), little Sand, gray and brown, moist, medium		TW 16"		42	DD=81 pcf WD=115 pcf
		Mineralization at 20 feet	20	2-3-4 (7) 18"	1.25	54	LL=40, PL=21, PI=19 A-6
867.7							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-013**

LOCATION: See attached sketch

LATITUDE:	46.99934	LONGITUDE:	-96.89787
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/16/20	END DATE:	12/16/20
SURFACE ELEVATION:	889.3 ft	RIG:	7521
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
		FAT CLAY (CH), black, frozen (moist when thawed) to moist		3-7-9 (16*) 20"		31	*Influenced by frost to 14 inches
886.3 3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium to stiff, iron oxide staining					
		Little mineralization at 5 1/2 feet	5	3-4-5 (9) 18"		28	LL=57, PL=24, PI=33 A-7-6
				TW 16"		27	
		Silt lenses 10 1/2 to 16 feet	10	2-3-4 (7) 18"		29	
			15	2-3-3 (6) 18"		36	LL=76, PL=25, PI=51 A-7-6
				TW 16"		50	
868.3		*Gray below 20 1/2 feet*	20	2-3-3 (6) 18"		57	
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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Fargo, North Dakota

BORING: **CAA-014**

LOCATION: See attached sketch

LATITUDE:	47.00072	LONGITUDE:	-96.89920
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 886.7 ft	RIG: 7521	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
		FAT CLAY (CH), little Sand, trace roots, dark gray to gray, frozen (moist when thawed) to moist, stiff		4-5-5 (10*) 18"		28	*Influenced by frost to 12 inches LL=58, PL=20, PI=38 A-7-6
			5	3-4-5 (9) 18"		31	
879.7 7.0		FAT CLAY (CH), gray and brown, moist, medium to stiff, iron oxide staining		TW 17"		37	DD=84 pcf WD=115 pcf
			10	2-3-3 (6) 18"	1.25	39	LL=76, PL=27, PI=49 A-7-6
		Trace Silt lenses from 10 1/2 to 16 feet					
			15	3-4-4 (8) 18"	1.75	46	
		Gray below 15 1/2 feet		TW 24"		56	DD=68 pcf WD=105 pcf
			20	1-2-3 (5) 18"	1	54	LL=100, PL=31, PI=69 A-7-5 Water not observed while drilling.
865.7 21.0		END OF BORING Boring then backfilled with auger cuttings					
			25				
			30				

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Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-015**

LOCATION: See attached sketch

LATITUDE: 47.00666	LONGITUDE: -96.90303		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/16/20	END DATE: 12/16/20
SURFACE ELEVATION: 885.1 ft	RIG: 7521	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
		FAT CLAY (CH), trace roots, dark gray, frozen (moist when thawed)		1-3-3 (6*) 18"		34	*Influenced by frost to 12 inches
880.6 4.5		FAT CLAY (CH), Silt lenses, gray and brown, moist, medium to stiff, iron oxide staining	5	3-4-5 (9) 18"	2	32	
				TW 23"		38	
			10	2-3-4 (7) 18"		37	
874.1 11.0		*Trace Sand at 10 1/2 feet* END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-016**

LOCATION: See attached sketch

LATITUDE: 47.01259	LONGITUDE: -96.90614		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 884.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
		FAT CLAY (CH), dark gray, frozen (moist when thawed) to moist, soft to medium		2-3-4 (7*) 18"		33	*Influenced by frost to 12 inches LL=75, PL=24, PI=51 A-7-6
5		*Brown and gray below 5 1/2 feet*		3-3-4 (7) 18"		30	
				TW 16"		34	LL=81, PL=27, PI=54 DD=88 pcf WD=117 pcf A-7-6
10		*Silt lenses at 10 1/2 feet*		2-3-4 (7) 18"	1.5	37	
15		*Gray below 15 1/2 feet*		1-2-3 (5) 18"		59	
				TW 24"		54	LL=104, PL=37, PI=67 DD=68 pcf WD=106 pcf A-7-5
20				1-2-2 (4) 18"			
863.4 21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
25							
30							

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Fargo, North Dakota

BORING: **CAA-017**

LOCATION: See attached sketch

LATITUDE:	47.01822	LONGITUDE:	-96.90969
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/17/20	END DATE:	12/17/20
SURFACE ELEVATION:	886.8 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Foggy		

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
		FAT CLAY (CH), trace roots, trace Sand, dark gray, frozen (moist when thawed) to moist, stiff		5-5-4 (9*) 18"		31	*Influenced by frost to 12 inches
883.8 3.0		WELL-GRADED SAND with SILT and GRAVEL (SW-SM), brown, moist, medium dense	5	4-9-8 (17) 16"		9	Nonplastic A-1-b
879.8 7.0		FAT CLAY (CH), gray and brown, moist, soft to medium		TW 16"		32	
			10	2-3-4 (7) 18"	1	35	
			15	2-4-4 (8) 18"	1.25	43	
				TW 17"		58	
865.8			20	3-2-2 (4) 18"	<0.25	65	
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-018**

LOCATION: See attached sketch

LATITUDE:	47.02378	LONGITUDE:	-96.91374
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 884.0 ft	RIG: 7521	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
		FAT CLAY (CH), trace mineralization, black, frozen (moist when thawed) to moist, medium		2-2-3 (5*) 18"		38	*Influenced by frost to 10 inches LL=86, PL=31, PI=55 A-7-5
		Trace roots and Sand at 1 1/2 feet					
5		*Gray and brown below 5 1/2 feet*		2-3-3 (6) 18"		34	
				TW 17"		37	DD=84 pcf WD=115 pcf
10				2-3-5 (8) 18"		51	LL=106, PL=39, PI=67 A-7-5
873.0 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-019**

LOCATION: See attached sketch

LATITUDE:	47.02912	LONGITUDE:	-96.91762
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 883.2 ft	RIG: 7521	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
880.2		FAT CLAY (CH), trace roots, dark gray, frozen (moist when thawed) to moist, medium		2-2-3 (5*) 18"		35	*Influenced by frost to 10 inches
3.0		FAT CLAY (CH), gray and brown, moist, medium, iron oxide staining	5	2-3-4 (7) 18"		42	LL=101, PL=41, PI=60 A-7-5
				TW 24"		37	
872.2			10	1-3-3 (6) 18"		37	
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-020**

LOCATION: See attached sketch

LATITUDE:	47.03446	LONGITUDE:	-96.92151
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/17/20	END DATE:	12/17/20
SURFACE ELEVATION:	882.8 ft	RIG:	7521
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
		FAT CLAY with SAND (CH), trace roots, dark gray, frozen (moist when thawed) to moist, medium		3-4-4 (8*) 18"		32	*Influenced by frost to 10 inches LL=76, PL=27, PI=49 A-7-6
878.8 4.0		FAT CLAY (CH), gray and brown, moist, medium, iron oxide staining *Silt lenses at 5 1/2 feet*	5	3-3-4 (7) 18"		39	
				TW 20"		47	DD=74 pcf WD=109 pcf
871.8 11.0		*Gray below 10 1/2 feet* END OF BORING Boring then backfilled with auger cuttings	10	2-3-3 (6) 18"		47	LL=115, PL=38, PI=77 A-7-5 Water not observed while drilling.
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-021**

LOCATION: See attached sketch

LATITUDE:	47.03977	LONGITUDE:	-96.92553
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 882.8 ft	RIG: 7521	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
882.0		FAT CLAY (CH), trace roots, dark gray, frozen (moist when thawed)		3-3-4 (7*) 18"		34	*Influenced by frost to 6 inches
0.8		FAT CLAY with SAND (CH), gray and brown, moist, medium					
		Silt seams at 5 1/2 feet	5	3-3-4 (7) 18"		40	LL=70, PL=24, PI=46 A-7-6
				TW 17"		52	
			10	2-3-2 (5) 18"	0.75	61	
871.8							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-022**

LOCATION: See attached sketch

LATITUDE:	47.04410	LONGITUDE:	-96.93167		
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders	START DATE:	12/17/20
END DATE:	12/17/20				
SURFACE ELEVATION:	884.4 ft	RIG:	7521	METHOD:	3 1/4" HSA
SURFACING:	Grass	WEATHER:	Overcast, 20 mph S wind		

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
882.4		FAT CLAY (CH), trace roots, trace Sand, dark gray, frozen (moist when thawed) to moist, medium		3-4-3 (7*) 18"		34	*Influenced by frost to 12 inches LL=66, PL=26, PI=40 A-7-6
2.0		FAT CLAY (CH), gray and brown, moist, medium to stiff					
		Silt lenses at 5 feet	5	3-4-5 (9) 18"	1.5	36	
				TW 18"		40	DD=80 pcf WD=111 pcf
		Gray below 10 1/2 feet	10	2-3-4 (7) 18"	1.5	46	LL=120, PL=39, PI=81 A-7-5
			15	1-3-3 (6) 18"		53	
				TW 24"		55	DD=68 pcf WD=106 pcf
863.4			20	1-2-3 (5) 18"		55	LL=117, PL=37, PI=80 A-7-5
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-023**

LOCATION: See attached sketch

LATITUDE:	47.04801	LONGITUDE:	-96.93788
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/17/20	END DATE:	12/17/20
SURFACE ELEVATION:	884.3 ft	RIG:	7521
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
883.5		FAT CLAY (CH), trace roots, trace Sand, dark gray, frozen (moist when thawed)		4-4-4 (8*) 18"		37	*Influenced by frost to 8 inches
0.8		FAT CLAY (CH), brown and gray, moist, medium, iron oxide staining					
			5	2-3-4 (7) 18"	1	36	LL=93, PL=28, PI=65 A-7-6
		Silt lenses 5 1/2 to 7 1/2 feet		TW 19"		47	
			10	2-3-4 (7) 18"	1	50	
873.3							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-024**

LOCATION: See attached sketch

LATITUDE:	47.05300	LONGITUDE:	-96.94172
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 886.5 ft	RIG: 7521	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
885.2		FAT CLAY with SAND (CH), trace roots, trace Gravel, dark gray, frozen (moist when thawed)		4-4-4 (8*) 18"		20	*Influenced by frost to 12 inches
1.3		FAT CLAY (CH), trace Sand, gray and brown, moist, stiff					
			5	3-4-5 (9) 18"	1.5	33	
				TW 13"		37	LL=87, PL=32, PI=55 DD=84 pcf WD=105 pcf
		MIneralization at 10 1/2 feet	10	2-8-4 (12) 18"	1	44	LL=112, PL=34, PI=78 A-7-5
875.5							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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Fargo, North Dakota

BORING: **CAA-025**

LOCATION: See attached sketch

LATITUDE:	47.05841	LONGITUDE:	-96.94277
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/17/20	END DATE: 12/17/20
SURFACE ELEVATION: 885.3 ft	RIG: 7521	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
883.8		FAT CLAY (CH), trace roots, black, frozen (moist when thawed) to moist		3-3-4 (7*) 18"		35	*Influenced by frost to 8 inches
1.5		FAT CLAY (CH), gray and brown, moist, soft to stiff					
		Trace roots at 5 1/2 feet	5	4-4-5 (9) 18"	1.25	33	
				TW 14"		44	
			10	2-2-3 (5) 18"		52	
			15	1-1-3 (4) 18"	0.5	55	LL=109, PL=34, PI=75 A-7-5
				TW 24"		47	DD=75 pcf WD=110 pcf
			20	2-3-3 (6) 18"		46	
864.3							
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
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Fargo, North Dakota

BORING: **GDRL-026**

LOCATION: See attached sketch

LATITUDE:	47.06497	LONGITUDE:	-96.94273
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/17/20	END DATE:	12/17/20
SURFACE ELEVATION:	887.0 ft	RIG:	7521
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
885.7		FAT CLAY (CH), with Sand, trace roots, black, frozen (moist when thawed)		2-6-2 (8*) 18"		30	*Influenced by frost to 12 inches
1.3		FAT CLAY (CH), trace Sand, gray and brown, moist, medium					
		Trace roots at 5 1/2 feet	5	3-3-3 (6) 18"		32	
				TW 13"		35	DD=87 pcf WD=117 pcf
			10	2-3-4 (7) 18"	1.5	44	LL=105, PL=38, PI=67 A-7-5
876.0							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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

BORING: **GDRL-027**

LOCATION: See attached sketch

LATITUDE:	47.07168	LONGITUDE:	-96.94270
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/18/20	END DATE: 12/18/20
SURFACE ELEVATION: 884.2 ft	RIG: 7521	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
883.2		FAT CLAY (CH), trace Sand, and roots, black, frozen (moist when thawed)		2-3-4 (7*) 18"		38	*Influenced by frost to 8 inches
1.0		FAT CLAY (CH), brown and gray, moist, medium					
			5	3-3-4 (7) 18"		43	LL=119, PL=28, PI=91 A-7-5
				TW 24"		54	
			10	1-2-3 (5) 18"		47	
873.2							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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BORING: **GDRL-028**

LOCATION: See attached sketch

LATITUDE:	47.07826	LONGITUDE:	-96.94457
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/18/20	END DATE:	12/18/20
SURFACE ELEVATION:	885.4 ft	RIG:	7521
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
884.6		FAT CLAY (CH), trace Sand, and roots, black, frozen (moist when thawed)		3-5-4 (9*) 18"		36	*Influenced by frost to 10 inches LL=75, PL=24, PI=51 A-7-6
0.8		FAT CLAY (CH), brown and gray, moist, medium to stiff					
			5	3-6-5 (11) 18"		32	
				TW 15"		41	DD=79 pcf WD=111 pcf
			10	2-2-3 (5) 18"		53	LL=118, PL=29, PI=89 A-7-6
874.4							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **CAA-029**

LOCATION: See attached sketch

LATITUDE:	47.08503	LONGITUDE:	-99.94706
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/18/20	END DATE: 12/18/20
SURFACE ELEVATION: 885.4 ft	RIG: 7521	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
884.1		FAT CLAY (CH), trace Sand, and roots, black, frozen (moist when thawed)		3-3-4 (7*) 18"		36	*Influenced by frost to 14 inches
1.3		FAT CLAY (CH), gray and brown, moist, medium					
5				3-3-4 (7) 0"			
				TW 19"		51	DD=70 pcf WD=106 pcf
10				1-2-3 (5) 18"		57	LL=115, PL=29, PI=86 A-7-6
15				2-2-3 (5) 18"		47	LL=91, PL=27, PI=64 A-7-6
				TW 24"		48	DD=72 pcf WD=106 pcf
20				1-2-4 (6) 18"		48	
864.4							
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
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Fargo, North Dakota

BORING: **GDRL-030**

LOCATION: See attached sketch

LATITUDE:	47.09080	LONGITUDE:	-96.94919
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/18/20	END DATE:	12/18/20
SURFACE ELEVATION:	885.2 ft	RIG:	7521
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
883.7		FAT CLAY (CH), trace Sand, black, frozen (moist when thawed)		2-3-4 (7*) 18"		35	*Influenced by frost to 15 inches LL=75, PL=24, PI=51 A-7-6
1.5		FAT CLAY (CH), gray and brown, moist, soft to medium					
			5	4-3-4 (7) 18"		31	
				TW 14"		48	
			10	2-2-2 (4) 18"		58	LL=118, PL=28, PI=90 A-7-6
874.2							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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Fargo, North Dakota

BORING: **CAA-031**

LOCATION: See attached sketch

LATITUDE:	47.09624	LONGITUDE:	-96.95213
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/18/20	END DATE: 12/18/20
SURFACE ELEVATION: 884.6 ft	RIG: 7521	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
883.4		FAT CLAY (CH), trace Sand, black, frozen (moist when thawed)		3-3-5 (8*) 18"		29	*Influenced by frost to 10 inches
1.2		FAT CLAY (CH), brown and gray, moist, medium					
			5	2-2-4 (6) 10"		45	LL=119, PL=29, PI=90 A-7-6
				TW 23"		50	DD=72 pcf WD=107 pcf
			10	1-2-3 (5) 18"		49	
			15	2-3-3 (6) 18"		42	LL=89, PL=26, PI=63 A-7-6
				TW 23"		45	DD=75 pcf WD=109 pcf
			20	2-2-4 (6) 18"		58	
863.6							
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
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BORING: **GDRL-032**

LOCATION: See attached sketch

LATITUDE:	47.10142	LONGITUDE:	-96.95602
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/21/20	END DATE:	12/21/20
SURFACE ELEVATION:	886.1 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed) to moist, medium		4-4-4 (8*) 18"		33	*Influenced by frost to 10 inches LL=73, PL=29, PI=44 A-7-6
881.6 4.5		FAT CLAY (CH), little Sand, gray and brown, moist, medium	5	3-4-3 (7) 18"		31	
				TW 16"		52	
			10	2-3-2 (5) 18"		52	LL=107, PL=37, PI=70 A-7-5
875.1 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-033**

LOCATION: See attached sketch

LATITUDE:	47.10689	LONGITUDE:	-96.95816
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 886.1 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace roots, black to gray, frozen (moist when thawed) to moist, medium		3-4-4 (8*) 18"		37	*Influenced by frost to 10 inches
881.6 4.5		FAT CLAY (CH), little Sand, trace mineralization, gray and brown, moist	5	3-2-4 (6) 4"		39	
				TW 21"		52	LL=103, PL=37, PI=66 DD=67 pcf WD=102 pcf A-7-5
875.1 11.0		END OF BORING Boring then backfilled with auger cuttings	10	1-2-3 (5) 18"	0.75	48	Water not observed while drilling.
			15				
			20				
			25				
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-034**

LOCATION: See attached sketch

LATITUDE:	47.11240	LONGITUDE:	-96.95824
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 885.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace mineralization, trace roots, black to gray, frozen (moist when thawed) to moist, medium		4-4-3 (7*) 10"		32	*Influenced by frost to 8 inches
881.5 4.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium *Trace mineralization below 4 feet*	5	2-3-4 (7) 18"	0.75	50	
				TW 20"		52	
			10	2-2-3 (5) 18"	0.75	49	LL=108, PL=36, PI=72 A-7-5
		Iron oxide staining at 15 1/2 feet	15	1-2-3 (5) 18"	1	44	
				TW 23"		44	LL=82, PL=31, PI=51 DD=76 pcf WD=110 pcf A-7-5
864.5			20	2-2-4 (6) 18"			
21.0		END OF BORING Boring then backfilled with auger cuttings	25 30				Water not observed while drilling.

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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BORING: **GDRL-035**

LOCATION: See attached sketch

LATITUDE:	47.11888	LONGITUDE:	-96.95954
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/21/20	END DATE:	12/21/20
SURFACE ELEVATION:	886.0 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace roots, trace Gravel, trace mineralization, black to brown, frozen (moist when thawed) to moist, medium		4-3-4 (7*) 11"		28	*Influenced by frost to 11 inches
882.0 4.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium *Mineralization below 4 feet*	5	2-3-4 (7) 18"	1.5	45	LL=101, PL=36, PI=65 A-7-5
				TW 21"		50	DD=71 pcf WD=107 pcf
875.0 11.0		*Iron oxide staining at 10 1/2 feet* END OF BORING	10	2-2-3 (5) 18"	0.5	49	Water not observed while drilling.
		Boring then backfilled with auger cuttings	15				
			20				
			25				
			30				

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BORING: **GDRL-036**

LOCATION: See attached sketch

LATITUDE: 47.12540	LONGITUDE: -96.96195		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 886.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), with Sand, trace roots, black to gray, frozen (moist when thawed) to moist		4-8-9 (17*) 8"		25	*Influenced by frost to 8 inches
			5	2-3-4 (7) 11"	1.25	35	
879.5 7.0		FAT CLAY (CH), brown, moist, medium, iron oxide staining		TW 20"		51	
			10	2-2-3 (5) 18"		46	
875.5 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-037**

LOCATION: See attached sketch

LATITUDE:	47.13192	LONGITUDE:	-96.96436
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 886.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), black to gray, frozen (moist when thawed) to moist		3-3-3 (6*) 18"		32	*Influenced by frost to 10 inches
882.0 4.5		FAT CLAY (CH), trace mineralization, gray and brown, moist, medium, iron oxide staining	5	2-3-4 (7) 9"		37	LL=104, PL=37, PI=67 A-7-5
				TW 19"		47	DD=76 pcf WD=112 pcf
			10	2-2-3 (5) 18"		40	
875.5 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-038**

LOCATION: See attached sketch

LATITUDE:	47.13844	LONGITUDE:	-96.96677
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/21/20	END DATE:	12/21/20
SURFACE ELEVATION:	886.4 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace roots, trace Sand, dark gray to brown, frozen (moist when thawed) to moist, stiff to medium *Slightly organic odor at 1 1/2 feet*		3-5-5 (10*) 18"		29	*Influenced by frost to 18 inches LL=84, PL=28, PI=56 A-7-6
			5	3-3-4 (7) 18"		38	
879.4 7.0		FAT CLAY (CH), little mineralization, brown, moist, medium		TW 24"		53	
			10	1-3-2 (5) 18"	0.5	49	LL=118, PL=37, PI=81 A-7-5
875.4 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-039**

LOCATION: See attached sketch

LATITUDE:	47.14495	LONGITUDE:	-96.97040
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/22/20	END DATE:	12/22/20
SURFACE ELEVATION:	885.9 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
884.4		FAT CLAY (CH), trace roots, black, frozen (moist when thawed) to moist		3-3-3 (6*) 18"		34	*Influenced by frost to 10 inches
1.5		FAT CLAY (CH), trace Sand, gray and brown, moist, medium					
		Mineralization from 5 to 11 feet *Iron oxide staining at 5 1/2 feet*	5	3-3-4 (7) 18"	1.25	51	LL=93, PL=33, PI=60 A-7-5
				TW 20"		42	DD=79 pcf WD=111 pcf
			10	2-3-3 (6) 18"		42	
			15	1-3-3 (6) 18"	1.25	48	
				TW 24"		41	DD=80 pcf WD=113 pcf
			20	1-3-3 (6) 18"		49	
864.9							
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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Project Number B2009724
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BORING: **GDRL-040**

LOCATION: See attached sketch

LATITUDE:	47.15066	LONGITUDE:	-96.97411
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/22/20	END DATE:	12/22/20
SURFACE ELEVATION:	886.8 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace roots, dark gray, frozen (moist when thawed) to moist, organic odor		3-2-4 (6*) 18"		37	*Influenced by frost to 10 inches LL=91, PL=35, PI=56 A-7-5
			5	2-3-3 (6) 1"		37	
880.8							
6.0		FAT CLAY (CH), trace mineralization, brown, moist, medium, iron oxide staining		TW 22"		48	
			10	2-3-3 (6) 18"	0.75		
875.8							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-041**

LOCATION: See attached sketch

LATITUDE:	47.15641	LONGITUDE:	-96.97530
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/22/20	END DATE:	12/22/20
SURFACE ELEVATION:	889.5 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY with SAND (CH), trace roots, trace rock fragments, brown, frozen (moist when thawed) to moist, medium		8-3-4 (7*) 18"		32	*Influenced by frost to 10 inches
883.5			5	4-3-4 (7) 6"		35	
6.0		FAT CLAY (CH), gray and brown, moist, medium *Trace mineralization and iron oxide staining from 8 to 18 feet*		TW 21"		44	DD=77 pcf WD=111 pcf
			10	1-3-3 (6) 18"	1.5	44	
			15	2-2-3 (5) 18"	1.5	46	LL=84, PL=34, PI=50 A-7-5
				TW 24"		44	DD=76 pcf WD=109 pcf
868.5			20	2-3-4 (7) 18"	1.25	49	
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-042**

LOCATION: See attached sketch

LATITUDE: 47.16115 LONGITUDE: -96.97540

DRILLER: L. Smillie LOGGED BY: T. Sanders START DATE: 12/22/20 END DATE: 12/22/20

SURFACE ELEVATION: 889.3 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Partly cloudy

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
		FAT CLAY (CH), little roots, trace Sand, gray and brown, frozen (moist when thawed) to moist *Driller noted Gravel Clay mixture from 0 to 1 1/2 feet*		3-3-4 (7*) 18"		35	*Influenced by frost to 10 inches
883.3			5	2-3-3 (6) 1"		34	
6.0		FAT CLAY (CH), gray and brown, moist, medium		TW 21"		47	
878.3			10	2-3-4 (7) 18"		40	LL=88, PL=34, PI=54 A-7-5 Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-043**

LOCATION: See attached sketch

LATITUDE:	47.16626	LONGITUDE:	-96.97705
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 887.3 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Winter

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
		FAT CLAY (CH), black to gray, frozen (moist when thawed) to moist, medium		3-3-3 (6*) 18"		34	*Influenced by frost to 11 inches
			5	3-2-4 (6) 0"			
880.3 7.0		FAT CLAY (CH), light brown, moist, soft to medium, iron oxide staining		TW 17"		45	DD=75 pcf WD=109 pcf
		Trace mineralization from 9 to 15 1/2 feet	10	2-3-4 (7) 18"	1.25	39	
			15	2-2-4 (6) 18"	1.25	48	
		Gray and brown below 15 1/2 feet		TW 24"		52	DD=70 pcf WD=106 pcf
866.3			20	1-2-2 (4) 18"		50	
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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BORING: **GDRL-044**

LOCATION: See attached sketch

LATITUDE:	47.17248	LONGITUDE:	-96.97935
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	12/22/20	END DATE:	12/22/20
SURFACE ELEVATION:	888.8 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Winter		

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
887.8		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed) to moist		3-4-5 (9*) 13"		29	*Influenced by frost to 10 inches
1.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium to stiff					
		Iron oxide staining below 5 1/2 feet	5	2-3-3 (6) 14"	1.5	40	
				TW 18"		45	LL=94, PL=34, PI=60 DD=42 pcf WD=104 pcf A-7-5
		Mineralization at 10 1/2 feet	10	2-3-3 (6) 18"		38	LL=74, PL=28, PI=46 A-7-6
877.8							Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-045**
LOCATION: See attached sketch
LATITUDE: 47.17838 LONGITUDE: -96.98226
DRILLER: L. Smillie LOGGED BY: T. Sanders START DATE: 12/22/20 END DATE: 12/22/20
SURFACE ELEVATION: 889.0 ft RIG: 7521 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace roots, trace Sand, black to gray, frozen (moist when thawed) to moist, medium		2-3-3 (6*) 12"		37	*Influenced by frost to 10 inches
885.0 4.0		FAT CLAY (CH), little Sand, gray and brown, moist, medium to stiff *Mineralization and iron oxide staining below 4 feet*	5	3-3-5 (8) 15"	1.5	34	LL=74, PL=25, PI=49 A-7-6
				TW 23"		44	
878.0 11.0		END OF BORING Boring then backfilled with auger cuttings	10	2-2-3 (5) 18"	1	39	Water not observed while drilling.
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-046**

LOCATION: See attached sketch

LATITUDE:	47.18423	LONGITUDE:	-96.98540
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 889.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace Sand, black to gray, frozen (moist when thawed) to moist, medium		2-3-4 (7*) 18"		31	*Influenced by frost to 10 inches LL=71, PL=24, PI=47 A-7-6
885.4 4.0		FAT CLAY (CH), gray and brown, moist, medium *Mineralization at 5 1/2 feet*	5	2-3-3 (6) 13"	1.25	40	
				TW 19"		46	DD=75 pcf WD=110 pcf
878.4 11.0		*Iron oxide staining at 10 1/2 feet* END OF BORING Boring then backfilled with auger cuttings	10	2-3-4 (7) 18"	1.25	43	LL=82, PL=28, PI=54 A-7-6 Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-047**

LOCATION: See attached sketch

LATITUDE:	47.19020	LONGITUDE:	-96.98860
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 890.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
889.6		FAT CLAY (CH), trace roots, black to gray, frozen (moist when thawed)		2-3-3 (6*) 12"		31	*Influenced by frost to 10 inches
0.8		FAT CLAY (CH), trace Sand, gray and brown, moist, medium					
		Mineralization at 5 1/2 feet	5	2-3-4 (7) 18"	1	42	LL=91, PL=29, PI=62 A-7-6
				TW 24"		43	
			10	2-3-5 (8) 10"	1.25	40	
		Iron oxide staining below 15 1/2 feet	15	2-3-3 (6) 18"	0.75	43	LL=73, PL=27, PI=46 A-7-6
				TW 24"		51	DD=74 pcf WD=111 pcf
			20	1-3-3 (6) 18"		40	
869.4							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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Fargo, North Dakota

BORING: **GDRL-048**

LOCATION: See attached sketch

LATITUDE:	47.19445	LONGITUDE:	-96.99006
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 890.7 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
889.9		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-5-5 (10*) 18"		31	*Influenced by frost to 10 inches LL=68, PL=30, PI=38 A-7-5
0.8		FAT CLAY (CH), trace Sand, gray, moist, medium to stiff					
		Mineralization at 5 1/2 feet	5	2-3-4 (7) 18"	1.25	41	
		Iron oxide staining below 5 1/2 feet		TW 17"		43	LL=86, PL=28, PI=58 DD=78 pcf WD=112 pcf A-7-6
879.7			10	1-2-4 (6) 18"		39	LL=77, PL=30, PI=47 A-7-5
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-049**

LOCATION: See attached sketch

LATITUDE:	47.19854	LONGITUDE:	-96.99008
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 890.8 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
890.3							
0.5		FAT CLAY (CH), black, frozen (moist when thawed)		2-3-3 (6*) 16"		38	*Influenced by frost to 12 inches
		FAT CLAY (CH), trace Sand, trace roots, gray, frozen (moist when thawed) to moist, medium					
			5	2-3-5 (8) 18"	0.5	37	LL=88, PL=34, PI=54 A-7-5
		Mineralization from 5 1/2 to 10 1/2 feet		TW 20"		45	DD=78 pcf WD=113 pcf
			10	2-2-3 (5) 18"	0.75	41	
		Iron oxide staining below 10 1/2 feet					
			15	2-3-4 (7) 18"		47	LL=86, PL=32, PI=54 A-7-5
				TW 24"		48	DD=76 pcf WD=113 pcf
			20	1-2-3 (5) 18"		59	
869.8							
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
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BORING: **GDRL-050**

LOCATION: See attached sketch

LATITUDE:	47.20468	LONGITUDE:	-96.99129
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 890.9 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
889.9		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		4-4-4 (8*) 11"			*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium				34	LL=66, PL=29, PI=37 A-7-6
			5	3-3-5 (8) 16"	1	34	
				TW 15"		51	
		Trace mineralization and iron oxide staining at 10 1/2 feet	10	2-3-3 (6) 18"		41	LL=77, PL=28, PI=49 A-7-6
879.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-051**

LOCATION: See attached sketch

LATITUDE:	47.21089	LONGITUDE:	-96.99358
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 890.6 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
889.8		FAT CLAY (CH), black, frozen (moist when thawed)		4-5-5 (10*) 15"		35	*Influenced by frost to 10 inches
0.8		FAT CLAY (CH), trace Sand, gray and brown, moist, medium to stiff					
		Trace mineralization and iron oxide staining below 5 1/2 feet	5	3-4-5 (9) 16"	1.5	35	LL=77, PL=32, PI=45 A-7-5
				TW 18"		50	DD=76 pcf WD=114 pcf
			10	1-2-3 (5) 18"	0.5	51	
879.6							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	15				
			20				
			25				
			30				

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Project Number B2009724
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BORING: **GDRL-052**

LOCATION: See attached sketch

LATITUDE:	47.21709	LONGITUDE:	-96.99588
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 889.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
888.6		FAT CLAY (CH), black, frozen (moist when thawed)		3-4-4 (8*) 16"			*Influenced by frost to 11 inches
0.9		FAT CLAY (CH), trace Sand, gray, moist, medium				33	LL=82, PL=27, PI=55 A-7-6
			5	3-3-4 (7) 16"	1.5	42	
				TW 21"		50	
		Trace mineralization at 10 1/2 feet	10	1-2-3 (5) 18"	0.5	48	LL=93, PL=35, PI=58 A-7-5
878.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-053**

LOCATION: See attached sketch

LATITUDE:	47.22321	LONGITUDE:	-96.99858
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	12/21/20	END DATE:	12/21/20
SURFACE ELEVATION:	890.3 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
889.2		FAT CLAY (CH), black, frozen (moist when thawed)		3-5-5 (10*) 18"		36	*Influenced by frost to 13 inches
1.1		FAT CLAY (CH), trace roots, gray, moist, medium to stiff					
			5	2-4-6 (10) 18"		39	LL=78, PL=30, PI=48 A-7-5
		Gray and brown and iron oxide staining below 5 1/2 feet		TW 20"		43	DD=80 pcf WD=114 pcf
			10	2-2-3 (5) 18"		40	
879.3							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-054**

LOCATION: See attached sketch

LATITUDE:	47.22891	LONGITUDE:	-97.00361
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 891.3 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
890.8							
0.5		FAT CLAY (CH), black, frozen (moist when thawed)		3-3-3 (6*) 18"		30	*Influenced by frost to 12 inches LL=74, PL=30, PI=44 A-7-5
		FAT CLAY (CH), trace Sand, gray, frozen (moist when thawed) to moist, medium *Trace roots at 1 foot*					
5		*Iron oxide staining below 5 1/2 feet*		2-3-3 (6) 18"	1	35	
				TW 21"			
10				1-3-3 (6) 18"		41	LL=73, PL=30, PI=43 A-7-5
15				2-2-4 (6) 18"		45	
				TW 24"		40	DD=81 pcf WD=114 pcf
20				2-3-4 (7) 18"		38	LL=62, PL=29, PI=33 A-7-6
870.3							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
25							
30							

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BORING: **GDRL-055**

LOCATION: See attached sketch

LATITUDE:	47.23440	LONGITUDE:	-97.00790
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 893.2 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 30°

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
		FAT CLAY (CH), trace roots, black to gray, frozen (moist when thawed) to moist, medium		3-4-4 (8*) 17"		25	*Influenced by frost to 16 inches
889.2 4.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium *Iron oxide staining below 5 1/2 feet*	5	2-2-3 (5) 18"		34	LL=60, PL=28, PI=32 A-7-6
				TW 20"		45	DD=75 pcf WD=110 pcf
882.2 11.0		END OF BORING Boring then backfilled with auger cuttings	10	2-2-3 (5) 18"	0.75	43	Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-056**

LOCATION: See attached sketch

LATITUDE:	47.23999	LONGITUDE:	-97.01090
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/21/20	END DATE: 12/21/20
SURFACE ELEVATION: 893.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 30°

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
892.9		FAT CLAY (CH), black		3-3-4			*Influenced by frost to 12 inches
0.5		FAT CLAY (CH), trace Sand, gray and brown, moist, medium		(7*) 17"		34	LL=71, PL=27, PI=44 A-7-6
				3-3-3			
5		*Trace mineralization and iron oxide staining below 5 1/2 feet*		(6) 18"	1.25	40	
				TW 19"		49	
10				2-2-3 (5) 18"		41	LL=80, PL=30, PI=50 A-7-5
882.4							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
15							
20							
25							
30							

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BORING: **CAA-057**

LOCATION: See attached sketch

LATITUDE:	47.24563	LONGITUDE:	-97.01390
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE:	12/21/20
END DATE:	12/21/20		
SURFACE ELEVATION: 896.0 ft	RIG: 7520	METHOD: 3 1/4" HSA	
SURFACING:	Grass	WEATHER:	Partly cloudy, 30°

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
		FAT CLAY with SAND (CH), brown, frozen (moist when thawed) to moist, medium to stiff		6-5-6 (11*) 14"		35	*Influenced by frost to 12 inches
			5	4-4-5 (9) 3"		23	LL=68, PL=27, PI=41 A-7-6
				TW 17"		37	DD=83 pcf WD=114 pcf
			10	2-3-4 (7) 17"		33	
		Trace Sand and roots at 15 1/2 feet	15	6-8-8 (16) 18"		33	LL=66, PL=34, PI=32 A-7-5
				TW 17"		58	DD=65 pcf WD=103 pcf
			20	2-3-3 (6) 18"		35	
875.0							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **CAA-058**

LOCATION: See attached sketch

LATITUDE:	47.24713	LONGITUDE:	-97.01470
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE:	12/22/20
END DATE:	12/22/20		
SURFACE ELEVATION: 893.6 ft	RIG: 7520	METHOD: 3 1/4" HSA	
SURFACING: Grass	WEATHER: Partly cloudy, 30°		

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
		FAT CLAY (CH), little Sand, trace roots, black to brown, frozen (moist when thawed) to moist, stiff		7-8-8 (16*) 8"		22	*Influenced by frost to 12 inches LL=65, PL=26, PI=39 A-7-6
887.6			5	4-5-6 (11) 8"		23	
6.0		FAT CLAY (CH), little Sand, gray and brown, moist, soft to stiff		TW 18"		34	
			10	1-2-3 (5) 18"	0.75	28	LL=61, PL=22, PI=39 A-7-6
		Mineralization at 15 1/2 feet	15	2-4-7 (11) 18"		28	
				TW 24"		54	
872.6			20	0-1-2 (3) 18"	<0.25	55	LL=95, PL=31, PI=64 A-7-5
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-059**

LOCATION: See attached sketch

LATITUDE: 47.25191	LONGITUDE: -97.01680		
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 895.9 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 30°

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
895.1		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		4-5-5 (10*) 4"		28	*Influenced by frost to 10 inches
0.8		FAT CLAY (CH), trace Sand, brown, moist, medium to stiff					
		Iron oxide staining at 5 1/2 feet		3-4-5 (9) 10"	0.75	41	LL=86, PL=26, PI=60 A-7-6
		Mineralization below 5 1/2 feet		TW 20"		45	DD=76 pcf WD=110 pcf
				2-3-3 (6) 18"	1	41	
884.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **CAA-060**

LOCATION: See attached sketch

LATITUDE:	47.25722	LONGITUDE:	-97.01720
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE:	12/22/20
END DATE:	12/22/20		
SURFACE ELEVATION: 895.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	
SURFACING:	Grass	WEATHER:	Partly cloudy, 30°

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
894.4		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed)		5-4-4 (8*) 14"		33	*Influenced by frost to 12 inches LL=66, PL=27, PI=39 A-7-6
1.5		FAT CLAY (CH), gray and brown, moist, soft to medium					
		Iron oxide staining from 5 1/2 to 10 1/2 feet	5	2-3-3 (6) 16"		36	
				TW 19"		51	
		Mineralization at 10 1/2 feet	10	2-2-2 (4) 18"		47	LL=86, PL=29, PI=57 A-7-6
			15	2-2-2 (4) 18"	1	53	
				TW 24"		48	DD=76 pcf WD=111 pcf
874.8			20	1-1-2 (3) 18"	0.5	54	LL=95, PL=31, PI=64 A-7-5
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-061**

LOCATION: See attached sketch

LATITUDE:	47.26363	LONGITUDE:	-97.01726
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 893.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
893.4							
0.5		FAT CLAY (CH), black, frozen (moist when thawed)		3-4-6 (10*) 12"		36	*Influenced by frost to 6 inches
		FAT CLAY (CH), gray, moist, medium to stiff *Trace roots at 1 foot*					
5		*Gray and brown below 5 1/2 feet*		2-3-4 (7) 16"	1	32	LL=76, PL=26, PI=50 A-7-6
				TW 21"		42	
10				1-3-3 (6) 18"		41	
882.8		*Mineralization at 10 1/2 feet*					
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
15							
20							
25							
30							

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BORING: **GDRL-062**

LOCATION: See attached sketch

LATITUDE:	47.26991	LONGITUDE:	-97.01736
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 893.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
892.8							
0.6		FAT CLAY (CH), brown, frozen (moist when thawed)		2-3-3 (6*) 14"	0.5	32	*Influenced by frost to 6 inches LL=60, PL=26, PI=34 A-7-6
		FAT CLAY (CH), trace Sand, gray and brown, moist, medium					
		Iron oxide staining from 5 1/2 to 10 1/2 feet	5	2-3-4 (7) 16"		36	
				TW 22"		42	DD=79 pcf WD=112 pcf
			10	2-2-4 (6) 16"	1.25	36	LL=76, PL=38, PI=38 A-7-5
882.4		*Mineralization at 10 1/2 feet*					
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-063**

LOCATION: See attached sketch

LATITUDE:	47.27616	LONGITUDE:	-97.01784
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 893.0 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
891.5		FAT CLAY (CH), black, frozen (moist when thawed)		3-4-4 (8*) 16"		36	*Influenced by frost to 18 inches
1.5		FAT CLAY (CH), gray and brown, moist, medium					
			5	2-3-4 (7) 14"	1	37	LL=89, PL=30, PI=59 A-7-5
				TW 24"		40	
		Iron oxide staining at 10 1/2 feet	10	2-2-4 (6) 18"		41	
882.0							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-064**

LOCATION: See attached sketch

LATITUDE:	47.28230	LONGITUDE:	-97.02008
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 894.6 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
893.4		FAT CLAY (CH), trace roots, black, frozen (moist when thawed) to moist		3-4-5 (9*) 17"		31	*Influenced by frost to 12 inches LL=75, PL=23, PI=52 A-7-6
1.2		FAT CLAY (CH), trace Sand, gray and brown, moist, medium to stiff					
			5	4-5-6 (11) 12"		36	
				TW 24"		39	DD=82 pcf WD=114 pcf
		Iron oxide staining and mineralization at 10 1/2 feet	10	2-3-4 (7) 18"		38	LL=80, PL=29, PI=51 A-7-6
883.6							Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-065**

LOCATION: See attached sketch

LATITUDE:	47.28833	LONGITUDE:	-97.02230
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 893.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
892.3		FAT CLAY (CH), trace roots, black, frozen (moist when thawed), stiff		2-4-5 (9*) 16"		32	*Influenced by frost to 18 inches
1.5		FAT CLAY (CH), trace Sand, gray, moist, medium					
			5	2-3-3 (6) 16"		34	LL=73, PL=22, PI=51 A-7-6
				TW 18"		39	
		Iron oxide staining at 10 1/2 feet	10	2-4-4 (8) 18"	1.5	42	
882.8							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-066**

LOCATION: See attached sketch

LATITUDE:	47.29441	LONGITUDE:	-97.02458
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 894.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace Sand, trace roots, black to gray, frozen (moist when thawed) to moist		3-3-4 (7*) 12"		35	*Influenced by frost to 12 inches LL=64, PL=25, PI=39 A-7-6
890.4 4.0		FAT CLAY (CH), trace mineralization, gray and brown, moist, medium, iron oxide staining	5	2-3-5 (8) 17"	1.25	39	
				TW 19"		42	DD=78 pcf WD=111 pcf
883.4 11.0		END OF BORING Boring then backfilled with auger cuttings	10	2-3-3 (6) 18"	1	37	LL=74, PL=26, PI=48 A-7-6 Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-067**

LOCATION: See attached sketch

LATITUDE:	47.30061	LONGITUDE:	-97.02688
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 12/22/20	END DATE: 12/22/20
SURFACE ELEVATION: 895.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace roots, black, frozen (moist when thawed) to moist, medium to stiff		5-5-5 (10*) 10"		27	*Influenced by frost to 16 inches
		Trace Sand and Gravel at 1 1/2 feet					
				2-3-4 (7) 12"		37	LL=78, PL=28, PI=50 A-7-6
890.4 5.5		FAT CLAY (CH), trace Sand, gray and brown, moist, medium	5				
				TW 19"		38	
		Mineralization at 9 1/2 feet		3-3-4 (7) 18"	1	43	
		Iron oxide staining at 10 1/2 feet	10				
			15	2-3-3 (6) 18"		45	LL=96, PL=28, PI=68 A-7-6
				TW 26"		35	DD=86 pcf WD=117 pcf
			20	1-2-3 (5) 18"	0.5	51	
874.8 21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-068**

LOCATION: See attached sketch

LATITUDE: 47.30604 LONGITUDE: -97.02963

DRILLER: D. Nash LOGGED BY: T. Sanders START DATE: 12/22/20 END DATE: 12/22/20

SURFACE ELEVATION: 895.8 ft RIG: 7520 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Partly cloudy

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
		FAT CLAY (CH), little Sand, trace roots, black to gray, frozen (moist when thawed) to moist, medium *Organic odor at 1 1/2 feet*		3-3-4 (7*) 10"		30	*Influenced by frost to 16 inches LL=60, PL=21, PI=39 A-7-6
889.8			5	2-3-4 (7) 12"	0.5	36	
6.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium		TW 13"		42	
884.8		*Iron oxide staining and trace mineralization at 10 1/2 feet*	10	2-3-4 (7) 18"	1	36	LL=76, PL=27, PI=49 A-7-6
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-069**

LOCATION: See attached sketch

LATITUDE: 47.31070	LONGITUDE: -97.03360		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/28/20	END DATE: 12/28/20
SURFACE ELEVATION: 895.9 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), black to dark gray, frozen (moist when thawed) to moist, stiff		6-7-8 (15*) 18"		24	*Influenced by frost to 24 inches LL=60, PL=26, PI=34 A-7-6
890.4			5	3-3-6 (9) 18"		32	
5.5		FAT CLAY (CH), black to gray and brown, moist, medium *Buried Topsoil at 5 1/2 feet*		TW 24"		45	DD=76 pcf WD=110 pcf
884.9		*Iron oxide staining at 10 1/2 feet*	10	3-3-3 (6) 18"	1.5	39	LL=82, PL=35, PI=47 A-7-5
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-070**

LOCATION: See attached sketch

LATITUDE: 47.31534	LONGITUDE: -97.03759		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/28/20	END DATE: 12/28/20
SURFACE ELEVATION: 895.0 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
893.2		FAT CLAY (CH), trace roots, black to dark gray, frozen (moist when thawed), soft		2-2-2 (4*) 18"		30	*Influenced by frost to 24 inches
1.8		FAT CLAY (CH), gray and brown, moist, medium					
		Iron oxide staining from 5 1/2 to 11 feet	5	2-3-4 (7) 18"	1.5	31	LL=79, PL=30, PI=49 A-7-5
				TW 24"		47	
			10	2-2-3 (5) 18"	0.75	47	
884.0							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-071**

LOCATION: See attached sketch

LATITUDE:	47.32031	LONGITUDE:	-97.04184
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	12/31/20	END DATE:	12/31/20
SURFACE ELEVATION:	903.0 ft	RIG:	7518
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy, 20°		

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
902.3							
0.7		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-4-3 (7*) 18"		26	*Influenced by frost to 24 inches LL=64, PL=27, PI=37 A-7-6
		FAT CLAY (CH), trace Sand, gray and brown, frozen (moist when thawed) to moist, stiff to medium					
			5	5-4-5 (9) 18"	1.5	38	
				TW 22"		41	
			10	2-2-3 (5) 18"		41	LL=82, PL=33, PI=49 A-7-5
		Iron oxide staining at 10 1/2 feet					
			15	2-2-3 (5) 18"	0.75	57	
				TW 24"		45	DD=76 pcf WD=110 pcf
			20	2-2-3 (5) 18"		41	LL=81, PL=33, PI=48 A-7-5
882.0							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-072**

LOCATION: See attached sketch

LATITUDE:	47.32599	LONGITUDE:	-97.04650
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 903.4 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), trace Sand, black to gray, frozen (moist when thawed) to moist, stiff to medium		2-3-8 (11*) 18"		24	*Influenced by frost to 24 inches
5				4-5-5 (10) 18"		32	LL=64, PL=30, PI=34 A-7-5
				TW 13"		38	
10				1-2-3 (5) 16"		43	
892.4 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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BORING: **GDRL-073**

LOCATION: See attached sketch

LATITUDE:	47.33199	LONGITUDE:	-97.04950
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	12/31/20	END DATE:	12/31/20
SURFACE ELEVATION:	903.6 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy, 20°		

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
902.8							
0.8		FAT CLAY (CH), black, frozen (moist when thawed) to moist		6-4-4 (8*) 18"		21	*Influenced by frost to 24 inches LL=54, PL=22, PI=32 A-7-6
		FAT CLAY (CH), little Sand, brown, frozen (moist when thawed) to moist					
899.6							
4.0		FAT CLAY (CH), gray and brown, moist, medium to soft, iron oxide staining *Silt seams from 4 to 10 1/2 feet*		3-3-4 (7) 18"		38	
				TW 23"		42	DD=77 pcf WD=110 pcf
			10	1-2-2 (4) 18"	0.5	35	LL=68, PL=29, PI=39 A-7-6
892.6							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-074**

LOCATION: See attached sketch

LATITUDE:	47.33844	LONGITUDE:	-97.04980
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE:	12/31/20
END DATE:	12/31/20		
SURFACE ELEVATION: 902.2 ft	RIG: 7508	METHOD: 3 1/4" HSA	
SURFACING:	Grass	WEATHER:	Partly cloudy, 20°

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
901.2		FAT CLAY (CH), trace roots, black to dark gray, frozen (moist when thawed)		6-5-4 (9*) 18"		26	*Influenced by frost to 24 inches
1.0		FAT CLAY (CH), little Sand, gray and brown, frozen (moist when thawed) to moist, medium					LL=55, PL=24, PI=31 A-7-6
			5	3-3-3 (6) 18"		33	
				TW 24"		41	DD=79 pcf WD=112 pcf
		Trace mineralization and iron oxide staining from 9 1/2 to 16 feet	10	2-3-3 (6) 18"	1	40	
			15	2-3-2 (5) 18"		27	LL=71, PL=30, PI=41 A-7-5
				TW 24"		58	DD=66 pcf WD=104 pcf
		Silt seams at 20 1/2 feet	20	2-3-3 (6) 18"		42	
881.2							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-075**

LOCATION: See attached sketch

LATITUDE:	47.34529	LONGITUDE:	-97.04990
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 899.6 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
898.9		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		6-4-5 (9*) 18"		31	*Influenced by frost to 24 inches LL=76, PL=32, PI=44 A-7-5
0.7		FAT CLAY (CH), trace Sand, gray and brown, frozen (moist when thawed) to moist, soft to medium					
			5	2-2-2 (4) 18"	1.5	39	
		Iron oxide staining from 5 1/2 to 10 1/2 feet		TW 24"		45	
			10	2-3-3 (6) 18"		38	LL=90, PL=26, PI=64 A-7-6
888.6		*Trace mineralization at 10 1/2 feet*					
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-076**

LOCATION: See attached sketch

LATITUDE:	47.35173	LONGITUDE:	-97.04990
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 899.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), black to gray and brown, frozen (moist when thawed) to moist, medium to soft		3-3-3 (6*) 18"		23	*Influenced by frost to 24 inches
5				2-2-2 (4) 18"	1	32	LL=81, PL=29, PI=52 A-7-6
				TW 22"		45	DD=75 pcf WD=109 pcf
10				2-1-2 (3) 18"	0.75	42	
888.0 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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BORING: **GDRL-077**

LOCATION: See attached sketch

LATITUDE:	47.35806	LONGITUDE:	-97.05000
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 901.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), trace Sand, black to dark gray, frozen (moist when thawed) to moist, medium		4-3-4 (7*) 18"		20	*Influenced by frost to 24 inches LL=75, PL=23, PI=52 A-7-6
		Gray and brown below 5 1/2 feet	5	4-3-4 (7) 18"	0.75	49	
				TW 24"		41	
		Iron oxide staining at 10 1/2 feet	10	2-3-2 (5) 16"	0.5	31	LL=81, PL=32, PI=49 A-7-5
890.0 11.0		END OF BORING Boring then backfilled with auger cuttings	15 20 25 30				Water not observed while drilling.

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BORING: **GDRL-078**

LOCATION: See attached sketch

LATITUDE:	47.36457	LONGITUDE:	-97.05070
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/30/20	END DATE: 12/30/20
SURFACE ELEVATION: 899.6 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), trace Sand, trace mineralization, black to gray and brown, frozen (moist when thawed) to moist, soft		5-3-3 (6*) 16"		31	*Influenced by frost to 24 inches
5				2-2-1 (3) 18"	<0.25	35	LL=80, PL=29, PI=51 A-7-6
				TW 24"		41	DD=79 pcf WD=112 pcf
10				1-2-2 (4) 18"		35	LL=79, PL=33, PI=46 A-7-5
888.6 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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BORING: **CAA-079**

LOCATION: See attached sketch

LATITUDE:	47.36747	LONGITUDE:	-97.05180
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/30/20	END DATE: 12/30/20
SURFACE ELEVATION: 900.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
899.2							
0.8		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-3-3 (6*) 18"		36	*Influenced by frost to 24 inches
		FAT CLAY (CH), little Sand, brown and gray, frozen (moist when thawed) to moist, medium to soft					
				1-2-3 (5) 18"	1	32	LL=72, PL=27, PI=45 A-7-6
5		*Iron oxide staining at 5 1/2 feet*					
		Trace mineralization from 5 1/2 to 21 feet		TW 21"		41	DD=80 pcf WD=113 pcf
10				2-3-3 (6) 18"			
15				2-2-2 (4) 18"		41	LL=85, PL=30, PI=55 A-7-5
				TW 24"		52	DD=69 pcf WD=104 pcf
20				2-3-3 (6) 18"		41	
879.0							
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
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Interstate 29
Fargo, North Dakota

BORING: **CAA-080**

LOCATION: See attached sketch

LATITUDE:	47.37126	LONGITUDE:	-97.05320
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/30/20	END DATE: 12/30/20
SURFACE ELEVATION: 900.9 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 206

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
897.9		LEAN CLAY (CL), little Sand, black to dark gray, frozen (moist when thawed) to moist, soft		2-2-2 (4*) 18"		21	*Influenced by frost to 24 inches LL=41, PL=17, PI=24 A-7-6
3.0		FAT CLAY (CH), trace Sand, gray, moist, medium					
		Brown and gray below 5 1/2 feet	5	2-3-3 (6) 16"	1.25	36	
				TW 24"		43	
		Iron oxide staining and mineralization at 10 1/2 feet	10	2-3-3 (6) 16"	1.5	32	LL=77, PL=33, PI=44 A-7-5
			15	3-3-2 (5) 18"		38	
				TW 24"		47	
879.9			20	2-2-3 (5) 18"	<0.25	41	LL=79, PL=35, PI=44 A-7-5
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-081**

LOCATION: See attached sketch

LATITUDE: 47.37701	LONGITUDE: -97.05540		
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 12/30/20	END DATE: 12/30/20
SURFACE ELEVATION: 901.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
900.4							
0.7		FAT CLAY (CH), trace roots, black to dark gray, frozen (moist when thawed)		2-2-2 (4*) 18"		35	*Influenced by frost to 24 inches
		FAT CLAY (CH), little Sand, gray and brown, frozen (moist when thawed) to moist, soft to medium					
		Mineralization from 4 1/2 to 10 1/2 feet	5	2-2-2 (4) 18"		25	LL=77, PL=28, PI=49 A-7-6
				TW 24"		41	DD=79 pcf WD=111 pcf
			10	2-3-2 (5) 18"		38	
890.0							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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BORING: **GDRL-082**

LOCATION: See attached sketch

LATITUDE:	47.38236	LONGITUDE:	-97.05887
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	902.2 ft	RIG:	7518
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace Sand, black to gray, frozen (moist when thawed)		2-3-3 (6*) 18"		28	*Influenced by frost to 24 inches LL=81, PL=29, PI=52 A-7-6
		Brown and gray below 1 foot					
5		*Mineralization 5 1/2 to 11 feet*		2-2-3 (5) 18"		39	
				TW 18"		43	
10				2-2-2 (4) 18"		38	LL=82, PL=32, PI=50 A-7-5
891.2 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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See Descriptive Terminology sheet for explanation of abbreviations

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Fargo, North Dakota

BORING: **CAA-083**

LOCATION: See attached sketch

LATITUDE:	47.38745	LONGITUDE:	-97.06352
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.0 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace roots, trace Sand, black to gray, frozen (moist when thawed) to moist		2-2-2 (4*) 18"		33	*Influenced by frost to 24 inches
897.0			5	2-2-3 (5) 18"		35	LL=96, PL=32, PI=64 A-7-5
6.0		FAT CLAY (CH), brown and gray, moist, medium to soft		TW 24"		45	
			10	2-3-3 (6) 18"	0.75	48	
			15	2-2-1 (3) 18"		48	LL=83, PL=29, PI=54 A-7-6
				TW 24"		53	DD=69 pcf WD=106 pcf
882.0			20	2-2-2 (4) 18"		44	
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **GDRL-084**

LOCATION: See attached sketch

LATITUDE:	47.39272	LONGITUDE:	-97.06835
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.9 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
900.9		FAT CLAY (CH), black, frozen (moist when thawed) to moist, medium *Gray and brown below 1/2 feet*		2-2-3 (5*) 18"		36	*Influenced by frost to 24 inches LL=84, PL=28, PI=56 A-7-6
3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium to soft *Iron oxide staining and trace mineralization from 3 to 11 feet*	5	2-2-3 (5) 18"	1	39	
				TW 24"		40	DD=81 pcf WD=113 pcf
892.9			10	2-2-2 (4) 18"	0.5	42	LL=79, PL=26, PI=53 A-7-6
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **GDRL-085**

LOCATION: See attached sketch

LATITUDE: 47.39774	LONGITUDE: -97.07259		
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 903.9 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
900.9		FAT CLAY (CH), trace roots, black to gray, frozen (moist when thawed) to moist, stiff		3-4-5 (9*) 16"		35	*Influenced by frost to 22 inches
3.0		FAT CLAY (CH), gray and brown, moist, medium to soft *Iron oxide staining 3 to 11 feet*	5	2-2-3 (5) 18"	0.75	35	LL=73, PL=28, PI=45 A-7-6
				TW 18"		53	
892.9			10	2-2-2 (4) 18"		46	
11.0		END OF BORING Boring then backfilled with auger cuttings	15 20 25 30				Water not observed while drilling.

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BORING: **GDRL-086**

LOCATION: See attached sketch

LATITUDE:	47.40338	LONGITUDE:	-97.07436
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 903.2 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace Sand, black to gray, frozen (moist when thawed) to moist, medium		3-4-5 (9*) 18"		28	*Influenced by frost to 12 inches LL=80, PL=27, PI=53 A-7-6
			5	2-4-4 (8) 18"		27	
896.2 7.0		LEAN CLAY (CL), trace Sand, gray, moist, medium		TW 24"		29	DD=94 pcf WD=121 pcf
			10	3-4-3 (7) 18"		28	LL=48, PL=26, PI=22 A-7-6
892.2 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-087**

LOCATION: See attached sketch

LATITUDE:	47.40918	LONGITUDE:	-97.07364
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	904.0 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), little Sand, black to gray, frozen (moist when thawed) to moist, medium		3-4-3 (7*) 18"		21	*Influenced by frost to 24 inches
			5	4-5-3 (8) 18"		29	LL=58, PL=30, PI=28 A-7-5
				TW 24"		31	DD=89 pcf WD=116 pcf
			10	3-4-5 (9) 18"		30	
		Slight organic odor 10 1/2 feet					
891.0							
13.0		LEAN CLAY (CL), little Sand, brown and gray, moist, medium					
		Intermixed Silt below 15 1/2 feet	15	4-4-3 (7) 18"		24	LL=43, PL=21, PI=22 A-7-6
		Gray below 15 1/2 feet					
887.6							
16.5		FAT CLAY (CH), Sand, gray, soft					
				TW 24"		30	DD=92 pcf WD=120 pcf
			20	3-2-2 (4) 18"		34	
883.0							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **CAA-088**

LOCATION: See attached sketch

LATITUDE:	47.41033	LONGITUDE:	-97.07346
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	904.0 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
902.0		FAT CLAY (CH), trace Sand, trace roots, black to gray, frozen (moist when thawed), stiff		4-4-6 (10*) 18"		24	*Influenced by frost to 24 inches LL=67, PL=25, PI=42 A-7-6
2.0		FAT CLAY (CH), trace roots, brown and gray, moist, stiff to medium					
		Slight organic odor at 5 1/2 feet	5	5-6-7 (13) 18"		38	
				TW 19"		27	
		Intermixed Silt from 10 1/2 to 21 feet	10	3-4-6 (10) 18"		27	LL=50, PL=28, PI=22 A-7-6
			15	3-4-3 (7) 18"		31	
887.0							
17.0		LEAN CLAY with SAND (CL), brown and gray, moist, medium		TW 15"		28	
			20	2-3-4 (7) 12"		28	LL=40, PL=21, PI=19 A-7-6
883.0							
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

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BORING: **GDRL-089**

LOCATION: See attached sketch

LATITUDE: 47.41692	LONGITUDE: -97.07241		
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 903.6 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
900.6		FAT CLAY (CH), trace roots, black, frozen (moist when thawed) to moist		3-3-3 (6*) 18"		24	*Influenced by frost to 12 inches
3.0		FAT CLAY (CH), gray and brown, moist, medium		2-3-3 (6) 18"	1	38	LL=77, PL=32, PI=45 A-7-5
		Iron oxide staining from 5 1/2 to 11 feet		TW 24"			
892.6				2-2-3 (5) 18"		41	
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **GDRL-090**

LOCATION: See attached sketch

LATITUDE:	47.42347	LONGITUDE:	-97.07137
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.8 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FILL: FAT CLAY (CH), trace Sand, trace roots, black to gray, frozen (moist when thawed) to moist, soft		3-3-3 (6*) 18"		28	*Influenced by frost to 24 inches LL=67, PL=27, PI=40 A-7-6
		Gray and brown below 5 1/2 feet *Mineralization from 5 1/2 to 11 feet*	5	2-2-2 (4) 18"	0.5	45	
				TW 24"		44	DD=77 pcf WD=110 pcf
892.8			10	2-2-2 (4) 18"		41	LL=90, PL=30, PI=60 A-7-5
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-091**

LOCATION: See attached sketch

LATITUDE:	47.43002	LONGITUDE:	-97.07033
DRILLER:	G. Bevre	LOGGED BY:	T.Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.5 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
902.5		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		2-2-2 (4*) 18"		30	*Influenced by frost to 24 inches
1.0		FAT CLAY (CH), trace Sand, gray and brown, frozen (moist when thawed) to moist, soft					
		Mineralization and iron oxide staining at 5 1/2 feet	5	2-2-2 (4) 18"		36	LL=86, PL=33, PI=53 A-7-5
				TW 24"		46	
			10	2-2-2 (4) 18"		45	
892.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **GDRL-092**

LOCATION: See attached sketch

LATITUDE:	47.43659	LONGITUDE:	-97.06991
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.0 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
902.2		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-3-3 (6*) 18"		25	*Influenced by frost to 24 inches LL=54, PL=23, PI=31 A-7-6
0.8		FAT CLAY (CH), little Sand, brown, frozen (moist when thawed) to moist, medium					
		Iron oxide staining 5 1/2 to 11 feet	5	2-3-3 (6) 18"	0.75	44	
				TW 24"		44	DD=76 pcf WD=110 pcf
			10	2-2-3 (5) 18"		41	LL=90, PL=34, PI=56 A-7-5
892.0							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-093**

LOCATION: See attached sketch

LATITUDE:	47.44359	LONGITUDE:	-97.06989
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 903.8 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		FAT CLAY (CH), trace roots, black to gray, frozen (moist when thawed), medium		3-3-4 (7*) 18"		25	*Influenced by frost to 12 inches
900.8 3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, soft to medium, iron oxide staining					
5				3-3-3 (6) 18"		38	LL=108, PL=32, PI=76 A-7-5
				TW 24"		46	
10				2-3-3 (6) 18"		42	
15				2-2-3 (5) 18"	0.75	40	LL=79, PL=31, PI=48 A-7-5
				TW 24"		49	
20				1-2-2 (4) 18"	<0.25	48	
882.8 21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
25							
30							

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BORING: **GDRL-094**

LOCATION: See attached sketch

LATITUDE:	47.44763	LONGITUDE:	-97.07041
DRILLER: G. Bevre	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 904.0 ft	RIG: 7508	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
901.0		LEAN CLAY (CL), little Sand, black to gray, frozen (moist when thawed) to moist, stiff		3-4-5 (9*) 18"		24	*Influenced by frost to 24 inches LL=44, PL=20, PI=24 A-7-6
3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, soft	5	2-2-2 (4) 18"	1	45	
				TW 24"		44	DD=76 pcf WD=110 pcf
		Trace roots at 10 1/2 feet	10	2-2-1 (3)	0.5	40	LL=84, PL=29, PI=55 A-7-6
893.0 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			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-095**

LOCATION: See attached sketch

LATITUDE:	47.45156	LONGITUDE:	-97.07214
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	903.9 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
900.9		LEAN CLAY (CL), Silt lenses, black, frozen (moist when thawed) to moist, stiff		3-4-7 (11*) 18"		21	*Influenced by frost to 12 inches
3.0		FAT CLAY (CH), mineralization, gray and brown, moist, soft to medium, iron oxide staining	5	2-2-2 (4) 18"	0.5	39	LL=97, PL=33, PI=64 A-7-5
				TW 24"			
			10	2-1-1 (2) 18"	<0.25	48	
			15	2-3-2 (5) 18"	<0.25	39	LL=75, PL=29, PI=46 A-7-6
				TW 24"		43	DD=77 pcf WD=109 pcf
			20	1-2-2 (4) 18"		44	
882.9							
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-096**

LOCATION: See attached sketch

LATITUDE:	47.45554	LONGITUDE:	-97.07345
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	904.7 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		FAT CLAY (CH), trace roots, trace Sand, dark gray, frozen (moist when thawed) to moist, medium		2-2-3 (5*) 18"		26	*Influenced by frost to 12 inches LL=73, PL=25, PI=48 A-7-6
900.7 4.0		FAT CLAY (CH), trace Sand, brown, moist, medium to soft	5	2-2-3 (5) 18"	0.5	43	
				TW 24"		51	
			10	1-2-2 (4)		43	LL=92, PL=31, PI=61 A-7-5
893.7 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Project Number B2009724
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BORING: **CAA-097**

LOCATION: See attached sketch

LATITUDE: 47.45920	LONGITUDE: -97.07333		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 906.8 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
906.0		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		4-3-2 (5*) 12"		31	*Influenced by frost to 12 inches LL=85, PL=29, PI=56 A-7-6
0.7		FAT CLAY (CH), trace to little Sand, gray, frozen (moist when thawed) to moist, medium					
			5	2-3-4 (7) 18"		43	
		Iron oxide staining from 5 1/2 to 16 feet					
				TW 20"		43	DD=75 pcf WD=108 pcf
			10	1-2-2 (4) 18"		48	
		Mineralization from 10 1/2 to 16 feet					
			15	2-2-3 (5) 18"		40	LL=78, PL=29, PI=49 A-7-6
				TW 21"		47	DD=74 pcf WD=109 pcf
			20	1-3-4 (7) 18"		34	LL=69, PL=31, PI=38 A-7-5
885.8							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-098**

LOCATION: See attached sketch

LATITUDE: 47.46388	LONGITUDE: -97.07289		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 906.5 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
905.5		FAT CLAY (CH), brown, frozen (moist when thawed)		3-3-3 (6*) 18"		28	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), gray and brown, moist, medium to soft					
			5	2-2-3 (5) 0"		34	LL=87, PL=34, PI=53 A-7-5
				TW 19"		42	
			10	1-1-3 (4) 18"	0.5	49	
895.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-099**

LOCATION: See attached sketch

LATITUDE: 47.46883	LONGITUDE: -97.07373		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 908.5 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
905.5		LEAN CLAY (CL), little Sand, trace roots, black to brown, frozen (moist when thawed) to moist, stiff *Intermixed Topsoil at 1 1/2 feet*		3-5-5 (10*) 18"		23	*Influenced by frost to 24 inches LL=49, PL=23, PI=26 A-7-6
3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, medium					
		Intermixed Silt at 5 1/2 feet *Iron oxide staining from 5 1/2 to 21 feet*	5	3-2-2 (4) 18"		38	
				TW 24"		50	DD=72 pcf WD=107 pcf
			10	2-2-3 (5) 18"	0.5	42	LL=103, PL=33, PI=70 A-7-5
		Mineralization at 15 1/2 feet	15	2-3-5 (8) 18"		47	
				TW 23"		48	DD=74 pcf WD=109 pcf
887.5			20	2-1-2 (3) 10"		42	LL=81, PL=30, PI=51 A-7-5
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-100**

LOCATION: See attached sketch

LATITUDE:	47.47393	LONGITUDE:	-97.07466
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 911.2 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
908.2		LEAN CLAY (CL), black to gray, frozen (moist when thawed) to moist, stiff		3-4-5 (9*) 14"		28	*Influenced by frost to 12 inches
3.0		FAT CLAY (CH), trace Sand, gray and brown, moist, soft		1-2-2 (4) 18"		49	
				TW 24"		53	
900.2		*Mineralization at 10 1/2 feet*		1-1-2 (3)		44	LL=91, PL=33, PI=58 A-7-5
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **GDRL-101**

LOCATION: See attached sketch

LATITUDE: 47.47862	LONGITUDE: -97.07570		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 911.2 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
910.2		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-3-4 (7*) 8"		35	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), trace Sand, Silt lenses, brown, moist, medium					
		Silt lenses at 5 feet	5	3-3-4 (7) 18"		23	LL=32, PL=24, PI=8 A-4
904.2							
7.0		FAT CLAY (CH), gray, moist, soft		TW 22"		46	DD=75 pcf WD=109 pcf
		Mineralization at 10 1/2 feet	10	2-2-2 (4) 18"	0.5	50	
900.2							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-102**

LOCATION: See attached sketch

LATITUDE: 47.48352	LONGITUDE: -97.07823		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 913.7 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
912.7		LEAN CLAY (CL), little Sand, trace roots, black, frozen (moist when thawed)		3-4-6 (10*) 14"		22	*Influenced by frost to 24 inches
1.0		FAT CLAY (CH), gray and brown, frozen (moist when thawed) to moist, medium to soft					LL=45, PL=21, PI=24 A-7-6
			5	2-3-3 (6) 18"		47	
		Iron oxide staining at 5 1/2 feet		TW 21"		50	
			10	1-2-2 (4) 18"		44	LL=93, PL=32, PI=61 A-7-5
			15	2-3-3 (6) 18"		46	
		Mineralization at 15 1/2 feet		TW 20"		53	DD=70 pcf WD=107 pcf
			20	1-2 (3) 18"	<0.25	41	LL=72, PL=30, PI=42 A-7-5
892.7		*Gray below 20 feet*					
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-103**

LOCATION: See attached sketch

LATITUDE: 47.48844	LONGITUDE: -97.08090		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 917.7 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
916.7		SILT (ML), black, frozen (moist when thawed)		2-3-4 (7*) 10"		21	*Influenced by frost to 12 inches
1.0		SILT (ML), trace Sand, brown, moist, medium					
			5	3-5-5 (10) 18"		33	LL=35, PL=27, PI=8 A-4
910.7							
7.0		FAT CLAY (CH), gray, moist, soft		TW 20"	0.5	49	
			10	1-2-2 (4) 18"		51	
906.7							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-104**

LOCATION: See attached sketch

LATITUDE: 47.49329	LONGITUDE: -97.08353		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 925.2 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
924.2		SANDY SILTY CLAY (CL-ML), black, moist		4-4-6 (10*) 14"		15	*Influenced by frost to 12 inches LL=27, PL=20, PI=7
1.0		SILT (ML), gray and brown, wet, very loose to loose					
		Iron oxide staining from 5 1/2 to 11 feet		3-3-5 (8) 18"		34	
				TW 24"		34	DD=88 pcf WD=118 pcf
				2-2-2 (4) 18"		32	LL=31, PL=29, PI=2 A-4
914.2							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **GDRL-105**

LOCATION: See attached sketch

LATITUDE: 47.49815	LONGITUDE: -97.08617		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 927.9 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
926.9		LEAN CLAY (CL), black, frozen (moist when thawed)		3-4-4 (8*) 12"		19	*Influenced by frost to 12 inches
1.0		LEAN CLAY (CL), trace Sand, Silt lenses, gray and brown, moist, medium *Iron oxide staining from 1 to 11 feet*					
			5	2-3-4 (7) 18"		34	LL=38, PL=30, PI=8 A-4
				TW 24"		36	
			10	2-3-3 (6) 18"		35	
916.9							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-106**

LOCATION: See attached sketch

LATITUDE: 47.50325	LONGITUDE: -97.08894		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 928.6 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
927.8							
0.7		LEAN CLAY (CL), black, frozen (moist when thawed)		4-4-6 (10) 18"		23	*Influenced by frost to 9 inches LL=33, PL=23, PI=10 A-4
		LEAN CLAY (CL), trace Sand, Silt seams, brown, moist, soft, iron oxide staining					
			5	2-2-2 (4) 18"		44	
921.6							
7.0		FAT CLAY (CH), little to trace Sand, brown to gray, moist, medium to soft		TW 24"		32	DD=90 pcf WD=119 pcf
			10	2-2-3 (5) 18"		36	LL=65, PL=20, PI=45
			15	2-2-2 (4) 18"		77	
				TW 20"		58	DD=66 pcf WD=104 pcf
			20	0-2-2 (4) 18"		68	LL=98, PL=29, PI=69 A-7-6
907.6							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-107**

LOCATION: See attached sketch

LATITUDE: 47.50913	LONGITUDE: -97.09104		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 930.9 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
930.2		LEAN CLAY (CL), trace roots, black, frozen (moist when thawed)		3-4-5 (9*) 14"		20	*Influenced by frost to 20 inches
0.7		LEAN CLAY (CL), brown, frozen (moist when thawed) to moist, stiff					
927.9							
3.0		SILT (ML), trace Sand, brown, moist, loose					
		Iron oxide staining from 5 1/2 to 11 feet	5	2-2-3 (5) 18"		35	LL=38, PL=31, PI=7
				TW 22"		36	
			10	2-3-4 (7) 18"		29	
919.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-108**

LOCATION: See attached sketch

LATITUDE:	47.51495	LONGITUDE:	-97.09110
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 931.5 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny, 40°

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
		LEAN CLAY (CL), little Sand, trace roots, black to brown, frozen (moist when thawed) to moist, medium to soft		2-3-5 (8*) 10"		20	*Influenced by frost to 16 inches LL=36, PL=23, PI=13 A-6
		Iron oxide staining from 5 1/2 to 11 feet	5	2-3-4 (7) 18"		33	
				TW 24"		32	DD=92 pcf WD=121 pcf
			10	1-1-1 (2) 18"		21	LL=35, PL=24, PI=11 A-6
920.5 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-109**

LOCATION: See attached sketch

LATITUDE:	47.52078	LONGITUDE:	-97.09113
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 932.6 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny, 40°

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
929.6		LEAN CLAY (CL), black to brown, frozen (moist when thawed) to moist, iron oxide staining		4-5-7 (12*) 18"		16	*Influenced by frost to 24 inches
3.0		SILT (ML), brown, moist, loose		2-2-3 (5) 18"		26	LL=32, PL=27, PI=5 A-4
923.6				TW 24"		27	
9.0		FAT CLAY (CH), gray, moist, soft		2-1-1 (2) 18"		57	
921.6							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **GDRL-110**

LOCATION: See attached sketch

LATITUDE:	47.52661	LONGITUDE:	-97.09115
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 933.2 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny, 40°

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
930.2		LEAN CLAY with SAND (CL), Silt seams, trace roots, black to brown, frozen (moist when thawed) to moist, stiff		4-6-7 (13*) 10"		15	*Influenced by frost to 24 inches LL=31, PL=20, PI=11 A-6
3.0		SILT (ML), brown, moist, loose	5	3-4-5 (9) 18"		29	
925.8							
7.5		FAT CLAY (CH), little Sand, brown, soft, iron oxide staining		TW 24"		35	DD=90 pcf WD=122 pcf
922.2			10	0-1-1 (2) 10"		49	LL=72, PL=36, PI=36
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **CAA-111**

LOCATION: See attached sketch

LATITUDE:	47.53252	LONGITUDE:	-97.09118
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	933.2 ft	RIG:	7518
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Sunny, 40°		

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
930.2		LEAN CLAY (CL), black to brown, frozen (moist when thawed) to moist, medium		3-4-4 (8*) 10"		18	*Influenced by frost to 24 inches
926.2		LEAN CLAY (CL), little Sand, Silt lenses, brown, moist, medium, iron oxide staining	5	2-3-4 (7) 18"		33	LL=46, PL=23, PI=23 A-7-6
912.2		FAT CLAY (CH), little Sand, dark gray, moist, soft		TW 24"		50	
			10	0-1-1 (2) 18"		47	
			15	1-1-1 (2) 18"		39	LL=73, PL=23, PI=50 A-7-6
				TW 24"		55	DD=69 pcf WD=106 pcf
			20	0-0-1 (1) 14"		56	
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-112**

LOCATION: See attached sketch

LATITUDE:	47.53840	LONGITUDE:	-97.09052
DRILLER:	A. Horner	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	935.2 ft	RIG:	7518
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Sunny, 45°		

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
934.6							
0.7		LEAN CLAY (CL), intermixed with Silt, black to brown, frozen (moist when thawed)		4-6-8 (14*) 18"		9	*Influenced by frost to 9 inches LL=23, PL=20, PI=3 A-2-4
932.2		SILTY SAND (SM), trace Gravel, brown, moist, medium dense					
3.0		SILT (ML), gray, moist, loose					
			5	2-3-2 (5) 18"		29	
928.2							
7.0		FAT CLAY (CH), little Sand, brown, moist, soft		TW 24"		38	
			10	2-2-2 (4) 18"	0.5	25	LL=51, PL=18, PI=33 A-7-6
924.2							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-113**

LOCATION: See attached sketch

LATITUDE:	47.54295	LONGITUDE:	-97.08706
DRILLER:	G. Bevre	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	956.7 ft	RIG:	7508
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
953.7		FAT CLAY (CH), little Sand, black, frozen (moist when thawed) to moist, stiff		18-12-10 (22*) 18"		26	*Influenced by frost to 24 inches
3.0		SANDY LEAN CLAY (CL), brown, moist, stiff	5	3-5-5 (10) 18"		17	LL=38, PL=17, PI=21 A-6
948.7				TW 8"		22	DD=107 pcf WD=129 pcf
8.0		SILTY SAND (SM), fine-grained, gray, moist, medium dense	10	8-12-14 (26) 18"		8	
			15	5-10-7 (17) 18"		10	LL=24, PL=22, PI=2 A-2-4
				TW 6"			
935.7		*Black below 20 feet*	20	5-10-15 (25) 18"		16	
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **CAA-114**

LOCATION: See attached sketch

LATITUDE:	47.54535	LONGITUDE:	-97.08433
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION:	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
1.0		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		9-11-14 (25*) 18"		7	*Influenced by frost to 12 inches Nonplastic A-1-b
		SILTY SAND with GRAVEL (SM), fine-grained, trace Cobbles, brown, moist, medium dense to very dense					
5				17-21-27 (48) 18"		6	
				50/6" (REF) 3"		4	
10				9-19-22 (41) 18"		11	Nonplastic A-2-4
15				5-15-18 (33) 18"		10	
17.0		SILT (ML), trace Sand, gray, moist, medium dense		7-10-10 (20) 18"			
20				5-6-7 (13) 18"		27	Nonplastic A-4 Water not observed while drilling.
21.0		END OF BORING Boring then backfilled with auger cuttings					
25							
30							

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BORING: **GDRL-115**

LOCATION: See attached sketch

LATITUDE: 47.54949	LONGITUDE: -97.08125		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 324.2 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny, 45°

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
		FAT CLAY (CH), little Sand, trace roots, black to gray, frozen (moist when thawed) to moist, medium to stiff		3-5-6 (11*) 18"		19	*Influenced by frost to 24 inches
			5	3-4-5 (9) 18"		23	LL=62, PL=20, PI=42 A-7-6
				TW 24"		31	DD=91 pcf WD=118 pcf
			10	2-3-5 (8) 18"	0.75	34	
313.2 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-116**

LOCATION: See attached sketch

LATITUDE:	47.55569	LONGITUDE:	-97.08052
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 922.0 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny, 40°

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
919.0		SANDY FAT CLAY (CH), trace roots, black to brown, frozen (moist when thawed) to moist, stiff		5-5-6 (11*) 14"		14	*Influenced by frost to 12 inches LL=50, PL=17, PI=33 A-7-6
3.0		FAT CLAY (CH), little Sand, brown to gray, moist, dense to stiff	5	3-3-5 (8) 18"		24	
				TW 24"			
910.0			10	2-4-6 (10) 18"	1	30	LL=65, PL=21, PI=44 A-7-6
12.0		FAT CLAY with SAND (CH), trace Gravel, gray, moist, dense	15	2-3-4 (7) 18"	1	35	
				TW 24"		37	DD=85 pcf WD=117 pcf
901.0			20	2-4-4 (8) 18"		26	LL=53, PL=18, PI=35 A-7-6
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-117**

LOCATION: See attached sketch

LATITUDE:	47.56230	LONGITUDE:	-97.08045
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 917.5 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
916.5		FAT CLAY (CH), black, moist		2-2-3 (5*) 14"		34	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), little Sand, brown, moist, medium to stiff					
			5	2-3-5 (8) 18"		24	LL=62, PL=21, PI=41 A-7-6
				TW 18"		31	
			10	4-5-6 (11) 16"		32	
906.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-118**

LOCATION: See attached sketch

LATITUDE:	47.56845	LONGITUDE:	-97.08040
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 916.4 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
915.8							
0.7		FAT CLAY (CH), black, frozen (moist when thawed)		2-2-3 (5*) 14"		25	*Influenced by frost to 12 inches LL=53, PL=18, PI=35 A-7-6
		FAT CLAY with SAND (CH), gray, frozen (moist when thawed) to moist, medium					
912.0							
4.5		FAT CLAY (CH), trace Sand, gray and brown, moist, stiff	5	3-5-7 (12) 18"		24	
				TW 24"		29	DD=94 pcf WD=121 pcf
			10	3-5-8 (13) 18"		25	LL=64, PL=24, PI=40 A-7-6
905.4							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-119**

LOCATION: See attached sketch

LATITUDE:	47.57460	LONGITUDE:	-97.08061
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 914.6 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
		FAT CLAY with SAND (CH), black to gray, frozen (moist when thawed) to moist, stiff		3-4-5 (9*) 10"		28	*Influenced by frost to12 inches
		Gypsum crystals at 5 1/2 feet	5	2-4-5 (9) 18"		22	LL=64, PL=22, PI=42 A-7-6
				TW 18"		27	
			10	3-5-6 (11) 18"	1.5	26	
903.6							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-120**

LOCATION: See attached sketch

LATITUDE:	47.58087	LONGITUDE:	-97.08098
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 914.2 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass
			WEATHER: Partly cloudy, 20°

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
		FAT CLAY (CH), little Sand, Silt lenses, brown, frozen (moist when thawed) to moist		2-3-4 (7) 10"		21	LL=55, PL=21, PI=34 A-7-6
5				3-4-5 (9) 18"		25	
				TW 20"		26	DD=99 pcf WD=124 pcf
10				3-4-4 (8) 18"		26	LL=57, PL=27, PI=30 A-7-6
				2-4-5 (9) 18"			
15				3-3-6 (9) 12"	1	26	
				TW 24"		31	DD=90 pcf WD=118 pcf
20		*Little mineralization at 20 1/2 feet*		3-4-5 (9) 18"		27	LL=60, PL=24, PI=36 A-7-6
893.2 21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
25							
30							

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BORING: **GDRL-121**

LOCATION: See attached sketch

LATITUDE:	47.58620	LONGITUDE:	-97.08109
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/31/20	END DATE: 12/31/20
SURFACE ELEVATION: 915.6 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 20°

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
914.6		FAT CLAY (CH), trace Sand, black, stiff		3-4-6 (10*) 14"		24	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), little Sand, dark gray, medium					
		Trace mineralization from 5 1/2 to 10 1/2 feet	5	3-4-4 (8) 18"	0.75	25	LL=57, PL=19, PI=38
				TW 15"		31	
			10	2-4-4 (8) 18"		31	
904.6							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-122**

LOCATION: See attached sketch

LATITUDE:	47.59186	LONGITUDE:	-97.08070		
DRILLER:	A. Horner	LOGGED BY:	T. Sanders	START DATE:	12/29/20
END DATE:	12/29/20				
SURFACE ELEVATION:	921.3 ft	RIG:	7518	METHOD:	3 1/4" HSA
SURFACING:	Grass	WEATHER:	Cloudy, 15°		

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
		SANDY SILTY CLAY (CL-ML), brown, frozen (moist when thawed) to moist, stiff		6-5-6 (11) 14"		11	*Influenced by frost to 12 inches LL=26, PL=19, PI=7 A-4
			5	3-3-6 (9) 18"		22	
914.3							
7.0		FAT CLAY with SAND (CH), trace Gravel, gray and brown, moist, medium, iron oxide staining		TW 17"		28	DD=96 pcf WD=122 pcf
			10	0-3-4 (7) 18"	0.75	24	LL=55, PL=20, PI=35 A-7-6
				2-3-3 (6) 18"	0.5	31	
907.3							
14.0		LEAN CLAY with SAND (CL), gray and brown, moist, medium	15	2-3-4 (7) 18"		23	LL=45, PL=17, PI=28 A-7-6
904.3							
17.0		FAT CLAY (CH), little Sand, gray, moist, medium		TW 16"		39	
			20	2-3-2 (5) 18"		32	LL=60, PL=21, PI=39 A-7-6
900.3							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-123**

LOCATION: See attached sketch

LATITUDE: 47.59712	LONGITUDE: -97.08032		
DRILLER: A. Horner	LOGGED BY: T. Sanders	START DATE: 12/29/20	END DATE: 12/29/20
SURFACE ELEVATION: 920.1 ft	RIG: 7518	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Cloudy, 15°

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
919.6							
0.5		SILT (ML), trace roots, brown, frozen (moist when thawed)		3-3-6 (9*) 12"		27	*Influenced by frost to 12 inches
917.1		SILT (ML), light gray, frozen (moist when thawed) to moist, medium to loose, iron oxide staining					
3.0		FAT CLAY (CH), little Sand, dark gray, moist, medium to soft		4-3-4 (7) 18"		29	LL=51, PL=19, PI=32 A-7-6
				TW 24"		34	
				1-1-2 (3) 18"		36	
909.1							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **GDRL-124**

LOCATION: See attached sketch

LATITUDE: 47.60236	LONGITUDE: -97.08013		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 914.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
911.4		CLAYEY SAND (SC), fine-grained, black to gray, frozen (moist when thawed) to moist, stiff		6-6-5 (11*) 10"		16	*Influenced by frost to 12 inches LL=28, PL=17, PI=11 A-6
3.0		FAT CLAY with SAND (CH), gray, moist, stiff					
			5	5-5-6 (11) 18"		23	
				TW 24"		23	DD=100 pcf WD=123 pcf
			10	3-4-6 (10) 18"		21	LL=57, PL=22, PI=35 A-7-6
903.4		*Trace fine Gravel at 10 1/2 feet*					
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **CAA-125**

LOCATION: See attached sketch

LATITUDE:	47.60767	LONGITUDE:	-97.08012
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	915.3 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Foggy		

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
914.5							
0.8		LEAN CLAY (CL), trace roots, with SILT layers, black, frozen (moist when thawed)		4-4-6 (10*) 18"		10	*Influenced by frost to 12 inches
		SANDY SILT (ML), Silt lenses, brown, frozen (moist when thawed) to moist, stiff					
			5	7-8-8 (16) 18"		13	Nonplastic A-4
908.3							
7.0		FAT CLAY with SAND (CH), trace Gravel, brown to gray, moist, stiff to medium		TW 22"		27	
			10	3-4-5 (9) 18"		27	
			15	3-4-5 (9) 18"		22	LL=56, PL=23, PI=33 A-7-6
				TW 24"		32	DD=89 pcf WD=117 pcf
			20	3-3-4 (7)	1.25	31	
894.3							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-126**

LOCATION: See attached sketch

LATITUDE: 47.61382	LONGITUDE: -97.08014		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 912.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
911.5		SILTY SAND (SM), fine-grained, trace roots, black, frozen (moist when thawed)		3-4-5 (9*) 18"		10	*Influenced by frost to 12 inches
1.0		SILTY SAND (SM), brown, frozen (moist when thawed) to moist, loose					Nonplastic A-2-4
908.5							
4.0		FAT CLAY (CH), Silt lenses, brown, moist, medium, iron oxide staining	5	2-3-4 (7) 18"		35	
905.5							
7.0		LEAN CLAY with SAND (CL), gray to brown, moist, stiff		TW 10"		18	
			10	2-3-4 (7)	1.5	22	LL=49, PL=21, PI=28 A-7-6
901.5							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-127**

LOCATION: See attached sketch

LATITUDE: 47.61954	LONGITUDE: -97.08021		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 911.1 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
910.3		SILT (ML), black, frozen (moist when thawed)		4-4-6 (10*) 18"		15	*Influenced by frost to 12 inches
0.8		SILT (ML), trace Sand, brown to gray, wet, loose, iron oxide staining					
				3-2-3 (5) 18"		32	LL=31, PL=30, PI=1 A-4
904.1							
7.0		FAT CLAY (CH), trace Sand, gray, moist, medium		TW 18"		33	DD=87 pcf WD=116 pcf
				3-2-4 (6) 18"		32	
900.1							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **GDRL-128**

LOCATION: See attached sketch

LATITUDE: 47.62527	LONGITUDE: -97.08028		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 911.1 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
909.6		SILT (ML), black, frozen (moist when thawed)		9-7-7 (14*) 18"		17	*Influenced by frost to 12 inches LL=32, PL=28, PI=4 A-4
1.5		FAT CLAY (CH), little Sand, gray, moist, stiff to medium					
			5	3-5-5 (10) 18"		19	
				TW 24"		25	
		Iron oxide staining at 10 1/2 feet	10	2-2-4 (6) 18"		24	LL=51, PL=24, PI=27
900.1							Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-129**

LOCATION: See attached sketch

LATITUDE:	47.63100	LONGITUDE:	-97.08036
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	910.5 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Foggy		

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
909.5		SILTY SAND (SM), fine-grained, black, frozen (moist when thawed)		11-8-8 (16*) 16"		13	*Influenced by frost to 12 inches
1.0		SILT (ML), trace Sand, gray to brown, wet, iron oxide staining					
				4-3-5 (8) 18"		29	LL=34, PL=27, PI=7 A-4
903.0							
7.5		FAT CLAY (CH), gray, moist, soft		TW 24"		27	DD=93 pcf WD=118 pcf
				1-2-1 (3) 18"	<0.25	34	
899.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **GDRL-130**

LOCATION: See attached sketch

LATITUDE: 47.63672	LONGITUDE: -97.08039		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 909.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
908.4		SILTY SAND (SM), fine-grained, black, frozen (moist when thawed)		11-5-5 (10*) 18"		7	*Influenced by frost to 12 inches
1.0		SILTY SAND (SM), fine-grained, brown, moist to wet, loose, iron oxide staining					Nonplastic
				3-3-4 (7) 18"		36	
901.4				TW 9"		37	
8.0		LEAN CLAY with SAND (CL), gray, moist, soft		3-2-2 (4) 18"	<0.25	30	LL=47, PL=21, PI=26 A-7-6
898.4							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **CAA-131**

LOCATION: See attached sketch

LATITUDE: 47.64291	LONGITUDE: -97.08044		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 908.6 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
907.1		LEAN CLAY (CL), Silt lenses, black, frozen (moist when thawed) to moist, stiff		7-5-6 (11*) 18"		12	*Influenced by frost to 12 inches
1.5		SILT (ML), trace Sand, gray, moist, loose					
			5	2-3-3 (6) 18"		27	LL=37, PL=27, PI=10 A-4
899.6				TW 24"		31	DD=92 pcf WD=119 pcf
9.0		LEAN CLAY with SAND (CL), trace Gravel, brown, moist, medium	10	2-3-3 (6) 18"		25	
			15	1-2-3 (5) 18"		21	LL=46, PL=22, PI=24 A-7-6
892.6							
16.0		FAT CLAY (CH), gray, moist, soft		TW 24"		31	DD=91 pcf WD=119 pcf
			20	1-1-3 (4) 18"	<0.25	31	
887.6							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-132**

LOCATION: See attached sketch

LATITUDE: 47.64911	LONGITUDE: -97.08048		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 903.4 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
900.4		LEAN CLAY (CL), little Sand, black to brown, frozen (moist when thawed) to moist, stiff		11-8-6 (14*) 18"		18	*Influenced by frost to 12 inches LL=43, PL=20, PI=23 A-7-6
3.0		FAT CLAY (CH), little Sand, Silt lenses, brown, wet to moist, medium	5	3-3-4 (7) 18"		38	
				TW 24"		33	
892.4			10	2-2-4 (6) 18"		29	LL=51, PL=25, PI=26 A-7-6
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-133**

LOCATION: See attached sketch

LATITUDE: 47.65529	LONGITUDE: -97.08054		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 902.5 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Foggy

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
901.4		SILT (ML), black, frozen (moist when thawed)		7-4-4 (8*) 18"		19	*Influenced to frost to 12 inches
1.1		SILT (ML), trace Sand, brown, moist, medium					
		Silt lenses at 5 1/2 feet	5	3-3-4 (7) 18"		30	LL=37, PL=27, PI=10 A-4
				TW 20"		34	DD=87 pcf WD=117 pcf
			10	5-3-4 (7) 18"		29	
891.5							Water not observed while drilling.
11.0		END OF BORING					
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-134**

LOCATION: See attached sketch

LATITUDE: 47.66150	LONGITUDE: -97.08055		
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 896.3 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
895.0		SILTY SAND (SM), brown, frozen (moist when thawed)		7-9-9 (18*) 15"		10	*Influenced by frost to 12 inches LL=20, PL=18, PI=2 A-4
1.3 893.3		SILTY SAND (SM), brown, moist, medium dense					
3.0		LEAN CLAY with SAND (CL), gray, moist, stiff to medium	5	5-3-4 (7) 18"		35	
				TW 24"		25	
			10	4-3-5 (8) 18"	0.75	23	LL=47, PL=23, PI=24 A-7-6
882.3							
14.0		LEAN CLAY (CL), little Sand, gray, moist, stiff to medium *Gray below 15 feet*	15	3-5-5 (10) 18"		25	
				TW 24"		27	DD=96 pcf WD=121 pcf
			20	2-3-4 (7) 18"		25	LL=40, PL=20, PI=20 A-6
875.3							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-135**

LOCATION: See attached sketch

LATITUDE:	47.67191	LONGITUDE:	-97.07754
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 890.7 ft	RIG: 7521	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
887.7		LEAN CLAY (CL), trace roots, black to brown, frozen (moist when thawed) to moist, stiff		7-5-8 (13*) 18"		16	*Influenced by frost to 12 inches
3.0		SILT (ML), little Sand, brown, wet, loose, iron oxide staining	5	4-3-3 (6) 18"		31	Nonplastic A-4
				TW 24"		29	
879.7			10	2-3-4 (7) 18"		29	
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **CAA-136**

LOCATION: See attached sketch

LATITUDE:	47.67391	LONGITUDE:	-97.07860
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 888.7 ft	RIG: 7521	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
887.2		SILTY, CLAYEY SAND (SC-SM), fine-grained, trace roots, black, frozen (moist when thawed), loose		3-4-5 (9*) 18"		16	*Influenced by frost to 18 inches LL=26, PL=21, PI=5 A-4
1.5		*Silt lenses from 1 1/2 to 7 feet* FAT CLAY with SAND (CH), trace Gravel, gray, stiff to medium					
			5	3-4-5 (9) 18"		31	
				TW 23"		29	DD=94 pcf WD=120 pcf
			10	2-3-5 (8) 18"		26	LL=51, PL=22, PI=29 A-7-6
875.7							
13.0		LEAN CLAY with SAND (CL), trace Gravel, brown, moist, medium					
			15	2-2-4 (6) 18"	0.5	28	
				TW 24"		29	DD=94 pcf WD=122 pcf
			20	1-2-3 (5) 18"	<0.25	27	LL=43, PL=21, PI=22 A-7-6
867.7							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-137**

LOCATION: See attached sketch

LATITUDE:	47.67783	LONGITUDE:	-97.07777
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	886.4 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
885.1		LEAN CLAY (CL), black, frozen (moist when thawed)		6-6-5 (11*) 18"		18	*Influenced by frost to 12 inches
1.3 / 883.4		LEAN CLAY (CL), Silt lenses, gray, moist, stiff					
3.0		SILT (ML), trace Sand, gray, wet, loose	5	5-3-4 (7) 18"		34	Nonplastic A-4
877.4				TW 3"		34	
9.0 / 875.4		FAT CLAY (CH), trace Sand, gray, stiff	10	3-4-5 (9) 18"	0.5	25	
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **CAA-138**

LOCATION: See attached sketch

LATITUDE:	47.68179	LONGITUDE:	-97.07759
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 887.1 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
884.1		LEAN CLAY with SAND (CL), trace roots, black to brown, frozen (moist when thawed) to moist, stiff		8-6-6 (12*) 18"		17	*Influenced by frost to 12 inches LL=33, PL=22, PI=11 A-4
3.0		SILT (ML), trace Sand, gray to brown, wet, loose, iron oxide staining	5	4-3-4 (7) 18"		33	
				TW 24"		33	
874.1			10	4-3-4 (7) 18"		26	LL=30, PL=28, PI=2 A-4
13.0		FAT CLAY (CH), gray, wet, soft to medium	15	1-1-3 (4) 18"		21	
				TW 24"		28	DD=96 pcf WD=123 pcf
866.1			20	2-2-3 (5) 18"		21	LL=60, PL=27, PI=33 A-7-6
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-139**

LOCATION: See attached sketch

LATITUDE:	47.68849	LONGITUDE:	-97.07759
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	882.5 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
879.5		LEAN CLAY (CL), trace Sand, trace roots, black, frozen (moist when thawed) to moist, medium		3-3-4 (7*) 18"		23	*Influenced by frost to 12 inches
3.0		SILT (ML), brown, wet, loose		3-3-3 (6) 18"		32	Nonplastic A-4
873.5				TW 3"		33	
9.0		FAT CLAY (CH), Silt lenses, gray, wet		3-3-3 (6) 18"		43	
871.5							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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BORING: **GDRL-140**

LOCATION: See attached sketch

LATITUDE:	47.69467	LONGITUDE:	-97.07760
DRILLER: L. Smillie	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 882.1 ft	RIG: 7521	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Grass

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
880.8		LEAN CLAY with SAND (CL), trace roots, black, frozen (moist when thawed), medium		3-3-3 (6*) 15"		21	*Influenced by frost to 18 inches
1.3		SILT (ML), little Sand, brown to gray, wet, loose, iron oxide staining					LL=41, PL=24, PI=17 A-7-6
			5	3-2-4 (6) 18"		37	
				TW 5"		46	
			10	2-2-3 (5) 18"		35	LL=34, PL=32, PI=2 A-4
871.1							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Interstate 29
Fargo, North Dakota

BORING: **GDRL-141**

LOCATION: See attached sketch

LATITUDE:	47.70095	LONGITUDE:	-97.07762
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	877.8 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
876.8		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		2-4-4 (8*) 18"		29	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), gray, moist, medium					
873.8							
4.0		LEAN CLAY (CL), trace Sand, brown, moist, loose		2-2-2 (4) 18"		37	LL=42, PL=27, PI=15 A-7-6
				TW 20"		39	DD=80 pcf WD=111 pcf
				1-2-2 (4) 18"		39	
866.8							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
Geotechnical Evaluation
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Fargo, North Dakota

BORING: **GDRL-142**

LOCATION: See attached sketch

LATITUDE:	47.70719	LONGITUDE:	-97.07766
DRILLER:	L. Smillie	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	875.6 ft	RIG:	7521
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
874.4		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed), stiff		6-6-7 (13*) 18"		22	*Influenced by frost to 16 inches LL=50, PL=22, PI=28 A-7-6
1.2		LEAN CLAY (CL), trace Sand, Silt lenses, gray to brown, moist, medium to soft, iron oxide staining					
			5	3-2-3 (5) 18"		43	
				TW 24"		42	DD=78 pcf WD=111 pcf
			10	1-2 (3) 18"		39	LL=46, PL=27, PI=19 A-7-6
864.6							Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-143**

LOCATION: See attached sketch

LATITUDE:	47.71355	LONGITUDE:	-97.07769
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION: 873.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
872.6		LEAN CLAY (CL), trace roots, black, frozen (moist when thawed)		5-5-5 (10*) 18"		29	*Influenced by frost to 16 inches
1.2		SILT (ML), trace Sand, brown and gray, moist, very loose					
			5	2-2-2 (4) 18"		38	LL=42, PL=31, PI=11 A-7-5
867.3							
6.5		LEAN CLAY (CL), little Sand, brown and gray, soft		TW 24"		44	DD=77 pcf WD=111 pcf
			10	0-1-2 (3) 18"		33	
			15	2-1-2 (3) 18"		32	LL=43, PL=20, PI=23 A-7-6
				TW 12"		31	
			20	0-1-2 (3) 18"		30	
852.8							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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BORING: **GDRL-144**

LOCATION: See attached sketch

LATITUDE:	47.71589	LONGITUDE:	-97.07763
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION: 841.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
840.2		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		6-5-7 (12*) 18"		21	*Influenced by frost to 12 inches
1.2		LEAN CLAY (CL), little to trace Sand, brown, moist, medium to soft					LL=49, PL=22, PI=27 A-7-6
			5	3-2-3 (5) 18"		43	
				TW 24"		43	
			10	1-2-2 (4) 18"			LL=44, PL=28, PI=16 A-7-6
830.4							Water not observed while drilling.
11.0		END OF BORING Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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Fargo, North Dakota

BORING: **CAA-145**

LOCATION: See attached sketch

LATITUDE:	47.71796	LONGITUDE:	-97.07739
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION: 872.1 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
871.1		FAT CLAY (CH), little Sand, trace roots, black, frozen (moist when thawed)		4-5-5 (10*) 18"		32	*Influenced by frost to 12 inches
1.0		LEAN CLAY (CL), trace Sand, brown and gray, moist, soft to stiff					
5				1-2-2 (4) 18"		36	LL=45, PL=27, PI=18 A-7-6
				TW 24"		24	DD=102 pcf WD=126 pcf
10				1-2-2 (4) 18"		38	
15				1-1-2 (3) 18"		31	LL=40, PL=29, PI=11 A-6
				TW 22"		40	DD=81 pcf WD=114 pcf
20				2-4-5 (9) 18"		21	
851.1							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
25							
30							

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BORING: **GDRL-146**

LOCATION: See attached sketch

LATITUDE:	47.72198	LONGITUDE:	-97.07707
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION: 868.5 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
867.5		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed)		4-5-6 (11*) 18"		25	*Influenced by frost to 12 inches
1.0		FAT CLAY (CH), trace Sand, brown, moist, soft					LL=53, PL=22, PI=31 A-7-6
			5	2-1-1 (2) 12"		53	
				TW 24"		47	
859.5							
9.0		LEAN CLAY (CL), trace Sand, brown, moist, soft	10	0-1-1 (2) 18"		30	LL=41, PL=28, PI=13 A-7-6
857.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **CAA-147**

LOCATION: See attached sketch

LATITUDE:	47.72563	LONGITUDE:	-97.07740
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/07/21	END DATE:	01/07/21
SURFACE ELEVATION:	866.2 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy, 26°		

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
864.9	FAT CLAY (CH), little Sand, trace roots, black, frozen (moist when thawed)		5-5-4 (9*) 18"		31	*Influenced by frost to 12 inches
1.3	LEAN CLAY (CL), trace Sand, brown and gray, moist, soft to medium					
		5	1-2-1 (3) 18"		34	LL=44, PL=28, PI=16 A-7-6
			TW 24"		43	DD=79 pcf WD=112 pcf
		10	3-2-2 (4) 18"		40	
853.2						
13.0	SILTY CLAY (CL-ML), little Sand, gray, moist, very stiff					
		15	7-8-8 (16) 18"		25	LL=22, PL=18, PI=4 A-4
849.2						
17.0	FAT CLAY (CH), gray, moist, soft		2-2-2 (4) 18"		26	
		20	1-2-2 (4) 18"		26	
845.2						
21.0	END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
		25				
		30				

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BORING: **CAA-148**

LOCATION: See attached sketch

LATITUDE:	47.72666	LONGITUDE:	-97.07755
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/07/21	END DATE: 01/07/21
SURFACE ELEVATION: 867.5 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy, 26°

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
866.7							
0.8		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed)		13-8-8 (16*) 18"			*Influenced by frost to 12 inches LL=39, PL=20, PI=19 A-6
		LEAN CLAY (CL), trace Sand, brown, moist, stiff to soft					
			5	3-4-5 (9) 18"		36	
				TW 24"		36	
			10	1-1-1 (2) 18"			LL=46, PL=23, PI=23 A-7-6
			15	4-3-3 (6) 18"		43	
850.5							
17.0		LEAN CLAY with SAND (CL), gray, moist, soft		TW 24"		25	
			20	1-2-2 (4) 18"			LL=40, PL=15, PI=25 A-6
846.5							
21.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			25				
			30				

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BORING: **GDRL-149**

LOCATION: See attached sketch

LATITUDE:	47.73289	LONGITUDE:	-97.07780
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 865.0 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
863.5		FAT CLAY (CH), with Sand, trace roots, black, frozen (moist when thawed), stiff		6-6-7 (13*) 18"		31	*Influenced by frost to 16 inches
1.5		LEAN CLAY (CL), trace Sand, brown, moist, soft					
			5	2-2-2 (4) 18"		39	LL=44, PL=25, PI=19 A-7-6
				TW 24"		43	DD=79 pcf WD=113 pcf
			10	1-2-2 (4) 18"		42	
854.0							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-150**

LOCATION: See attached sketch

LATITUDE:	47.73910	LONGITUDE:	-97.07780
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 864.9 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
863.7		SANDY LEAN CLAY (CL), trace roots, black, frozen (moist when thawed)		4-6-5 (11*) 18"		15	*Influenced by frost to 16 inches LL=49, PL=22, PI=27 A-7-6
1.2		LEAN CLAY (CL), trace Sand, brown, moist, soft					
			5	3-2-2 (4) 18"		41	
				TW 24"		47	
			10	1-2-2 (4) 18"		40	LL=43, PL=25, PI=18 A-7-6
853.9							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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BORING: **GDRL-151**

LOCATION: See attached sketch

LATITUDE:	47.74329	LONGITUDE:	-97.07779
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	863.9 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
862.7		FAT CLAY (CH), trace roots, little Sand, black, frozen (moist when thawed)		5-5-6 (11*) 18"		19	*Influenced by frost to 16 inches
1.2		FAT CLAY (CH), brown, moist, stiff to soft					
			5	2-2-2 (4) 18"		38	LL=52, PL=27, PI=25 A-7-6
				TW 24"		39	DD=81 pcf WD=112 pcf
			10	1-1-2 (3) 18"		45	
852.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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BORING: **GDRL-152**

LOCATION: See attached sketch

LATITUDE:	47.75148	LONGITUDE:	-97.07778
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	861.9 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
860.9		LEAN CLAY (CL), trace Sand, trace roots, black, frozen (moist when thawed)		4-6-6 (12*) 18"		21	*Influenced by frost to 16 inches
1.0		LEAN CLAY (CL), brown, frozen (moist when thawed) to moist, stiff					LL=42, PL=20, PI=22 A-7-6
858.9							
3.0		FAT CLAY (CH), trace Sand, brown, moist, medium to soft					
			5	2-2-3 (5) 18"		42	
				TW 21"		40	
			10	1-2-2 (4) 18"		45	LL=51, PL=27, PI=24 A-7-6
850.9							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

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BORING: **GDRL-153**

LOCATION: See attached sketch

LATITUDE:	47.75768	LONGITUDE:	-97.07778
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 860.7 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
859.6		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed)		4-5-6 (11*) 18"		25	*Influenced by frost to 16 inches
1.1		FAT CLAY (CH), brown, frozen (moist when thawed) to moist, stiff to soft					
				2-2-3 (5) 18"		37	LL=56, PL=22, PI=34 A-7-6
				TW 24"		41	DD=80 pcf WD=112 pcf
				1-2-2 (4) 18"		45	
849.7							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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BORING: **CAA-154**

LOCATION: See attached sketch

LATITUDE:	47.76391	LONGITUDE:	-97.07777
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/06/21	END DATE:	01/06/21
SURFACE ELEVATION:	859.0 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
856.0		LEAN CLAY (CL), trace Sand, Silt lenses, black to brown, frozen (moist when thawed) to moist, stiff		7-7-9 (16*) 18"		16	*Influenced by frost to 12 inches LL=35, PL=22, PI=13 A-4
3.0		FAT CLAY (CH), brown, moist, medium to soft, iron oxide staining	5	3-2-3 (5) 18"	<0.25	42	
				TW 24"		45	
			10	1-2-2 (4) 18"		39	LL=53, PL=27, PI=26 A-7-6
			15	1-1-2 (3) 18"		47	
840.0				TW 24"		44	
19.0		SILT (ML), gray, wet, loose	20	2-2-4 (6) 16"		30	Nonplastic A-4
838.0							
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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Geotechnical Evaluation
8-029(200)069;PCN22888
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Fargo, North Dakota

BORING: **GDRL-155**

LOCATION: See attached sketch

LATITUDE:	47.77024	LONGITUDE:	-97.07777
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 857.6 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
856.4		FAT CLAY (CH), black, frozen (moist when thawed)		6-5-6 (11*) 18"		27	*Influenced by frost to 12 inches
1.2		LEAN CLAY (CL), brown, moist, stiff, iron oxide staining					
854.6							
3.0		FAT CLAY (CH), gray, moist, medium, iron oxide staining		2-2-3 (5) 18"		34	LL=54, PL=23, PI=31 A-7-6
5							
				TW 24"		39	DD=82 pcf WD=113 pcf
10				1-2-3 (5) 18"		40	
846.6							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
15							
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25							
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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: **GDRL-156**

LOCATION: See attached sketch

LATITUDE:	47.77609	LONGITUDE:	-97.07776
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 856.3 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
855.3		LEAN CLAY (CL), little Sand, black, frozen (moist when thawed)		4-6-6 (12*) 18"		21	*Influenced by frost to 12 inches
1.0		LEAN CLAY (CL), little Sand, brown, moist, stiff					LL=41, PL=19, PI=22 A-7-6
			5	4-7-9 (16) 18"		26	
849.8							
6.5		FAT CLAY (CH), little Sand, gray, moist, medium		TW 20"		47	
			10	1-3-3 (6) 18"		39	LL=53, PL=25, PI=28 A-7-6
843.3							
13.0		CLAYEY SAND (SC), fine-grained, gray, moist, very loose					
			15	1-2-2 (4)		22	
840.3							
16.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			20				
			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: **GDRL-157**

LOCATION: See attached sketch

LATITUDE:	47.78195	LONGITUDE:	-97.07775
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 853.7 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
852.7		FAT CLAY (CH), black, frozen (moist when thawed)		4-3-4 (7*) 16"		26	*Influenced by frost to 12 inches
1.0		LEAN CLAY (CL), Silt lenses, brown to gray, moist, medium					
850.7		*Iron oxide staining from 1 to 11 feet*					
3.0		FAT CLAY (CH), trace Sand, Silt lenses, gray to brown, medium to soft		2-2-3 (5) 18"		34	LL=53, PL=23, PI=30 A-7-6
				TW 22"		42	DD=78 pcf WD=110 pcf
				1-2-2 (4) 18"			
842.7							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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

BORING: **CAA-158**

LOCATION: See attached sketch

LATITUDE:	47.78827	LONGITUDE:	-97.07774
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/06/21	END DATE: 01/06/21
SURFACE ELEVATION: 852.8 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
851.3		LEAN CLAY (CL), trace Sand, trace roots, black, frozen (moist when thawed) to moist, medium		4-4-4 (8*) 18"		23	*Influenced by frost to 12 inches LL=38, PL=21, PI=17 A-6
1.5		FAT CLAY (CH), trace Sand, Silt lenses, brown to gray, moist, medium to soft					
		Iron oxide staining from 5 to 21 feet	5	3-2-3 (5) 18"		42	
				TW 24"		41	
			10	1-2-2 (4) 18"	0.5	37	LL=58, PL=26, PI=32 A-7-6
			15	1-2-2 (4) 18"		45	
833.8				TW 24"		46	DD=75 pcf WD=110 pcf
19.0		LEAN CLAY with SAND (CL), gray, moist, soft	20	1-1-2 (3) 18"		43	LL=38, PL=18, PI=20 A-6
831.8							
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			30				

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BORING: **GDRL-159**

LOCATION: See attached sketch

LATITUDE:	47.79301	LONGITUDE:	-97.07774
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 851.1 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
850.4		FAT CLAY (CH), trace roots, black, frozen (moist when thawed)		3-3-5 (8*) 18"		25	*Influenced by frost to 8 inches
0.7		LEAN CLAY (CL), trace Sand, brown, frozen (moist when thawed), soft *Iron oxide staining from 1 to 11 feet*					
		Silt lenses below 5 feet	5	1-2-2 (4) 18"		26	LL=48, PL=23, PI=25 A-7-6
844.1							
7.0		FAT CLAY (CH), gray, moist, soft		TW 23"		44	
			10	1-2-2 (4) 18"		43	
840.1							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Fargo, North Dakota

BORING: **GDRL-160**

LOCATION: See attached sketch

LATITUDE:	47.79771	LONGITUDE:	-97.07775
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 850.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
849.9							
0.5		LEAN CLAY (CL), trace Sand, trace Gravel, black, frozen (moist when thawed)		3-4-3 (7*) 12"		26	*Influenced by frost to 12 inches LL=37, PL=26, PI=11 A-6
		LEAN CLAY (CL), brown, frozen (moist when thawed) to moist, medium, iron oxide staining					
847.4							
3.0		FAT CLAY (CH), gray, moist, medium, iron oxide staining		2-2-3 (5) 18"		39	
5							
				TW 21"		39	DD=82 pcf WD=114 pcf
		Silt lenses at 10 feet		1-2-3 (5) 18"		37	LL=55, PL=25, PI=30 A-7-6
10							
839.4							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
30							

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Fargo, North Dakota

BORING: **CAA-161**

LOCATION: See attached sketch

LATITUDE:	47.80245	LONGITUDE:	-97.07776
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	849.3 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
848.2		FAT CLAY (CH), black, frozen (moist when thawed)		4-5-6 (11*) 18"		28	*Influenced by frost to 12 inches
1.1		*Iron oxide staining 1 to 11 feet*					
		LEAN CLAY (CL), Silt lenses, brown, moist, stiff to soft					
			5	1-2-2 (4) 18"		38	LL=43, PL=24, PI=19 A-7-6
				TW 22"		36	DD=85 pcf WD=115 pcf
840.3							
9.0		FAT CLAY (CH), gray, moist, soft	10	1-2-2 (4) 18"	0.5	40	
			15	1-1-3 (4) 18"	0.5	40	LL=68, PL=24, PI=44 A-7-6
				TW 24"		47	DD=74 pcf WD=108 pcf
			20	1-2 (3) 18"		44	
828.3							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings	25				
			30				

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Fargo, North Dakota

BORING: **GDRL-162**

LOCATION: See attached sketch

LATITUDE:	47.80749	LONGITUDE:	-97.07777
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 848.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
847.6		LEAN CLAY (CL), black, frozen (moist when thawed)		2-3-4 (7*) 18"		28	*Influenced by frost to 10 inches LL=36, PL=27, PI=9 A-4
0.8		LEAN CLAY (CL), Silt lenses, brown to gray, moist, medium to soft					
			5	1-2-1 (3) 18"		38	
				TW 24"		36	
			10	1-2 (3) 18"		35	LL=49, PL=23, PI=26 A-7-6
837.4							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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See Descriptive Terminology sheet for explanation of abbreviations

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Fargo, North Dakota

BORING: **GDRL-163**

LOCATION: See attached sketch

LATITUDE:	47.81208	LONGITUDE:	-97.07778
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/20	END DATE:	01/05/20
SURFACE ELEVATION:	848.0 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
847.2		FAT CLAY (CH), black, frozen (moist when thawed)		3-4-5 (9*) 18"		26	*Influenced by frost to 12 inches
0.8		LEAN CLAY (CL), Silt lenses, brown and gray, frozen (moist when thawed) to moist, stiff to soft *Iron oxide staining from 1 to 11 feet* *Trace roots at 1 1/2 feet*					
			5	2-2-1 (3) 18"		41	LL=45, PL=26, PI=19 A-7-6
				TW 22"		42	DD=79 pcf WD=112 pcf
			10	1-2-2 (4) 18"	0.5	42	
837.0							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Interstate 29
Fargo, North Dakota

BORING: **CAA-164**

LOCATION: See attached sketch

LATITUDE:	47.81712	LONGITUDE:	-97.07778
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	847.9 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
847.1						
0.8	LEAN CLAY (CL), trace Sand, Silt lenses, black, frozen (moist when thawed), iron oxide staining		6-7-9 (16*) 18"		18	*Influenced by frost to 24 inches LL=33, PL=21, PI=12 A-6
844.9	LEAN CLAY (CL), brown, frozen (moist when thawed) to moist, stiff					
3.0	FAT CLAY (CH), trace Sand, Silt lenses, gray, moist, soft to medium					
		5	2-1-2 (3) 18"	<0.25	39	
			TW 24"		39	DD=82 pcf WD=114 pcf
		10	1-2-2 (4) 18"		36	LL=61, PL=24, PI=37 A-7-6
	Buried Topsoil at 10 1/2 feet					
		15	1-3-3 (6) 18"		47	
			TW 24"		48	DD=74 pcf WD=109 pcf
		20	1-2-2 (4) 18"		44	LL=58, PL=30, PI=28 A-7-5
826.9						
21.0	END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
		25				
		30				

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Fargo, North Dakota

BORING: **GDRL-165**

LOCATION: See attached sketch

LATITUDE:	47.82193	LONGITUDE:	-97.07779
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	846.6 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
846.0							
0.6		LEAN CLAY (CL), brown, frozen (moist when thawed)		4-5-6 (11*) 16"		26	*Influenced by frost to 22 inches
		LEAN CLAY (CL), Silt lenses, brown to gray, frozen (moist when thawed) to wet, soft, iron oxide staining					
5				2-2-2 (4) 18"		37	LL=42, PL=26, PI=16 A-7-6
				TW 24"		38	
10				0-1-2 (3) 16"		42	
835.6							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
25							
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Geotechnical Evaluation
8-029(200)069;PCN22888
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Fargo, North Dakota

BORING: **GDRL-166**

LOCATION: See attached sketch

LATITUDE: 47.82670	LONGITUDE: -97.07780		
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/05/21	END DATE: 01/05/21
SURFACE ELEVATION: 845.3 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
844.6		LEAN CLAY (CL), trace roots, black, frozen (moist when thawed)		4-4-5 (9*) 14"		23	*Influenced by frost to 12 inches LL=35, PL=24, PI=11 A-6
0.7		LEAN CLAY (CL), trace Sand, Silt lenses, brown to gray, moist, stiff					
839.3			5	1-1-2 (3) 16"		44	
6.0		FAT CLAY (CH), trace Sand, gray, moist, soft to medium		TW 23"		40	DD=80 pcf WD=112 pcf
834.3			10	1-2-3 (5) 18"		37	LL=63, PL=24, PI=39 A-7-6
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

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Project Number B2009724
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Fargo, North Dakota

BORING: **CAA-167**

LOCATION: See attached sketch

LATITUDE:	47.83151	LONGITUDE:	-97.07780
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	843.1 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
842.6							
0.5		LEAN CLAY (CL), Silt lenses, black, frozen (moist when thawed)		4-5-7 (12*) 16"		28	*Influenced by frost to 12 inches
		LEAN CLAY (CL), Silt lenses, brown, frozen (moist when thawed) to moist, stiff, iron oxide staining					
840.1							
3.0		SILT (ML), little Sand, gray, moist, medium, iron oxide staining					
			5	3-3-4 (7) 18"		29	Nonplastic A-4
836.1							
7.0		FAT CLAY (CH), Silt lenses, gray, moist, medium, iron oxide staining		TW 22"		39	DD=82 pcf WD=113 pcf
			10	1-2-3 (5) 18"	0.5	42	
			15	1-3-3 (6) 18"		37	LL=69, PL=27, PI=42 A-7-6
				TW 24"		41	DD=80 pcf WD=112 pcf
			20	1-2-3 (5) 18"		46	
822.1							
21.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			25				
			30				

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Fargo, North Dakota

BORING: **GDRL-168**

LOCATION: See attached sketch

LATITUDE:	47.83671	LONGITUDE:	-97.07785
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/05/21	END DATE:	01/05/21
SURFACE ELEVATION:	840.5 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
839.9							
0.6		LEAN CLAY (CL), trace roots, black, frozen (moist when thawed)		4-3-3 (6*) 18"			*Influenced by frost to 24 inches
		LEAN CLAY (CL), Silt lenses, brown, frozen (moist when thawed) to moist, medium, iron oxide staining					LL=37, PL=24, PI=13 A-6
836.5							
4.0		FAT CLAY (CH), Silt lenses, gray, moist, soft to medium, iron oxide staining		1-1-2 (3) 18"		35	
				TW 22"		41	
				1-2-3 (5) 18"		38	LL=56, PL=28, PI=28 A-7-6
829.5							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

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Fargo, North Dakota

BORING: **GDRL-169**

LOCATION: See attached sketch

LATITUDE:	47.84132	LONGITUDE:	-97.07932
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	840.4 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
~~840.1~~ 0.3		LEAN CLAY (CL), trace organic, black, frozen (moist when thawed)		3-5-5 (10*) 16"		10	*Influenced by frost to 22 inches
		LEAN CLAY (CL), Silt lenses, brown, frozen (moist when thawed) to moist, stiff					
836.9 3.5		FAT CLAY (CH), gray becoming, moist, medium, iron oxide staining		2-2-3 (5) 16"		34	LL=60, PL=26, PI=34 A-7-6
				TW 24"		40	DD=80 pcf WD=112 pcf
		MIneralization at 10 1/2 feet		1-2-3 (5) 18"	<0.25	41	
829.4 11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					

5 10 15 20 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-170**

LOCATION: See attached sketch

LATITUDE:	47.84554	LONGITUDE:	-97.08260
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 841.4 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
		SILTY SAND (SM), fine-grained, trace roots, black, frozen (moist when thawed) to moist, loose		8-3-5 (8*) 10"		4	*Influenced by frost to 12 inches Nonplastic A-1-b
837.9 3.5		LEAN CLAY (CL), trace Sand, Silt lenses, brown, medium to soft, iron oxide staining	5	2-3-2 (5) 16"		35	
				TW 24"		39	DD=81 pcf WD=113 pcf
			10	1-2 (3) 18"		38	LL=49, PL=23, PI=26 A-7-6
829.4 12.0		FAT CLAY (CH), trace Sand, gray, moist, medium *Silt lenses 15 to 21 feet*	15	1-2-3 (5) 18"		45	
				TW 24"		38	DD=82 pcf WD=114 pcf
820.4			20	1-2-3 (5) 18"		43	LL=91, PL=29, PI=62 A-7-6
21.0		END OF BORING Boring then backfilled with auger cuttings	25				Water not observed while drilling.
			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: **GDRL-171**

LOCATION: See attached sketch

LATITUDE: 47.85031	LONGITUDE: -97.08624		
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 839.1 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
838.0		FAT CLAY (CH), trace Sand, trace roots, black, frozen (moist when thawed)		5-5-5 (10*) 18"		24	*Influenced by frost to 12 inches
1.1		FAT CLAY (CH), Silt lenses, brown, moist, medium, iron oxide staining					
			5	3-4-4 (8) 18"		32	LL=65, PL=26, PI=39 A-7-6
				TW 22"		39	
			10	2-3-3 (6) 18"	1	38	
828.1							
11.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					
			15				
			20				
			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: **GDRL-172**

LOCATION: See attached sketch

LATITUDE:	47.85512	LONGITUDE:	-97.08758
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	837.5 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
~~837.2~~ 0.3		LEAN CLAY (CL), black, frozen (moist when thawed)		2-3-3 (6*) 18"		24	*Influenced by frost to 12 inches
834.5 3.0		LEAN CLAY (CL), trace Sand, trace roots, brown, frozen (moist when thawed) to moist, medium					LL=38, PL=24, PI=14 A-6
		FAT CLAY (CH), trace Sand, brown, moist, medium, iron oxide staining	5	2-2-3 (5) 18"	1	34	
				TW 24"		40	DD=79 pcf WD=111 pcf
826.5 11.0		END OF BORING	10	1-3-3 (6) 18"	0.5	38	LL=87, PL=29, PI=58 A-7-6
		Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			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-173**

LOCATION: See attached sketch

LATITUDE:	47.86050	LONGITUDE:	-97.08756
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	837.9 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
836.6		FAT CLAY (CH), little Sand, black, frozen (moist when thawed)		7-7-6 (13*) 18"		22	*Influenced by frost to 15 inches
1.3		FAT CLAY (CH), brown to gray, moist, medium to soft, iron oxide staining					
			5	3-3-3 (6) 18"	0.5	36	LL=65, PL=29, PI=36 A-7-6
				TW 24"		44	
			10	1-2-2 (4) 18"	<0.25	46	
		Trace mineralization at 10 1/2 feet					
			15	1-2-3 (5) 18"		40	LL=82, PL=26, PI=56 A-7-6
				TW 24"		44	DD=76 pcf WD=109 pcf
			20	1-2-2 (4) 18"		43	
816.9		*Silt seams at 20 1/2 feet*					
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: **GDRL-174**

LOCATION: See attached sketch

LATITUDE: 47.86524	LONGITUDE: -97.08754		
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 836.2 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Partly cloudy

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
835.4		LEAN CLAY (CL), slightly organic, black, frozen (moist when thawed)		5-5-4 (9*) 16"		21	*Influenced by frost to 10 inches LL=36, PL=21, PI=15 A-6
0.8		LEAN CLAY (CL), Silt lenses, brown, moist, stiff, iron oxide staining					
832.2							
4.0		FAT CLAY (CH), Silt lenses, gray, moist, medium, iron oxide staining		2-3-4 (7) 18"	0.5	42	
			5	TW 21"		41	
			10	1-2-3 (5) 18"		38	LL=63, PL=25, PI=38 A-7-6
825.2							
11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			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: **GDRL-175**

LOCATION: See attached sketch

LATITUDE:	47.86994	LONGITUDE:	-97.08750
DRILLER:	D. Nash	LOGGED BY:	T. Sanders
START DATE:	01/04/21	END DATE:	01/04/21
SURFACE ELEVATION:	837.5 ft	RIG:	7520
METHOD:	3 1/4" HSA	SURFACING:	Grass
WEATHER:	Partly cloudy		

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
		LEAN CLAY (CL), trace Sand, trace roots, black to gray, frozen (moist when thawed) to moist, stiff		5-5-6 (11*) 16"		20	*Influenced by frost to 12 inches
834.0 3.5		FAT CLAY (CH), brown, moist, medium to soft					
5				2-2-3 (5) 18"		33	LL=60, PL=24, PI=36 A-7-6
				TW 24"		41	DD=80 pcf WD=112 pcf
10				2-2 (4) 18"	0.5	42	
826.5 11.0		END OF BORING Boring then backfilled with auger cuttings					Water not observed while drilling.
15							
20							
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-176**

LOCATION: See attached sketch

LATITUDE:	47.87470	LONGITUDE:	-97.08747
DRILLER: D. Nash	LOGGED BY: T. Sanders	START DATE: 01/04/21	END DATE: 01/04/21
SURFACE ELEVATION: 834.5 ft	RIG: 7520	METHOD: 3 1/4" HSA	SURFACING: Grass	WEATHER: Sunny

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
831.5		LEAN CLAY with SAND (CL), little Gravel, trace roots, trace asphalt fragments, black to gray, frozen (moist when thawed) to moist		9-6-5 (11*) 16"		16	*Influenced by frost to 12 inches LL=40, PL=21, PI=19 A-6
3.0 827.5		LEAN CLAY (CL), Silt lenses, brown, moist, medium, iron oxide staining	5	2-3-2 (5) 16"		31	
7.0		FAT CLAY (CH), gray, moist, medium, iron oxide staining		TW 20"		38	
		Trace iron concretions at 10 1/2 feet	10	1-2-3 (5) 18"	1	35	LL=65, PL=26, PI=39 A-7-6
		Silt seams 15 to 21 feet	15	2-2-3 (5) 18"		46	
				TW 24"		45	DD=75 pcf WD=109 pcf
813.5			20	2-3 (5) 18"	0.5		LL=57, PL=21, PI=36 A-7-6
21.0		END OF BORING Boring then backfilled with auger cuttings	25 30				Water not observed while drilling.

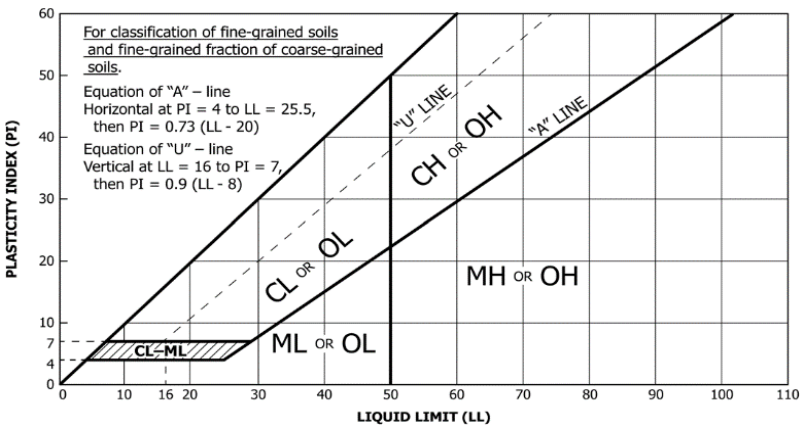
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Descriptive Terminology of Soil

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.



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 (▼).

Laboratory Tests

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

Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

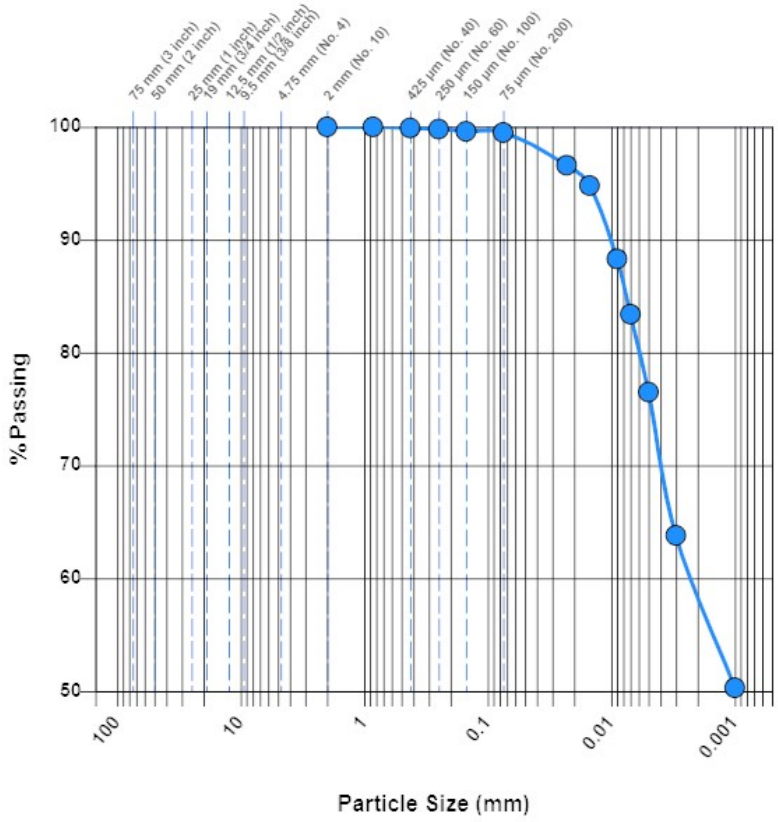
Sample Information

Sample Number:	360498	**Depth (ft):**	4.5-6
Boring Number:	CAA-001	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.5	-
23.1 (µm)	96.6	-
14.8 (µm)	94.8	-
8.9 (µm)	88.3	-
6.5 (µm)	83.4	-
4.8 (µm)	76.5	-
2.5 (µm)	63.8	-
1.1 (µm)	50.3	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(60)

Gravel (%):	0	**Sand (%):**	0.5	**Silt (%):**	23.0	**Clay (%):**	76.5

D_{60} (µm): 2.4

General

Remarks: LL=80, PL=30, PI=50

The results included in this report relate only to the items inspected or tested. Additionally, 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 the prior written approval.

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

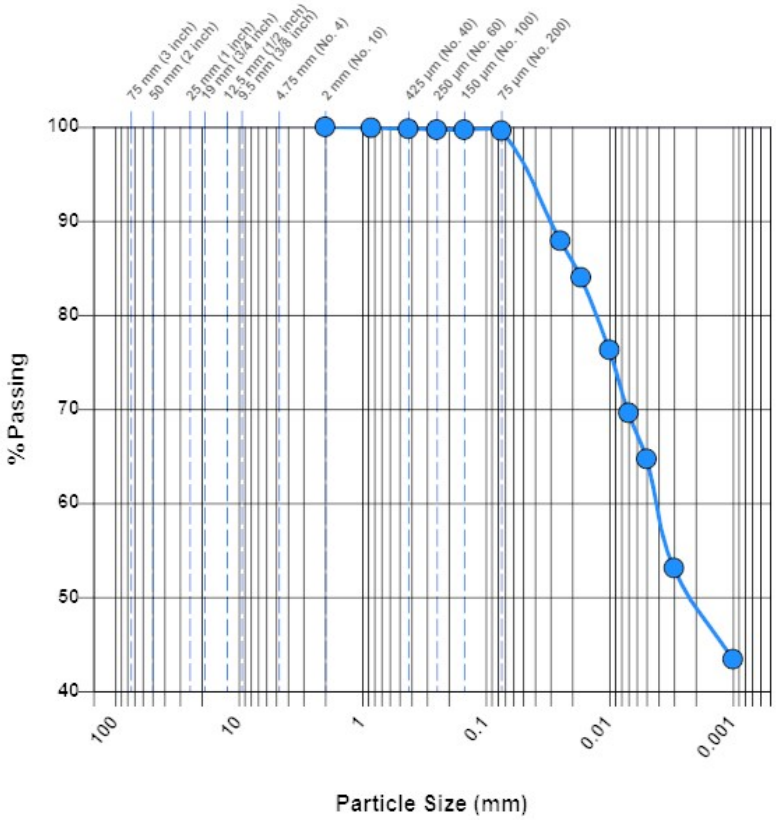
Sample Information

Sample Number:	360497	**Depth (ft):**	14.5-16
Boring Number:	CAA-001	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
25.4 (µm)	87.9	-
16.5 (µm)	84.0	-
9.9 (µm)	76.3	-
7.2 (µm)	69.6	-
5.2 (µm)	64.7	-
2.7 (µm)	53.1	-
1.2 (µm)	43.4	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(58)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	34.9	**Clay (%):**	64.7

D_{60} (µm): 4.2

General

Remarks: LL=76, PL=27, PI=49

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

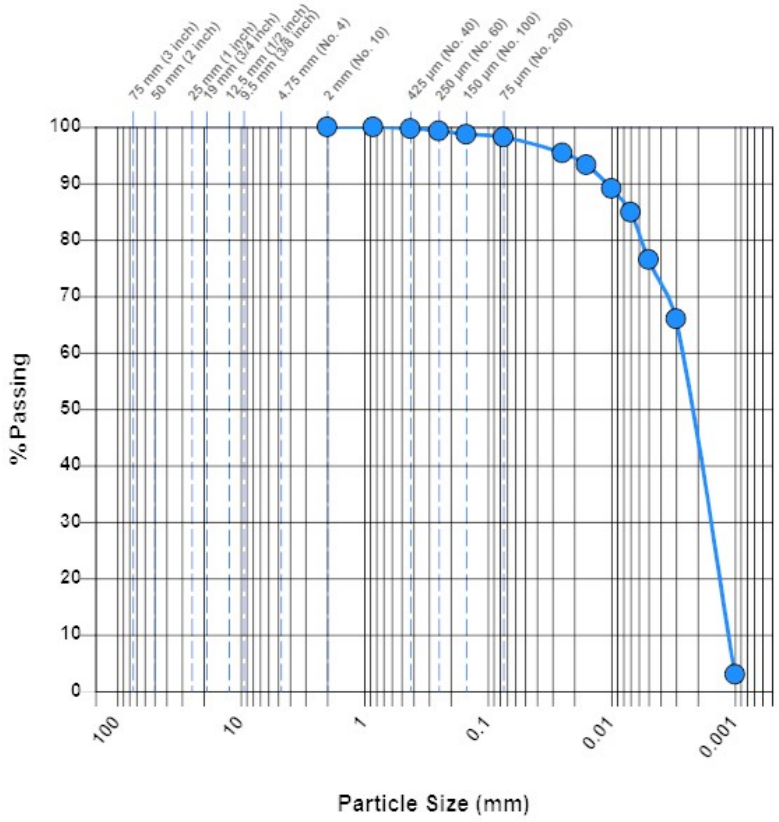
Sample Information

Sample Number:	360500	**Depth (ft):**	0.5-2
Boring Number:	GDRL-002	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	98.7	-
75 µm (No. 200)	98.2	-
25.4 (µm)	95.4	-
16.3 (µm)	93.3	-
9.6 (µm)	89.1	-
6.9 (µm)	84.9	-
5.1 (µm)	76.5	-
2.6 (µm)	66.0	-
1.3 (µm)	3.0	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(61)

Gravel (%):	0	**Sand (%):**	1.8	**Silt (%):**	21.7	**Clay (%):**	76.5		
D_{60} (µm):	2.8	**D_{30} (µm):**	1.9	**D_{10} (µm):**	1.2	**C_u:**	2.33	**C_c:**	1.07

General

Remarks: LL=81, PL=29, PI=52

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

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Phone: 701-255-7180

Client:

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

Project:

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

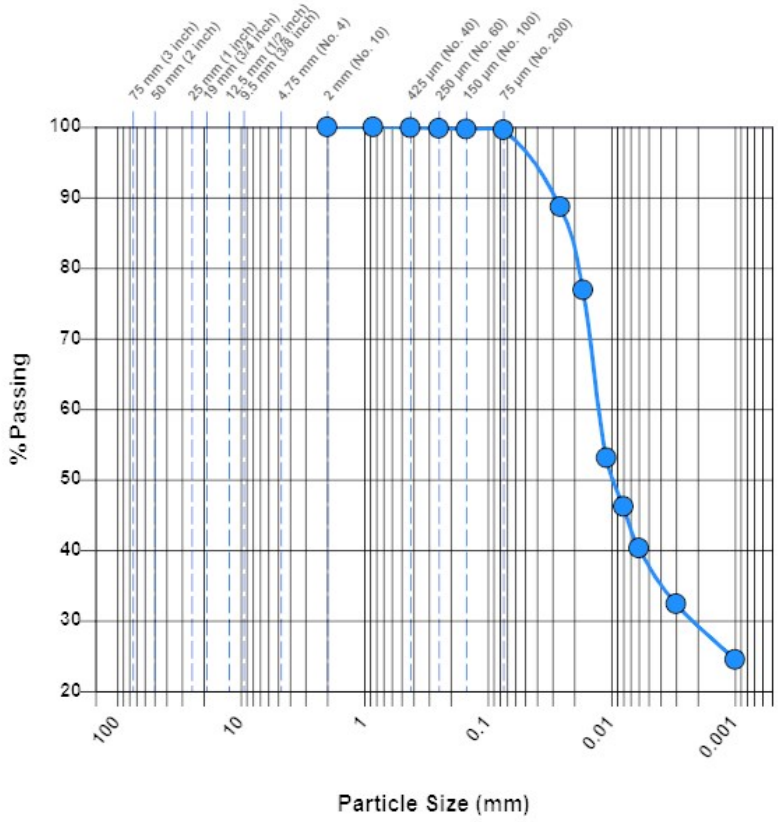
Sample Information

Sample Number:	360477	**Depth (ft):**	9.5-11
Boring Number:	GDRL-002	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
75 µm (No. 200)	99.6	-
25.7 (µm)	88.7	-
17.3 (µm)	76.9	-
11.1 (µm)	53.1	-
8.1 (µm)	46.2	-
5.8 (µm)	40.3	-
2.9 (µm)	32.4	-
1.3 (µm)	24.5	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(39)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	61.9	**Clay (%):**	37.7
D_{60} (µm):	12.7	**D_{30} (µm):**	2.4				

General

Remarks: LL=59, PL=25, PI=34

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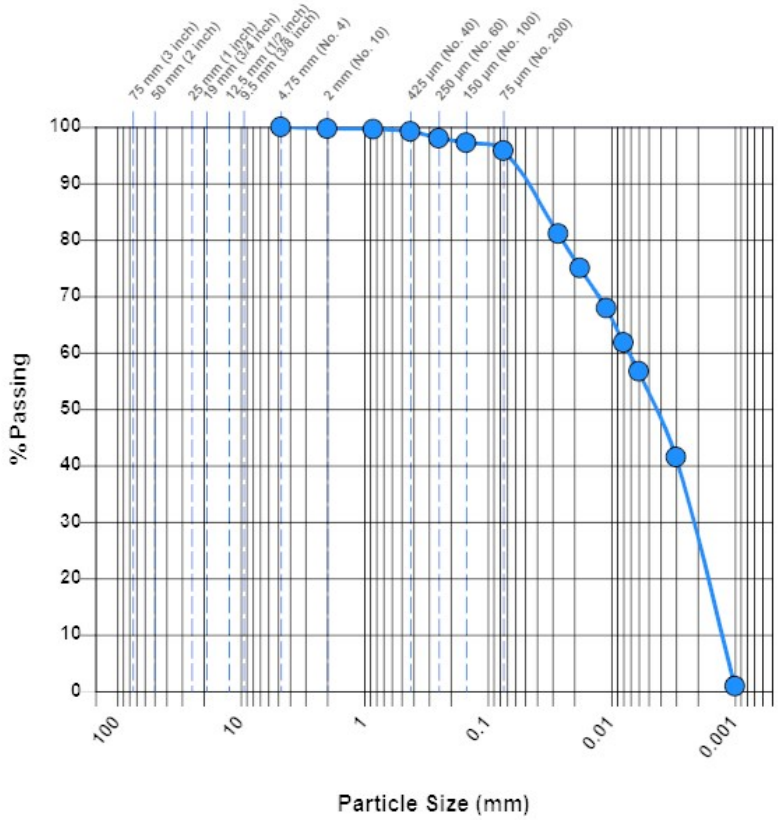
Sample Information

Sample Number:	360486	**Depth (ft):**	0.5-2
Boring Number:	GDRL-004	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	99.2	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	95.8	-
27.2 (µm)	81.1	-
17.7 (µm)	75.0	-
10.5 (µm)	67.9	-
7.6 (µm)	61.8	-
5.5 (µm)	56.7	-
2.9 (µm)	41.5	-
1.4 (µm)	0.9	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(51)

Gravel (%):	0.0	**Sand (%):**	4.2	**Silt (%):**	44.2	**Clay (%):**	51.6		
D_{60} (µm):	7.3	**D_{30} (µm):**	2.4	**D_{10} (µm):**	1.4	**C_u:**	5.21	**C_c:**	0.56

General

Remarks: LL=79, PL=35, PI=44

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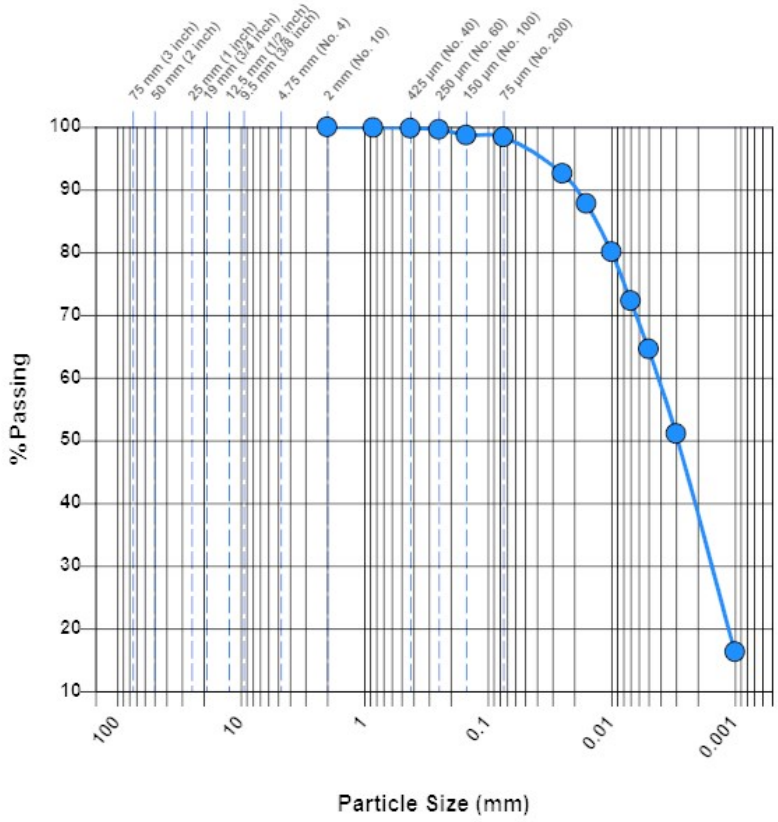
Sample Information

Sample Number:	360473	**Depth (ft):**	9.5-11
Boring Number:	GDRL-004	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.4	-
24.7 (µm)	92.6	-
16.1 (µm)	87.8	-
9.7 (µm)	80.1	-
7.1 (µm)	72.3	-
5.2 (µm)	64.6	-
2.7 (µm)	51.1	-
1.3 (µm)	16.3	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(54)

Gravel (%):	0	**Sand (%):**	1.6	**Silt (%):**	33.8	**Clay (%):**	64.6
D_{60} (µm):	4.3	**D_{30} (µm):**	1.8				

General

Remarks: LL=74, PL=27, PI=47

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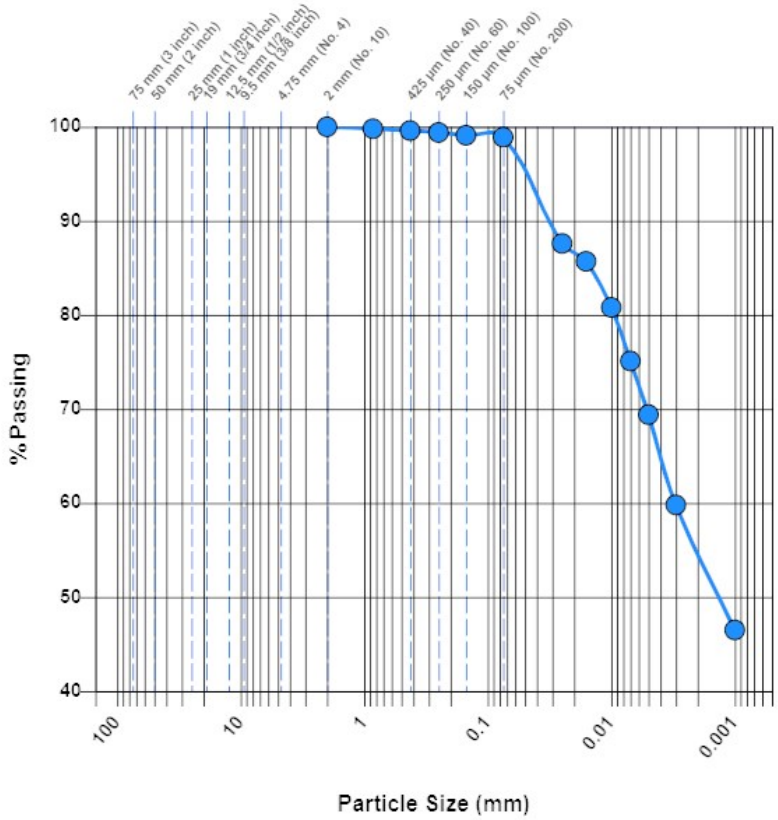
Sample Information

Sample Number:	360479	**Depth (ft):**	4.5-6
Boring Number:	GDRL-005	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.1	-
75 µm (No. 200)	98.9	-
25.4 (µm)	87.6	-
16.2 (µm)	85.7	-
9.6 (µm)	80.8	-
7.0 (µm)	75.1	-
5.1 (µm)	69.4	-
2.6 (µm)	59.8	-
1.2 (µm)	46.5	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(66)

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	29.5	**Clay (%):**	69.4

D_{60} (µm): 3.0

General

Remarks: LL=83, PL=26, PI=57

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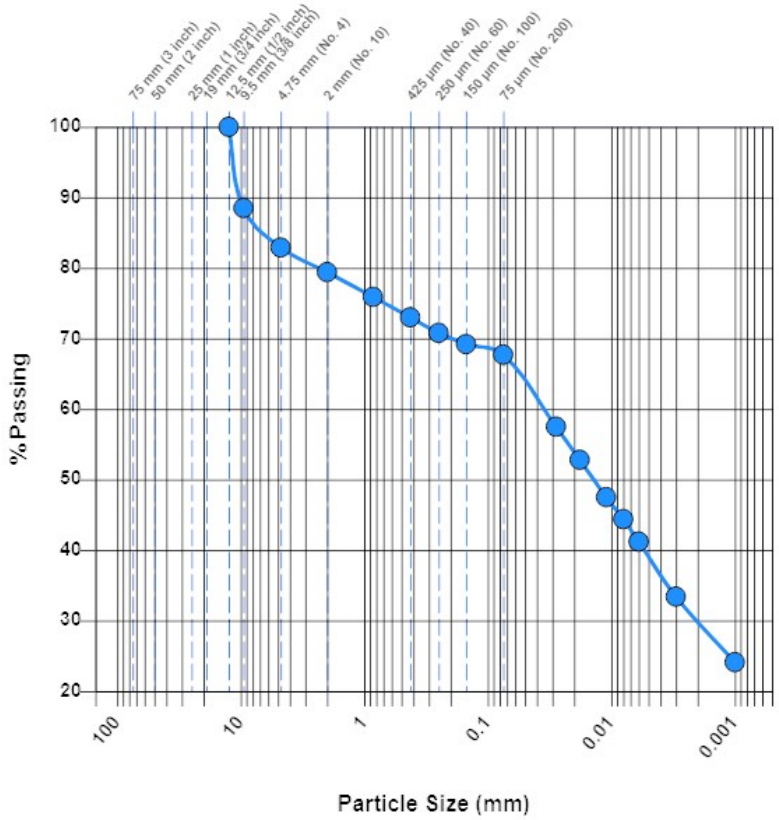
Sample Information

Sample Number:	360482	**Depth (ft):**	0.5-2
Boring Number:	CAA-006	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
12.5 mm (1/2 inch)	100.0	-
9.5 mm (3/8 inch)	88.5	-
4.75 mm (No. 4)	82.9	-
2 mm (No. 10)	79.4	-
850 µm (No. 20)	75.9	-
425 µm (No. 40)	73.0	-
250 µm (No. 60)	70.8	-
150 µm (No. 100)	69.2	-
75 µm (No. 200)	67.7	-
28.1 (µm)	57.5	-
18.3 (µm)	52.8	-
10.8 (µm)	47.5	-
7.7 (µm)	44.4	-
5.6 (µm)	41.2	-
2.8 (µm)	33.4	-
1.2 (µm)	24.1	-



Soil Classification: CH Fat Clay, dark brown and gray, A-7-6(31)

Gravel (%):	17.1	**Sand (%):**	15.2	**Silt (%):**	29.1	**Clay (%):**	38.6
D_{60} (µm):	39.5	**D_{30} (µm):**	2.3				

General

Remarks: LL=72, PL=25, PI=47

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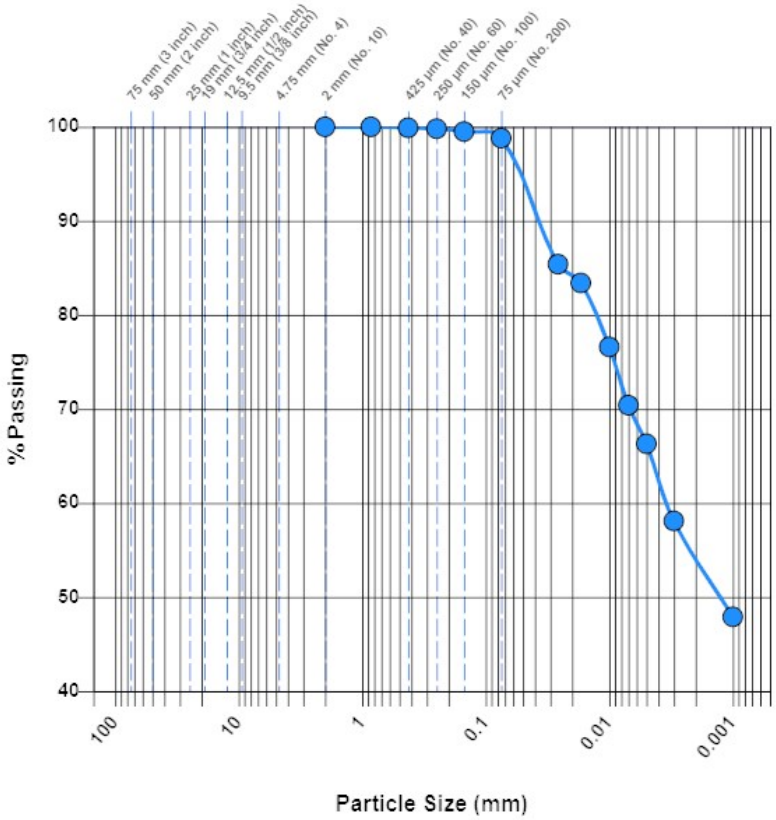
Sample Information

Sample Number:	360475	**Depth (ft):**	9.5-11
Boring Number:	CAA-006	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.5	-
75 µm (No. 200)	98.8	-
26.3 (µm)	85.4	-
16.8 (µm)	83.4	-
10.1 (µm)	76.6	-
7.3 (µm)	70.4	-
5.3 (µm)	66.3	-
2.7 (µm)	58.1	-
1.2 (µm)	47.9	-



Soil Classification: CH Fat Clay, black, A-7-5(69)

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	32.5	**Clay (%):**	66.3

D_{60} (µm): 3.5

General

Remarks: LL=95, PL=39, PI=56

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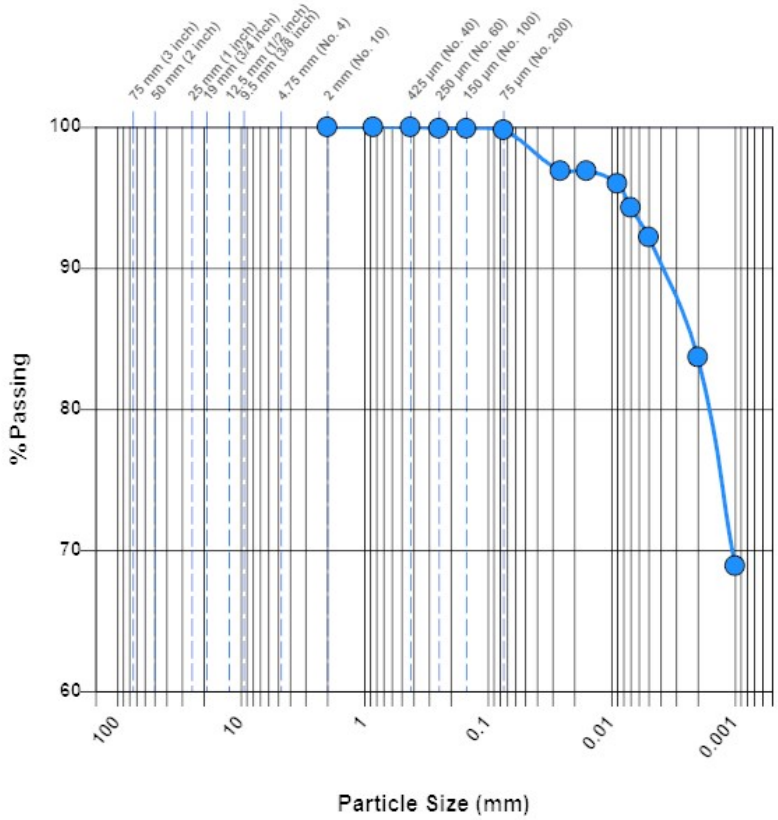
Sample Information

Sample Number:	360495	**Depth (ft):**	19.5-21
Boring Number:	CAA-006	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
25.6 (µm)	96.9	-
16.2 (µm)	96.9	-
9.3 (µm)	96.0	-
6.6 (µm)	94.3	-
4.7 (µm)	92.2	-
2.4 (µm)	83.7	-
1.1 (µm)	68.9	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(77)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	7.6	**Clay (%):**	92.2

General

Remarks: LL=98, PL=35, PI=63

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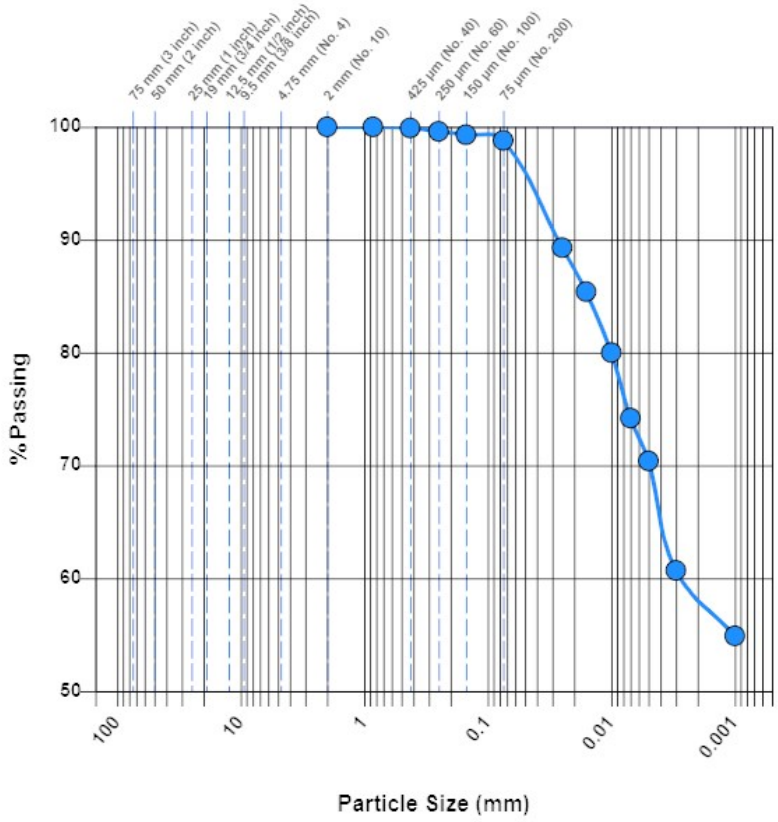
Sample Information

Sample Number:	360499	**Depth (ft):**	4.5-6
Boring Number:	CAA-007	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.8	-
25.2 (µm)	89.3	-
16.3 (µm)	85.4	-
9.7 (µm)	80.0	-
7.1 (µm)	74.2	-
5.1 (µm)	70.4	-
2.6 (µm)	60.7	-
1.1 (µm)	54.9	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(61)

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	28.4	**Clay (%):**	70.4
D_{60} (µm):	2.8						

General

Remarks: LL=82, PL=30, PI=52

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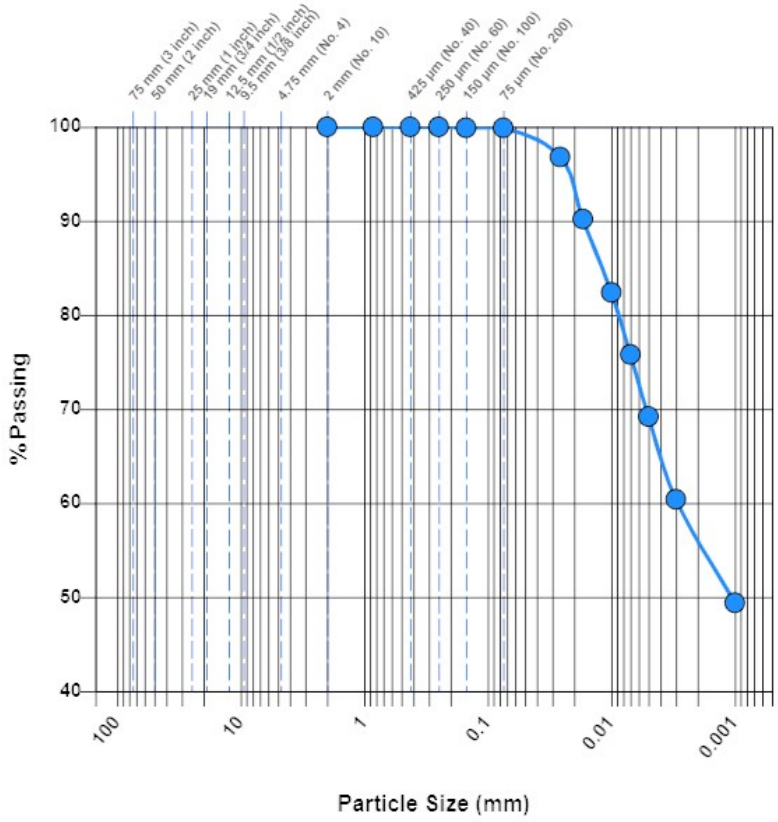
Sample Information

Sample Number:	360483	**Depth (ft):**	14.5-16
Boring Number:	CAA-007	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
26.0 (µm)	96.7	-
17.0 (µm)	90.1	-
10.1 (µm)	82.3	-
7.3 (µm)	75.7	-
5.3 (µm)	69.1	-
2.7 (µm)	60.3	-
1.2 (µm)	49.3	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(53)

Gravel (%):	0	**Sand (%):**	0.1	**Silt (%):**	30.8	**Clay (%):**	69.1

D_{60} (µm): 2.9

General

Remarks: LL=75, PL=31, PI=44

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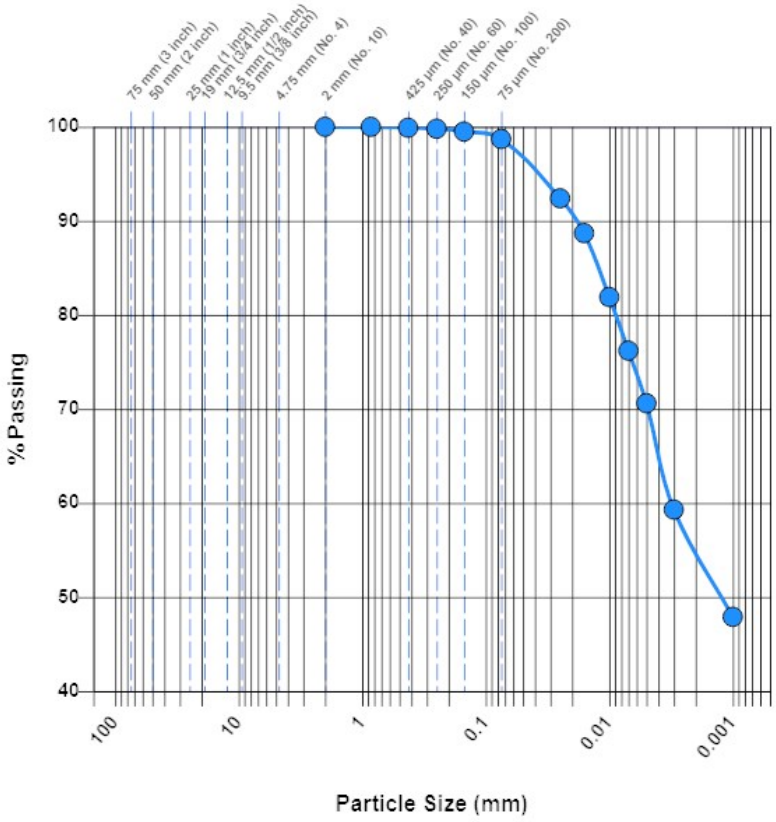
Sample Information

Sample Number:	360503	**Depth (ft):**	9.5-11
Boring Number:	CAA-008	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.5	-
75 µm (No. 200)	98.7	-
24.5 (µm)	92.4	-
15.9 (µm)	88.7	-
9.5 (µm)	81.9	-
6.9 (µm)	76.2	51 -
5.0 (µm)	70.6	-
2.6 (µm)	59.3	-
1.1 (µm)	47.9	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(62)

Gravel (%):	0	**Sand (%):**	1.3	**Silt (%):**	28.1	**Clay (%):**	70.6
D_{60} (µm):	3.1						

General

Remarks: LL=82, PL=29, PI=53

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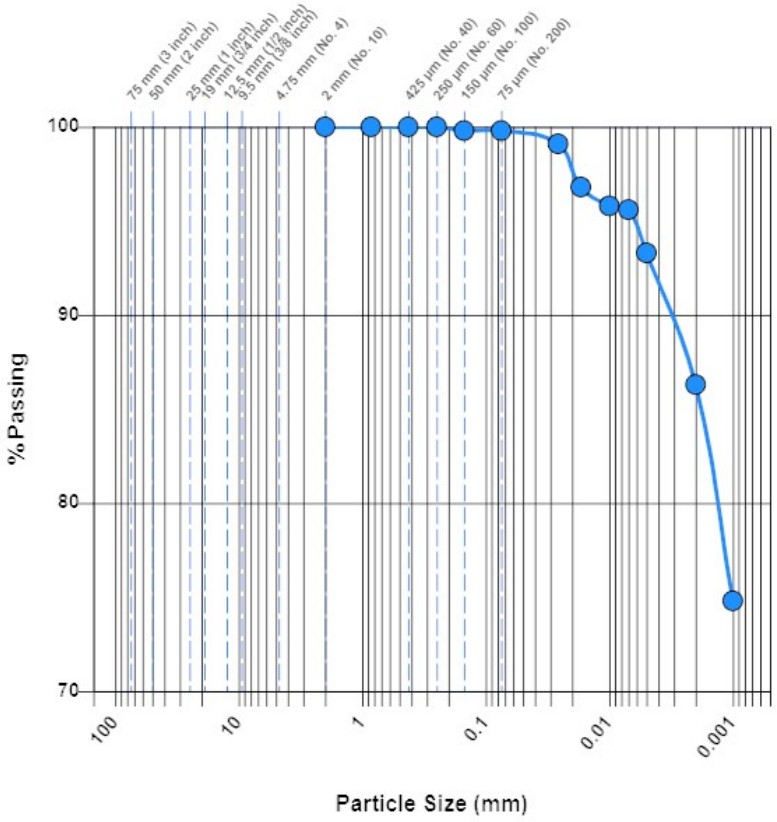
Sample Information

Sample Number:	360488	**Depth (ft):**	19.5-21
Boring Number:	CAA-008	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	100.0	-
150 µm (No. 100)	99.8	-
75 µm (No. 200)	99.8	-
25.9 (µm)	99.1	-
16.6 (µm)	96.8	-
9.7 (µm)	95.8	-
6.8 (µm)	95.6	-
4.8 (µm)	93.3	-
2.4 (µm)	86.3	-
1.1 (µm)	74.8	-



Soil Classification: CH Fat Clay, gray, A-7-5(87)

Gravel (%): 0 **Sand (%):** 0.2 **Silt (%):** 6.5 **Clay (%):** 93.3

General

Remarks: LL=107, PL=35, PI=72

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ASTM D422

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3203 32nd Avenue South
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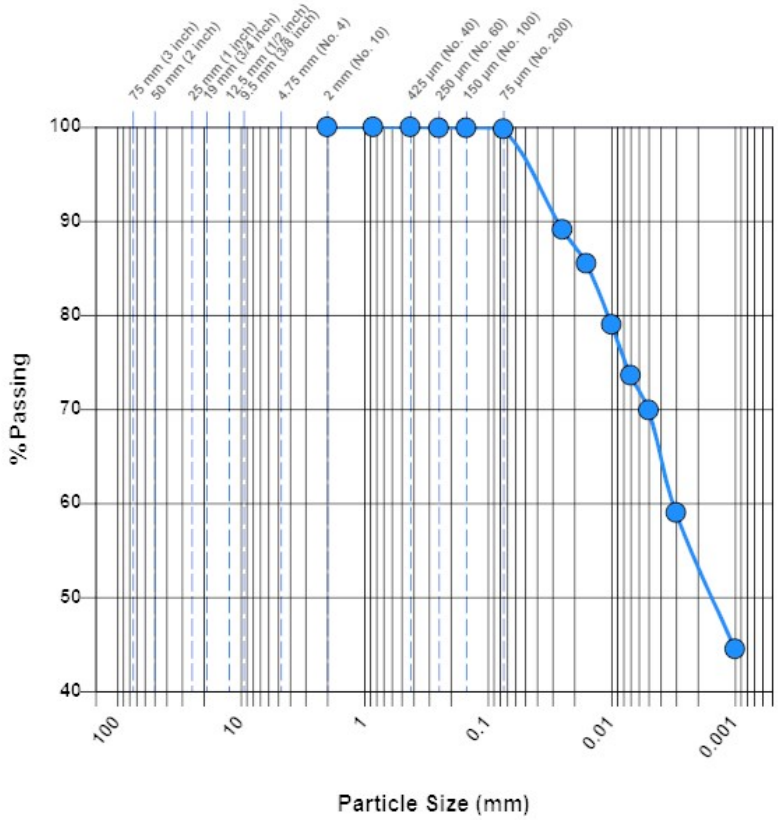
Sample Information

Sample Number:	360485	**Depth (ft):**	4.5-6
Boring Number:	GDRL-009	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
24.5 (µm)	89.0	-
15.9 (µm)	85.4	-
9.5 (µm)	79.0	-
6.9 (µm)	73.5	-
5.0 (µm)	69.9	-
2.6 (µm)	59.0	-
1.2 (µm)	44.4	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(69)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	29.9	**Clay (%):**	69.9
D_{60} (µm):	3.2						

General

Remarks: LL=90, PL=33, PI=57

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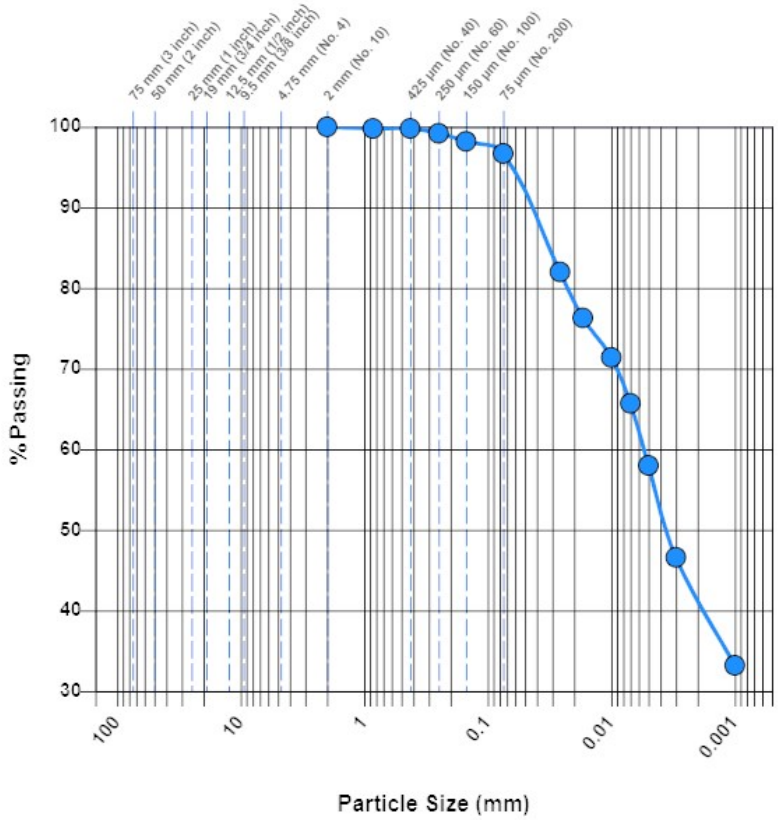
Sample Information

Sample Number:	360481	**Depth (ft):**	0.5-2
Boring Number:	CAA-010	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	98.2	-
75 µm (No. 200)	96.7	-
26.3 (µm)	82.0	-
17.2 (µm)	76.3	-
10.1 (µm)	71.4	-
7.3 (µm)	65.7	-
5.4 (µm)	58.0	-
2.8 (µm)	46.6	-
1.2 (µm)	33.2	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(41)

Gravel (%):	0	**Sand (%):**	3.3	**Silt (%):**	38.7	**Clay (%):**	58.0

D_{60} (µm): 5.5

General

Remarks: LL=72, PL=39, PI=33

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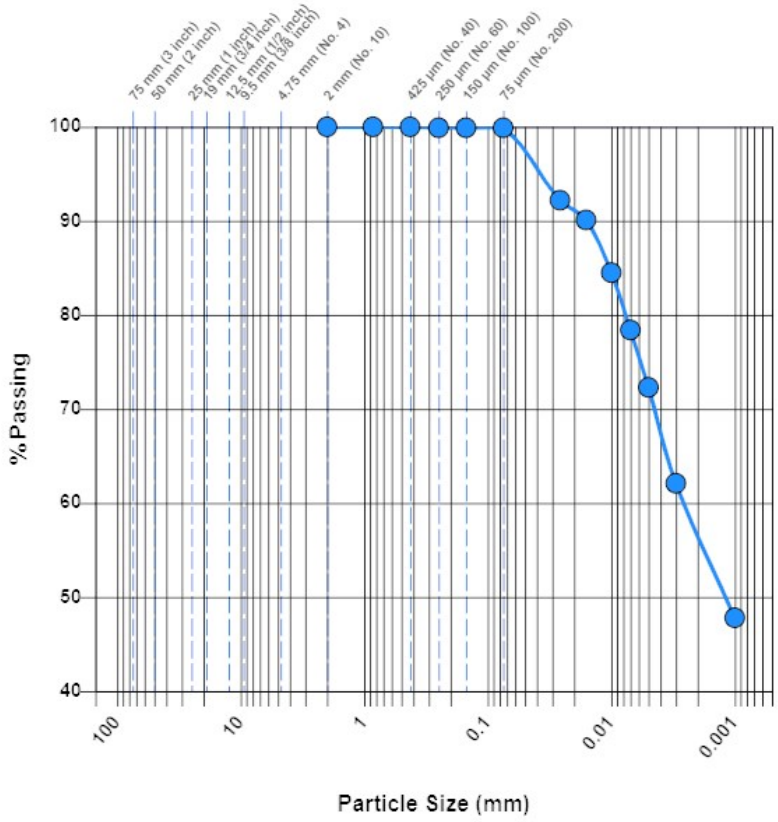
Sample Information

Sample Number:	360480	**Depth (ft):**	9.5-11
Boring Number:	CAA-010	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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	-
25.6 (µm)	92.2	-
16.4 (µm)	90.1	-
9.7 (µm)	84.5	-
7.1 (µm)	78.4	-
5.1 (µm)	72.3	-
2.6 (µm)	62.1	-
1.2 (µm)	47.8	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(67)

Gravel (%):	0	**Sand (%):**	0.1	**Silt (%):**	27.6	**Clay (%):**	72.3

D_{60} (µm): 2.7

General

Remarks: LL=90, PL=36, PI=54

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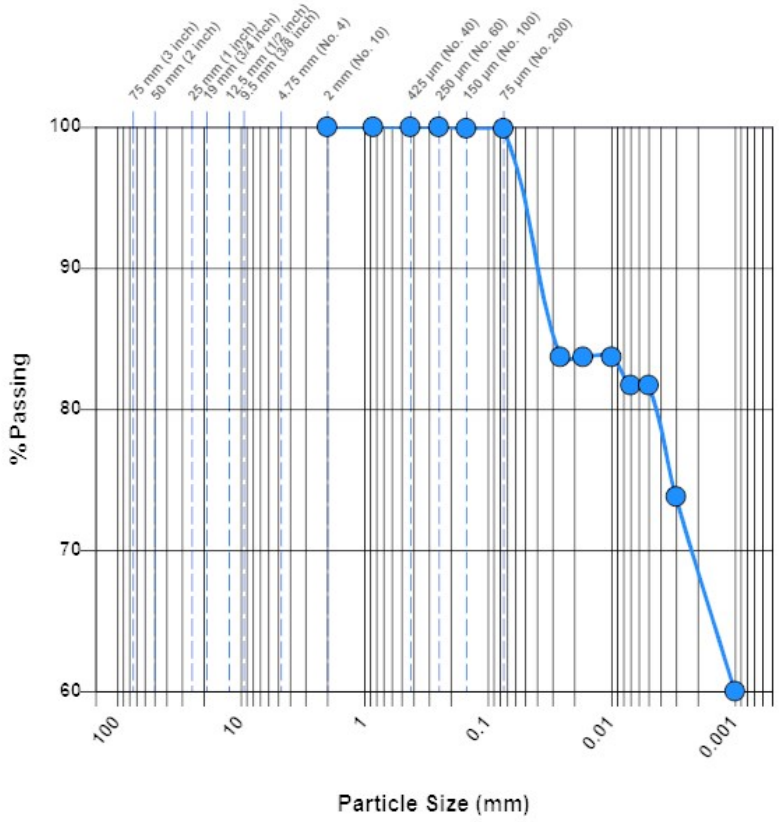
Sample Information

Sample Number:	360484	**Depth (ft):**	19.5-21
Boring Number:	CAA-010	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
26.3 (µm)	83.7	-
16.6 (µm)	83.7	-
9.6 (µm)	83.7	-
6.9 (µm)	81.7	-
4.8 (µm)	81.7	-
2.5 (µm)	73.8	-
1.1 (µm)	60.0	-



Soil Classification: CH Fat Clay, gray, A-7-6(76)

Gravel (%):	0	**Sand (%):**	0.1	**Silt (%):**	18.2	**Clay (%):**	81.7

D_{60} (µm): 1.0

General

Remarks: LL=93, PL=29, PI=64

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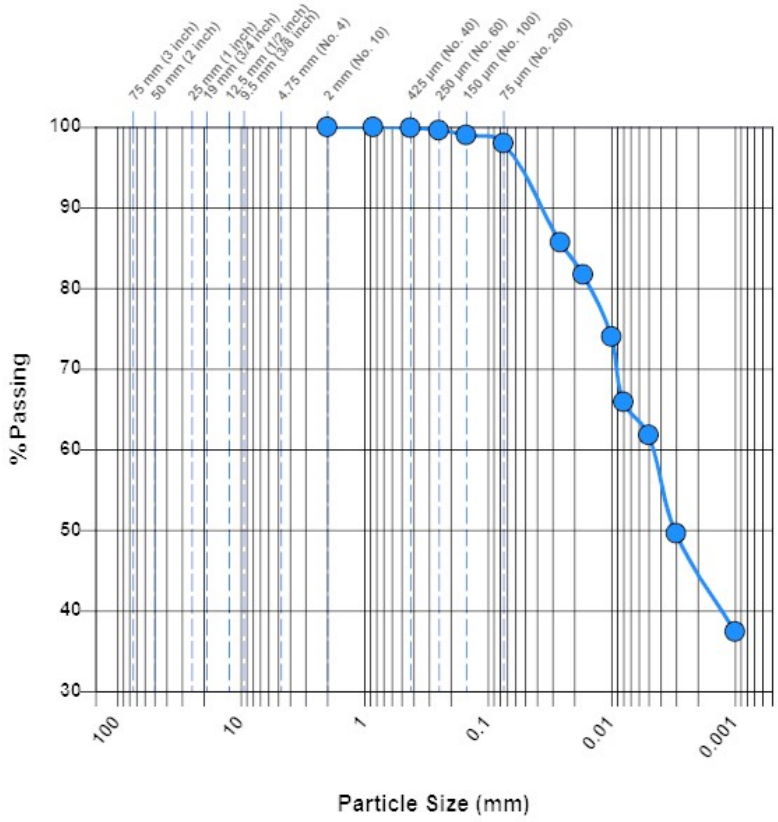
Sample Information

Sample Number:	360476	**Depth (ft):**	4.5-6
Boring Number:	GDRL-011	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	98.0	-
26.4 (µm)	85.7	-
17.1 (µm)	81.7	-
10.2 (µm)	74.0	-
7.5 (µm)	65.9	-
5.4 (µm)	61.8	-
2.8 (µm)	49.6	-
1.2 (µm)	37.4	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(36)

Gravel (%):	0	**Sand (%):**	2.0	**Silt (%):**	36.2	**Clay (%):**	61.8

D_{60} (µm): 4.7

General

Remarks: LL=68, PL=40, PI=28

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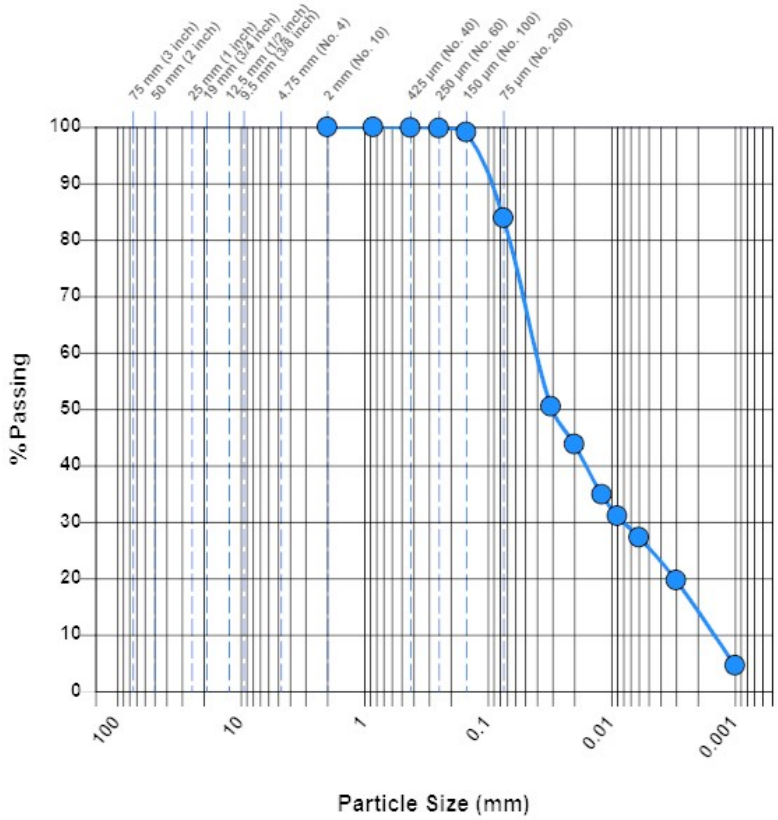
Sample Information

Sample Number:	360478	**Depth (ft):**	0.5-2
Boring Number:	GDRL-012	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.1	-
75 µm (No. 200)	83.9	-
30.6 (µm)	50.5	-
19.9 (µm)	43.8	-
11.8 (µm)	34.9	-
8.5 (µm)	31.1	-
6.1 (µm)	27.3	-
3.1 (µm)	19.7	-
1.3 (µm)	4.6	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(66)

Gravel (%):	0	**Sand (%):**	16.1	**Silt (%):**	59.1	**Clay (%):**	24.8		
D_{60} (µm):	43.5	**D_{30} (µm):**	8.1	**D_{10} (µm):**	1.7	**C_u:**	25.59	**C_c:**	0.89

General

Remarks: LL=105, PL=37, PI=68

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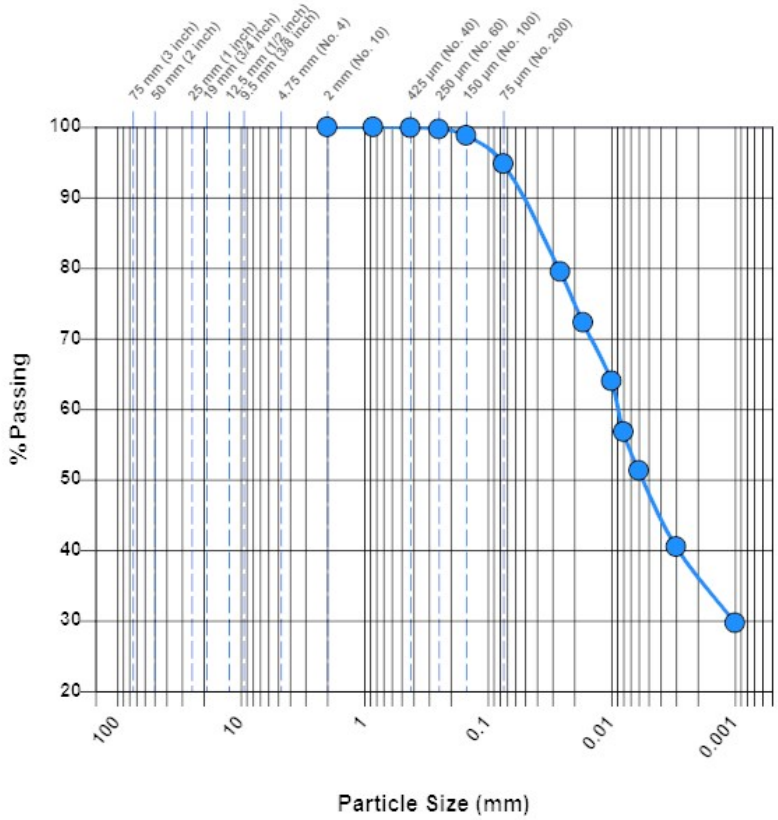
Sample Information

Sample Number:	360501	**Depth (ft):**	9.5-11
Boring Number:	CAA-012	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	94.8	-
26.0 (µm)	79.5	-
17.2 (µm)	72.3	-
10.3 (µm)	64.0	-
7.5 (µm)	56.8	-
5.5 (µm)	51.3	-
2.8 (µm)	40.5	-
1.2 (µm)	29.7	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(35)

Gravel (%):	0	**Sand (%):**	5.2	**Silt (%):**	47.1	**Clay (%):**	47.7
D_{60} (µm):	8.9	**D_{30} (µm):**	1.1				

General

Remarks: LL=58, PL=26, PI=32

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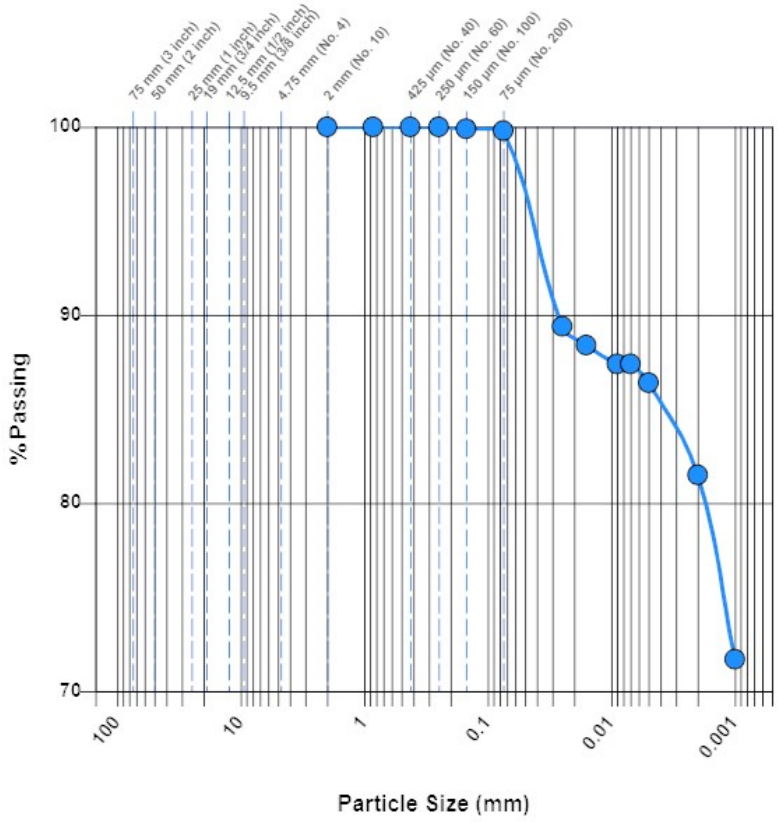
Sample Information

Sample Number:	360491	**Depth (ft):**	19.5-21
Boring Number:	CAA-012	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.8	-
25.4 (µm)	89.3	-
16.2 (µm)	88.3	-
9.4 (µm)	87.3	-
6.6 (µm)	87.3	-
4.7 (µm)	86.4	-
2.4 (µm)	81.4	-
1.0 (µm)	71.6	-



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

Gravel (%): 0 **Sand (%):** 0.2 **Silt (%):** 13.4 **Clay (%):** 86.4

General

Remarks: LL=40, PL=21, PI=19

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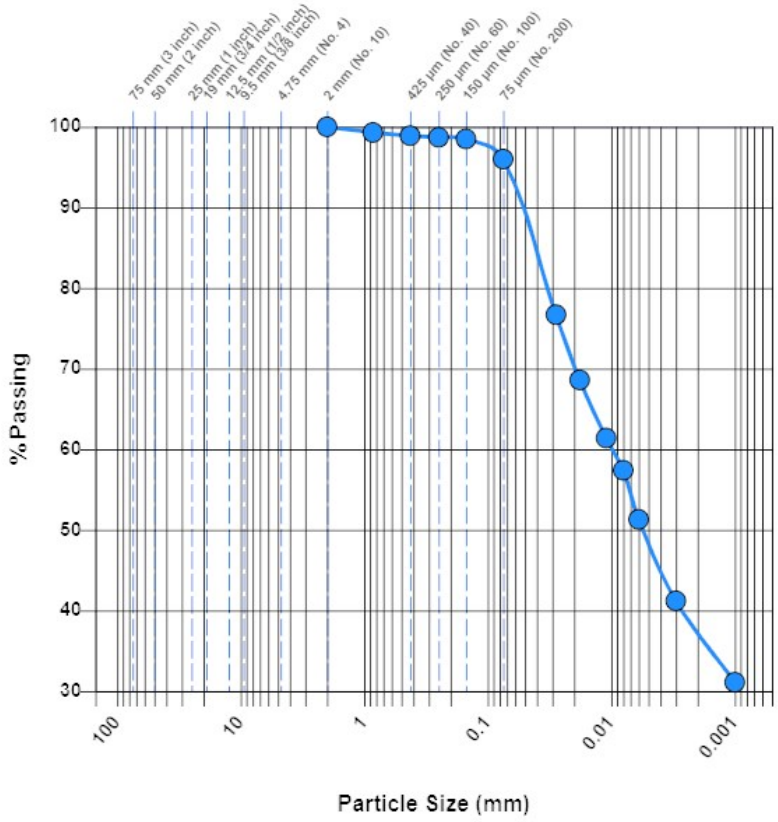
Sample Information

Sample Number:	360502	**Depth (ft):**	4.5-6
Boring Number:	CAA-013	**Sampled By:**	Drill Crew
Sample Date:	12/15/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.7	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	96.0	-
27.7 (µm)	76.7	-
18.2 (µm)	68.6	-
10.8 (µm)	61.4	-
7.7 (µm)	57.4	-
5.6 (µm)	51.3	-
2.9 (µm)	41.2	-
1.2 (µm)	31.1	-



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

Gravel (%):	0	**Sand (%):**	4.0	**Silt (%):**	48.1	**Clay (%):**	47.9

D_{60} (µm): 10.0

General

Remarks: LL=57, PL=24, PI=33

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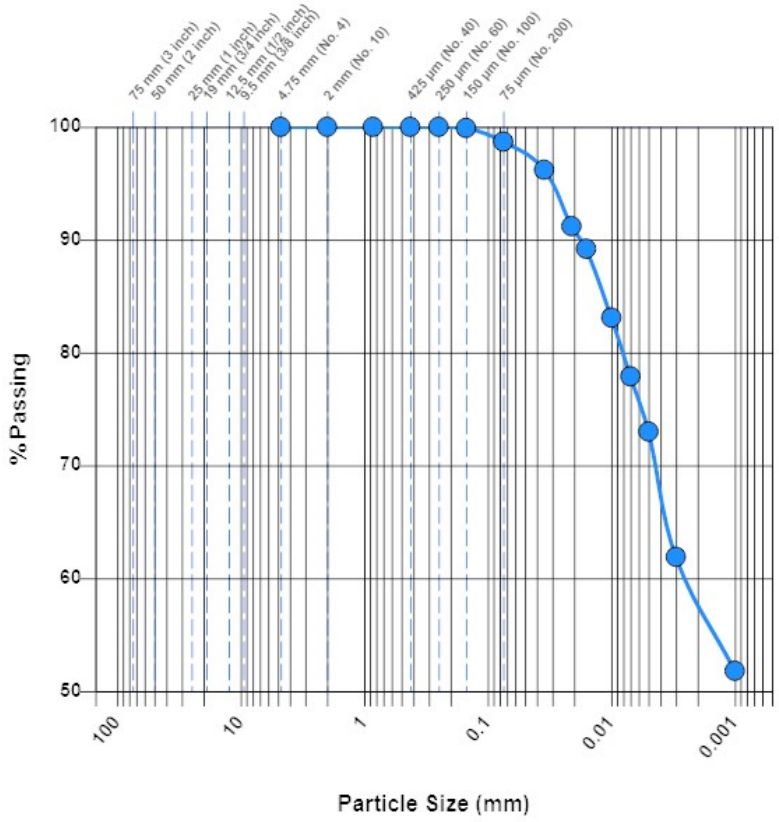
Sample Information

Sample Number:	361133	**Depth (ft):**	14.5-16
Boring Number:	CAA-013	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	98.7	-
35.0 (µm)	96.2	-
20.7 (µm)	91.2	-
16.2 (µm)	89.2	-
9.7 (µm)	83.1	-
7.0 (µm)	77.9	-
5.1 (µm)	73.0	-
2.7 (µm)	61.9	-
1.1 (µm)	51.8	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(59)

Gravel (%):	0.0	**Sand (%):**	1.3	**Silt (%):**	25.7	**Clay (%):**	73.0
D_{60} (µm):	2.6						

General

Remarks: LL=76, PL=25, PI=51

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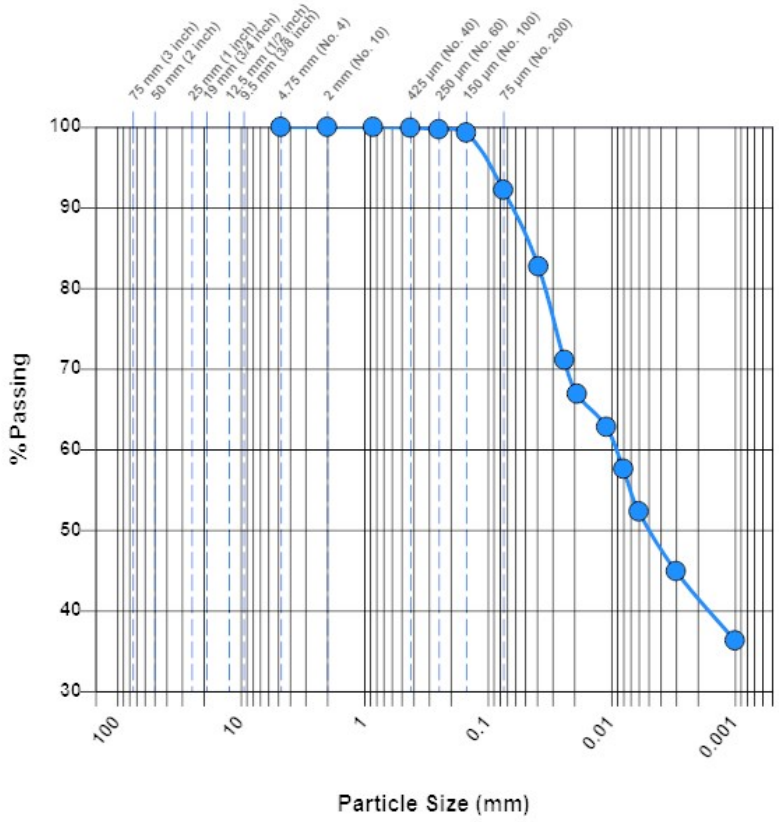
Sample Information

Sample Number:	361136	**Depth (ft):**	0.5-2
Boring Number:	CAA-014	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.9	-
250 µm (No. 60)	99.7	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	92.2	-
38.8 (µm)	82.7	-
23.5 (µm)	71.1	-
18.5 (µm)	66.9	-
10.8 (µm)	62.8	-
7.8 (µm)	57.6	-
5.6 (µm)	52.3	-
2.9 (µm)	44.9	-
1.2 (µm)	36.3	-



Soil Classification: CH Fat clay, dark gray to gray, A-7-6(38)

Gravel (%):	0.0	**Sand (%):**	7.8	**Silt (%):**	42.4	**Clay (%):**	49.8
D_{60} (µm):	9.4						

General

Remarks: LL=58, PL=20, PI=38

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

Dickinson
3214 111H Ave SW, Suite A
Dickinson, ND 58601
Phone: 701-225-7090

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

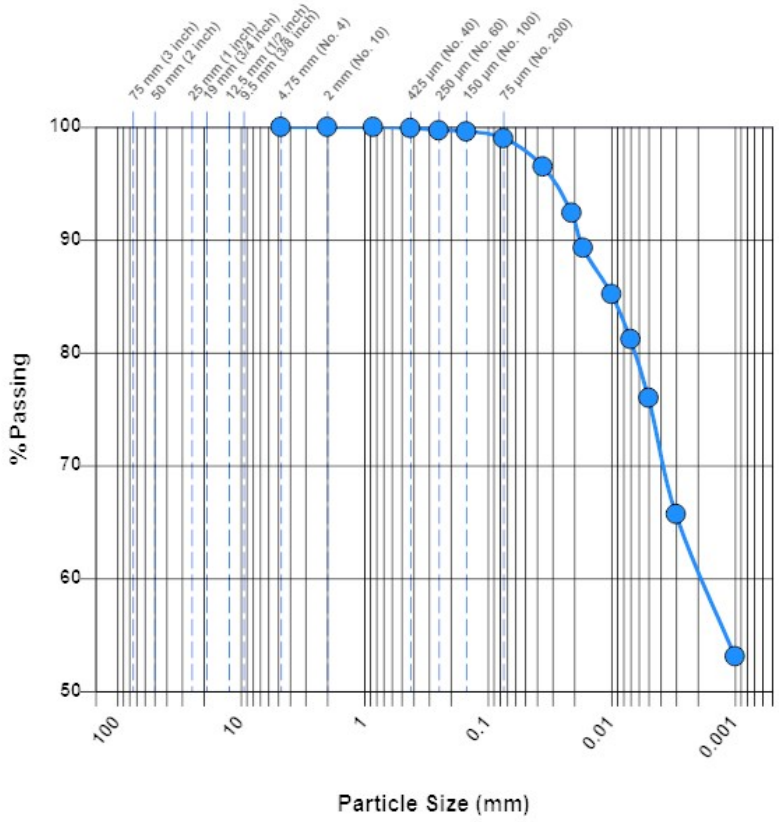
Sample Information

Sample Number:	361137	**Depth (ft):**	9.5-11
Boring Number:	CAA-014	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.9	-
250 µm (No. 60)	99.7	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	99.0	-
35.5 (µm)	96.5	-
20.9 (µm)	92.4	-
16.5 (µm)	89.3	-
9.7 (µm)	85.2	-
7.0 (µm)	81.2	-
5.1 (µm)	76.0	-
2.6 (µm)	65.7	-
1.1 (µm)	53.1	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(57)

Gravel (%):	0.0	**Sand (%):**	1.0	**Silt (%):**	23.0	**Clay (%):**	76.0

D_{60} (µm): 2.1

General

Remarks: LL=76, PL=27, PI=49

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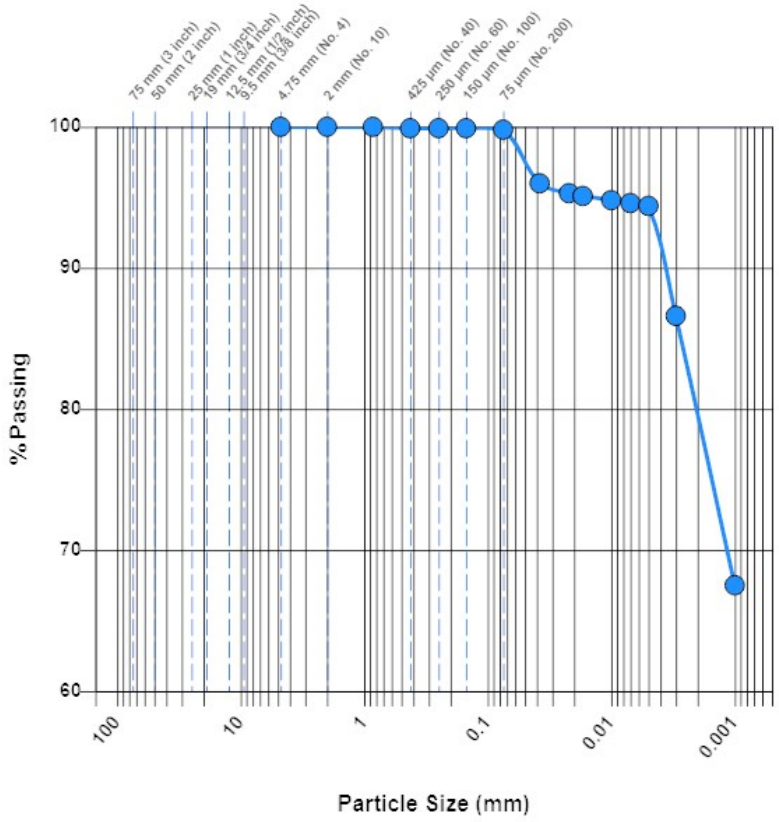
Sample Information

Sample Number:	361138	**Depth (ft):**	19.5-21
Boring Number:	CAA-014	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.9	-
75 µm (No. 200)	99.8	-
37.8 (µm)	96.0	-
21.9 (µm)	95.3	-
17.0 (µm)	95.1	-
9.8 (µm)	94.8	-
6.9 (µm)	94.6	-
4.9 (µm)	94.4	-
2.5 (µm)	86.6	-
1.1 (µm)	67.5	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(82)

Gravel (%): 0.0 **Sand (%):** 0.2 **Silt (%):** 5.4 **Clay (%):** 94.4

General

Remarks: LL=100, PL=31, PI=69

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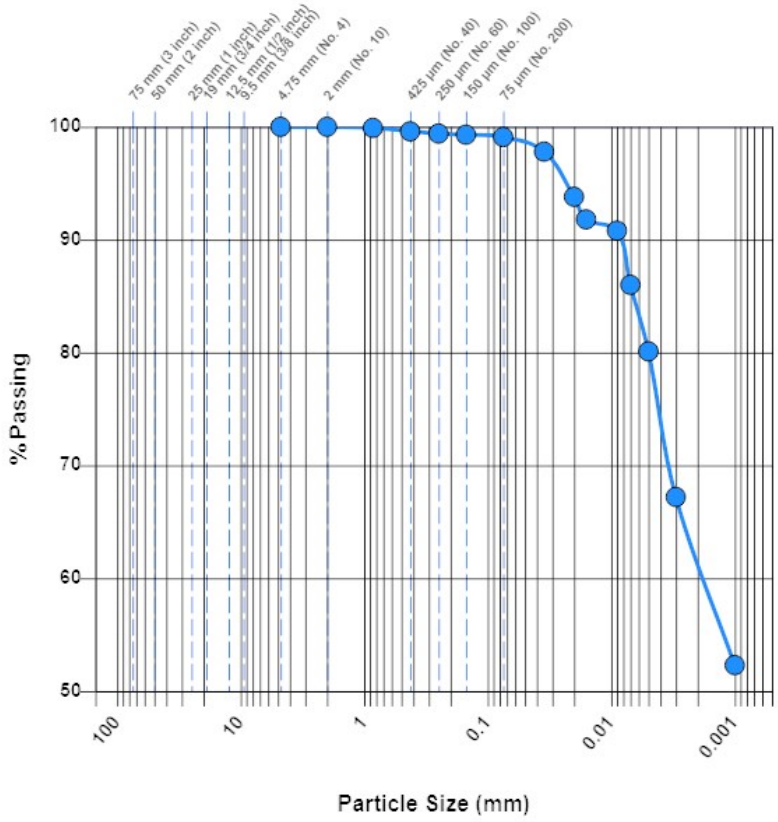
Sample Information

Sample Number:	361148	**Depth (ft):**	4.5-6
Boring Number:	GDRL-015	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.6	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	99.1	-
34.6 (µm)	97.8	-
20.4 (µm)	93.8	-
16.0 (µm)	91.8	-
9.3 (µm)	90.8	-
6.7 (µm)	86.0	-
4.9 (µm)	80.1	-
2.6 (µm)	67.2	-
1.1 (µm)	52.3	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	0.9	**Silt (%):**	19.0	**Clay (%):**	80.1
D_{60} (µm):	2.0						

General

Remarks: Insufficient sample for Atterberg

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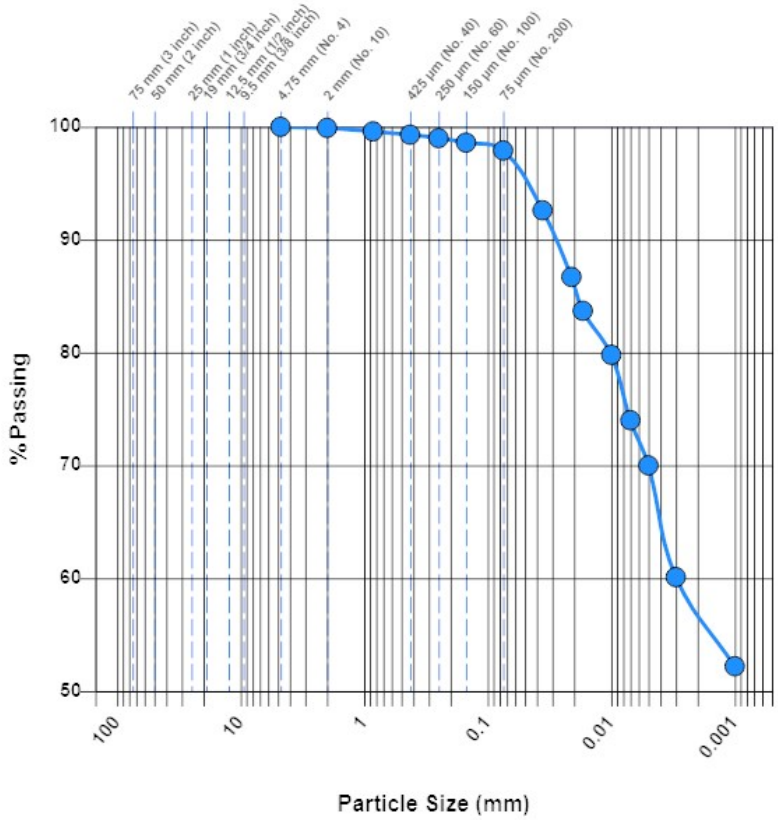
Sample Information

Sample Number:	361149	**Depth (ft):**	0.5-2
Boring Number:	CAA-016	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

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)	99.6	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	97.9	-
35.6 (µm)	92.6	-
21.2 (µm)	86.7	-
16.7 (µm)	83.7	-
9.8 (µm)	79.8	-
7.1 (µm)	74.0	-
5.1 (µm)	70.0	-
2.7 (µm)	60.1	-
1.1 (µm)	52.2	-



Soil Classification: CH Fat Clay, dark gray, A-7-6(58)

Gravel (%):	0.0	**Sand (%):**	2.1	**Silt (%):**	27.9	**Clay (%):**	70.0
D_{60} (µm):	3.0						

General

Remarks: LL=75, PL=24, PI=51

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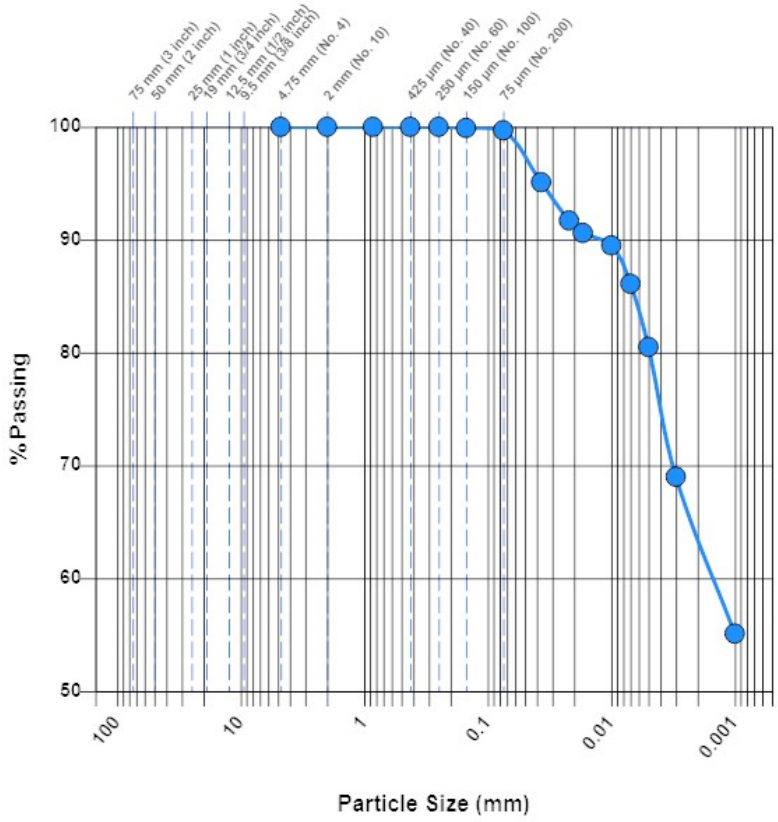
Sample Information

Sample Number:	361150	**Depth (ft):**	9.5-11
Boring Number:	CAA-016	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.7	-
37.4 (µm)	95.1	-
21.9 (µm)	91.7	-
17.1 (µm)	90.6	-
9.9 (µm)	89.5	-
7.1 (µm)	86.1	-
5.1 (µm)	80.5	-
2.7 (µm)	69.0	-
1.1 (µm)	55.1	-



Soil Classification: CH Fat Clay, dark gray

Gravel (%):	0.0	**Sand (%):**	0.3	**Silt (%):**	19.2	**Clay (%):**	80.5

D_{60} (µm): 1.7

General

Remarks: Insufficient sample for Atterberg.

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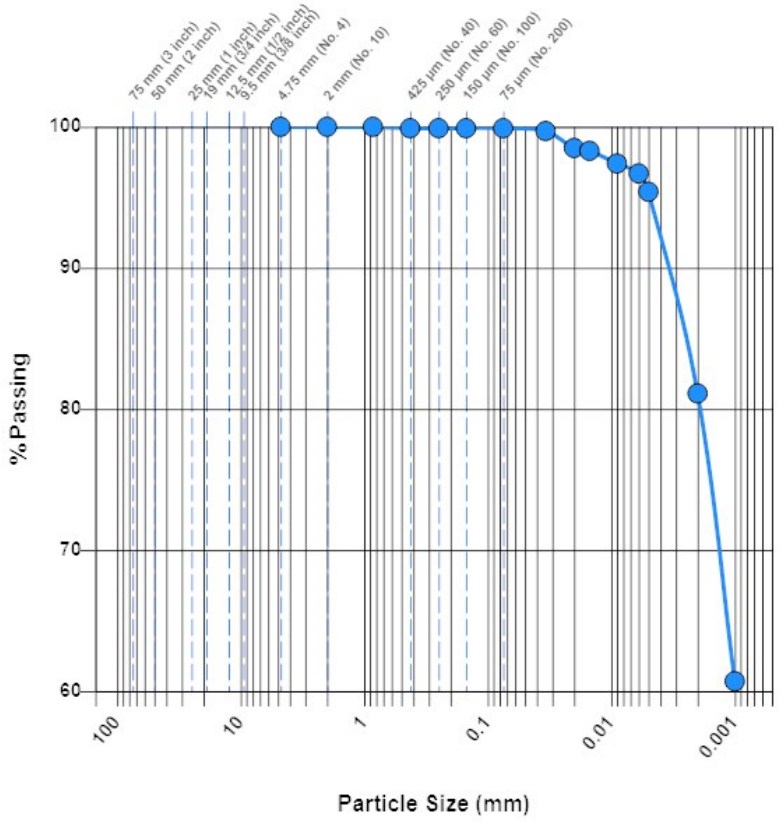
Sample Information

Sample Number:	361151	**Depth (ft):**	19.5-21
Boring Number:	CAA-016	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.9	-
75 µm (No. 200)	99.9	-
34.0 (µm)	99.7	-
19.8 (µm)	98.5	-
15.3 (µm)	98.3	-
9.0 (µm)	97.4	-
6.3 (µm)	96.7	-
4.5 (µm)	95.4	-
2.4 (µm)	81.1	-
1.1 (µm)	60.7	-



Soil Classification: CH Fat Clay, gray

Gravel (%):	0.0	**Sand (%):**	0.1	**Silt (%):**	4.5	**Clay (%):**	95.4

General

Remarks: Insufficient sample for Atterberg.

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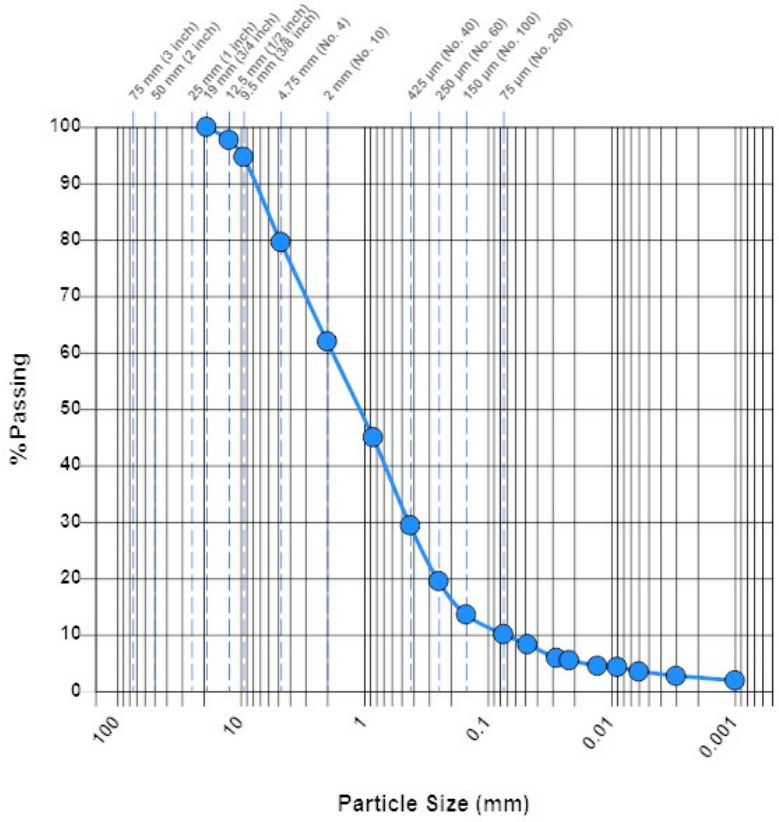
Sample Information

Sample Number:	361152	**Depth (ft):**	4.5-6
Boring Number:	CAA-017	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	97.7	-
9.5 mm (3/8 inch)	94.7	-
4.75 mm (No. 4)	79.6	-
2 mm (No. 10)	62.0	-
850 µm (No. 20)	45.0	-
425 µm (No. 40)	29.4	-
250 µm (No. 60)	19.5	-
150 µm (No. 100)	13.6	-
75 µm (No. 200)	10.1	-
48.2 (µm)	8.3	-
28.3 (µm)	5.9	-
22.0 (µm)	5.5	-
12.8 (µm)	4.5	-
9.0 (µm)	4.3	-
6.4 (µm)	3.5	-
3.2 (µm)	2.7	-
1.3 (µm)	1.9	-



Soil Classification:
SW-SM Well-graded sand with silted gravel, brown, A-1-b(0)

Gravel (%):	20.4	**Sand (%):**	69.5	**Silt (%):**	6.9	**Clay (%):**	3.2		
D_{60} (µm):	1864.7	**D_{30} (µm):**	441.3	**D_{10} (µm):**	73.5	**C_u:**	25.37	**C_c:**	1.42

General

Remarks: Non Plastic.

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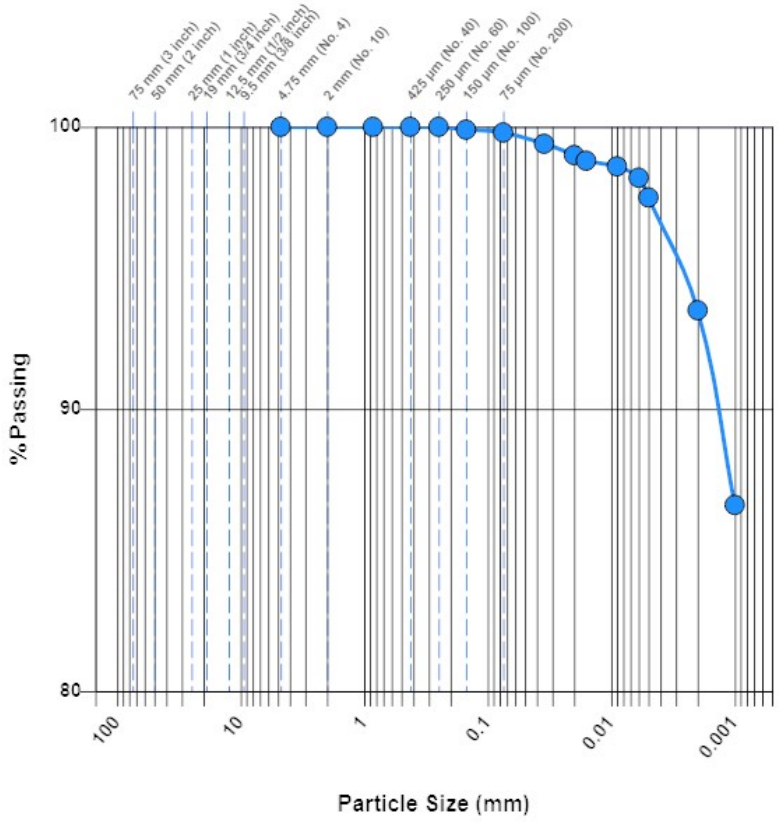
Sample Information

Sample Number:	361153	**Depth (ft):**	14.5-16
Boring Number:	CAA-017	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/10/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.8	-
34.9 (µm)	99.4	-
20.2 (µm)	99.0	-
15.6 (µm)	98.8	-
9.0 (µm)	98.6	-
6.4 (µm)	98.2	-
4.5 (µm)	97.5	-
2.3 (µm)	93.5	-
1.0 (µm)	86.6	-



Soil Classification: CH Fat Clay, gray and brown

Gravel (%): 0.0 **Sand (%):** 0.2 **Silt (%):** 2.3 **Clay (%):** 97.5

General

Remarks: Insufficient sample for Atterberg.

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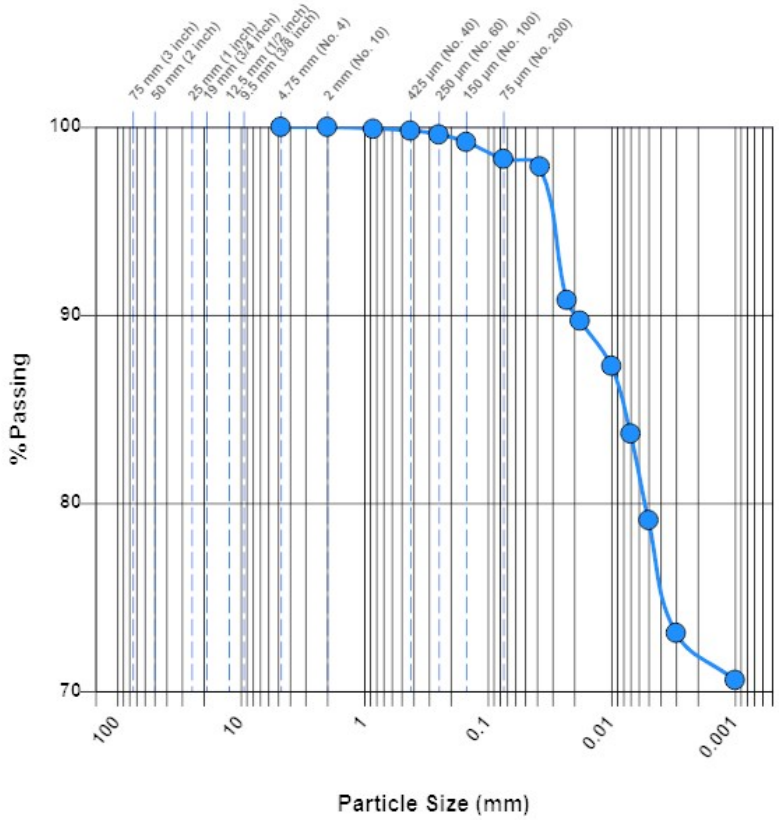
Sample Information

Sample Number:	361154	**Depth (ft):**	0.5-2
Boring Number:	GDRL-018	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.3	-
37.9 (µm)	97.9	-
22.5 (µm)	90.8	-
17.5 (µm)	89.7	-
10.2 (µm)	87.3	-
7.3 (µm)	83.7	-
5.2 (µm)	79.1	-
2.7 (µm)	73.1	-
1.1 (µm)	70.6	-



Soil Classification: CH Fat Clay, black, A-7-5(65)

Gravel (%): 0.0 **Sand (%):** 1.7 **Silt (%):** 19.2 **Clay (%):** 79.1

General

Remarks: LL=86, PL=31, PI=55

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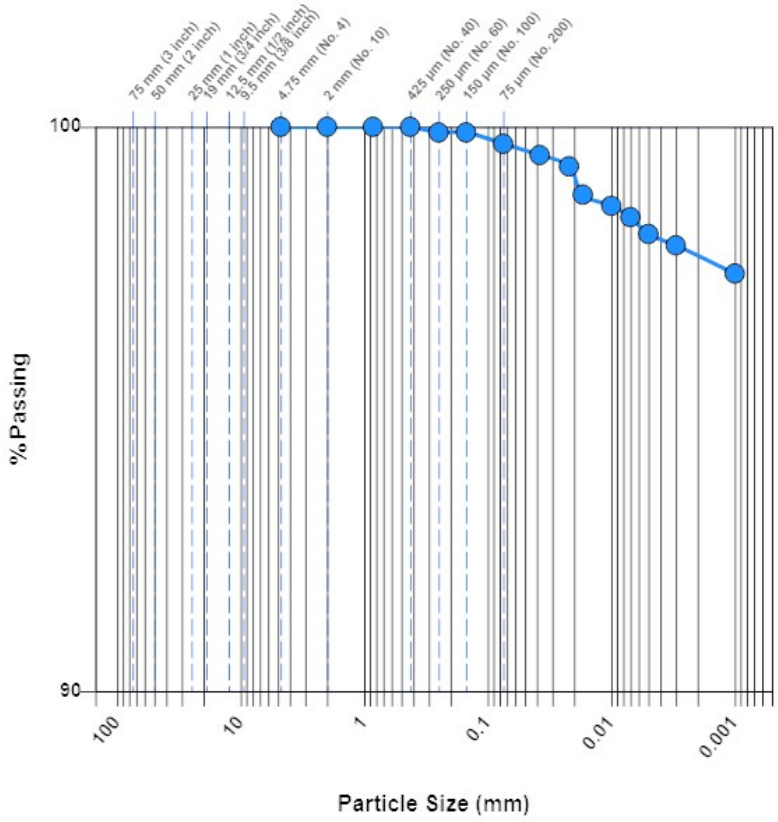
Sample Information

Sample Number:	361155	**Depth (ft):**	9.5-11
Boring Number:	GDRL-018	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
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Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.7	-
38.4 (µm)	99.5	-
22.2 (µm)	99.3	-
17.2 (µm)	98.8	-
9.9 (µm)	98.6	-
7.0 (µm)	98.4	-
5.0 (µm)	98.1	-
2.5 (µm)	97.9	-
1.0 (µm)	97.4	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(83)

Gravel (%): 0.0 **Sand (%):** 0.3 **Silt (%):** 1.6 **Clay (%):** 98.1

General

Remarks: LL=106, PL=39, PI=67

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

Client:

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

Project:

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

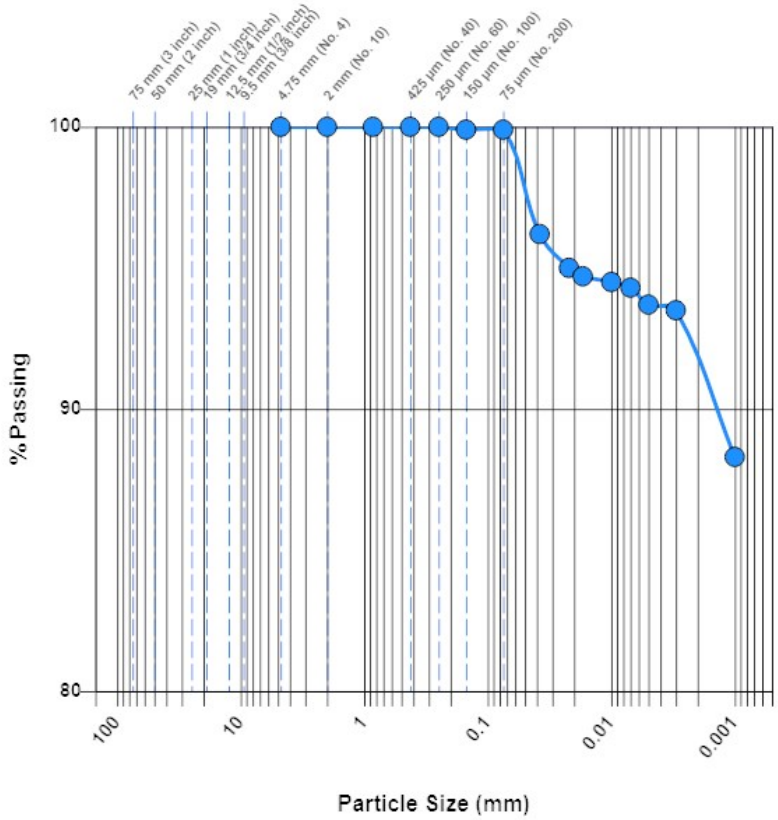
Sample Information

Sample Number:	361156	**Depth (ft):**	4.5-6
Boring Number:	GDRL-019	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
38.0 (µm)	96.2	-
22.0 (µm)	95.0	-
17.1 (µm)	94.7	-
9.9 (µm)	94.5	-
7.0 (µm)	94.3	-
5.0 (µm)	93.7	-
2.5 (µm)	93.5	-
1.0 (µm)	88.3	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(75)

Gravel (%):	0.0	**Sand (%):**	0.1	**Silt (%):**	6.2	**Clay (%):**	93.7

General

Remarks: LL=101, PL=41, PI=60

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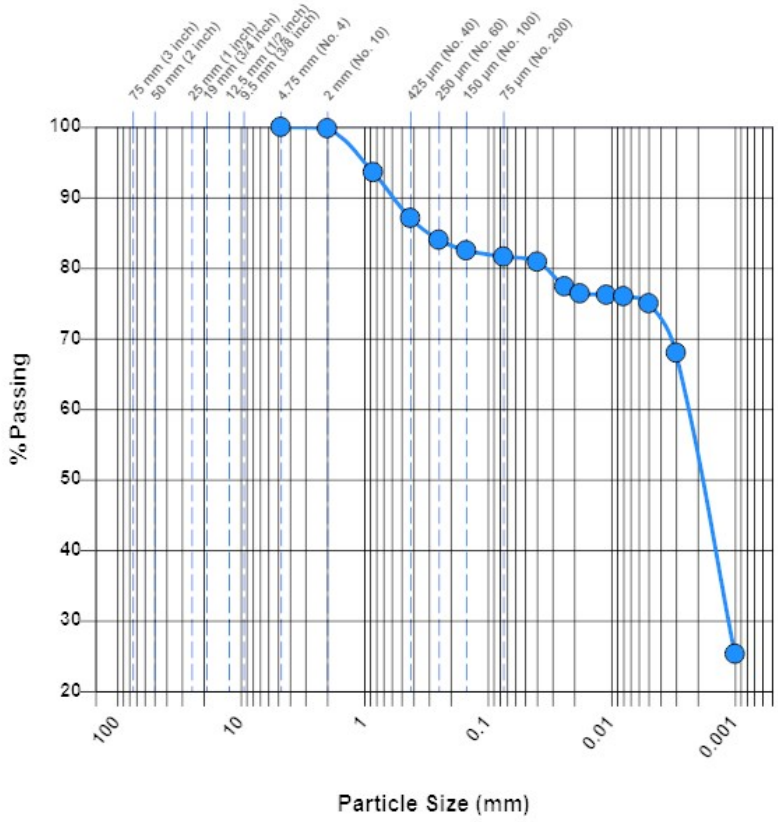
Sample Information

Sample Number:	361157	**Depth (ft):**	0.5-2
Boring Number:	GDRL-020	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

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)	93.6	-
425 µm (No. 40)	87.1	-
250 µm (No. 60)	84.0	-
150 µm (No. 100)	82.5	-
75 µm (No. 200)	81.6	-
40.4 (µm)	80.9	-
23.6 (µm)	77.4	-
18.4 (µm)	76.4	-
10.6 (µm)	76.2	-
7.5 (µm)	76.0	-
5.3 (µm)	75.0	-
2.7 (µm)	68.0	-
1.3 (µm)	25.3	-



Soil Classification: CH Fat Clay with sand, dark gray, A-7-6(44)

Gravel (%):	0.0	**Sand (%):**	18.4	**Silt (%):**	6.6	**Clay (%):**	75.0
D_{60} (µm):	2.6	**D_{30} (µm):**	1.2				

General

Remarks: LL=76, PL=27, PI=49

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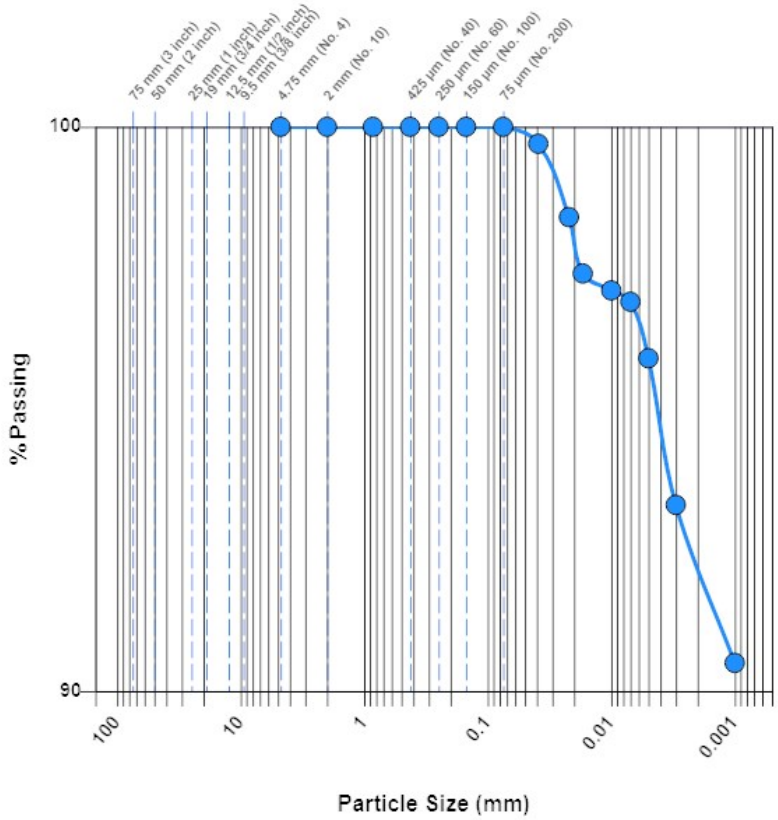
Sample Information

Sample Number:	361158	**Depth (ft):**	9.5-11
Boring Number:	GDRL-020	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	100.0	-
75 µm (No. 200)	100.0	-
38.7 (µm)	99.7	-
22.4 (µm)	98.4	-
17.4 (µm)	97.4	-
10.1 (µm)	97.1	-
7.1 (µm)	96.9	-
5.1 (µm)	95.9	-
2.6 (µm)	93.3	-
1.1 (µm)	90.5	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(94)

Gravel (%): 0.0 **Sand (%):** 0.0 **Silt (%):** 4.1 **Clay (%):** 95.9

General

Remarks: LL=115, PL=38, PI=77

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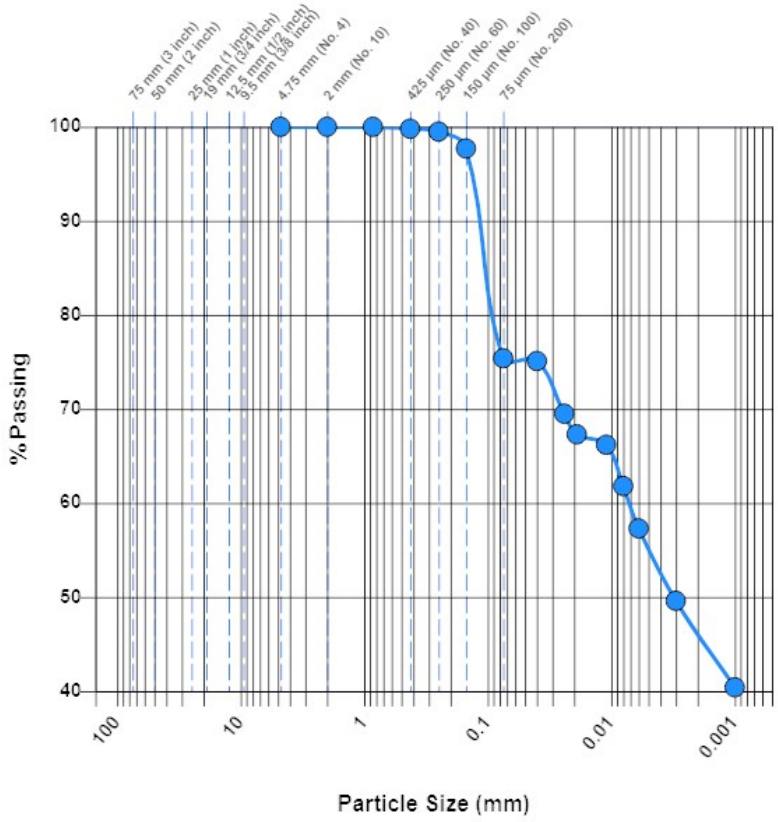
Sample Information

Sample Number:	361159	**Depth (ft):**	4.5-6
Boring Number:	GDRL-021	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	97.7	-
75 µm (No. 200)	75.4	-
40.2 (µm)	75.1	-
23.7 (µm)	69.5	-
18.5 (µm)	67.3	-
10.7 (µm)	66.2	-
7.7 (µm)	61.8	-
5.5 (µm)	57.3	-
2.8 (µm)	49.6	-
1.2 (µm)	40.4	-



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

Gravel (%):	0.0	**Sand (%):**	24.6	**Silt (%):**	20.7	**Clay (%):**	54.7
D_{60} (µm):	7.2						

General

Remarks: LL=70, PL=24, PI=46

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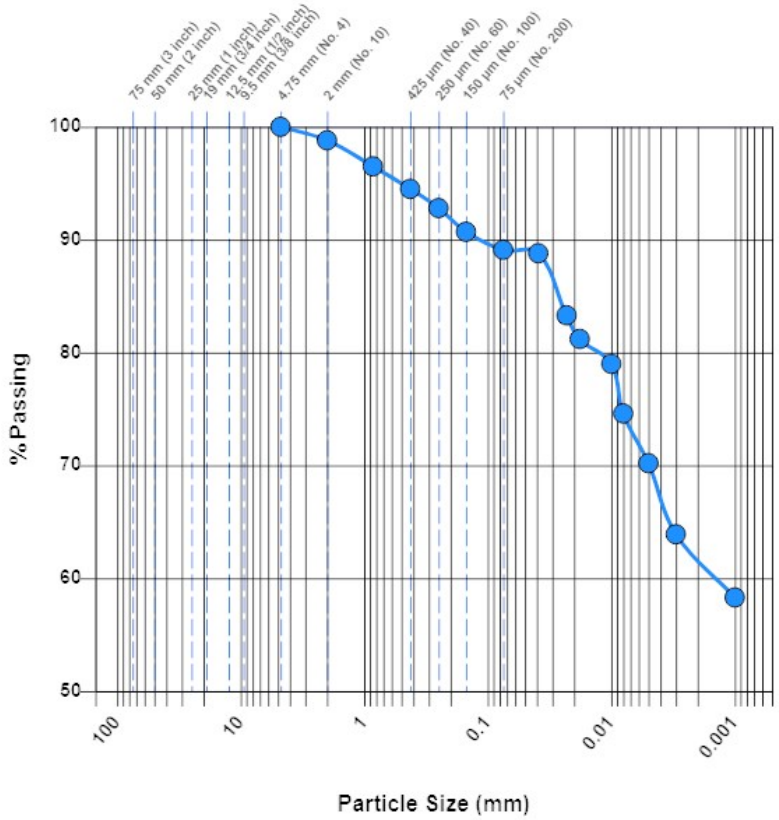
Sample Information

Sample Number:	361160	**Depth (ft):**	0.5-2
Boring Number:	CAA-022	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	96.5	-
425 µm (No. 40)	94.5	-
250 µm (No. 60)	92.8	-
150 µm (No. 100)	90.7	-
75 µm (No. 200)	89.1	-
38.6 (µm)	88.8	-
22.8 (µm)	83.3	-
17.8 (µm)	81.2	-
10.4 (µm)	79.0	-
7.5 (µm)	74.6	-
5.4 (µm)	70.2	-
2.7 (µm)	63.9	-
1.1 (µm)	58.3	-



Soil Classification: CH Fat Clay, dark gray, A-7-6(40)

Gravel (%):	0.0	**Sand (%):**	10.9	**Silt (%):**	18.9	**Clay (%):**	70.2
D_{60} (µm):	1.6						

General

Remarks: LL=66, PL=26, PI=40

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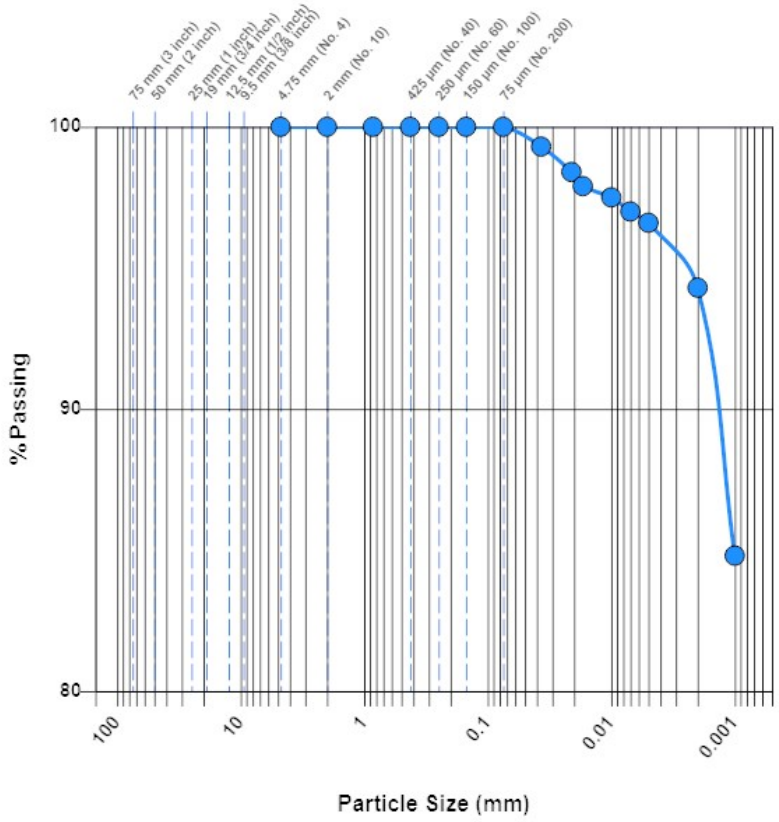
Sample Information

Sample Number:	361308	**Depth (ft):**	9.5-11
Boring Number:	CAA-022	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	100.0	-
75 µm (No. 200)	100.0	-
36.8 (µm)	99.3	-
21.3 (µm)	98.4	-
16.5 (µm)	97.9	-
9.6 (µm)	97.5	-
6.8 (µm)	97.0	-
4.8 (µm)	96.6	-
2.4 (µm)	94.3	-
1.0 (µm)	84.8	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(99)

Gravel (%): 0.0 **Sand (%):** 0.0 **Silt (%):** 3.4 **Clay (%):** 96.6

General

Remarks: LL=120, PL=39, PI=81

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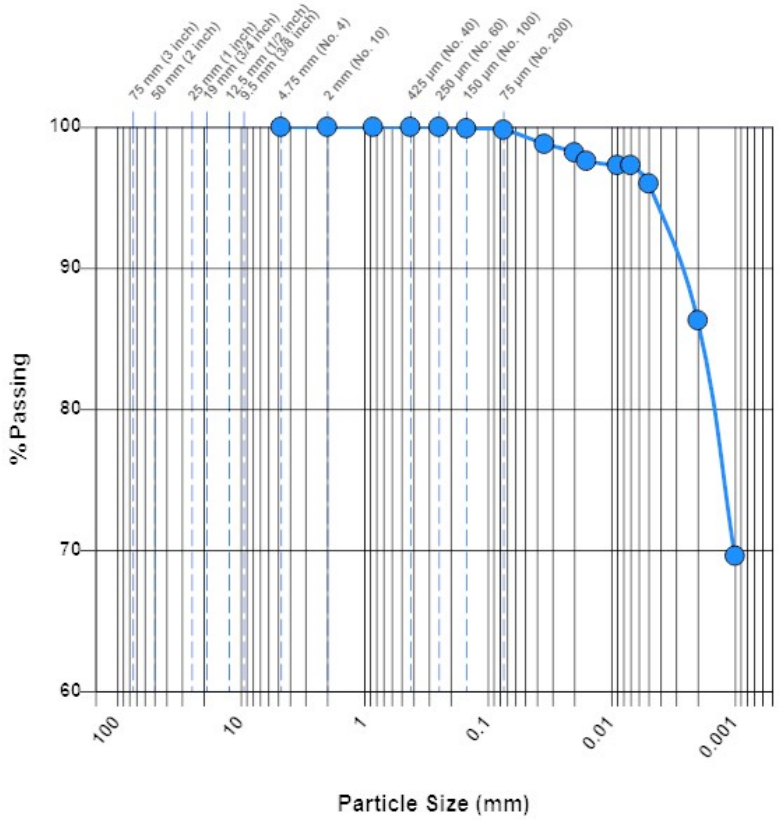
Sample Information

Sample Number:	361161	**Depth (ft):**	19.5-21
Boring Number:	CAA-022	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/11/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.8	-
35.2 (µm)	98.8	-
20.4 (µm)	98.2	-
15.8 (µm)	97.6	-
9.1 (µm)	97.3	-
6.5 (µm)	97.3	-
4.6 (µm)	96.0	-
2.4 (µm)	86.3	-
1.1 (µm)	69.6	-



Soil Classification: CH Fat Clay, gray, A-7-5(97)

Gravel (%): 0.0 **Sand (%):** 0.2 **Silt (%):** 3.8 **Clay (%):** 96.0

General

Remarks: LL=117, PL=37, PI=80

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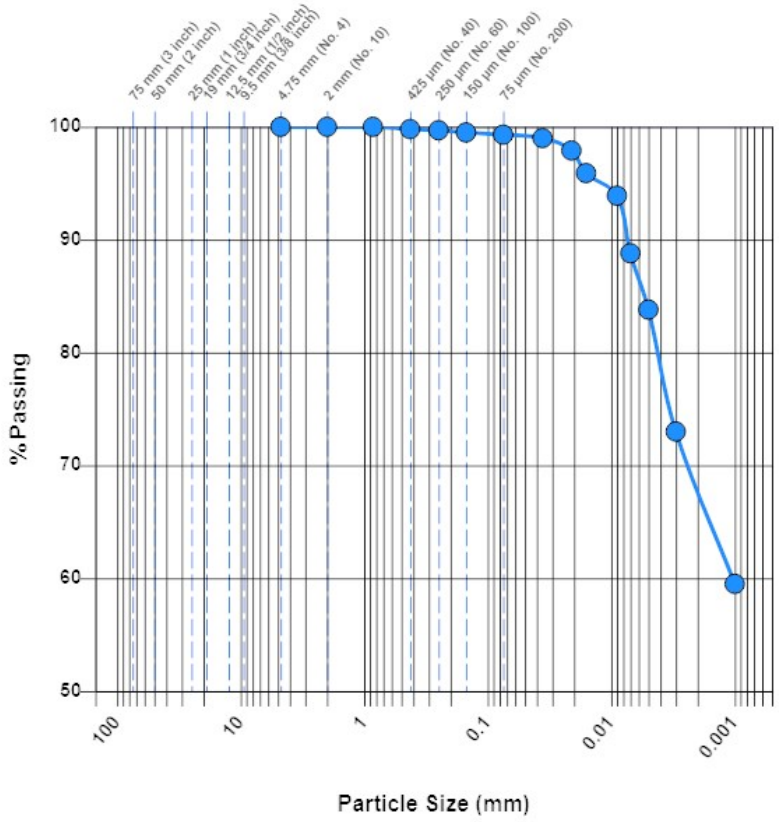
Sample Information

Sample Number:	361162	**Depth (ft):**	4.5-6
Boring Number:	CAA-023	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.7	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.3	-
35.6 (µm)	99.0	-
20.6 (µm)	97.9	-
16.2 (µm)	95.9	-
9.4 (µm)	93.9	-
6.8 (µm)	88.8	-
4.9 (µm)	83.8	-
2.6 (µm)	73.0	-
1.1 (µm)	59.5	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(76)

Gravel (%):	0.0	**Sand (%):**	0.7	**Silt (%):**	15.5	**Clay (%):**	83.8

D_{60} (µm): 1.1

General

Remarks: LL=93, PL=28, PI=65

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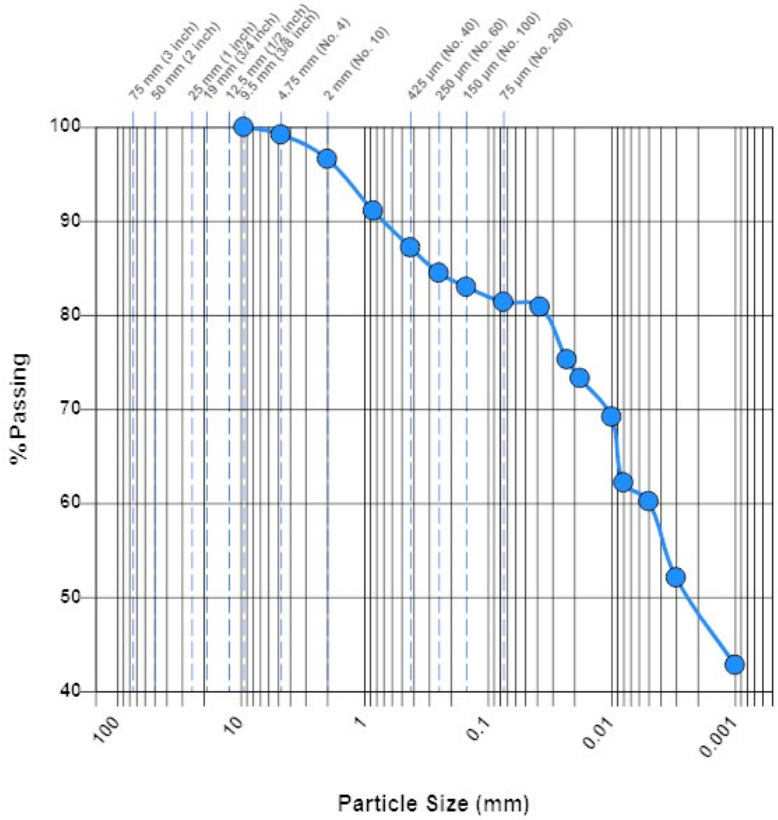
Sample Information

Sample Number:	361309	**Depth (ft):**	0.5-2
Boring Number:	GDRL-024	**Sampled By:**	Drill Crew
Sample Date:	12/16/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.2	-
2 mm (No. 10)	96.6	-
850 µm (No. 20)	91.1	-
425 µm (No. 40)	87.2	-
250 µm (No. 60)	84.5	-
150 µm (No. 100)	83.0	-
75 µm (No. 200)	81.4	-
38.4 (µm)	80.9	-
22.7 (µm)	75.3	-
17.8 (µm)	73.3	-
10.4 (µm)	69.2	-
7.6 (µm)	62.2	-
5.4 (µm)	60.2	-
2.8 (µm)	52.1	-
1.2 (µm)	42.8	-



Soil Classification: CH Fat Clay with sand, dark gray

Gravel (%):	0.8	**Sand (%):**	17.8	**Silt (%):**	21.2	**Clay (%):**	60.2
D_{60} (µm):	5.0						

General

Remarks: Insufficient sample for Atterberg.

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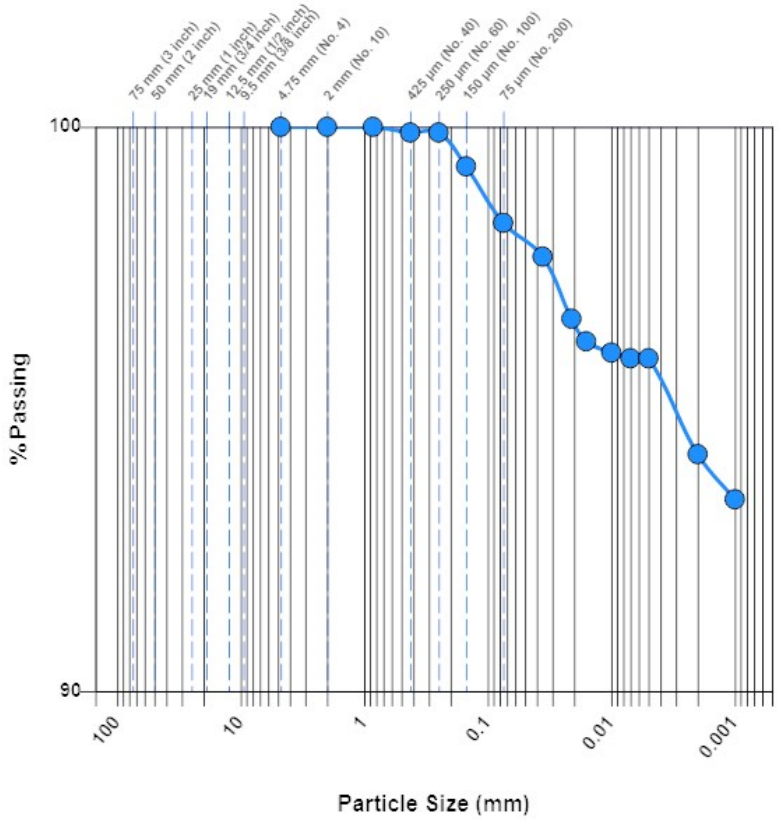
Sample Information

Sample Number:	361163	**Depth (ft):**	9.5-11
Boring Number:	GDRL-024	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.3	-
75 µm (No. 200)	98.3	-
36.3 (µm)	97.7	-
21.1 (µm)	96.6	-
16.4 (µm)	96.2	-
9.5 (µm)	96.0	-
6.7 (µm)	95.9	-
4.7 (µm)	95.9	-
2.4 (µm)	94.2	-
1.0 (µm)	93.4	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(92)

Gravel (%): 0.0 **Sand (%):** 1.7 **Silt (%):** 2.4 **Clay (%):** 95.9

General

Remarks: LL=112, PL=34, PI=78

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KLJ Engineering LLC
3203 32nd Avenue South
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Project:
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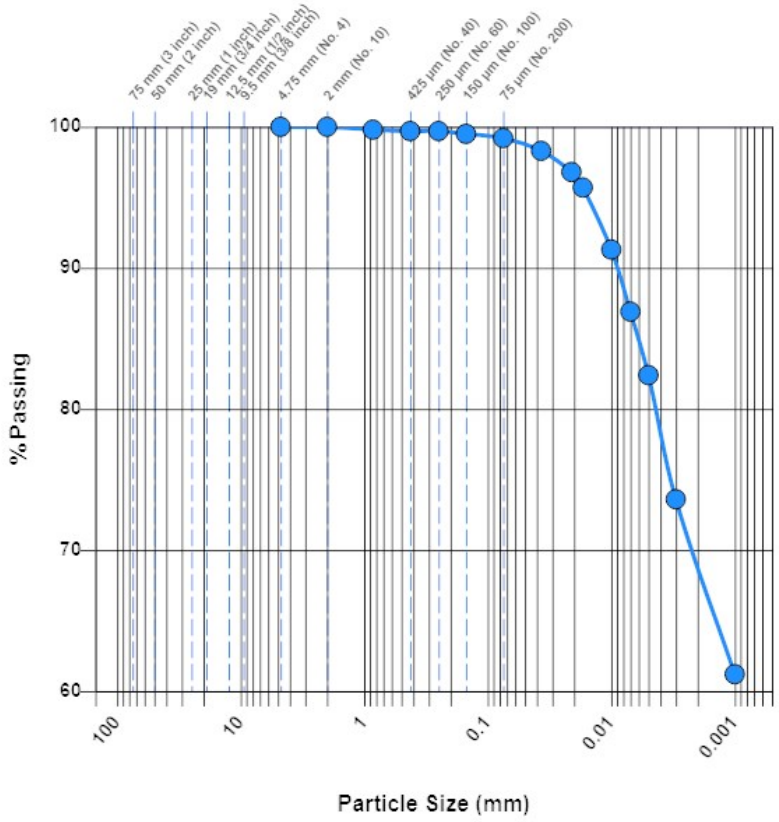
Sample Information

Sample Number:	361310	**Depth (ft):**	4.5-6
Boring Number:	CAA-025	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.7	-
250 µm (No. 60)	99.7	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.2	-
36.8 (µm)	98.3	-
21.4 (µm)	96.8	-
16.6 (µm)	95.7	-
9.8 (µm)	91.3	-
7.1 (µm)	86.9	-
5.1 (µm)	82.4	-
2.6 (µm)	73.6	-
1.1 (µm)	61.2	-



Soil Classification: CH Fat Clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	0.8	**Silt (%):**	16.8	**Clay (%):**	82.4

General

Remarks: Insufficient sample for Atterberg.

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ASTM D422

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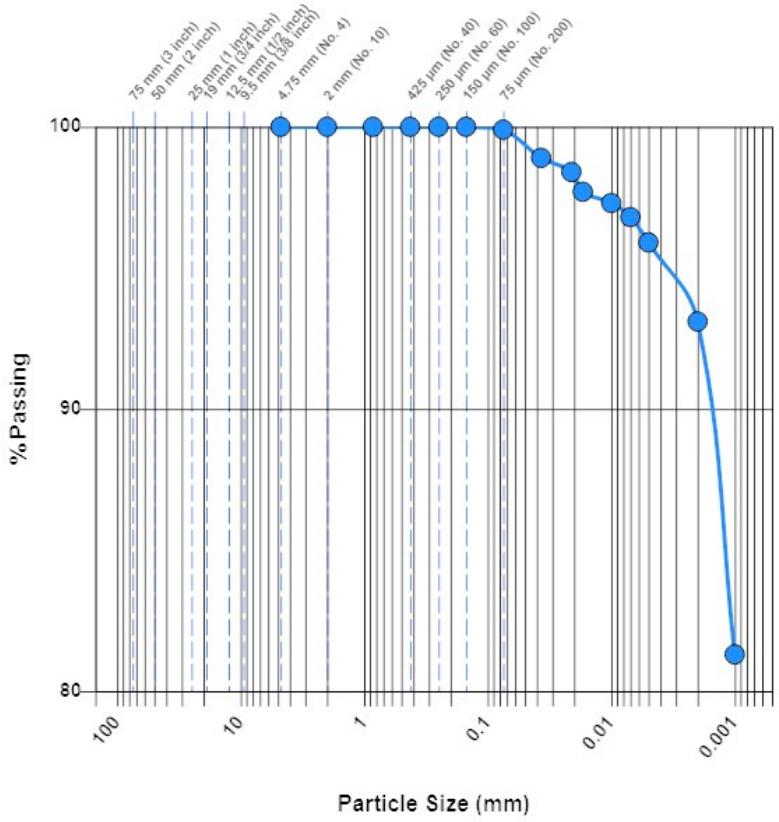
Sample Information

Sample Number:	361311	**Depth (ft):**	14.5-16
Boring Number:	CAA-025	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	100.0	-
75 µm (No. 200)	99.9	-
37.0 (µm)	98.9	-
21.4 (µm)	98.4	-
16.6 (µm)	97.7	-
9.6 (µm)	97.3	-
6.8 (µm)	96.8	-
4.8 (µm)	95.9	-
2.4 (µm)	93.1	-
1.0 (µm)	81.3	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(91)

Gravel (%): 0.0 **Sand (%):** 0.1 **Silt (%):** 4.0 **Clay (%):** 95.9

General

Remarks: LL=109, PL=34, PI=75

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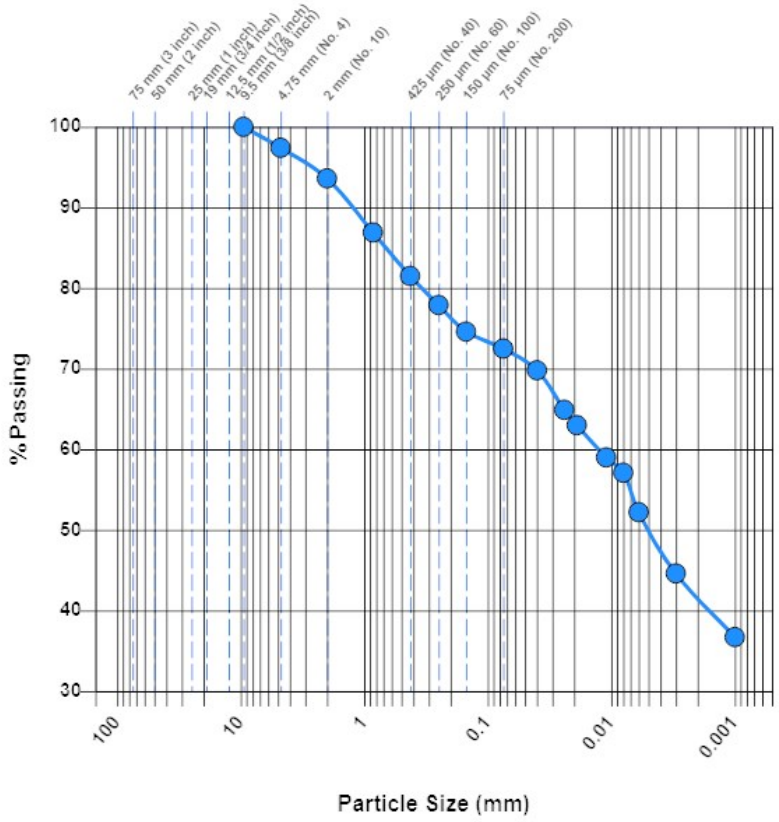
Sample Information

Sample Number:	361164	**Depth (ft):**	0.5-2
Boring Number:	GDRL-026	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	97.4	-
2 mm (No. 10)	93.6	-
850 µm (No. 20)	86.9	-
425 µm (No. 40)	81.5	-
250 µm (No. 60)	77.9	-
150 µm (No. 100)	74.6	-
75 µm (No. 200)	72.5	-
40.1 (µm)	69.8	-
23.6 (µm)	64.9	-
18.5 (µm)	63.0	-
10.9 (µm)	59.0	-
7.7 (µm)	57.1	-
5.6 (µm)	52.2	-
2.9 (µm)	44.6	-
1.2 (µm)	36.7	-



Soil Classification: CH Fat Clay with sand, black

Gravel (%):	2.6	**Sand (%):**	24.9	**Silt (%):**	22.8	**Clay (%):**	49.7
D_{60} (µm):	13.0						

General

Remarks: Insufficient sample for Atterberg.

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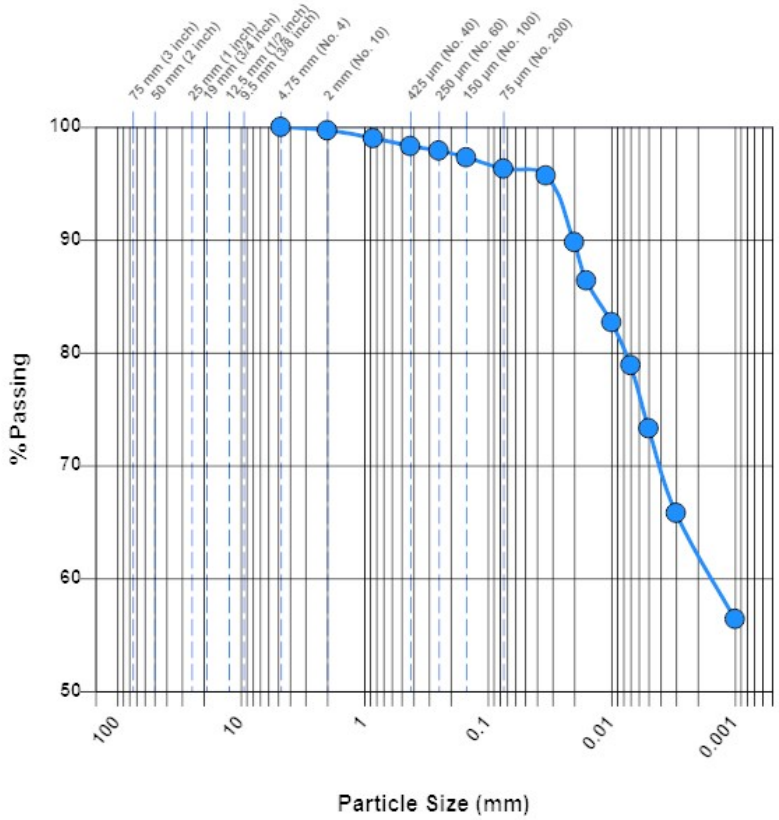
Sample Information

Sample Number:	361631	**Depth (ft):**	7-9
Boring Number:	GDRL-026	**Sampled By:**	Drill Crew
Sample Date:	12/17/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/18/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	99.0	-
425 µm (No. 40)	98.3	-
250 µm (No. 60)	97.9	-
150 µm (No. 100)	97.3	-
75 µm (No. 200)	96.3	-
34.0 (µm)	95.7	-
20.3 (µm)	89.8	-
16.1 (µm)	86.4	-
9.5 (µm)	82.7	-
6.8 (µm)	78.9	-
5.0 (µm)	73.3	-
2.6 (µm)	65.8	-
1.1 (µm)	56.4	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(79)

Gravel (%):	0.0	**Sand (%):**	3.7	**Silt (%):**	23.0	**Clay (%):**	73.3
D_{60} (µm):	1.8						

General

Remarks: LL=105, PL=38, PI=67

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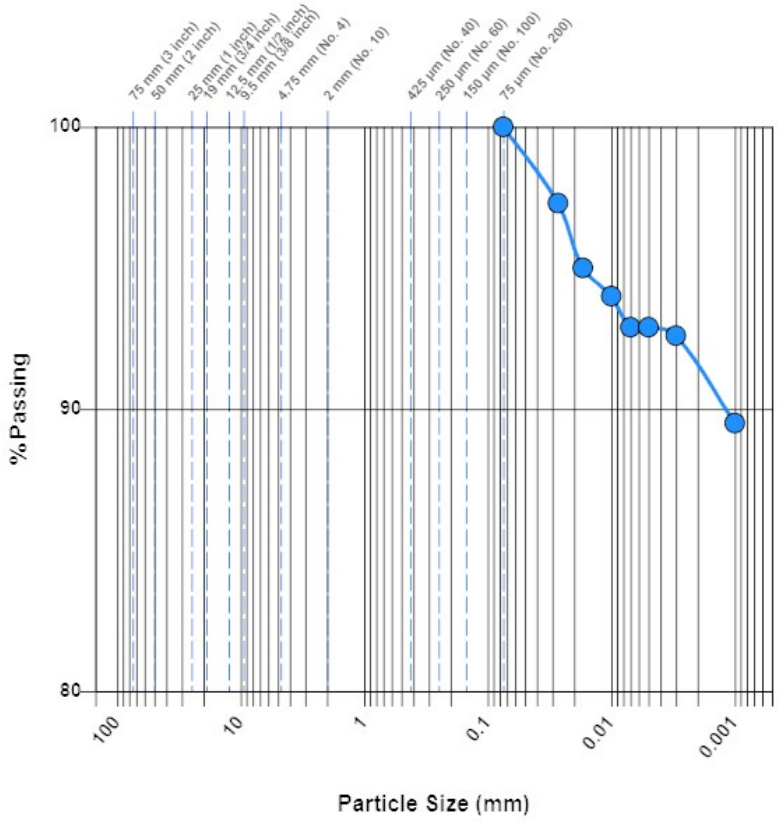
Sample Information

Sample Number:	356931	**Depth (ft):**	4.5-6
Boring Number:	GDRL-027	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
27.1 (µm)	97.3	-
17.3 (µm)	95.0	-
10.0 (µm)	94.0	-
7.1 (µm)	92.9	-
5.0 (µm)	92.9	-
2.5 (µm)	92.6	-
1.0 (µm)	89.5	-



Soil Classification: CH Fat clay, brown and gray, A-7-6(108)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 7.1 **Clay (%):** 92.9

General

Remarks: LL=119, PL=28, PI=91

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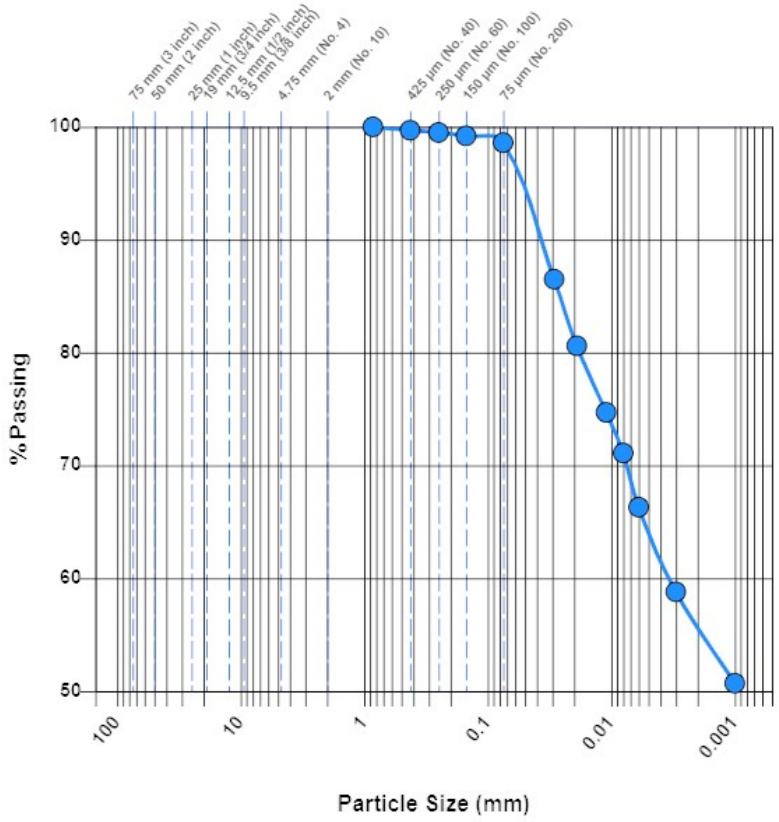
Sample Information

Sample Number:	356932	**Depth (ft):**	0.5-2
Boring Number:	GDRL-028	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.6	-
28.8 (µm)	86.5	-
18.6 (µm)	80.6	-
10.9 (µm)	74.7	-
7.8 (µm)	71.1	-
5.6 (µm)	66.3	-
2.8 (µm)	58.8	-
1.2 (µm)	50.7	-



Soil Classification: CH Fat clay, black, A-7-6(58)

Gravel (%):	0	**Sand (%):**	1.4	**Silt (%):**	34.8	**Clay (%):**	63.8

D_{60} (µm): 3.5

General

Remarks: LL=75, PL=24, PI=51

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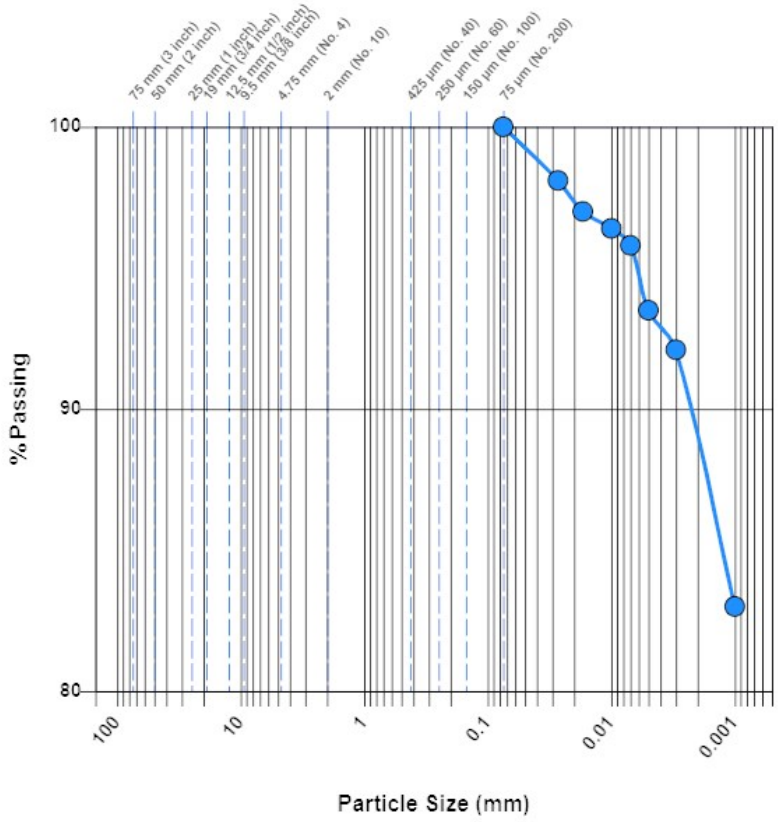
Sample Information

Sample Number:	356933	**Depth (ft):**	9.5-11
Boring Number:	GDRL-028	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
27.3 (µm)	98.1	-
17.3 (µm)	97.0	-
10.0 (µm)	96.4	-
7.1 (µm)	95.8	-
5.1 (µm)	93.5	-
2.5 (µm)	92.1	-
1.1 (µm)	83.0	-



Soil Classification: CH Fat clay, brown and gray, A-7-6(106)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 6.5 **Clay (%):** 93.5

General

Remarks: LL=118, PL=29, PI=89

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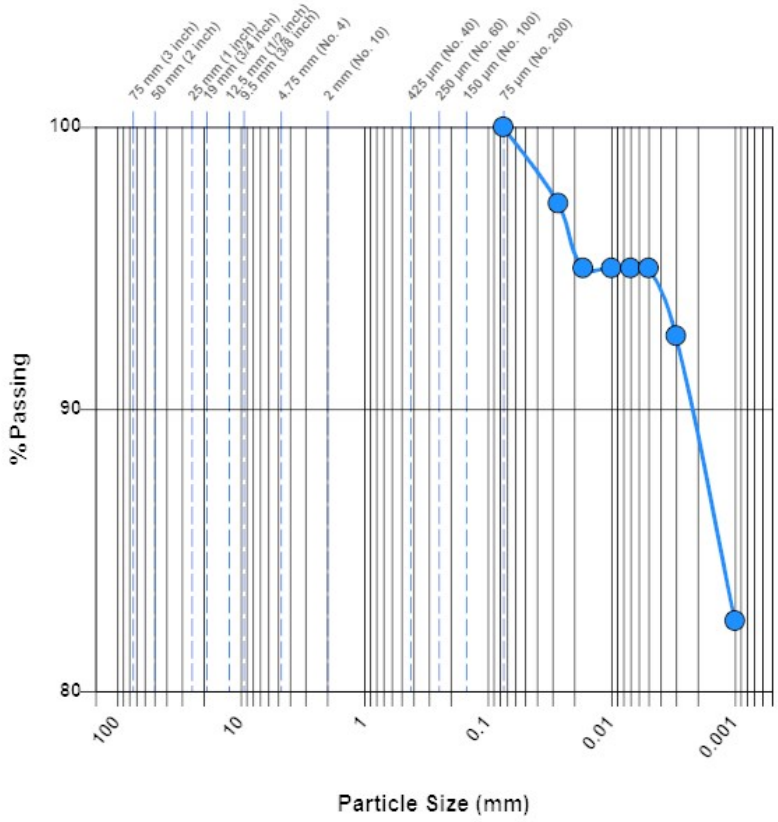
Sample Information

Sample Number:	356934	**Depth (ft):**	9.5-11
Boring Number:	CAA-029	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
27.0 (µm)	97.3	-
17.2 (µm)	95.0	-
10.0 (µm)	95.0	-
7.0 (µm)	95.0	-
5.0 (µm)	95.0	-
2.5 (µm)	92.6	-
1.1 (µm)	82.5	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(102)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 5.0 **Clay (%):** 95.0

General

Remarks: LL=115, PL=29, PI=86

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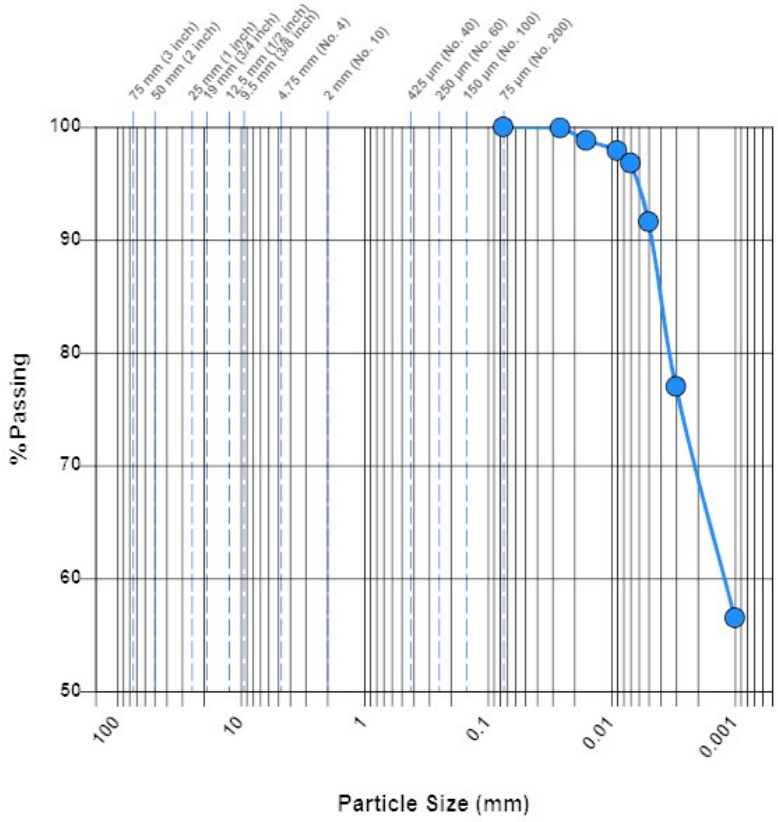
Sample Information

Sample Number:	356937	**Depth (ft):**	14.5-16
Boring Number:	CAA-029	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
25.5 (µm)	99.9	-
16.2 (µm)	98.8	-
9.4 (µm)	97.9	-
6.7 (µm)	96.8	-
4.9 (µm)	91.6	-
2.6 (µm)	77.0	-
1.2 (µm)	56.5	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(75)

Gravel (%):	0	**Sand (%):**	0.0	**Silt (%):**	8.4	**Clay (%):**	91.6

D_{60} (µm): 1.3

General

Remarks: LL=91, PL=27, PI=64

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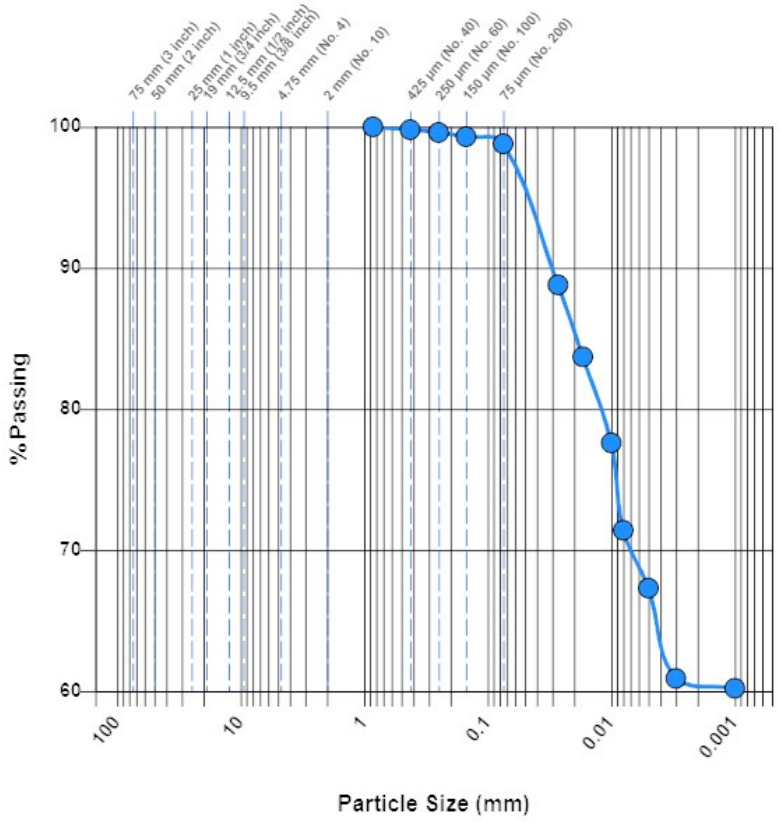
Sample Information

Sample Number:	356939	**Depth (ft):**	0.5-2
Boring Number:	GDRL-030	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.8	-
26.9 (µm)	88.8	-
17.4 (µm)	83.7	-
10.3 (µm)	77.6	-
7.5 (µm)	71.4	-
5.4 (µm)	67.3	-
2.7 (µm)	60.9	-
1.1 (µm)	60.2	-



Soil Classification: CH Fat clay, black, A-7-6(58)

Gravel (%): 0 **Sand (%):** 1.2 **Silt (%):** 31.5 **Clay (%):** 67.3

General

Remarks: LL=75, PL=24, PI=51

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Hydrometer And Sieve Analysis

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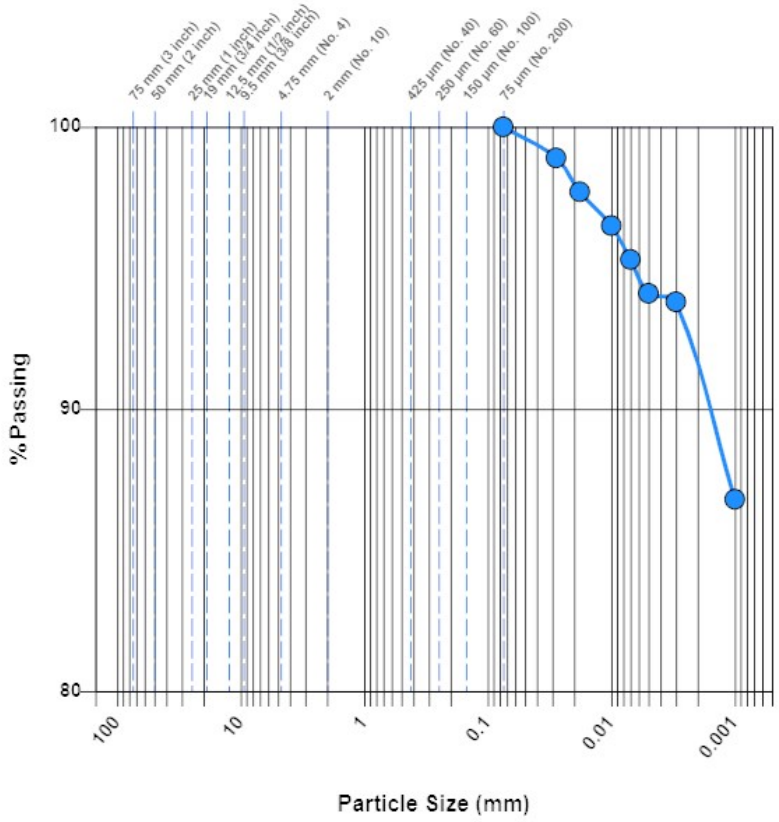
Sample Information

Sample Number:	356940	**Depth (ft):**	9.5-11
Boring Number:	GDRL-030	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
27.7 (µm)	98.9	-
17.6 (µm)	97.7	-
10.2 (µm)	96.5	-
7.2 (µm)	95.3	-
5.1 (µm)	94.1	-
2.5 (µm)	93.8	-
1.1 (µm)	86.8	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(106)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 5.9 **Clay (%):** 94.1

General

Remarks: LL=118, PL=28, PI=90

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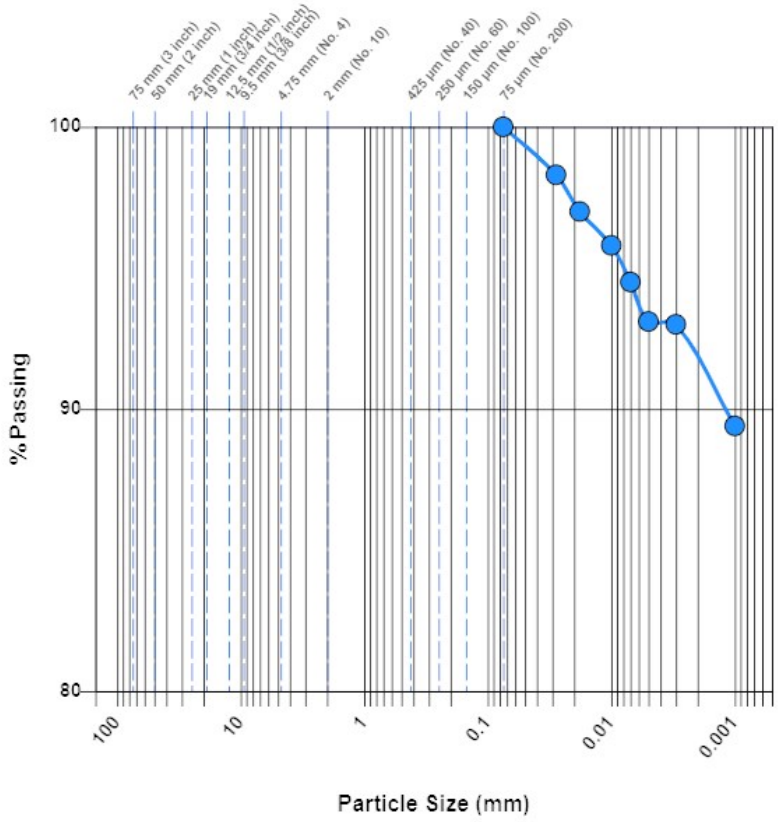
Sample Information

Sample Number:	356941	**Depth (ft):**	4.5-6
Boring Number:	CAA-031	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
28.3 (µm)	98.3	-
18.0 (µm)	97.0	-
10.4 (µm)	95.8	-
7.4 (µm)	94.5	-
5.3 (µm)	93.1	-
2.6 (µm)	93.0	-
1.1 (µm)	89.4	-



Soil Classification: CH Fat clay, brown and gray, A-7-6(107)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 6.9 **Clay (%):** 93.1

General

Remarks: LL=119, PL=29, PI=90

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

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Client:

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

Project:

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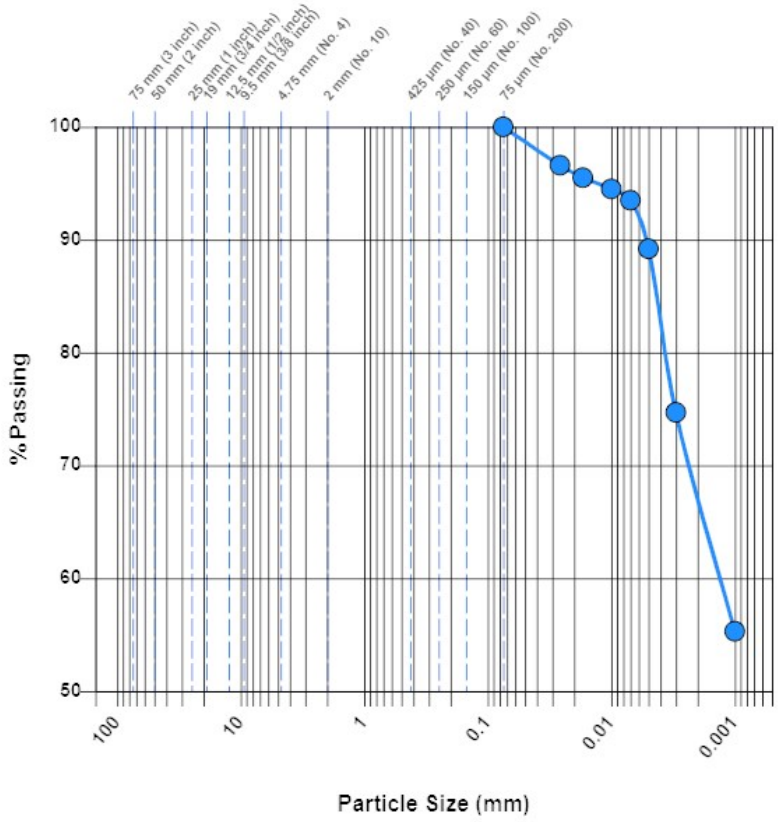
Sample Information

Sample Number:	356943	**Depth (ft):**	14.5-16
Boring Number:	CAA-031	**Sampled By:**	Drill Crew
Sample Date:	12/18/2020		
Received Date:	01/04/2021	**Lab:**	1502 Grumman Lane, Bismarck, ND
Tested Date:	01/12/2021	**Tested By:**	Ficek, Kevin

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
75 µm (No. 200)	100.0	-
25.9 (µm)	96.6	-
16.5 (µm)	95.5	-
9.6 (µm)	94.5	-
6.8 (µm)	93.5	-
4.9 (µm)	89.2	-
2.6 (µm)	74.7	-
1.2 (µm)	55.3	-



Soil Classification: CH Fat clay, brown and gray, A-7-6(74)

Gravel (%): 0 **Sand (%):** 0.0 **Silt (%):** 10.8 **Clay (%):** 89.2

D_{60} (µm): 1.5

General

Remarks: LL=89, PL=26, PI=63

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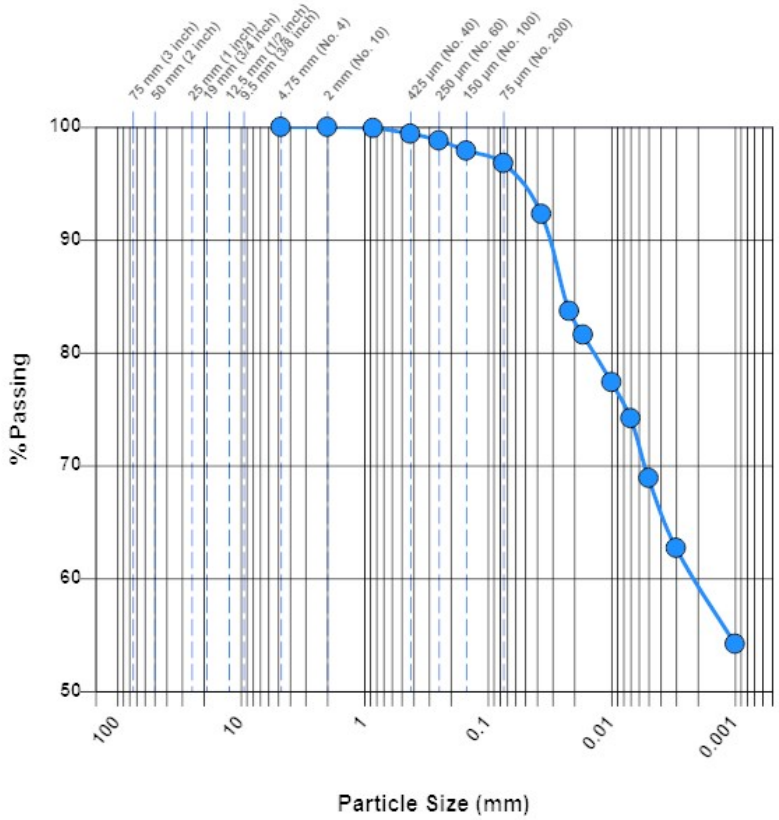
Sample Information

Sample Number:	361165	**Depth (ft):**	0.5-2
Boring Number:	GDRL-032	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	97.9	-
75 µm (No. 200)	96.8	-
37.1 (µm)	92.3	-
22.3 (µm)	83.7	-
17.4 (µm)	81.6	-
10.2 (µm)	77.4	-
7.3 (µm)	74.2	-
5.3 (µm)	68.9	-
2.7 (µm)	62.7	-
1.1 (µm)	54.2	-



Soil Classification: CH Fat clay, black, A-7-6(50)

Gravel (%):	0.0	**Sand (%):**	3.2	**Silt (%):**	27.9	**Clay (%):**	68.9

D_{60} (µm): 2.4

General

Remarks: LL=73, PL=29, PI=44

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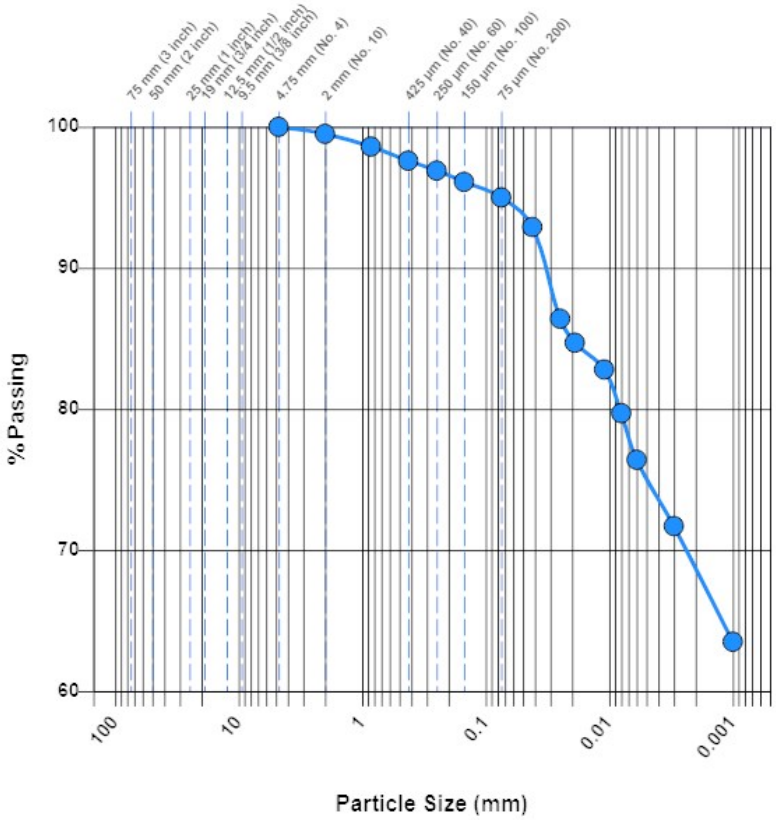
Sample Information

Sample Number:	361167	**Depth (ft):**	4.5-6
Boring Number:	GDRL-033	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.5	-
850 µm (No. 20)	98.6	-
425 µm (No. 40)	97.6	-
250 µm (No. 60)	96.9	-
150 µm (No. 100)	96.1	-
75 µm (No. 200)	95.0	-
42.2 (µm)	92.9	-
24.7 (µm)	86.4	-
19.2 (µm)	84.7	-
11.2 (µm)	82.8	-
7.9 (µm)	79.7	-
5.7 (µm)	76.4	-
2.9 (µm)	71.7	-
1.2 (µm)	63.5	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	5.0	**Silt (%):**	20.2	**Clay (%):**	74.8

General

Remarks: Insufficient sample for Atterberg.

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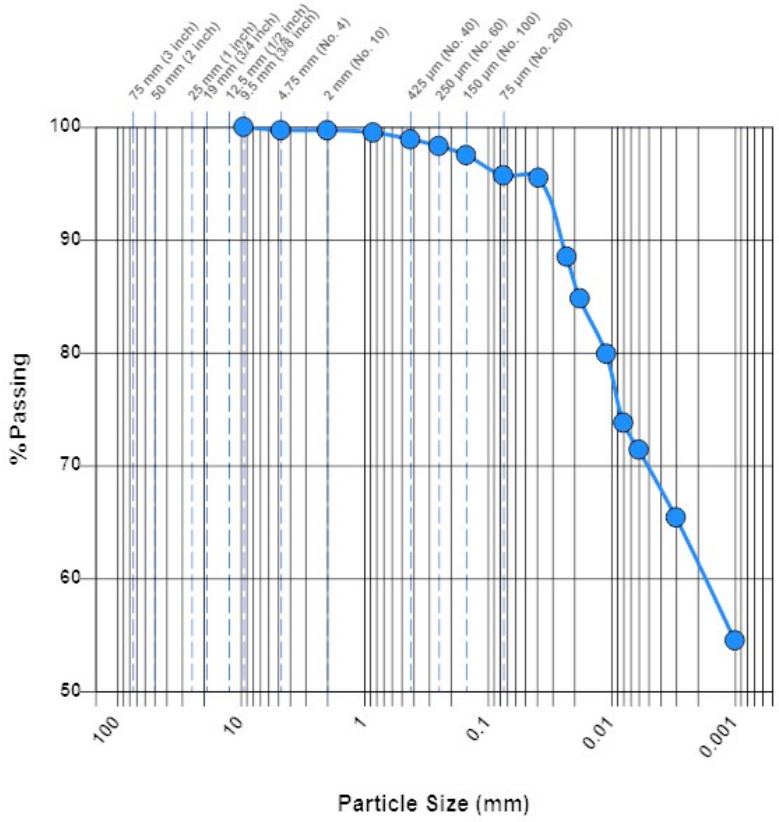
Sample Information

Sample Number:	361168	**Depth (ft):**	0.5-2
Boring Number:	CAA-034	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.7	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	99.5	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.3	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	95.7	-
38.8 (µm)	95.5	-
23.0 (µm)	88.5	-
18.1 (µm)	84.8	-
10.6 (µm)	79.9	-
7.6 (µm)	73.8	-
5.5 (µm)	71.4	-
2.8 (µm)	65.4	-
1.2 (µm)	54.5	-



Soil Classification: CH Fat clay, black to gray

Gravel (%):	0.3	**Sand (%):**	4.0	**Silt (%):**	26.3	**Clay (%):**	69.4
D_{60} (µm):	2.0						

General

Remarks: Insufficient sample for Atterberg.

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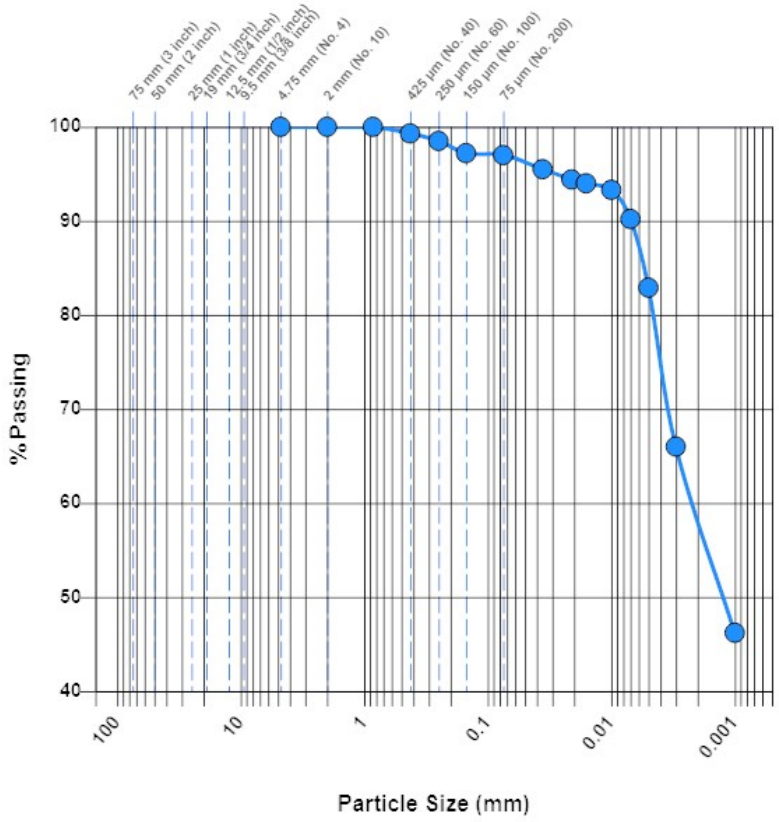
Sample Information

Sample Number:	361169	**Depth (ft):**	19.5-21
Boring Number:	CAA-034	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	98.5	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	97.0	-
36.4 (µm)	95.5	-
21.1 (µm)	94.4	-
16.4 (µm)	94.0	-
9.5 (µm)	93.3	-
6.8 (µm)	90.2	-
5.0 (µm)	82.9	-
2.7 (µm)	66.0	-
1.2 (µm)	46.2	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	3.0	**Silt (%):**	14.1	**Clay (%):**	82.9
D_{60} (µm):	2.4						

General

Remarks: Insufficient sample for Atterberg.

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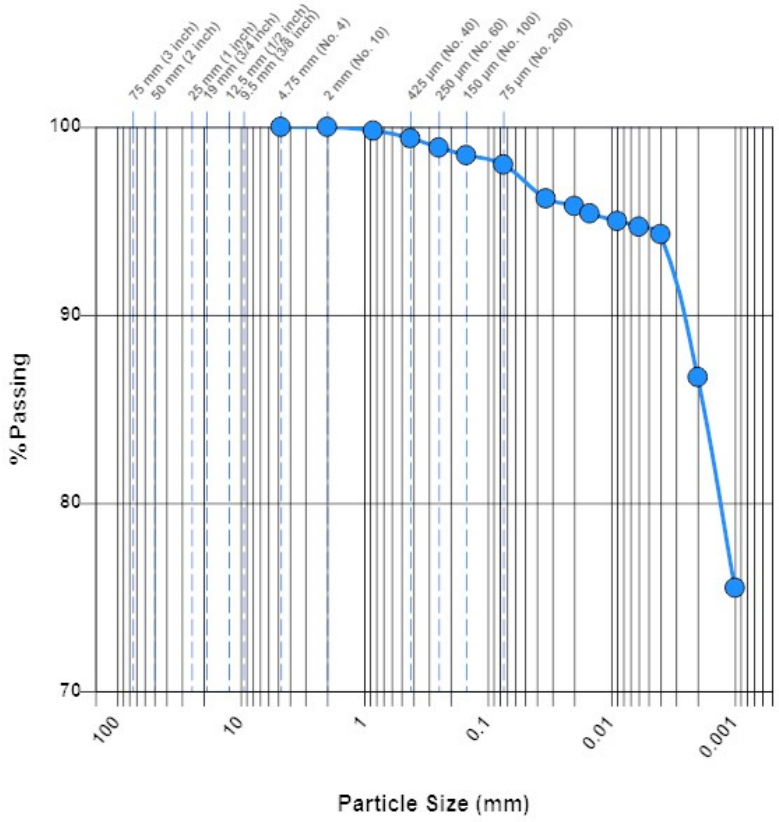
Sample Information

Sample Number:	361632	**Depth (ft):**	7-9
Boring Number:	GDRL-035	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/18/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	98.0	-
33.7 (µm)	96.2	-
19.5 (µm)	95.8	-
15.1 (µm)	95.4	-
8.8 (µm)	95.0	-
6.2 (µm)	94.7	-
4.4 (µm)	94.3	-
2.3 (µm)	86.7	-
1.0 (µm)	75.5	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%): 0.0 **Sand (%):** 2.0 **Silt (%):** 3.5 **Clay (%):** 94.5

General

Remarks: Sample taken from Shelby tube

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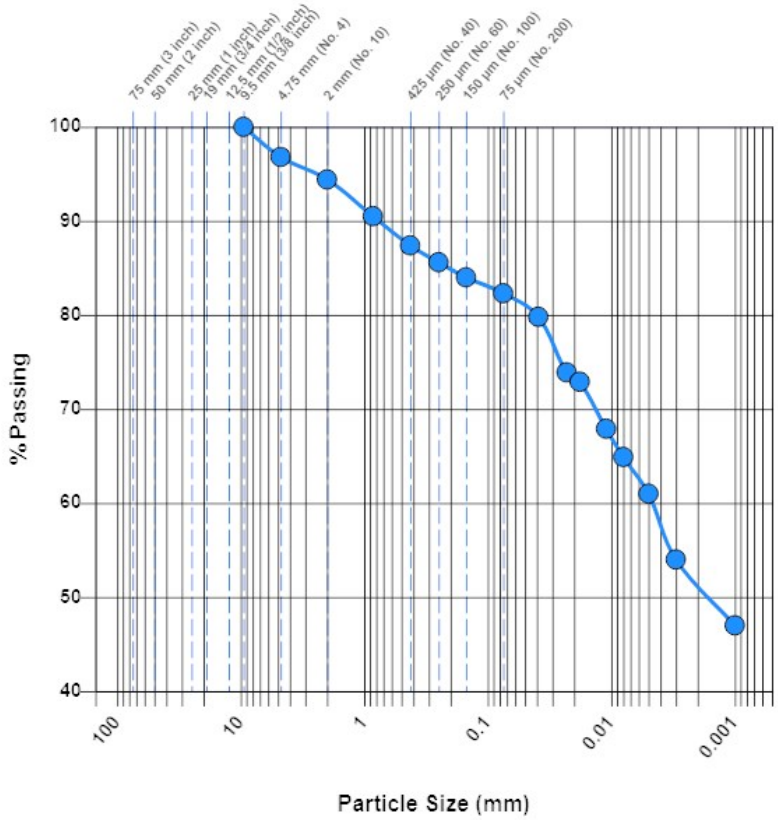
Sample Information

Sample Number:	361171	**Depth (ft):**	0.5-2
Boring Number:	GDRL-036	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	96.8	-
2 mm (No. 10)	94.4	-
850 µm (No. 20)	90.5	-
425 µm (No. 40)	87.4	-
250 µm (No. 60)	85.6	-
150 µm (No. 100)	84.0	-
75 µm (No. 200)	82.3	-
38.8 (µm)	79.8	-
23.0 (µm)	73.9	-
17.9 (µm)	72.9	-
10.6 (µm)	67.9	-
7.6 (µm)	64.9	-
5.4 (µm)	61.0	-
2.8 (µm)	54.0	-
1.2 (µm)	47.0	-



Soil Classification: CH Fat clay with sand, black to gray

Gravel (%):	3.2	**Sand (%):**	14.5	**Silt (%):**	21.3	**Clay (%):**	61.0
D_{60} (µm):	4.7						

General

Remarks: Insufficient sample for Atterberg.

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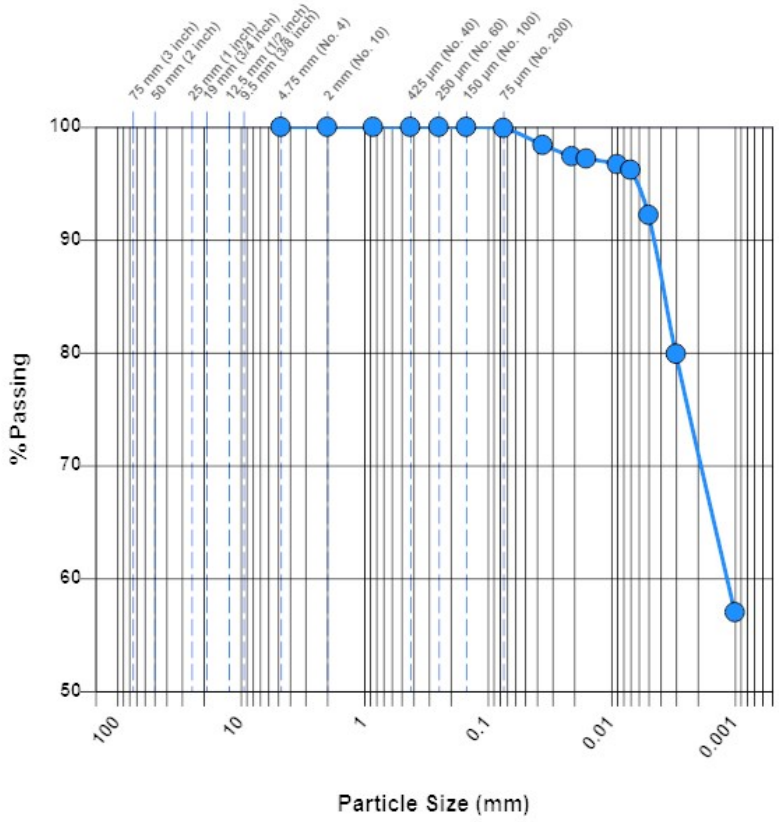
Sample Information

Sample Number:	361170	**Depth (ft):**	9.5-11
Boring Number:	GDRL-036	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	100.0	-
75 µm (No. 200)	99.9	-
35.5 (µm)	98.4	-
20.6 (µm)	97.4	-
16.0 (µm)	97.2	-
9.2 (µm)	96.7	-
6.6 (µm)	96.2	-
4.7 (µm)	92.2	-
2.5 (µm)	79.9	-
1.1 (µm)	57.0	-



Soil Classification: CH Fat clay, brown

Gravel (%):	0.0	**Sand (%):**	0.1	**Silt (%):**	7.7	**Clay (%):**	92.2
D_{60} (µm):	1.3						

General

Remarks: Insufficient sample for Atterberg

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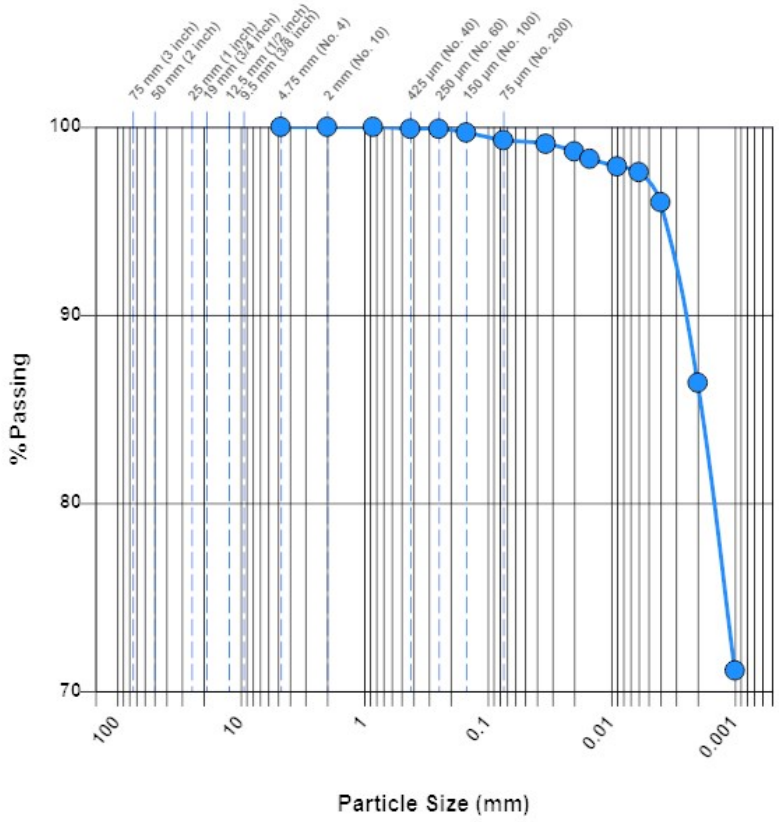
Sample Information

Sample Number:	361633	**Depth (ft):**	7-9
Boring Number:	GDRL-037	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/18/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.7	-
75 µm (No. 200)	99.3	-
33.8 (µm)	99.1	-
19.6 (µm)	98.7	-
15.2 (µm)	98.3	-
8.8 (µm)	97.9	-
6.2 (µm)	97.6	-
4.4 (µm)	96.0	-
2.4 (µm)	86.4	-
1.0 (µm)	71.1	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	0.7	**Silt (%):**	2.5	**Clay (%):**	96.8

General

Remarks: Sample taken from Shelby tube

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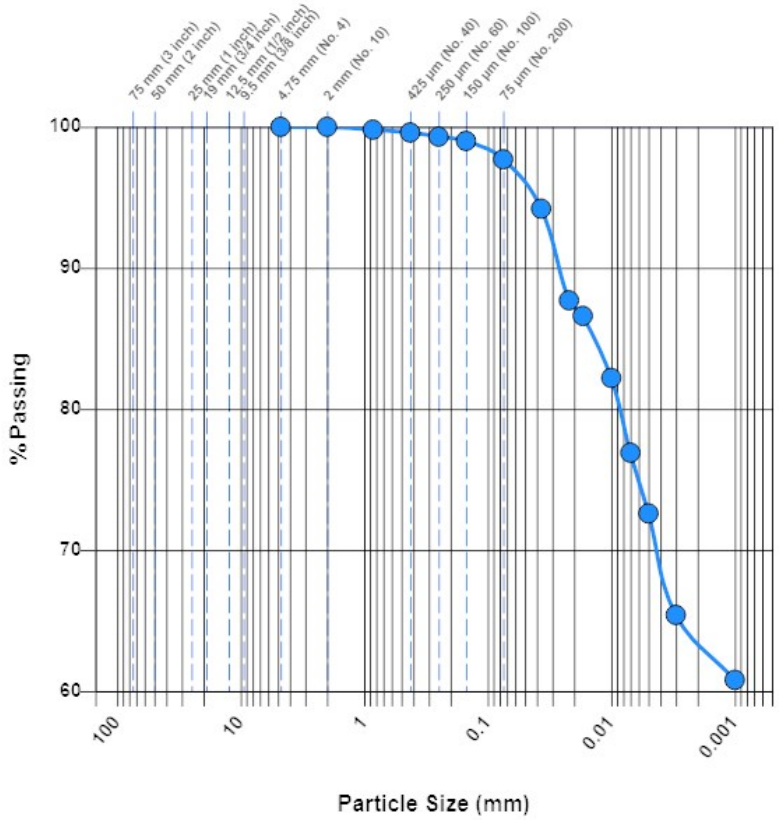
Sample Information

Sample Number:	361172	**Depth (ft):**	0.5-2
Boring Number:	GDRL-038	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.6	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	97.7	-
37.1 (µm)	94.2	-
22.1 (µm)	87.7	-
17.2 (µm)	86.6	-
10.1 (µm)	82.2	-
7.3 (µm)	76.9	-
5.3 (µm)	72.6	-
2.7 (µm)	65.4	-
1.1 (µm)	60.8	-



Soil Classification: CH Fat clay, dark gray to brown, A-7-6(64)

Gravel (%): 0.0 **Sand (%):** 2.3 **Silt (%):** 25.1 **Clay (%):** 72.6

General

Remarks: LL=84, PL=28, PI=56

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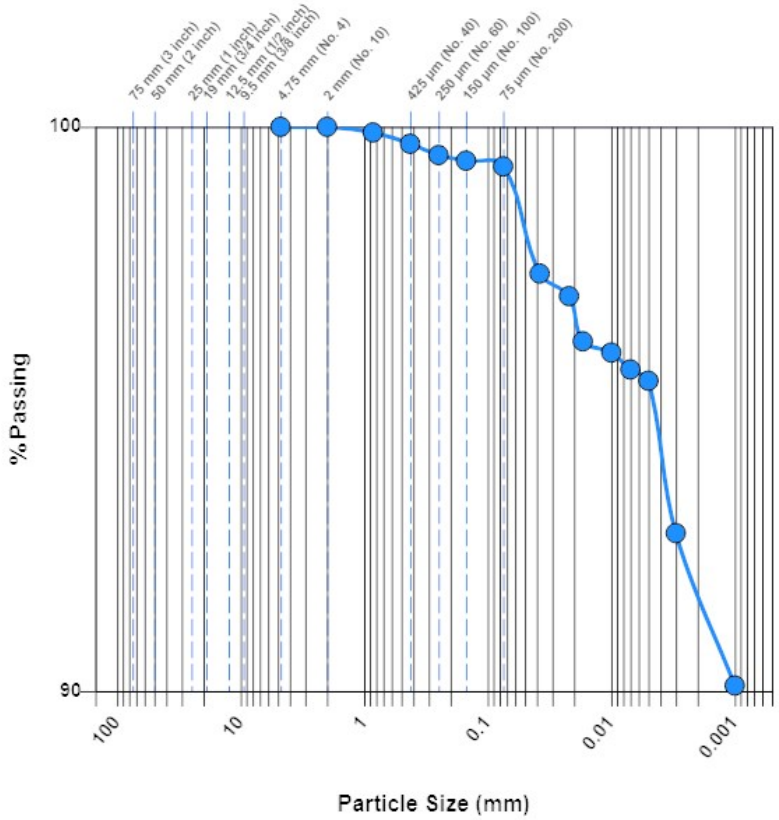
Sample Information

Sample Number:	361173	**Depth (ft):**	9.5-11
Boring Number:	GDRL-038	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
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)	99.3	-
38.3 (µm)	97.4	-
22.1 (µm)	97.0	-
17.2 (µm)	96.2	-
9.9 (µm)	96.0	-
7.0 (µm)	95.7	-
5.0 (µm)	95.5	-
2.5 (µm)	92.8	-
1.0 (µm)	90.1	-



Soil Classification: CH Fat clay, brown, A-7-5(98)

Gravel (%): 0.0 **Sand (%):** 0.7 **Silt (%):** 3.8 **Clay (%):** 95.5

General

Remarks: LL=118, PL=37, PI=81

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ASTM D422

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3203 32nd Avenue South
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Project:
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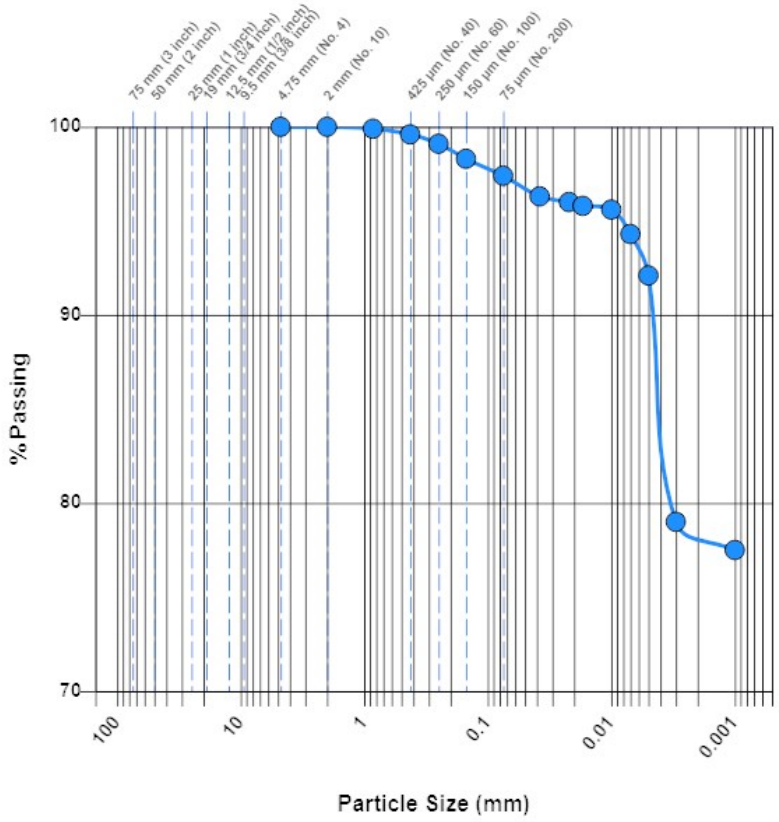
Sample Information

Sample Number:	361174	**Depth (ft):**	4.5-6
Boring Number:	CAA-039	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.6	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	97.4	-
38.4 (µm)	96.3	-
22.2 (µm)	96.0	-
17.2 (µm)	95.8	-
10.0 (µm)	95.6	-
7.1 (µm)	94.3	-
5.0 (µm)	92.1	-
2.6 (µm)	79.0	-
1.1 (µm)	77.5	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(70)

Gravel (%): 0.0 **Sand (%):** 2.6 **Silt (%):** 5.3 **Clay (%):** 92.1

General

Remarks: LL=93, PL=33, PI=60

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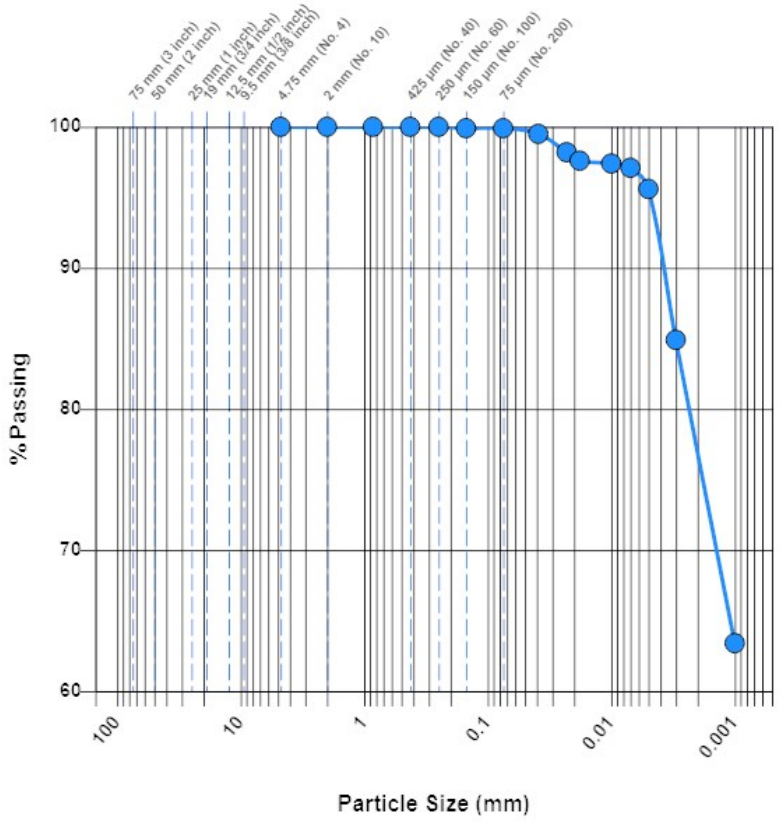
Sample Information

Sample Number:	361175	**Depth (ft):**	14.5-16
Boring Number:	CAA-039	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	100.0	-
250 µm (No. 60)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
39.4 (µm)	99.5	-
22.8 (µm)	98.2	-
17.7 (µm)	97.6	-
10.2 (µm)	97.4	-
7.2 (µm)	97.1	-
5.1 (µm)	95.6	-
2.7 (µm)	84.9	-
1.2 (µm)	63.4	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.0	**Sand (%):**	0.1	**Silt (%):**	4.3	**Clay (%):**	95.6

General

Remarks: Insufficient sample for Atterberg

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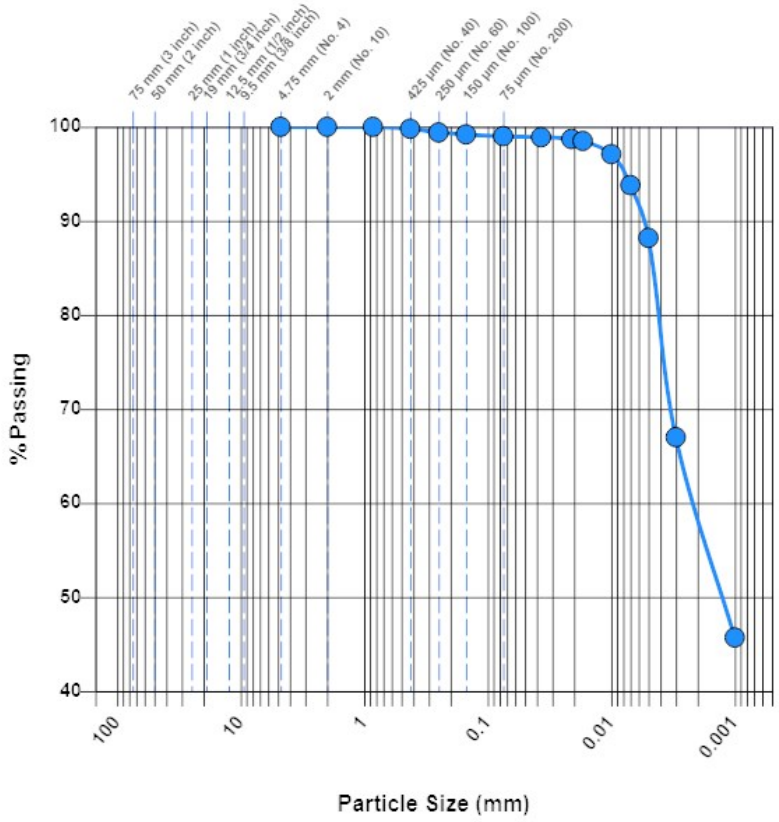
Sample Information

Sample Number:	361176	**Depth (ft):**	9.5-11
Boring Number:	GDRL-040	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	100.0	-
850 µm (No. 20)	100.0	-
425 µm (No. 40)	99.8	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	99.0	-
37.1 (µm)	98.9	-
21.4 (µm)	98.7	-
16.6 (µm)	98.5	-
9.7 (µm)	97.1	-
6.9 (µm)	93.8	-
5.0 (µm)	88.2	-
2.7 (µm)	67.0	-
1.2 (µm)	45.7	-



Soil Classification: CH Fat clay, brown

Gravel (%):	0.0	**Sand (%):**	1.0	**Silt (%):**	10.8	**Clay (%):**	88.2
D_{60} (µm):	2.3						

General

Remarks: Insufficient sample for Atterberg

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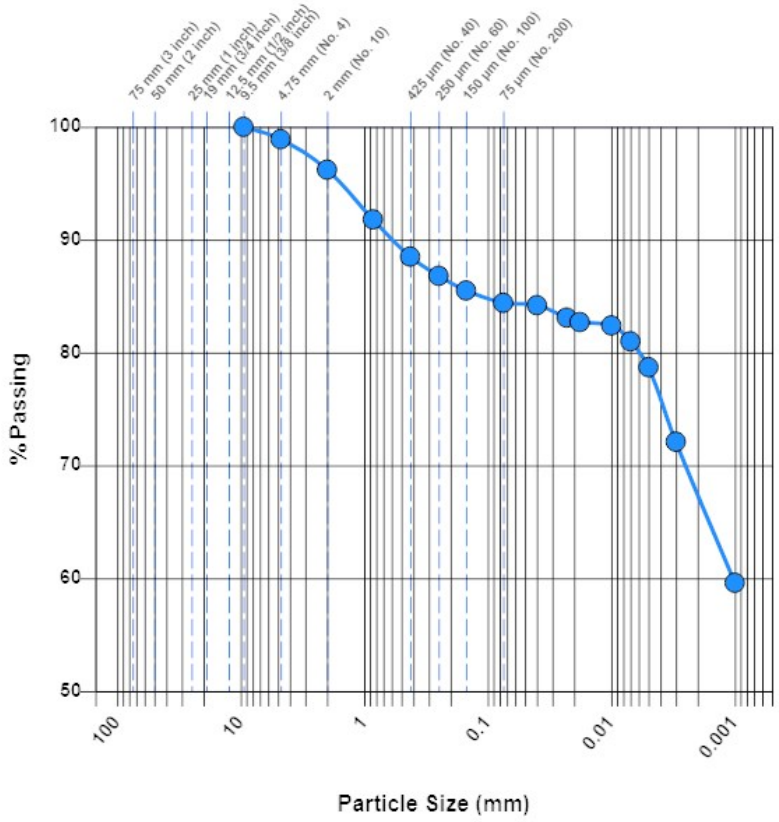
Sample Information

Sample Number:	361177	**Depth (ft):**	4.5-6
Boring Number:	CAA-041	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/12/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.9	-
2 mm (No. 10)	96.2	-
850 µm (No. 20)	91.8	-
425 µm (No. 40)	88.5	-
250 µm (No. 60)	86.8	-
150 µm (No. 100)	85.5	-
75 µm (No. 200)	84.4	-
39.6 (µm)	84.2	-
22.9 (µm)	83.1	-
17.8 (µm)	82.7	-
10.3 (µm)	82.4	-
7.3 (µm)	81.0	-
5.2 (µm)	78.7	-
2.7 (µm)	72.1	-
1.1 (µm)	59.6	-



Soil Classification: CH Fat clay with sand, brown

Gravel (%):	1.1	**Sand (%):**	14.5	**Silt (%):**	5.7	**Clay (%):**	78.7
D_{60} (µm):	1.1						

General

Remarks: Insufficient sample for Atterberg

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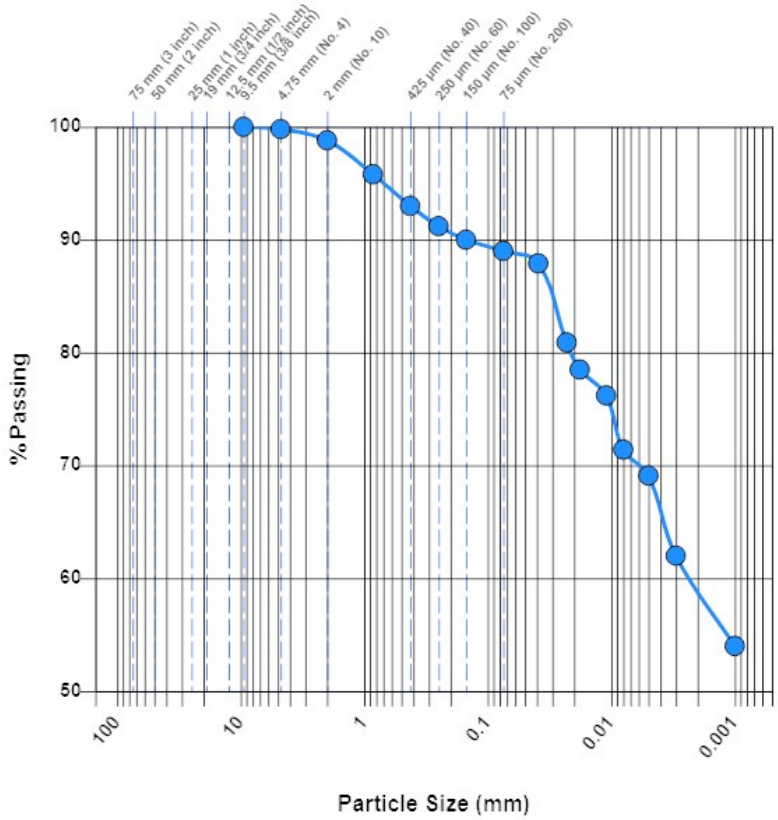
Sample Information

Sample Number:	361312	**Depth (ft):**	0.5-2
Boring Number:	GDRL-042	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.8	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	95.8	-
425 µm (No. 40)	93.0	-
250 µm (No. 60)	91.2	-
150 µm (No. 100)	90.0	-
75 µm (No. 200)	89.0	-
39.0 (µm)	87.9	-
23.1 (µm)	80.9	-
18.0 (µm)	78.5	-
10.5 (µm)	76.2	-
7.6 (µm)	71.4	-
5.4 (µm)	69.1	-
2.8 (µm)	62.0	-
1.2 (µm)	54.0	-



Soil Classification: CH Fat clay, gray and brown

Gravel (%):	0.2	**Sand (%):**	10.8	**Silt (%):**	19.9	**Clay (%):**	69.1
D_{60} (µm):	2.5						

General

Remarks: Insufficient sample for Atterberg

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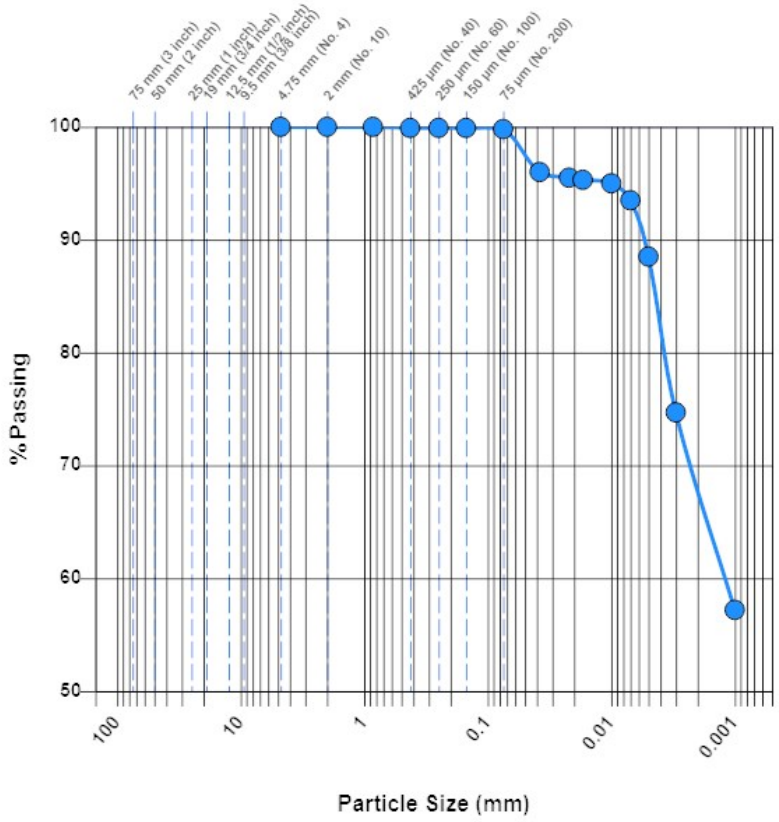
Sample Information

Sample Number:	361313	**Depth (ft):**	14.5-16
Boring Number:	CAA-043	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	99.9	-
75 µm (No. 200)	99.8	-
38.3 (µm)	96.0	-
22.2 (µm)	95.5	-
17.2 (µm)	95.3	-
9.9 (µm)	95.0	-
7.1 (µm)	93.5	-
5.1 (µm)	88.5	-
2.7 (µm)	74.7	-
1.2 (µm)	57.2	-



Soil Classification: CH Fat clay, light brown

Gravel (%):	0.0	**Sand (%):**	0.2	**Silt (%):**	11.3	**Clay (%):**	88.5
D_{60} (µm):	1.3						

General

Remarks: Insufficient sample for Atterberg

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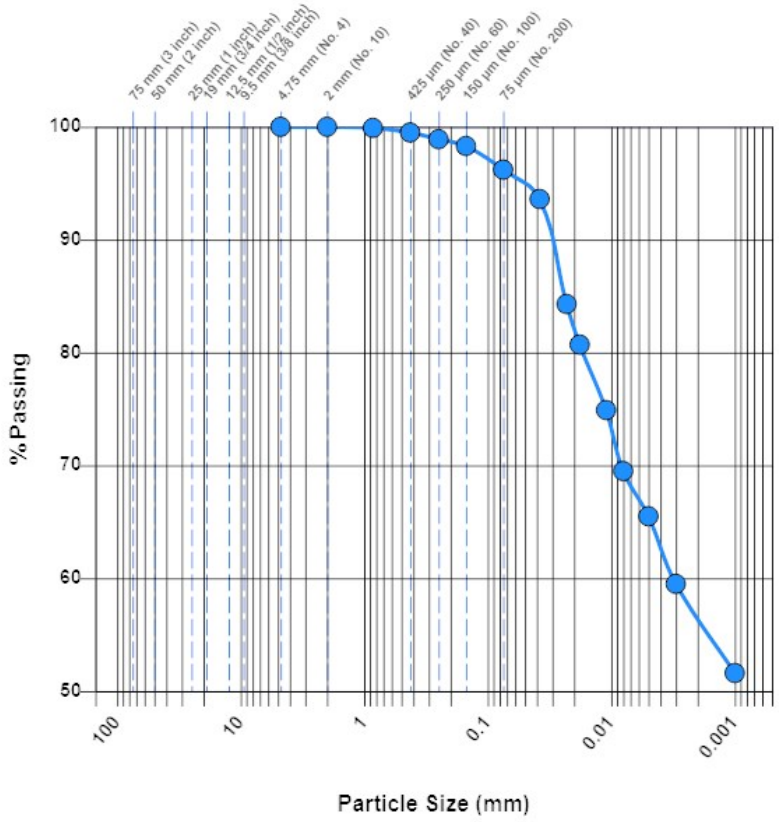
Sample Information

Sample Number:	361314	**Depth (ft):**	0.5-2
Boring Number:	GDRL-044	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/11/2021	**Lab:**	11529 W. 79th St, Building 21, Lenexa, KS
Tested Date:	02/15/2021	**Tested By:**	Tanquary, Stephen

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
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)	98.3	-
75 µm (No. 200)	96.2	-
38.1 (µm)	93.6	-
22.8 (µm)	84.3	-
17.9 (µm)	80.7	-
10.5 (µm)	74.9	-
7.6 (µm)	69.5	-
5.4 (µm)	65.5	-
2.8 (µm)	59.5	-
1.2 (µm)	51.6	-



Soil Classification: CH Fat clay, black

Gravel (%):	0.0	**Sand (%):**	3.8	**Silt (%):**	30.7	**Clay (%):**	65.5
D_{60} (µm):	3.2						

General

Remarks: Insufficient sample for Atterberg

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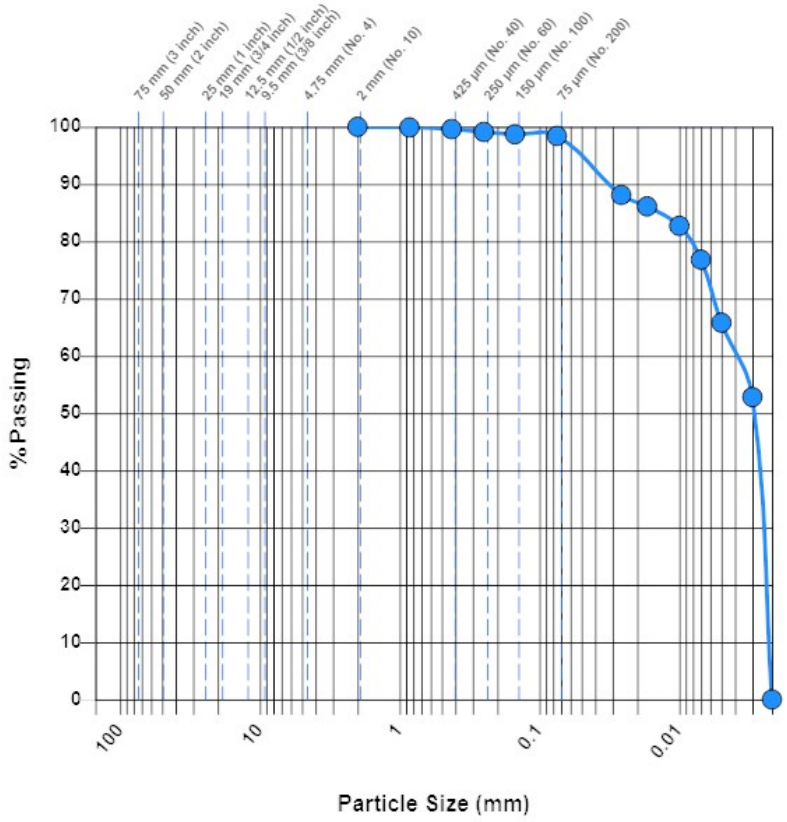
Sample Information

Sample Number:	359478	**Depth (ft):**	9.5-11
Boring Number:	GDRL-044	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.4	-
25.9 (µm)	88.1	-
16.6 (µm)	86.1	-
9.7 (µm)	82.7	-
7.1 (µm)	76.8	-
5.3 (µm)	65.8	-
2.7 (µm)	52.8	-
1.2 (µm)	34.8	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(53)

Gravel (%):	0	**Sand (%):**	1.6	**Silt (%):**	32.6	**Clay (%):**	65.8

D_{60} (µm): 4.1

General

Remarks: LL=74, PL=28, PI=46

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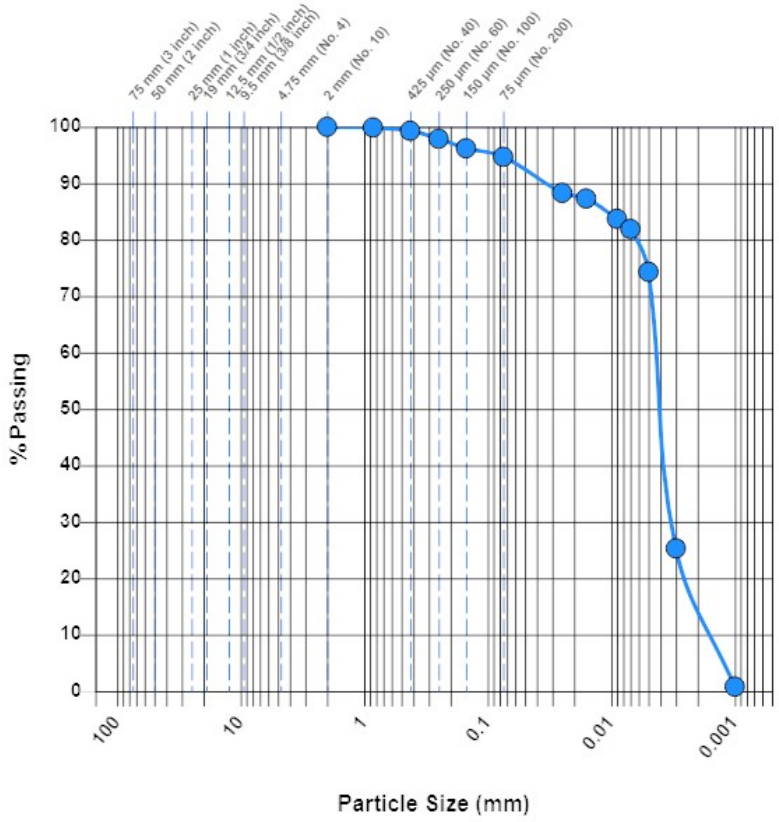
Sample Information

Sample Number:	359474	**Depth (ft):**	4.5-6
Boring Number:	GDRL-045	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.3	-
250 µm (No. 60)	97.9	-
150 µm (No. 100)	96.2	-
75 µm (No. 200)	94.7	-
25.0 (µm)	88.3	-
15.9 (µm)	87.3	-
9.4 (µm)	83.7	-
6.7 (µm)	81.9	-
5.0 (µm)	74.3	-
3.0 (µm)	25.3	-
1.4 (µm)	0.8	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(53)

Gravel (%):	0	**Sand (%):**	5.3	**Silt (%):**	20.4	**Clay (%):**	74.3		
D_{60} (µm):	4.4	**D_{30} (µm):**	3.2	**D_{10} (µm):**	1.8	**C_u:**	2.44	**C_c:**	1.29

General

Remarks: LL=74, PL=25, PI=49

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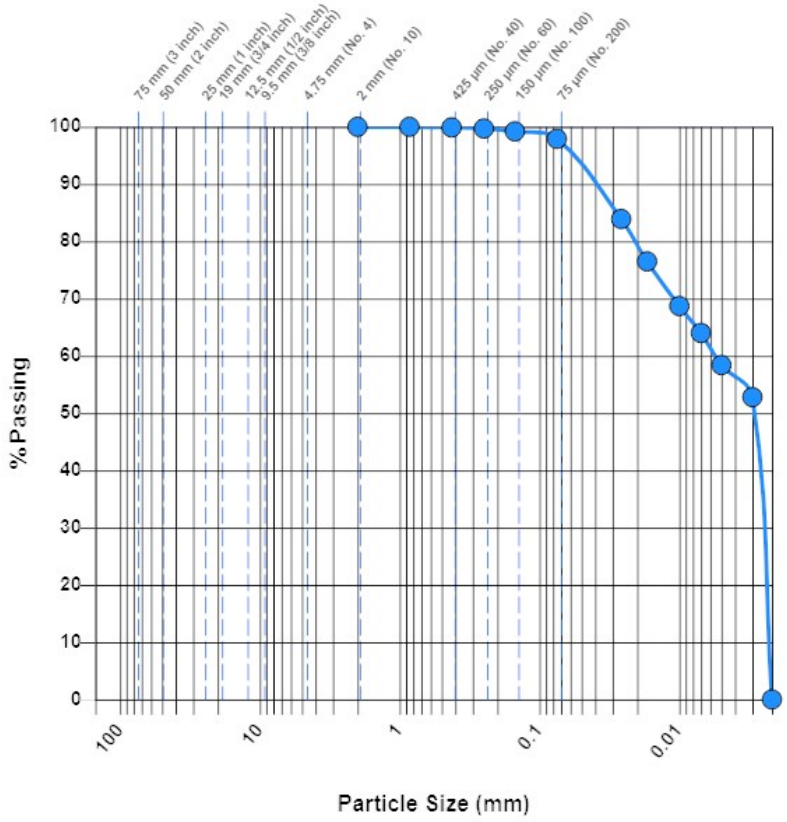
Sample Information

Sample Number:	359468	**Depth (ft):**	0.5-2
Boring Number:	GDRL-046	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	97.9	-
25.6 (µm)	83.9	-
16.9 (µm)	76.5	-
10.1 (µm)	68.7	-
7.3 (µm)	64.0	-
5.3 (µm)	58.4	-
2.7 (µm)	52.8	-
1.2 (µm)	39.8	-



Soil Classification: CH Fat clay, black to gray, A-7-6(53)

Gravel (%):	0	**Sand (%):**	2.1	**Silt (%):**	39.5	**Clay (%):**	58.4

D_{60} (µm): 5.6

General

Remarks: LL=71, PL=24, PI=47

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

Dickinson
3214 111H Ave SW, Suite A
Dickinson, ND 58601
Phone: 701-225-7090

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

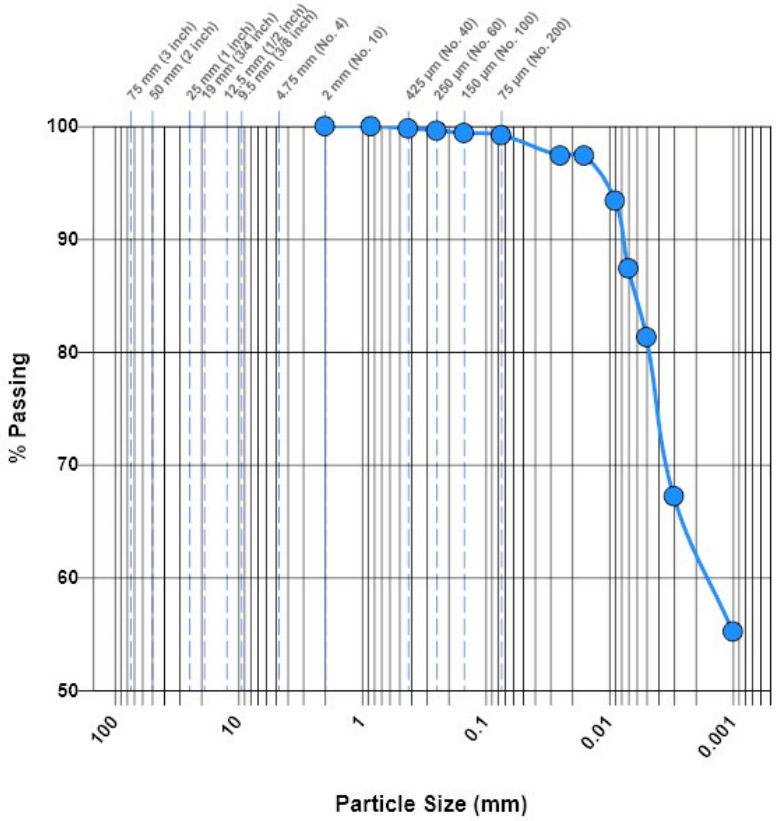
Sample Information

Sample Number:	359458	**Depth (ft):**	9.5-11
Boring Number:	GDRL-046	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/28/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
24.5 (µm)	97.4	-
15.5 (µm)	97.4	-
9.2 (µm)	93.4	-
6.7 (µm)	87.4	-
4.9 (µm)	81.3	-
2.6 (µm)	67.2	-
1.1 (µm)	55.2	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(63)

Gravel (%):	0	**Sand (%):**	0.8	**Silt (%):**	17.9	**Clay (%):**	81.3

D_{60} (µm): 1.8

General

Remarks: LL=82, PL=28, PI=54

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Hydrometer And Sieve Analysis

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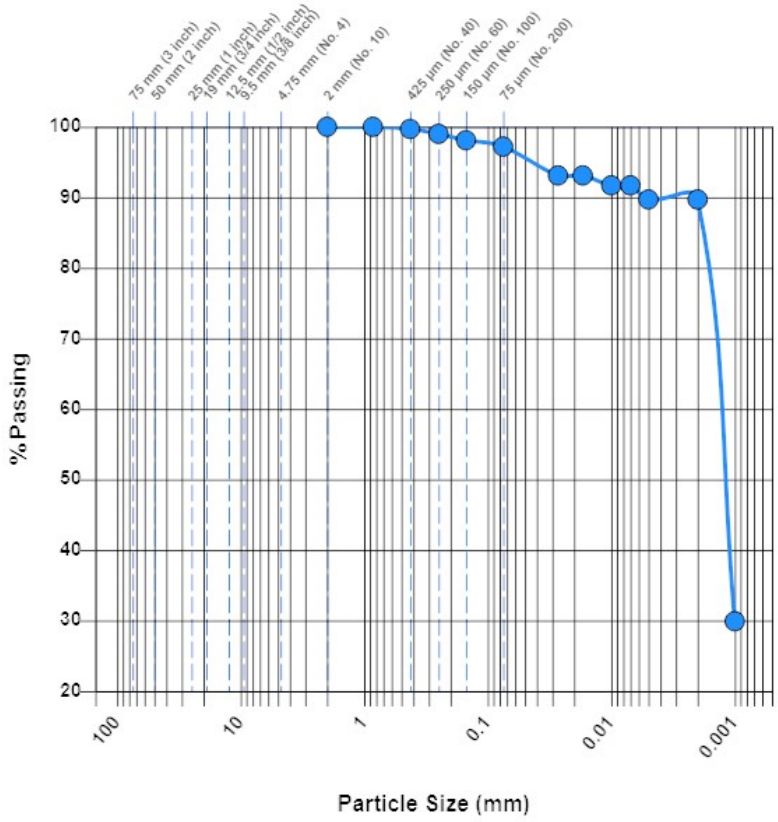
Sample Information

Sample Number:	359463	**Depth (ft):**	4.5-6
Boring Number:	CAA-047	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.0	-
150 µm (No. 100)	98.1	-
75 µm (No. 200)	97.2	-
26.6 (µm)	93.1	-
16.8 (µm)	93.1	-
9.7 (µm)	91.7	-
6.9 (µm)	91.7	-
4.9 (µm)	89.7	-
2.4 (µm)	89.7	-
1.3 (µm)	29.9	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(71)

Gravel (%):	0	**Sand (%):**	2.8	**Silt (%):**	7.5	**Clay (%):**	89.7
D_{60} (µm):	1.5	**D_{30} (µm):**	1.0				

General

Remarks: LL=91, PL=29, PI=62

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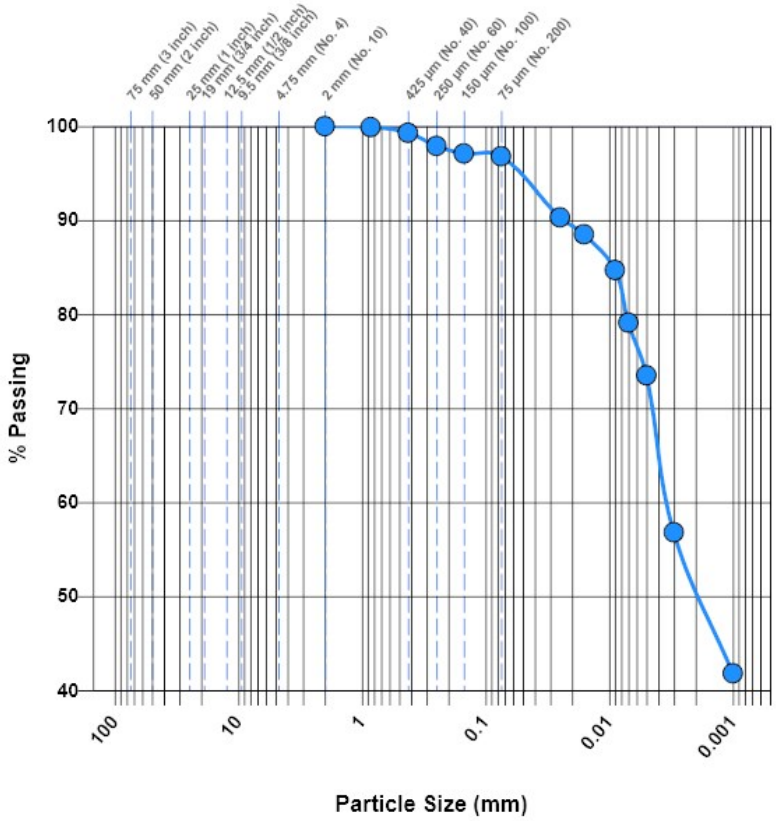
Sample Information

Sample Number:	359457	**Depth (ft):**	14.5-16
Boring Number:	CAA-047	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/28/2021	**Tested By:**	Stauffenberg, Henry

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)	99.3	-
250 µm (No. 60)	97.9	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	96.8	-
24.5 (µm)	90.3	-
15.7 (µm)	88.5	-
9.3 (µm)	84.7	-
6.8 (µm)	79.1	-
5.0 (µm)	73.5	-
2.6 (µm)	56.8	-
1.2 (µm)	41.8	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(52)

Gravel (%):	0	**Sand (%):**	3.2	**Silt (%):**	23.3	**Clay (%):**	73.5

D_{60} (µm): 3.4

General

Remarks: LL=73, PL=27, PI=46

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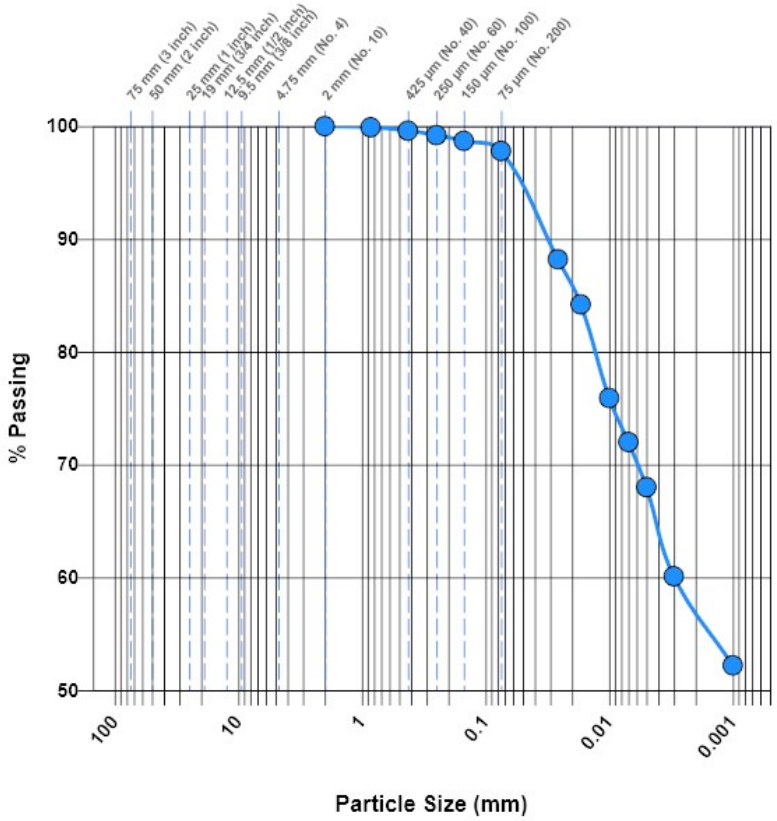
Sample Information

Sample Number:	359456	**Depth (ft):**	0.5-2
Boring Number:	GDRL-048	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/28/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	97.8	-
25.6 (µm)	88.2	-
16.5 (µm)	84.2	-
10.0 (µm)	75.9	-
7.2 (µm)	72.0	-
5.2 (µm)	68.0	-
2.6 (µm)	60.1	-
1.1 (µm)	52.2	-



Soil Classification: CH Fat clay, gray, A-7-5(45)

Gravel (%):	0	**Sand (%):**	2.2	**Silt (%):**	29.8	**Clay (%):**	68.0

D_{60} (µm): 3.0

General

Remarks: LL=68, PL=30, PI=38

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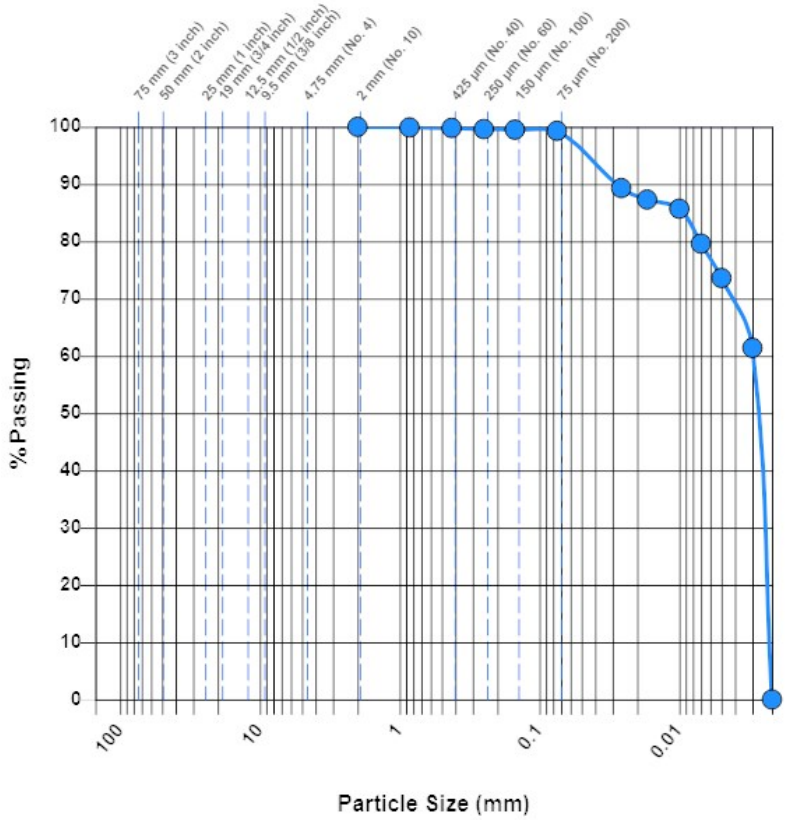
Sample Information

Sample Number:	359467	**Depth (ft):**	9.5-11
Boring Number:	GDRL-048	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.3	-
25.8 (µm)	89.3	-
16.5 (µm)	87.3	-
9.6 (µm)	85.7	-
7.0 (µm)	79.6	-
5.1 (µm)	73.6	-
2.6 (µm)	61.4	-
1.2 (µm)	41.2	-



Soil Classification: CH Fat clay, gray A-7-6(56)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	25.7	**Clay (%):**	73.6

D_{60} (µm): 2.9

General

Remarks: LL=77, PL=30, PI=47

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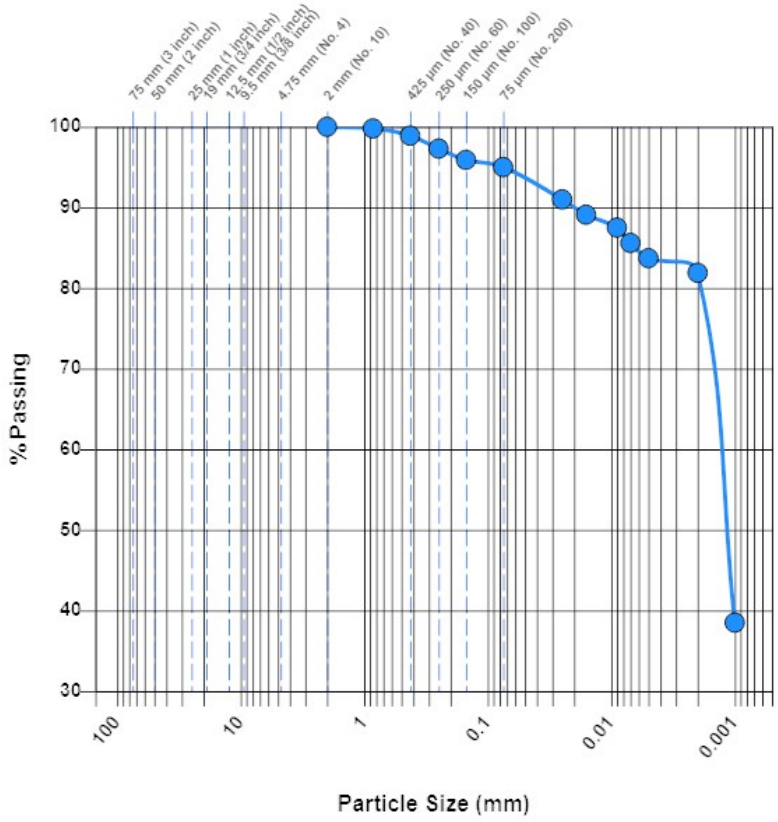
Sample Information

Sample Number:	359476	**Depth (ft):**	4.5-6
Boring Number:	CAA-049	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	98.9	-
250 µm (No. 60)	97.3	-
150 µm (No. 100)	95.9	-
75 µm (No. 200)	95.0	-
24.6 (µm)	91.0	-
15.8 (µm)	89.1	-
9.2 (µm)	87.5	-
6.6 (µm)	85.6	-
4.7 (µm)	83.7	-
2.3 (µm)	81.9	-
1.2 (µm)	38.5	-



Soil Classification: CH Fat clay, gray A-7-5(62)

Gravel (%):	0	**Sand (%):**	5.0	**Silt (%):**	11.3	**Clay (%):**	83.7

D_{60} (µm): 1.5

General

Remarks: LL=88, PL=34, PI=54

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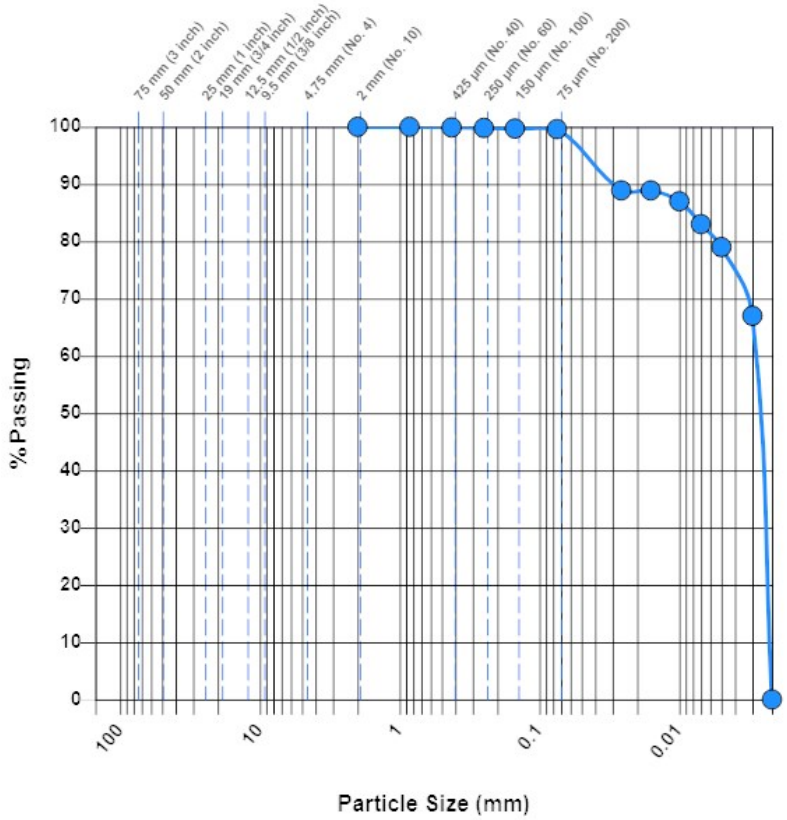
Sample Information

Sample Number:	359464	**Depth (ft):**	14.5-16
Boring Number:	CAA-049	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
75 µm (No. 200)	99.6	-
25.7 (µm)	88.9	-
16.3 (µm)	88.9	-
9.5 (µm)	87.0	-
6.9 (µm)	83.0	-
5.0 (µm)	79.0	-
2.6 (µm)	67.0	-
1.1 (µm)	50.9	-



Soil Classification: CH Fat clay, gray, A-7-5(65)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	20.6	**Clay (%):**	79.0

D_{60} (µm): 2.1

General

Remarks: LL=86, PL=32, PI=54

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

1502 Grumman Lane
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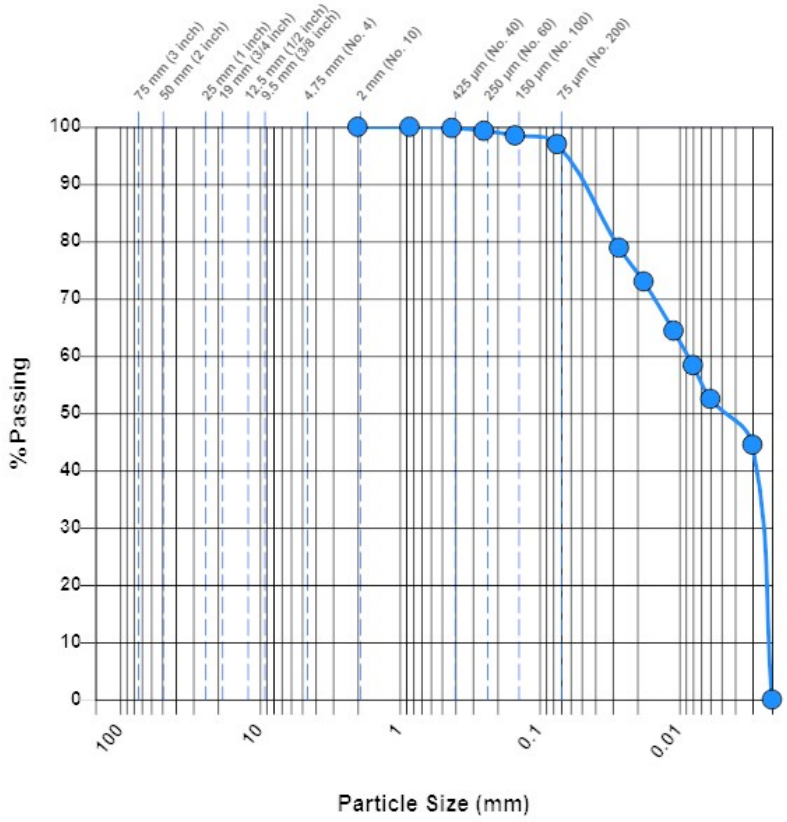
Sample Information

Sample Number:	359472	**Depth (ft):**	0.5-2
Boring Number:	GDRL-050	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	97.0	-
26.9 (µm)	78.9	-
17.5 (µm)	73.0	-
10.6 (µm)	64.4	-
7.7 (µm)	58.4	-
5.6 (µm)	52.5	-
2.8 (µm)	44.5	-
1.2 (µm)	34.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(43)

Gravel (%):	0	**Sand (%):**	3.0	**Silt (%):**	47.2	**Clay (%):**	49.8

D_{60} (µm): 8.8

General

Remarks: LL=66, PL=29, PI=37

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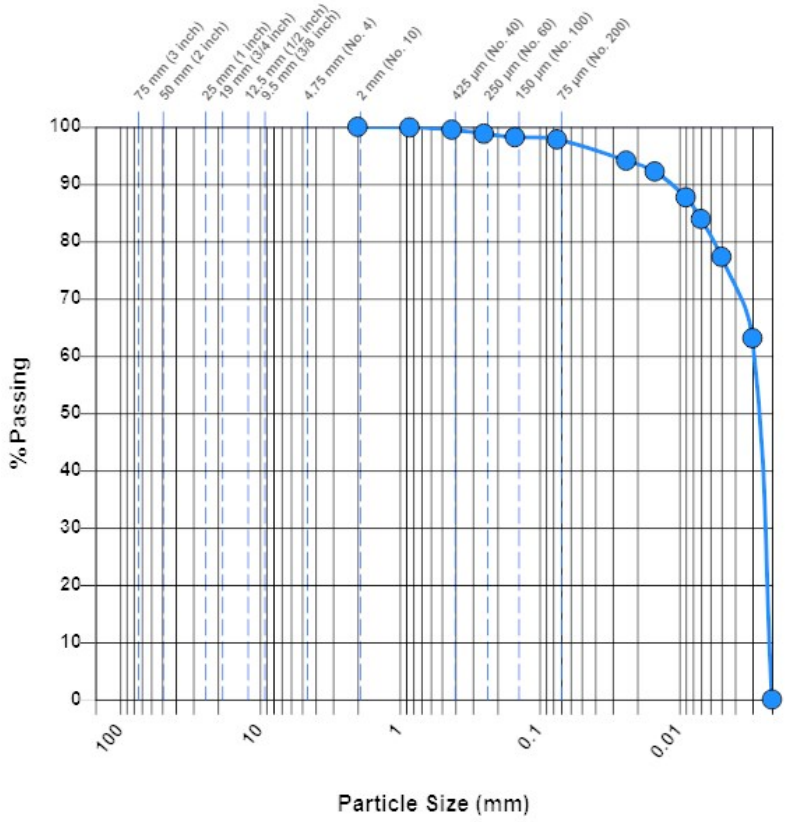
Sample Information

Sample Number:	359471	**Depth (ft):**	9.5-11
Boring Number:	GDRL-050	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	98.8	-
150 µm (No. 100)	98.2	-
75 µm (No. 200)	97.8	-
24.0 (µm)	94.1	-
15.4 (µm)	92.2	-
9.2 (µm)	87.7	-
6.6 (µm)	83.9	-
4.9 (µm)	77.3	-
2.6 (µm)	63.1	-
1.1 (µm)	48.0	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(56)

Gravel (%):	0	**Sand (%):**	2.2	**Silt (%):**	20.5	**Clay (%):**	77.3

D_{60} (µm): 2.6

General

Remarks: LL=77, PL=28, PI=49

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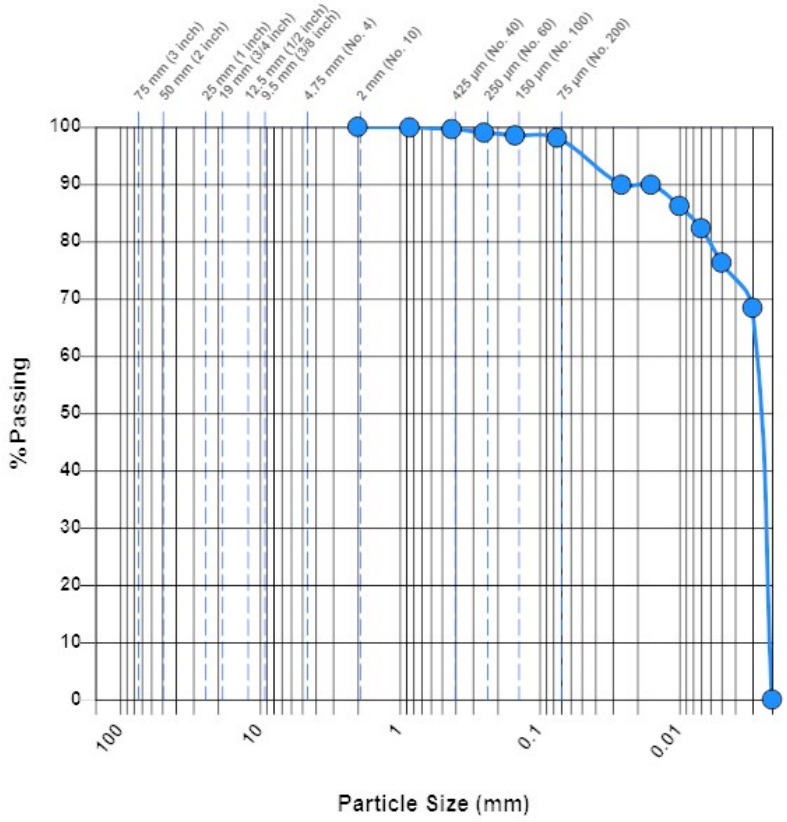
Sample Information

Sample Number:	359462	**Depth (ft):**	4.5-6
Boring Number:	GDRL-051	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	98.1	-
25.5 (µm)	89.9	-
16.1 (µm)	89.9	-
9.5 (µm)	86.2	-
6.9 (µm)	82.3	-
5.0 (µm)	76.3	-
2.5 (µm)	68.4	-
1.2 (µm)	28.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(53)

Gravel (%):	0	**Sand (%):**	1.9	**Silt (%):**	21.8	**Clay (%):**	76.3
D_{60} (µm):	2.6	**D_{30} (µm):**	1.1				

General

Remarks: LL=77, PL=32, PI=45

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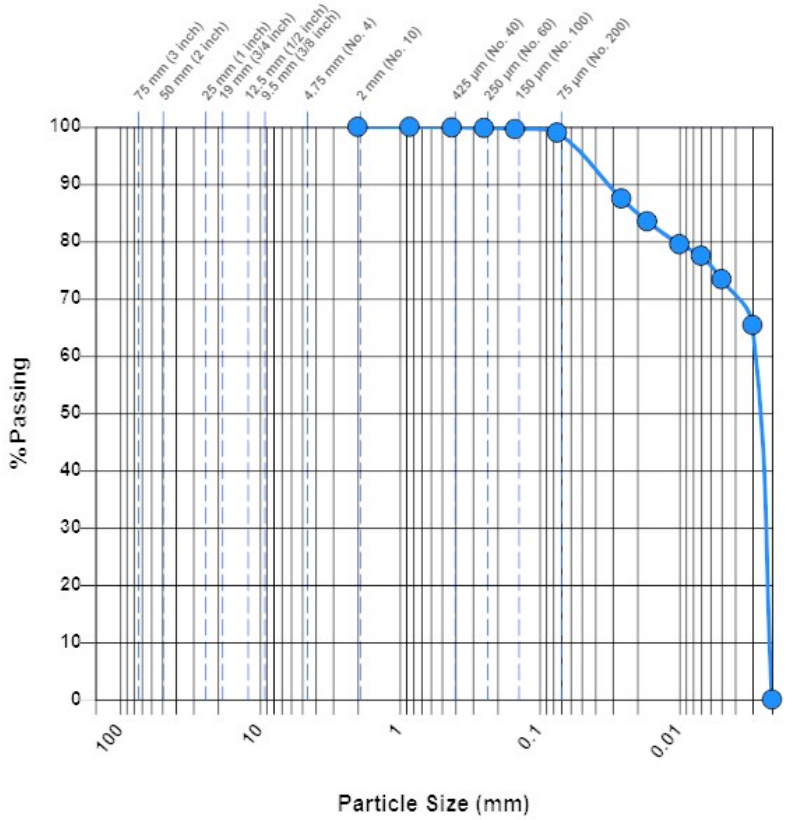
Sample Information

Sample Number:	359473	**Depth (ft):**	0.5-2
Boring Number:	GDRL-052	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.0	-
26.0 (µm)	87.5	-
16.8 (µm)	83.5	-
9.9 (µm)	79.5	-
7.1 (µm)	77.5	-
5.1 (µm)	73.4	-
2.6 (µm)	65.4	-
1.1 (µm)	57.3	-



Soil Classification: CH Fat clay, gray, A-7-6(64)

Gravel (%):	0	**Sand (%):**	1.0	**Silt (%):**	25.6	**Clay (%):**	73.4

D_{60} (µm): 1.7

General

Remarks: LL=82, PL=27, PI=55

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

1502 Grumman Lane
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Phone: 701-255-7180

Client:

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

Project:

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

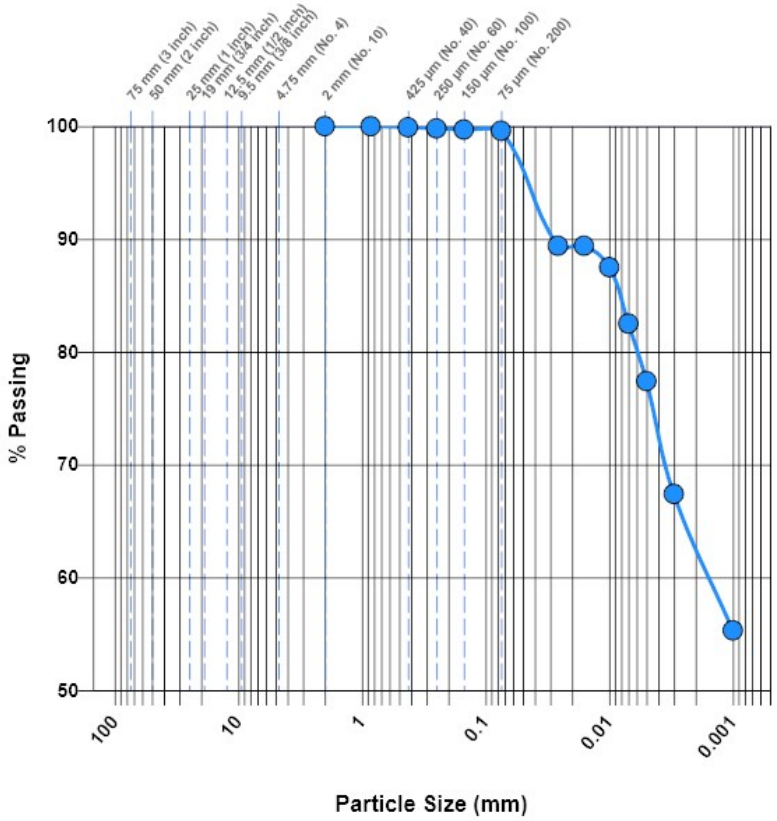
Sample Information

Sample Number:	359459	**Depth (ft):**	9.5-11
Boring Number:	GDRL-052	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/28/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
75 µm (No. 200)	99.6	-
25.7 (µm)	89.4	-
16.3 (µm)	89.4	-
9.5 (µm)	87.5	-
6.9 (µm)	82.5	-
5.0 (µm)	77.4	-
2.6 (µm)	67.4	-
1.1 (µm)	55.3	-



Soil Classification: CH Fat clay, gray, A-7-5(71)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	22.2	**Clay (%):**	77.4

D_{60} (µm): 1.8

General

Remarks: LL=93, PL=35, PI=58

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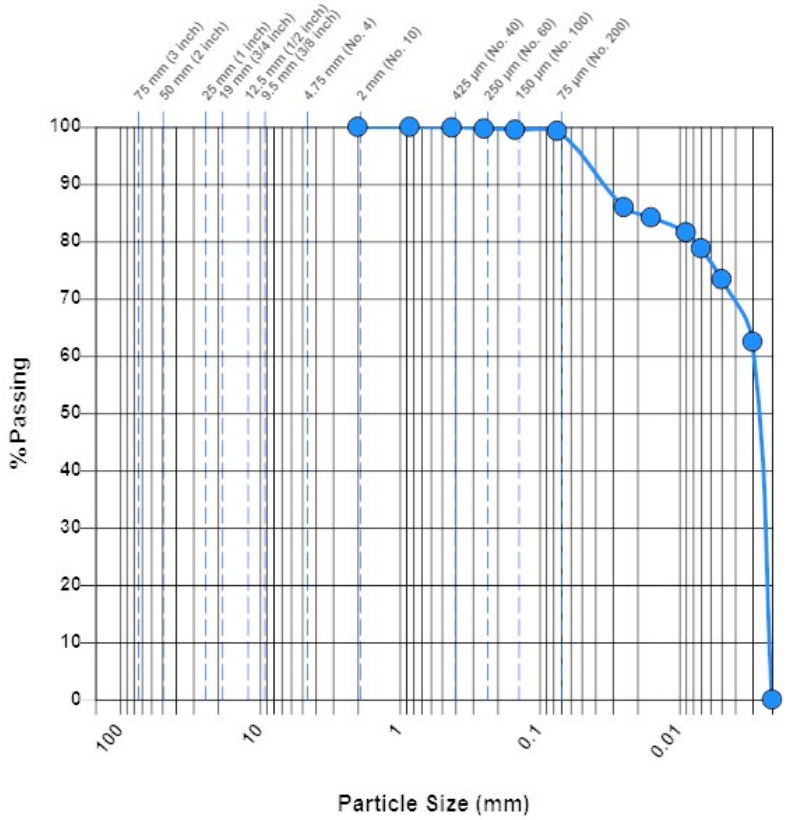
Sample Information

Sample Number:	359475	**Depth (ft):**	4.5-6
Boring Number:	GDRL-053	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.3	-
24.9 (µm)	86.0	-
15.9 (µm)	84.2	-
9.3 (µm)	81.6	-
6.7 (µm)	78.8	-
4.9 (µm)	73.4	-
2.5 (µm)	62.5	-
1.1 (µm)	48.0	-



Soil Classification: CH Fat clay, gray, A-7-5(57)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	25.9	**Clay (%):**	73.4

D_{60} (µm): 2.7

General

Remarks: LL=75, PL=30, PI=48

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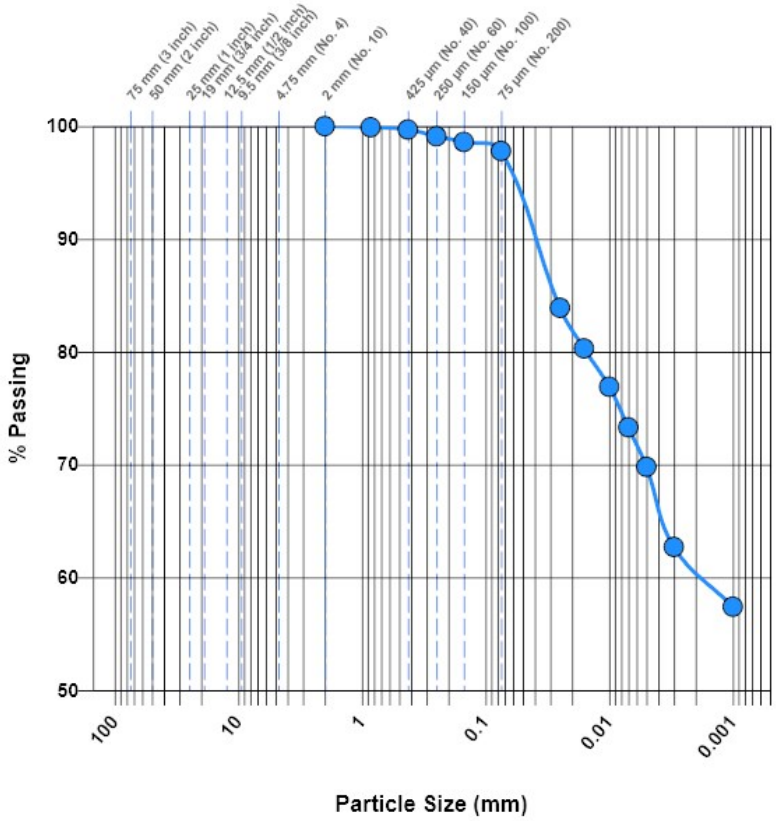
Sample Information

Sample Number:	359455	**Depth (ft):**	0.5-2
Boring Number:	CAA-054	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/28/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	97.8	-
24.9 (µm)	83.9	-
16.1 (µm)	80.3	-
9.5 (µm)	76.9	-
6.9 (µm)	73.3	-
5.0 (µm)	69.8	-
2.5 (µm)	62.7	-
1.1 (µm)	57.4	-



Soil Classification: CH Fat clay, gray, A-7-5(51)

Gravel (%):	0	**Sand (%):**	2.2	**Silt (%):**	28.0	**Clay (%):**	69.8
D_{60} (µm):	2.0						

General

Remarks: LL=74, PL=30, PI=44

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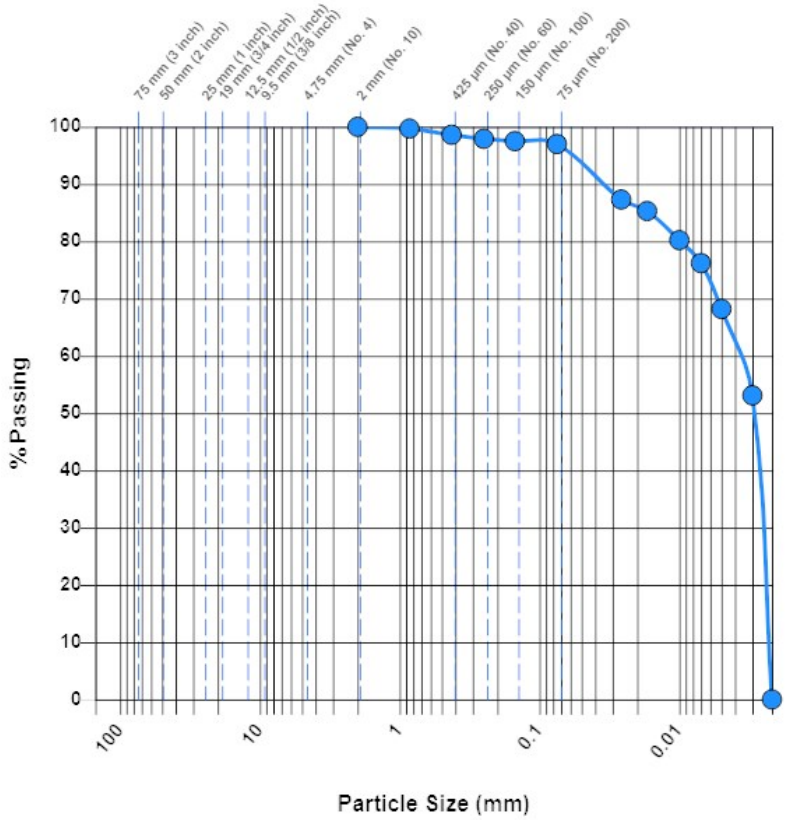
Sample Information

Sample Number:	359479	**Depth (ft):**	9.5-11
Boring Number:	CAA-054	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	98.6	-
250 µm (No. 60)	97.9	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	97.0	-
26.0 (µm)	87.3	-
16.6 (µm)	85.3	-
9.9 (µm)	80.2	-
7.1 (µm)	76.2	-
5.2 (µm)	68.2	-
2.7 (µm)	53.1	-
1.2 (µm)	35.0	-



Soil Classification: CH Fat clay, gray, A-7-5(50)

Gravel (%):	0	**Sand (%):**	3.0	**Silt (%):**	28.8	**Clay (%):**	68.2

D_{60} (µm): 3.9

General

Remarks: LL=73, PL=30, PI=43

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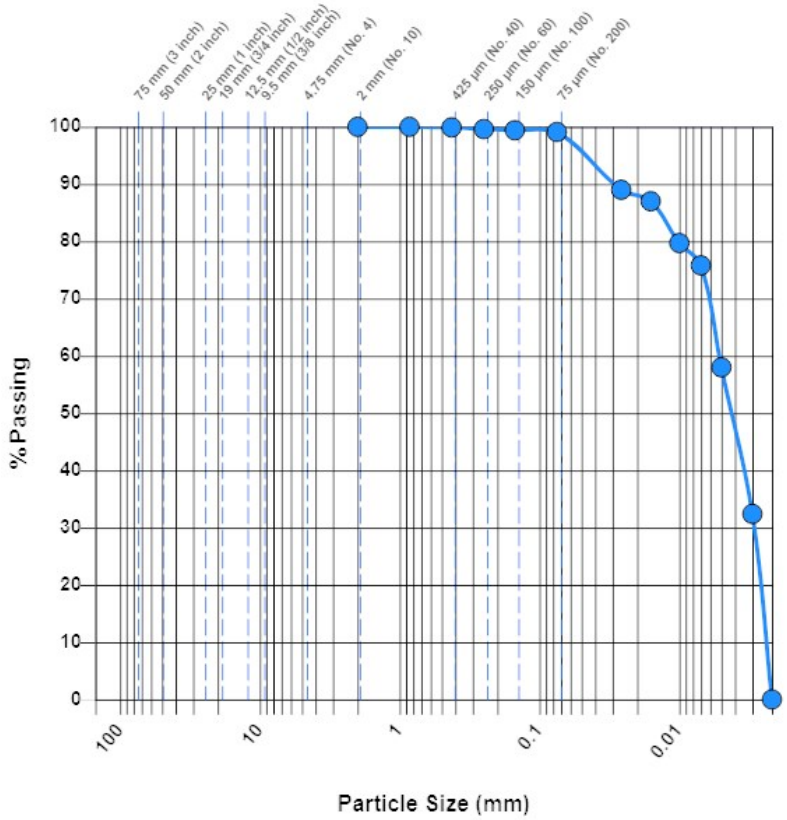
Sample Information

Sample Number:	359461	**Depth (ft):**	19.5-21
Boring Number:	CAA-054	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.1	-
25.6 (µm)	89.0	-
16.4 (µm)	87.0	-
9.8 (µm)	79.7	-
7.1 (µm)	75.8	-
5.4 (µm)	58.0	-
2.9 (µm)	32.4	-
1.3 (µm)	20.6	-



Soil Classification: CH Fat clay, gray, A-7-6(39)

Gravel (%):	0	**Sand (%):**	0.9	**Silt (%):**	41.1	**Clay (%):**	58.0
D_{60} (µm):	5.2	**D_{30} (µm):**	2.6				

General

Remarks: LL=62, PL=29, PI=33

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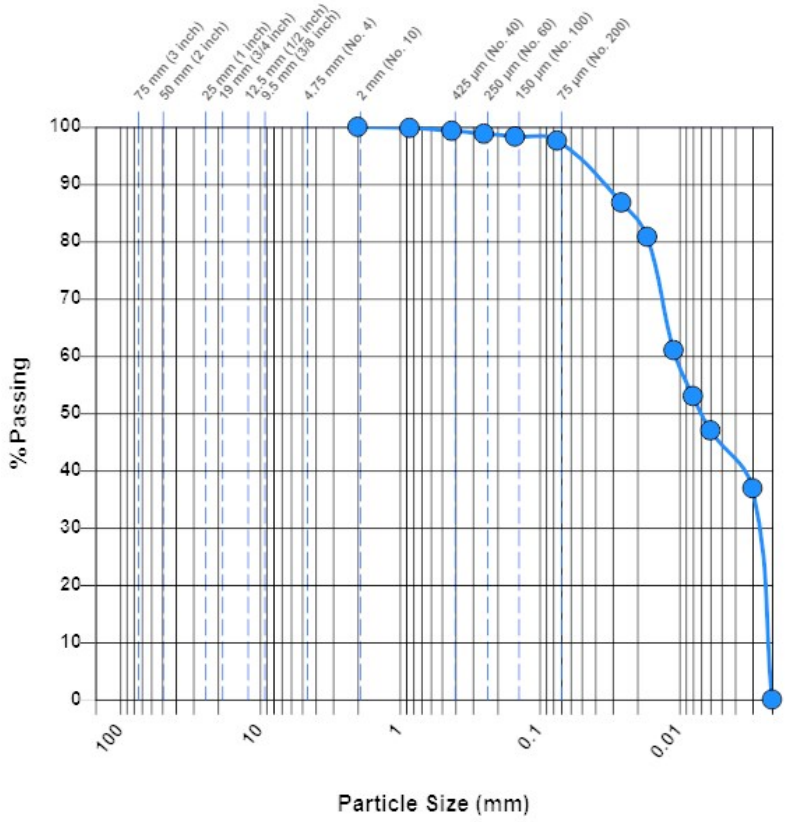
Sample Information

Sample Number:	359465	**Depth (ft):**	4.5-6
Boring Number:	GDRL-055	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	98.8	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	97.6	-
26.1 (µm)	86.8	-
17.0 (µm)	80.8	-
10.8 (µm)	61.0	-
7.9 (µm)	53.0	-
5.7 (µm)	47.0	-
2.9 (µm)	36.9	-
1.2 (µm)	28.9	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(37)

Gravel (%):	0	**Sand (%):**	2.4	**Silt (%):**	54.0	**Clay (%):**	43.6
D_{60} (µm):	10.6	**D_{30} (µm):**	1.3				

General

Remarks: LL=60, PL=28, PI=32

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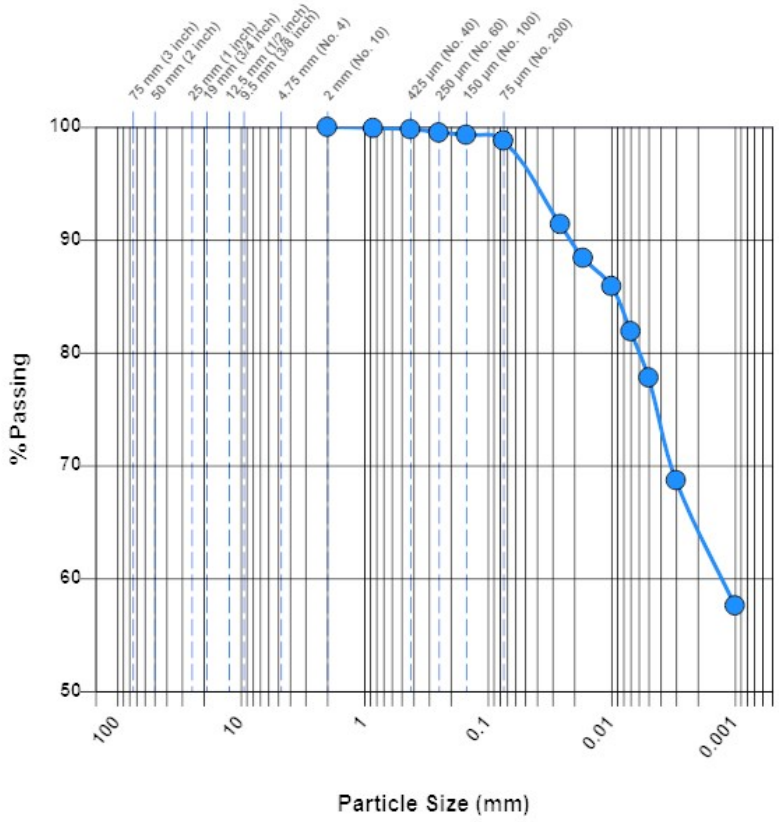
Sample Information

Sample Number:	359466	**Depth (ft):**	0.5-2
Boring Number:	GDRL-056	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.5	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.8	-
25.6 (µm)	91.4	-
16.5 (µm)	88.4	-
9.6 (µm)	85.9	-
6.9 (µm)	81.9	-
5.0 (µm)	77.8	-
2.6 (µm)	68.7	-
1.1 (µm)	57.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(51)

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	21.0	**Clay (%):**	77.8

D_{60} (µm): 1.4

General

Remarks: LL=71, PL=27, PI=44

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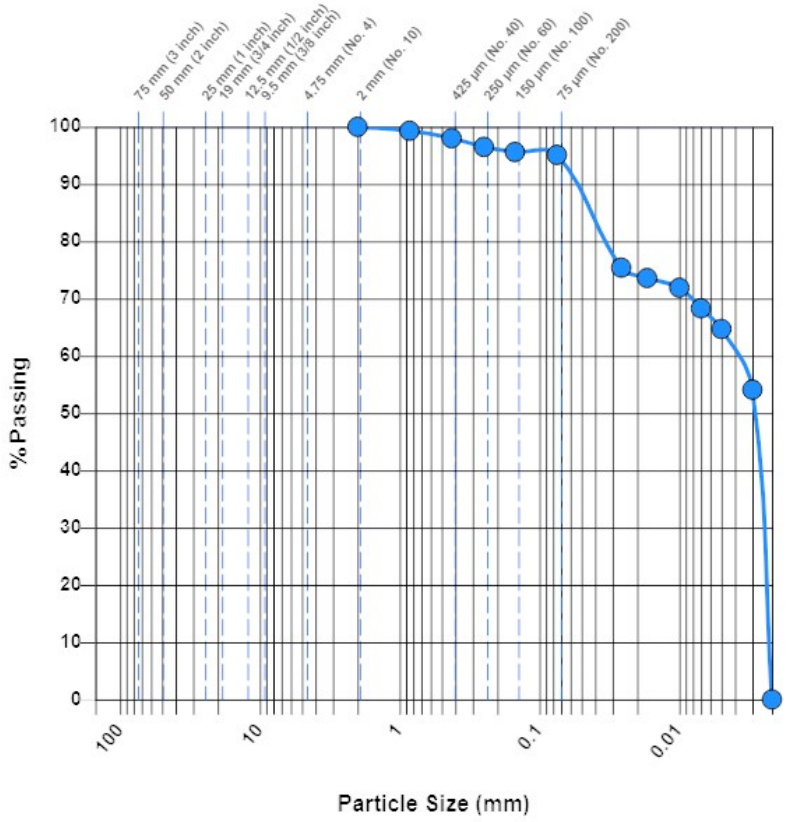
Sample Information

Sample Number:	359469	**Depth (ft):**	9.5-11
Boring Number:	GDRL-056	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	98.0	-
250 µm (No. 60)	96.5	-
150 µm (No. 100)	95.6	-
75 µm (No. 200)	95.1	-
26.3 (µm)	75.4	-
16.8 (µm)	73.6	-
9.8 (µm)	71.9	-
7.1 (µm)	68.3	-
5.1 (µm)	64.7	-
2.6 (µm)	54.1	-
1.2 (µm)	41.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(56)

Gravel (%):	0	**Sand (%):**	4.9	**Silt (%):**	30.4	**Clay (%):**	64.7

D_{60} (µm): 4.1

General

Remarks: LL=80, PL=30, PI=50

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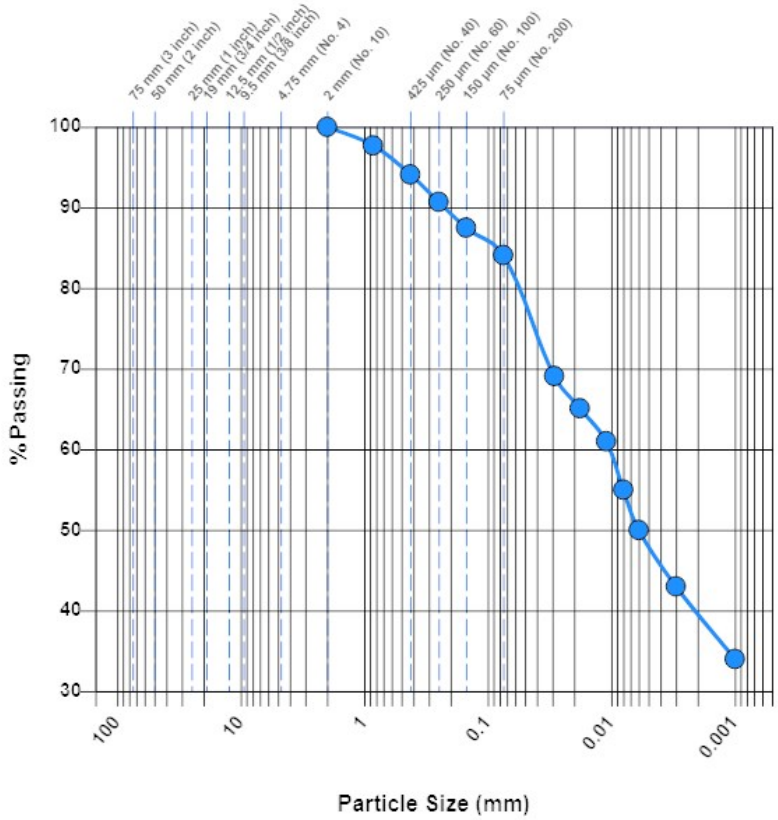
Sample Information

Sample Number:	359477	**Depth (ft):**	4.5-6
Boring Number:	CAA-057	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	97.7	-
425 µm (No. 40)	94.1	-
250 µm (No. 60)	90.7	-
150 µm (No. 100)	87.5	-
75 µm (No. 200)	84.1	-
28.5 (µm)	69.1	-
18.3 (µm)	65.1	-
10.8 (µm)	61.0	-
7.8 (µm)	55.0	-
5.6 (µm)	50.0	-
2.8 (µm)	43.0	-
1.2 (µm)	34.0	-



Soil Classification: CH Fat clay, brown, A-7-6(38)

Gravel (%):	0	**Sand (%):**	15.9	**Silt (%):**	36.4	**Clay (%):**	47.7

D_{60} (µm): 10.5

General

Remarks: LL=68, PL=27, PI=41

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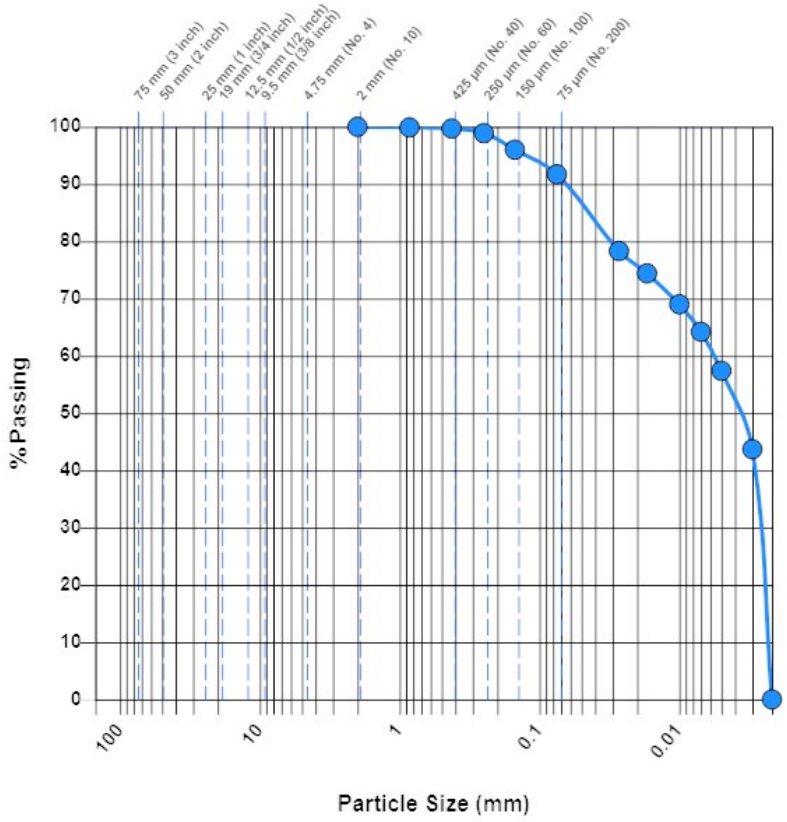
Sample Information

Sample Number:	359470	**Depth (ft):**	14.5-16
Boring Number:	CAA-057	**Sampled By:**	Drill Crew
Sample Date:	12/21/2020		
Received Date:	01/28/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	01/30/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	96.0	-
75 µm (No. 200)	91.7	-
27.0 (µm)	78.3	-
17.4 (µm)	74.4	-
10.3 (µm)	69.0	-
7.4 (µm)	64.2	-
5.4 (µm)	57.4	-
2.8 (µm)	43.7	-
1.2 (µm)	32.0	-



Soil Classification: CH Fat clay, brown, A-7-5(36)

Gravel (%):	0	**Sand (%):**	8.3	**Silt (%):**	34.3	**Clay (%):**	57.4
D_{60} (µm):	5.8						

General

Remarks: LL=66, PL=34, PI=32

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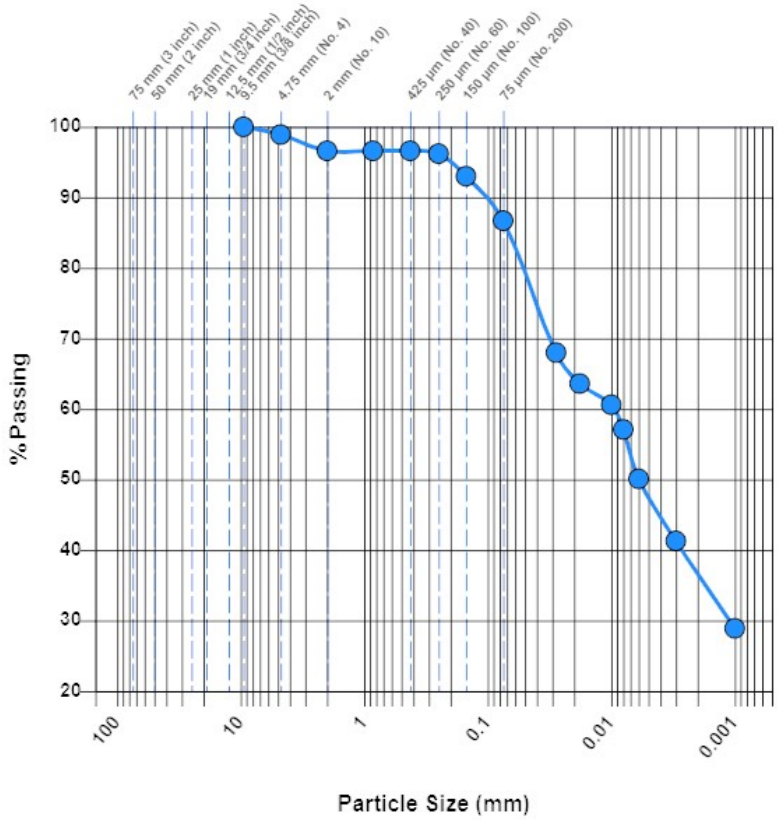
Sample Information

Sample Number:	360969	**Depth (ft):**	0.5-2
Boring Number:	CAA-058	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.9	-
2 mm (No. 10)	96.6	-
850 µm (No. 20)	96.6	-
425 µm (No. 40)	96.6	-
250 µm (No. 60)	96.2	-
150 µm (No. 100)	93.0	-
75 µm (No. 200)	86.7	-
27.5 (µm)	68.0	-
17.8 (µm)	63.6	-
10.4 (µm)	60.6	-
7.5 (µm)	57.1	-
5.5 (µm)	50.1	-
2.8 (µm)	41.3	-
1.2 (µm)	28.9	-



Soil Classification: CH Fat clay, black to brown, A-7-6(38)

Gravel (%):	1.1	**Sand (%):**	12.2	**Silt (%):**	39.5	**Clay (%):**	47.2
D_{60} (µm):	9.7	**D_{30} (µm):**	1.2				

General

Remarks: LL=65, PL=26, PI=39

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Hydrometer And Sieve Analysis

ASTM D422

2/23/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

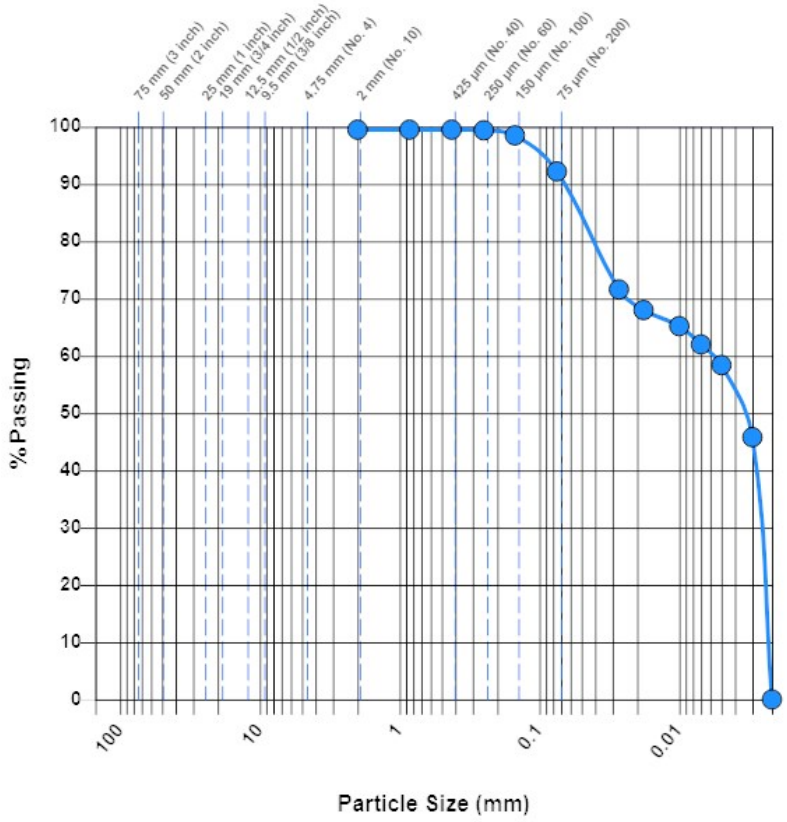
Sample Information

Sample Number:	361025	**Depth (ft):**	9.5-11
Boring Number:	CAA-058	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	99.5	-
850 µm (No. 20)	99.5	-
425 µm (No. 40)	99.5	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	92.2	-
27.3 (µm)	71.6	-
17.6 (µm)	68.0	-
10.3 (µm)	65.2	-
7.3 (µm)	62.0	-
5.3 (µm)	58.4	-
2.7 (µm)	45.8	-
1.3 (µm)	11.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(40)

Gravel (%):	0	**Sand (%):**	7.8	**Silt (%):**	33.8	**Clay (%):**	58.4
D_{60} (µm):	5.9	**D_{30} (µm):**	2.1				

General

Remarks: LL=61, PL=22, PI=39

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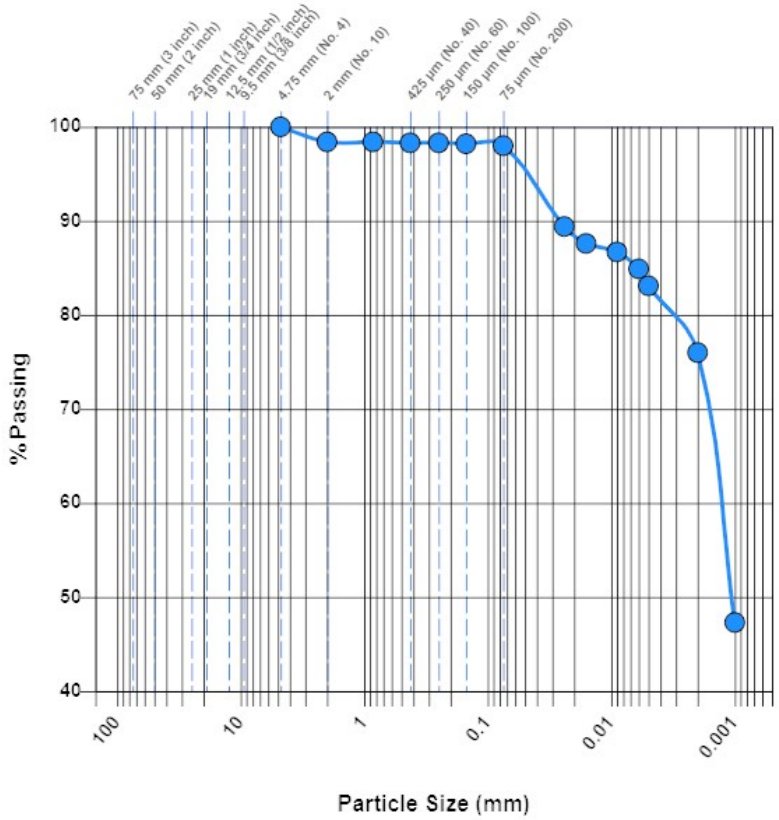
Sample Information

Sample Number:	360966	**Depth (ft):**	19.5-21
Boring Number:	CAA-058	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	98.4	-
850 µm (No. 20)	98.4	-
425 µm (No. 40)	98.3	-
250 µm (No. 60)	98.3	-
150 µm (No. 100)	98.2	-
75 µm (No. 200)	98.0	-
24.2 (µm)	89.4	-
15.5 (µm)	87.6	-
9.0 (µm)	86.7	-
6.4 (µm)	84.9	-
4.6 (µm)	83.1	-
2.3 (µm)	76.0	-
1.1 (µm)	47.3	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(75)

Gravel (%):	0.0	**Sand (%):**	2.0	**Silt (%):**	14.9	**Clay (%):**	83.1
D_{60} (µm):	1.4						

General

Remarks: LL=95, PL=31, PI=64

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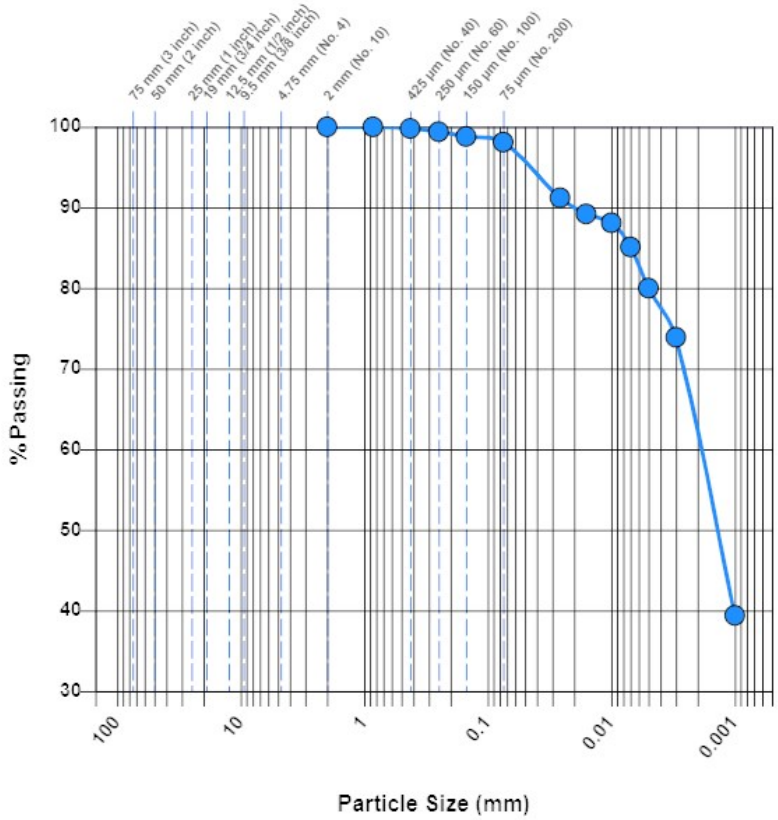
Sample Information

Sample Number:	360971	**Depth (ft):**	4.5-6
Boring Number:	GDRL-059	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	98.1	-
25.7 (µm)	91.2	-
16.4 (µm)	89.2	-
9.5 (µm)	88.1	-
6.8 (µm)	85.1	-
5.0 (µm)	80.0	-
2.5 (µm)	73.9	-
1.2 (µm)	39.4	-



Soil Classification: CH Fat clay, brown, A-7-6(69)

Gravel (%):	0	**Sand (%):**	1.9	**Silt (%):**	18.1	**Clay (%):**	80.0

D_{60} (µm): 2.2

General

Remarks: LL=86, PL=26, PI=60

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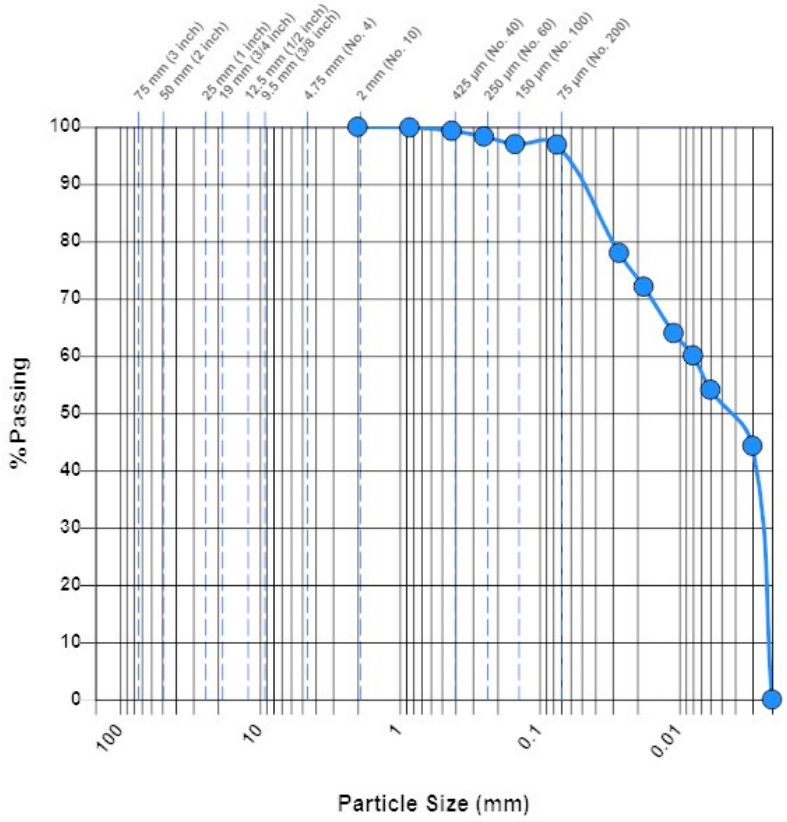
Sample Information

Sample Number:	361023	**Depth (ft):**	0.5-2
Boring Number:	CAA-060	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.3	-
250 µm (No. 60)	98.3	-
150 µm (No. 100)	97.0	-
75 µm (No. 200)	96.9	-
27.1 (µm)	78.0	-
17.6 (µm)	72.1	-
10.6 (µm)	64.0	-
7.6 (µm)	60.1	-
5.5 (µm)	54.1	-
2.8 (µm)	44.3	-
1.2 (µm)	34.4	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(44)

Gravel (%):	0	**Sand (%):**	3.1	**Silt (%):**	46.1	**Clay (%):**	50.8
D_{60} (µm):	8.0						

General

Remarks: LL=66, PL=27, PI=39

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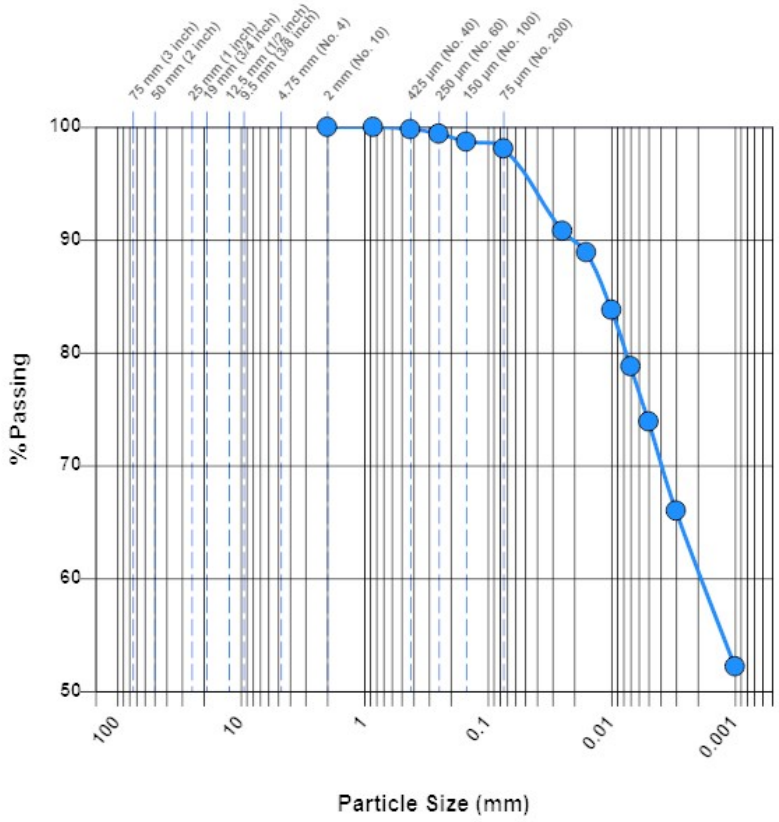
Sample Information

Sample Number:	360494	**Depth (ft):**	9.5-11
Boring Number:	CAA-060	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.1	-
25.4 (µm)	90.8	-
16.2 (µm)	88.9	-
9.6 (µm)	83.8	-
7.0 (µm)	78.8	-
5.0 (µm)	73.9	-
2.6 (µm)	66.0	-
1.1 (µm)	52.2	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(66)

Gravel (%):	0	**Sand (%):**	1.9	**Silt (%):**	24.2	**Clay (%):**	73.9

D_{60} (µm): 2.1

General

Remarks: LL=86, PL=29, PI=57

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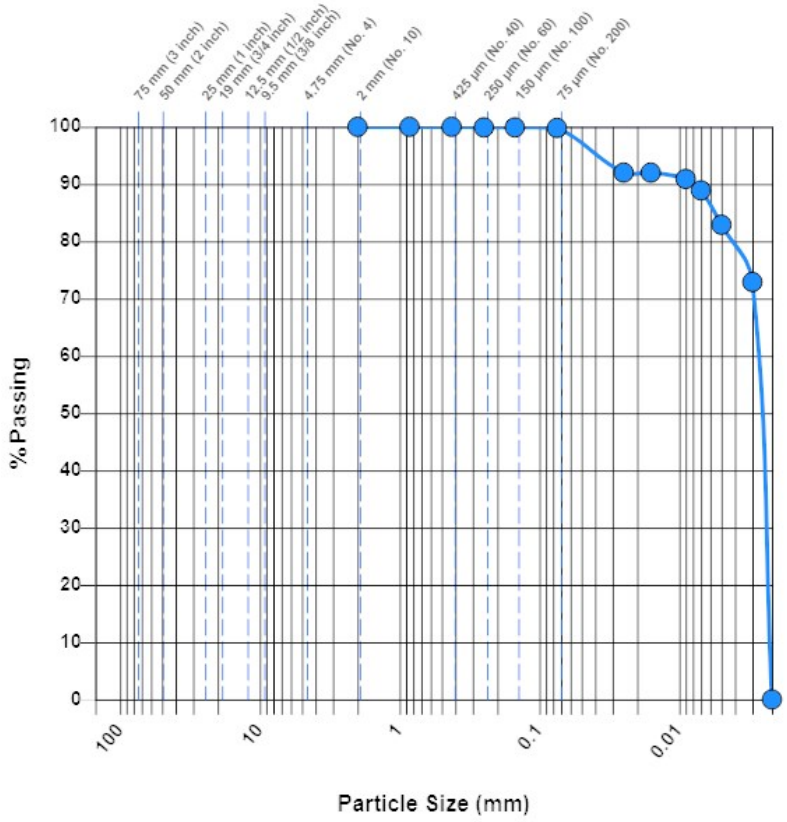
Sample Information

Sample Number:	361026	**Depth (ft):**	19.5-21
Boring Number:	CAA-060	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
25.4 (µm)	92.0	-
16.1 (µm)	92.0	-
9.3 (µm)	90.9	-
6.6 (µm)	88.9	-
4.8 (µm)	82.9	-
2.5 (µm)	72.9	-
1.1 (µm)	56.9	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(77)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	16.9	**Clay (%):**	82.9

D_{60} (µm): 1.4

General

Remarks: LL=95, PL=31, PI=64

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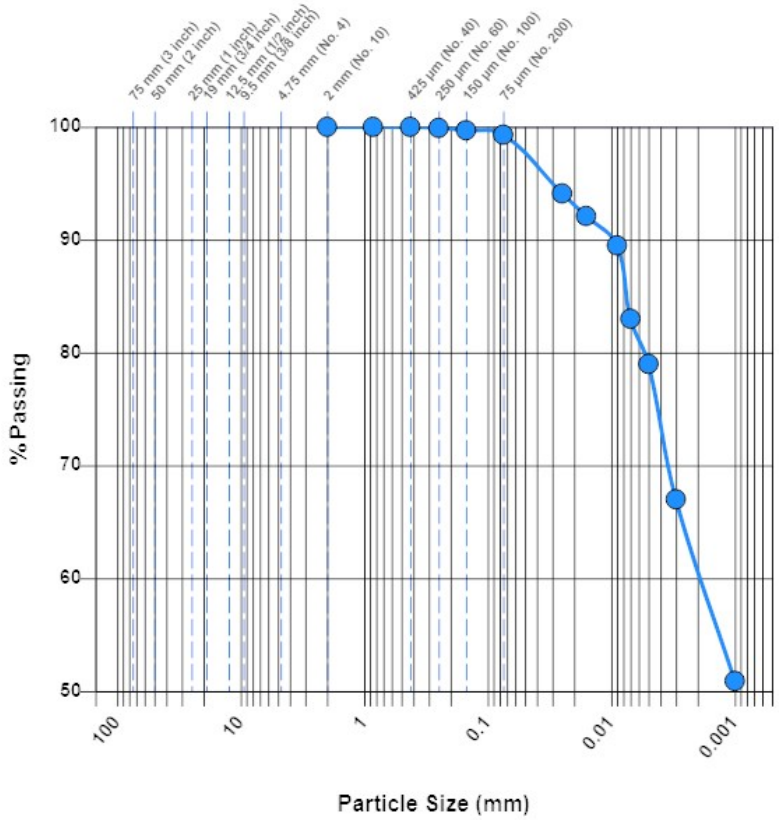
Sample Information

Sample Number:	360489	**Depth (ft):**	0.5-2
Boring Number:	GDRL-061	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
75 µm (No. 200)	99.3	-
24.8 (µm)	94.1	-
15.9 (µm)	92.1	-
9.3 (µm)	89.5	-
6.9 (µm)	83.0	-
5.0 (µm)	79.0	-
2.6 (µm)	67.0	-
1.1 (µm)	50.9	-



Soil Classification: CH Fat clay, gray, A-7-6(58)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	20.3	**Clay (%):**	79.0

D_{60} (µm): 2.1

General

Remarks: LL=76, PL=26, PI=50

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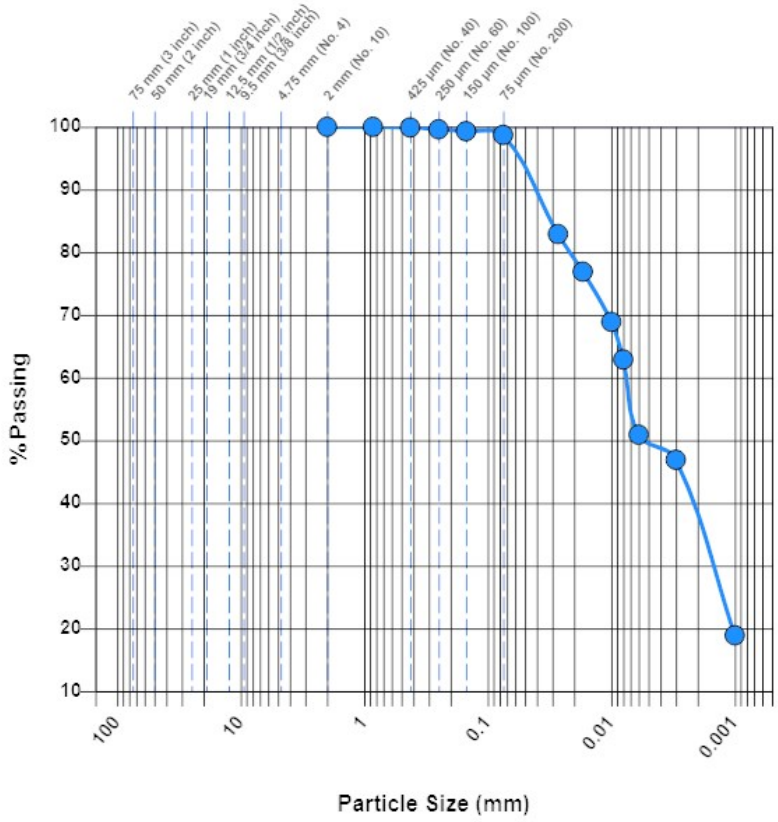
Sample Information

Sample Number:	360492	**Depth (ft):**	0.5-2
Boring Number:	GDRL-062	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.7	-
26.6 (µm)	82.9	-
17.3 (µm)	76.9	-
10.4 (µm)	68.9	-
7.5 (µm)	62.9	-
5.6 (µm)	50.9	-
2.8 (µm)	46.9	-
1.3 (µm)	18.9	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(36)

Gravel (%):	0	**Sand (%):**	1.3	**Silt (%):**	49.1	**Clay (%):**	49.6
D_{60} (µm):	7.5	**D_{30} (µm):**	1.8				

General

Remarks: LL=60, PL=26, PI=34

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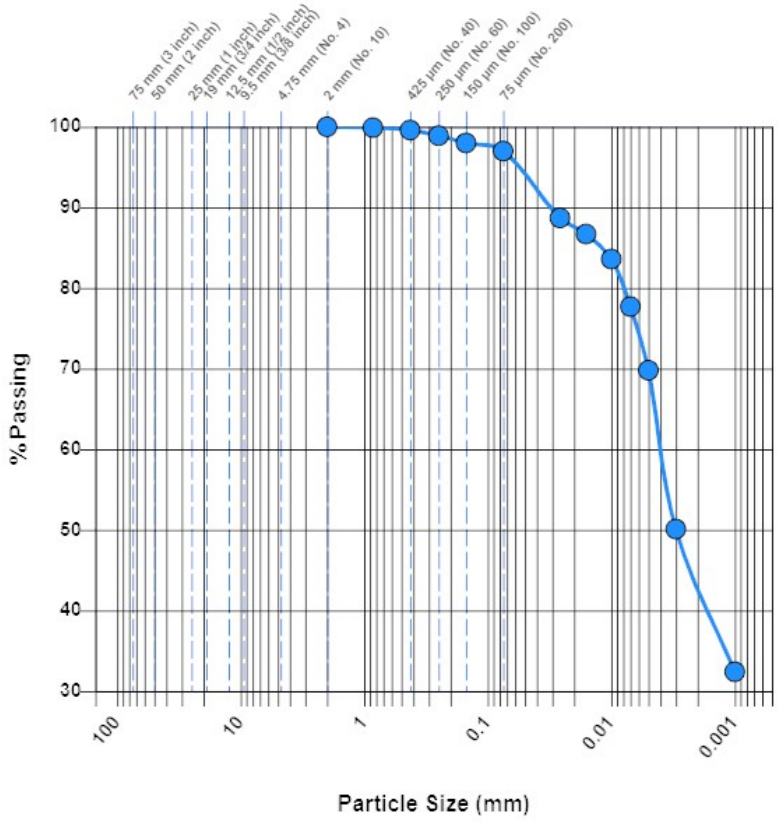
Sample Information

Sample Number:	360975	**Depth (ft):**	9.5-11
Boring Number:	GDRL-062	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.6	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	98.0	-
75 µm (No. 200)	97.0	-
25.7 (µm)	88.7	-
16.4 (µm)	86.7	-
9.6 (µm)	83.6	-
7.0 (µm)	77.7	-
5.1 (µm)	69.8	-
2.7 (µm)	50.1	-
1.2 (µm)	32.4	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(47)

Gravel (%):	0	**Sand (%):**	3.0	**Silt (%):**	27.2	**Clay (%):**	69.8

D_{60} (µm): 4.0

General

Remarks: LL=76, PL=38, PI=38

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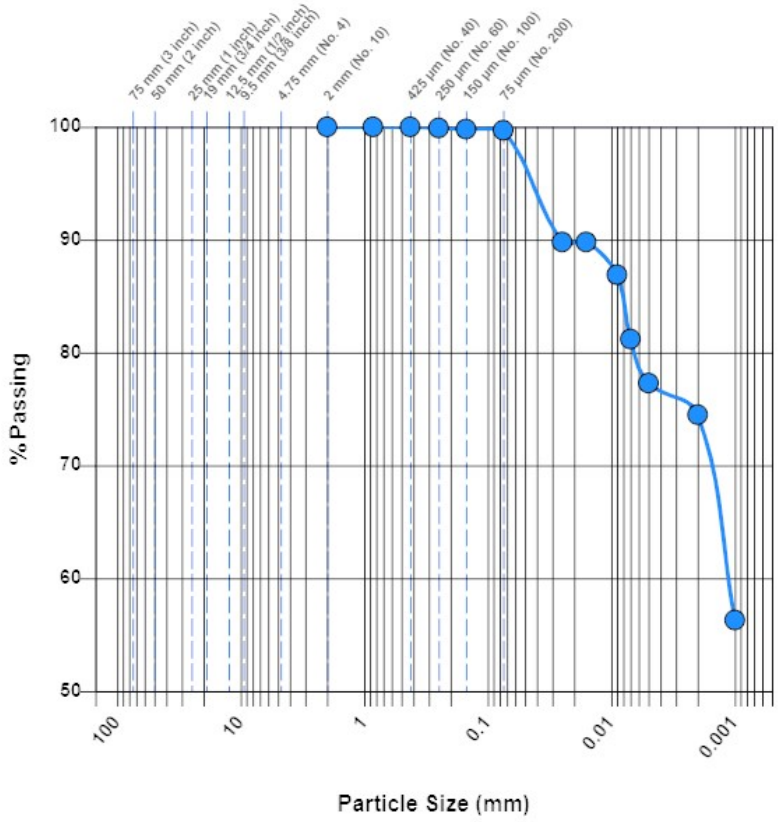
Sample Information

Sample Number:	360976	**Depth (ft):**	4.5-6
Boring Number:	GDRL-063	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
75 µm (No. 200)	99.7	-
25.1 (µm)	89.8	-
15.9 (µm)	89.8	-
9.3 (µm)	86.9	-
6.8 (µm)	81.2	-
4.9 (µm)	77.3	-
2.4 (µm)	74.5	-
1.1 (µm)	56.3	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(70)

Gravel (%):	0	**Sand (%):**	0.3	**Silt (%):**	22.4	**Clay (%):**	77.3

D_{60} (µm): 1.2

General

Remarks: LL=89, PL=30, PI=59

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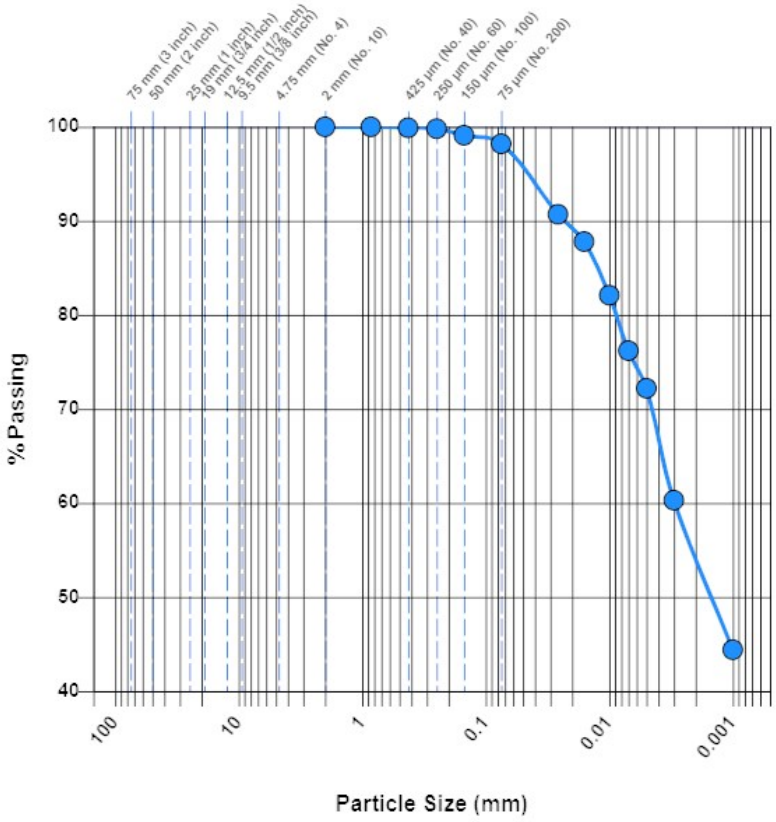
Sample Information

Sample Number:	360972	**Depth (ft):**	0.5-2
Boring Number:	GDRL-064	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.1	-
75 µm (No. 200)	98.2	-
25.5 (µm)	90.7	-
16.4 (µm)	87.8	-
9.7 (µm)	82.1	-
7.1 (µm)	76.2	-
5.1 (µm)	72.2	-
2.6 (µm)	60.3	-
1.2 (µm)	44.4	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(59)

Gravel (%):	0	**Sand (%):**	1.8	**Silt (%):**	26.0	**Clay (%):**	72.2

D_{60} (µm): 3.0

General

Remarks: LL=75, PL=23, PI=52

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3203 32nd Avenue South
Suite 201
Fargo, ND 58106

Project:

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

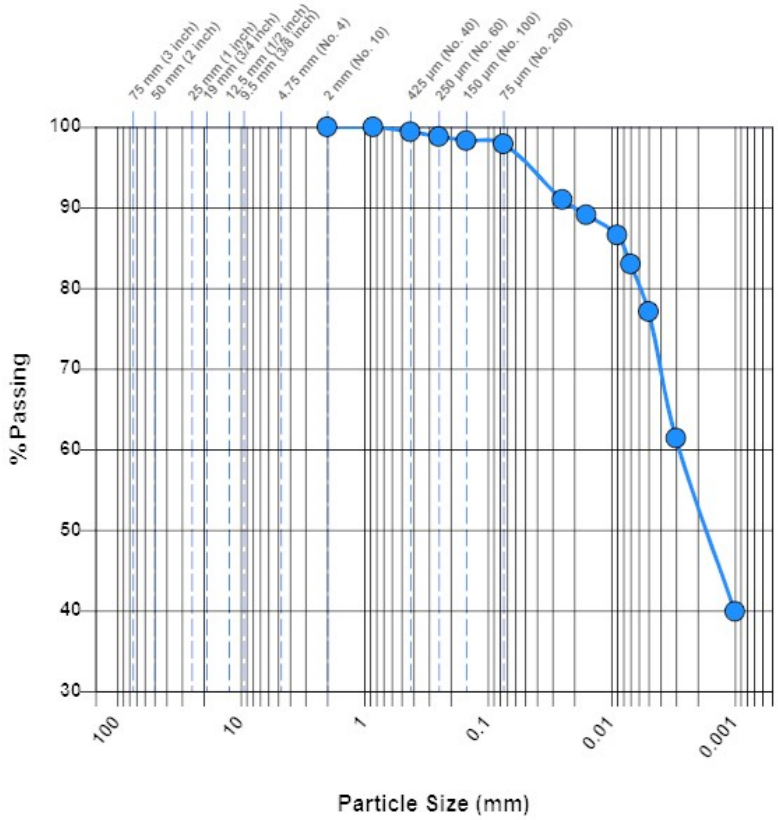
Sample Information

Sample Number:	360974	**Depth (ft):**	9.5-11
Boring Number:	GDRL-064	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.4	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	97.9	-
25.4 (µm)	91.0	-
16.2 (µm)	89.1	-
9.4 (µm)	86.6	-
6.8 (µm)	83.0	-
5.0 (µm)	77.1	-
2.6 (µm)	61.4	-
1.2 (µm)	39.9	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(59)

Gravel (%):	0	**Sand (%):**	2.1	**Silt (%):**	20.8	**Clay (%):**	77.1

D_{60} (µm): 2.9

General

Remarks: LL=80, PL=29, PI=51

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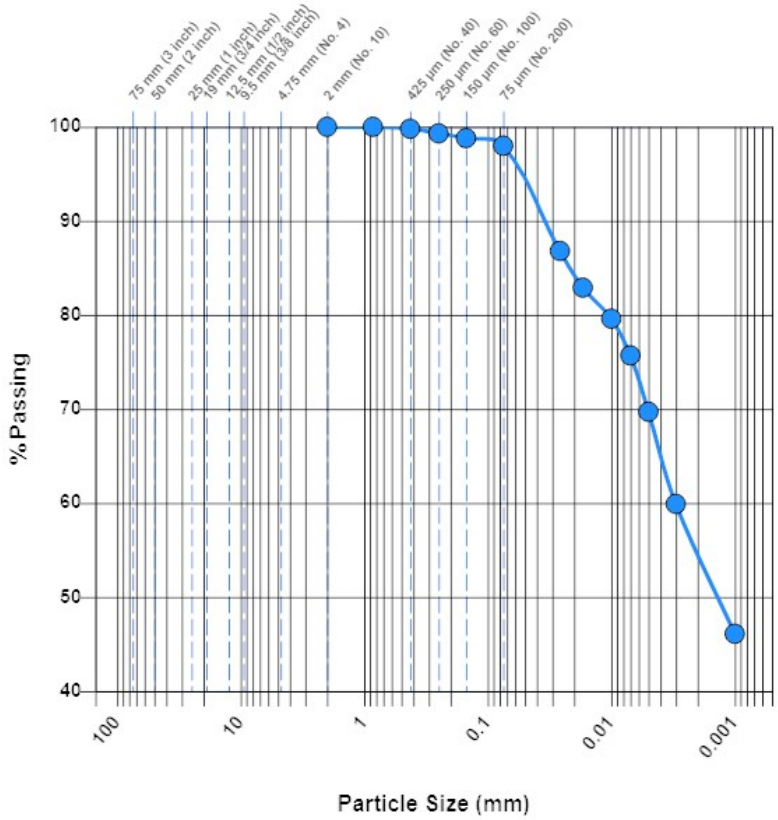
Sample Information

Sample Number:	360487	**Depth (ft):**	4.5-6
Boring Number:	GDRL-065	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/04/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/04/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	98.0	-
25.9 (µm)	86.8	-
16.8 (µm)	82.9	-
9.8 (µm)	79.6	-
7.1 (µm)	75.7	-
5.1 (µm)	69.7	-
2.6 (µm)	59.9	-
1.2 (µm)	46.1	-



Soil Classification: CH Fat clay, gray, A-7-6(57)

Gravel (%):	0	**Sand (%):**	2.0	**Silt (%):**	28.3	**Clay (%):**	69.7

D_{60} (µm): 3.0

General

Remarks: LL=73, PL=22, PI=51

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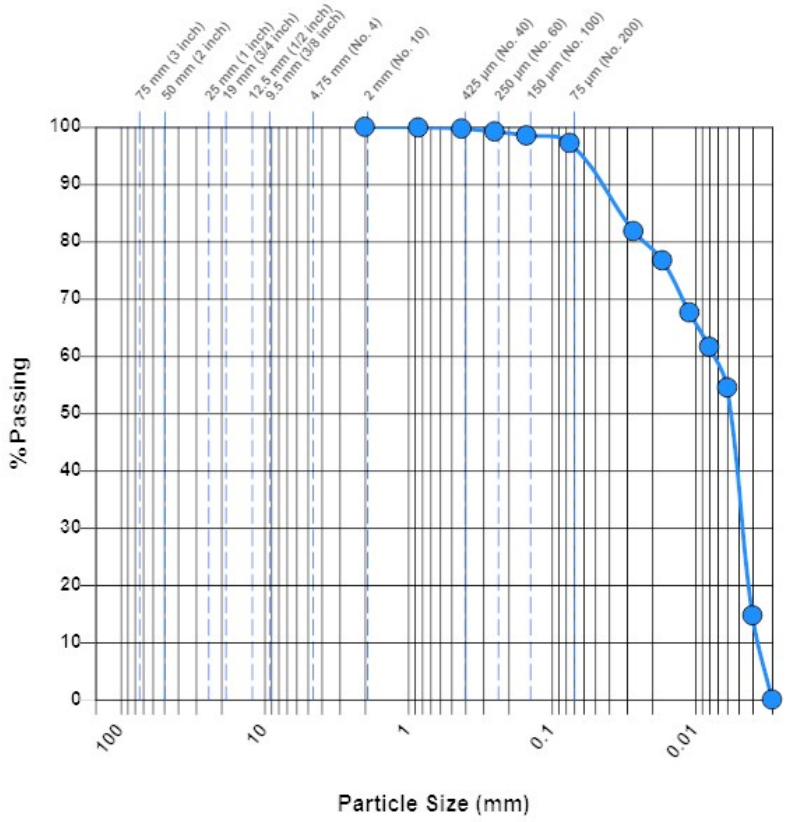
Sample Information

Sample Number:	361024	**Depth (ft):**	0.5-2
Boring Number:	GDRL-066	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	97.2	-
26.8 (µm)	81.8	-
17.4 (µm)	76.7	-
10.5 (µm)	67.6	-
7.6 (µm)	61.6	-
5.5 (µm)	54.5	-
3.7 (µm)	14.7	-
1.4 (µm)	-5.2	-



Soil Classification: CH Fat clay, black to gray, A-7-6(44)

Gravel (%):	0	**Sand (%):**	2.8	**Silt (%):**	62.6	**Clay (%):**	34.6		
D_{60} (µm):	7.5	**D_{30} (µm):**	4.8	**D_{10} (µm):**	3.3	**C_u:**	2.27	**C_c:**	0.93

General

Remarks: LL=64, PL=25, PI=39

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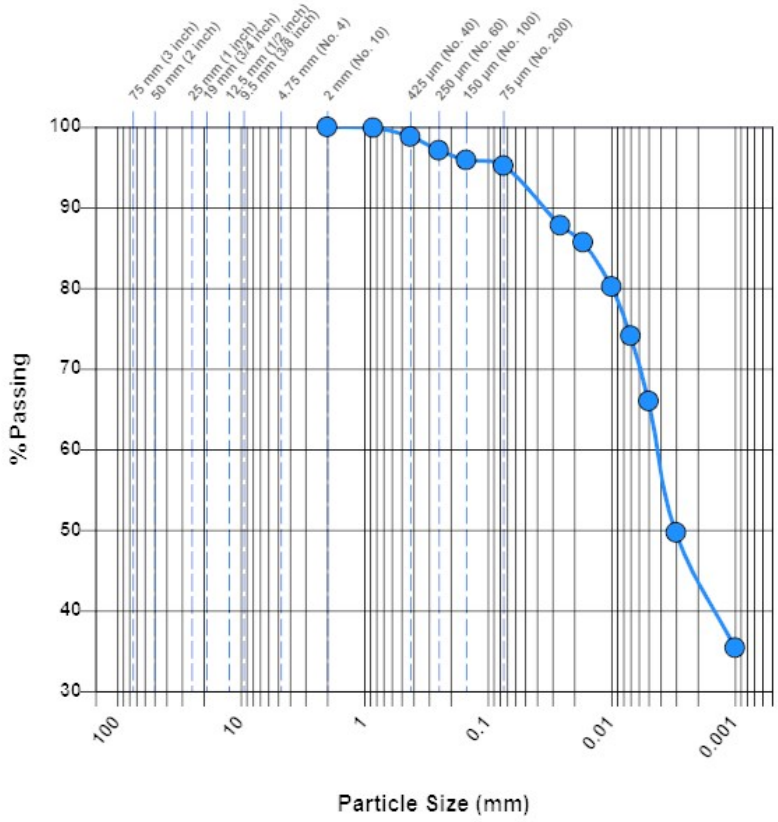
Sample Information

Sample Number:	360967	**Depth (ft):**	9.5-11
Boring Number:	GDRL-066	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	98.8	-
250 µm (No. 60)	97.1	-
150 µm (No. 100)	95.9	-
75 µm (No. 200)	95.2	-
26.2 (µm)	87.8	-
16.7 (µm)	85.7	-
9.9 (µm)	80.2	-
7.2 (µm)	74.1	-
5.3 (µm)	66.0	-
2.8 (µm)	49.7	-
1.2 (µm)	35.4	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(53)

Gravel (%):	0	**Sand (%):**	4.8	**Silt (%):**	29.2	**Clay (%):**	66.0

D_{60} (µm): 4.3

General

Remarks: LL=74, PL=26, PI=48

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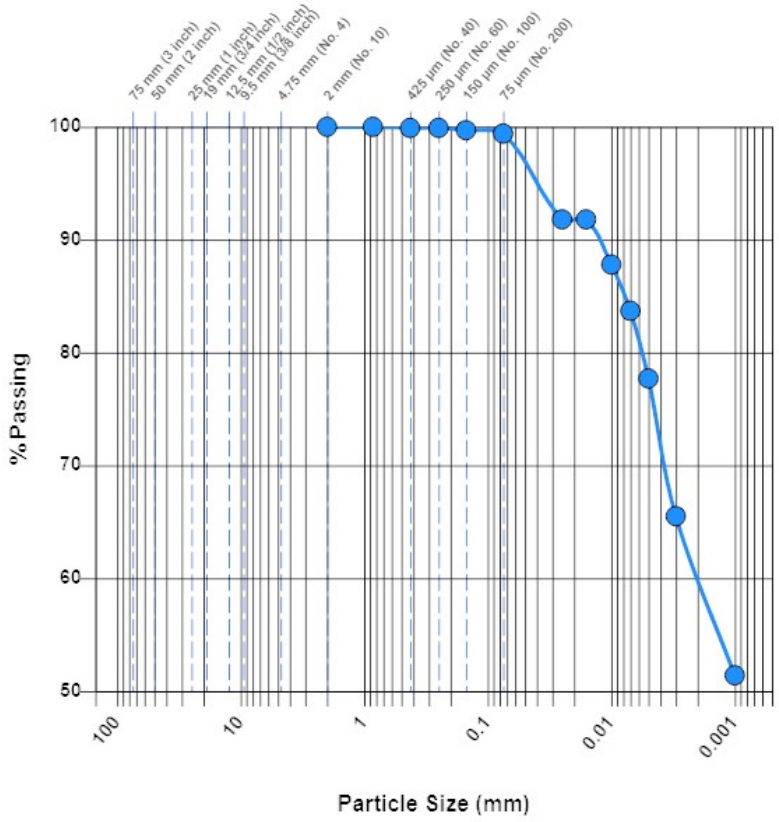
Sample Information

Sample Number:	361027	**Depth (ft):**	4.5-6
Boring Number:	CAA-067	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.7	-
75 µm (No. 200)	99.4	-
25.4 (µm)	91.8	-
16.1 (µm)	91.8	-
9.5 (µm)	87.8	-
6.9 (µm)	83.7	-
5.0 (µm)	77.7	-
2.6 (µm)	65.5	-
1.1 (µm)	51.4	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(59)

Gravel (%):	0	**Sand (%):**	0.6	**Silt (%):**	21.7	**Clay (%):**	77.7

D_{60} (µm): 2.2

General

Remarks: LL=78, PL=28, PI=50

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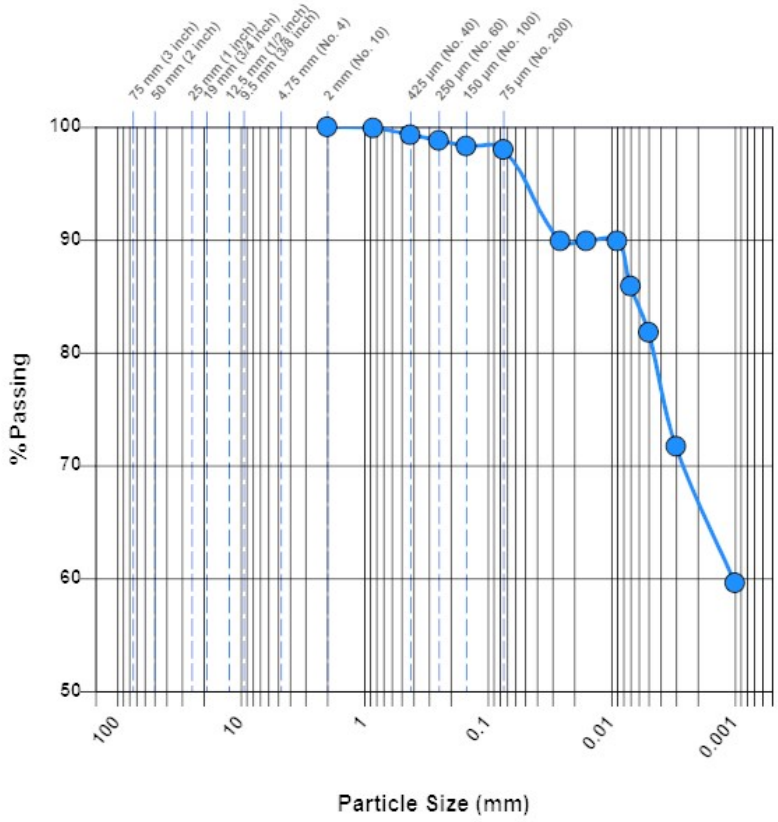
Sample Information

Sample Number:	360968	**Depth (ft):**	14.5-16
Boring Number:	CAA-067	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.3	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	98.0	-
25.7 (µm)	89.9	-
16.3 (µm)	89.9	-
9.4 (µm)	89.9	-
6.8 (µm)	85.9	-
4.9 (µm)	81.8	-
2.5 (µm)	71.7	-
1.1 (µm)	59.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(79)

Gravel (%):	0	**Sand (%):**	2.0	**Silt (%):**	16.2	**Clay (%):**	81.8

D_{60} (µm): 1.1

General

Remarks: LL=98, PL=28, PI=68

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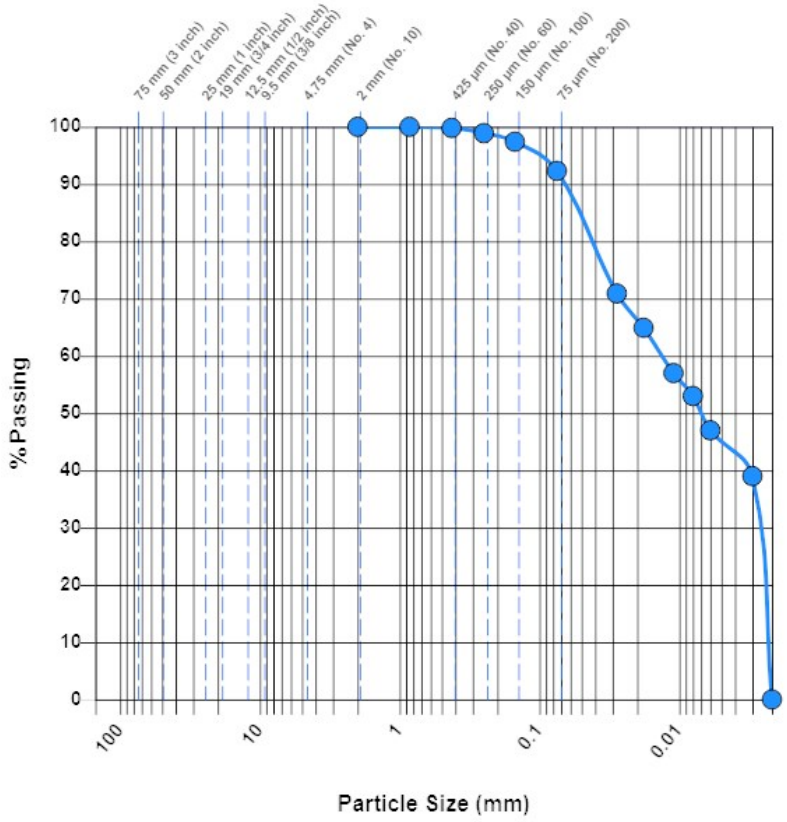
Sample Information

Sample Number:	361028	**Depth (ft):**	0.5-2
Boring Number:	GDRL-068	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	97.4	-
75 µm (No. 200)	92.3	-
28.3 (µm)	70.9	-
18.4 (µm)	64.9	-
10.9 (µm)	57.0	-
7.9 (µm)	53.0	-
5.7 (µm)	47.0	-
2.9 (µm)	39.0	-
1.2 (µm)	30.9	-



Soil Classification: CH Fat clay, black to gray, A-7-6(40)

Gravel (%):	0	**Sand (%):**	7.7	**Silt (%):**	48.0	**Clay (%):**	44.3

D_{60} (µm): 13.7

General

Remarks: LL=60, PL=21, PI=39

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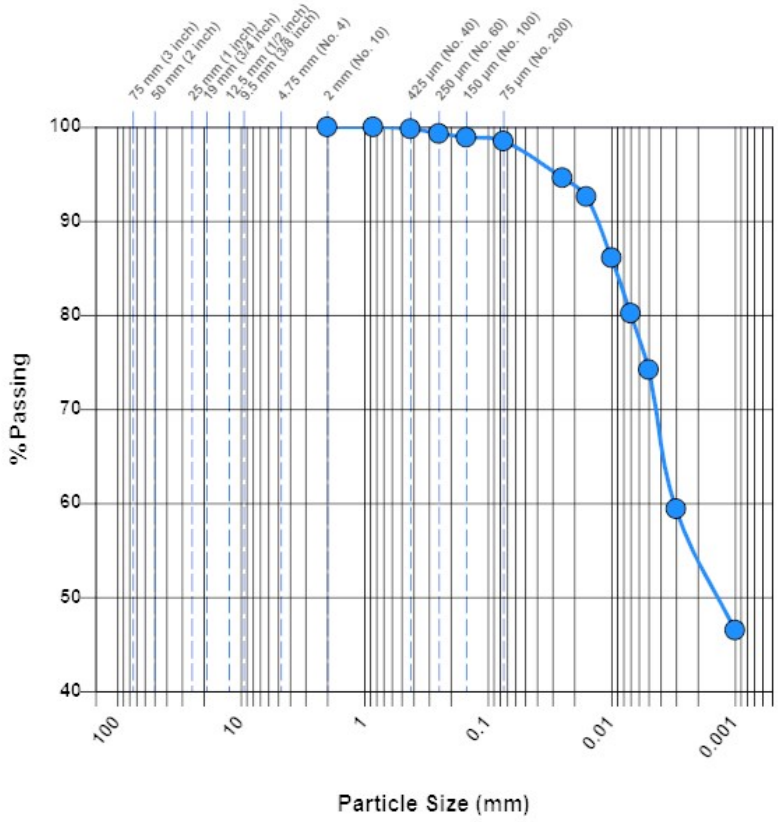
Sample Information

Sample Number:	360973	**Depth (ft):**	9.5-11
Boring Number:	GDRL-068	**Sampled By:**	Drill Crew
Sample Date:	12/22/2020		
Received Date:	02/09/2021	**Lab:**	1901 16th Ave. SW, Suite 2, Cedar Rapids, IA
Tested Date:	02/09/2021	**Tested By:**	Stauffenberg, Henry

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)	99.8	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	98.5	-
24.7 (µm)	94.6	-
15.8 (µm)	92.6	-
9.5 (µm)	86.1	-
6.9 (µm)	80.2	-
5.0 (µm)	74.2	-
2.6 (µm)	59.4	-
1.2 (µm)	46.5	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(57)

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	24.3	**Clay (%):**	74.2

D_{60} (µm): 3.1

General

Remarks: LL=76, PL=27, PI=49

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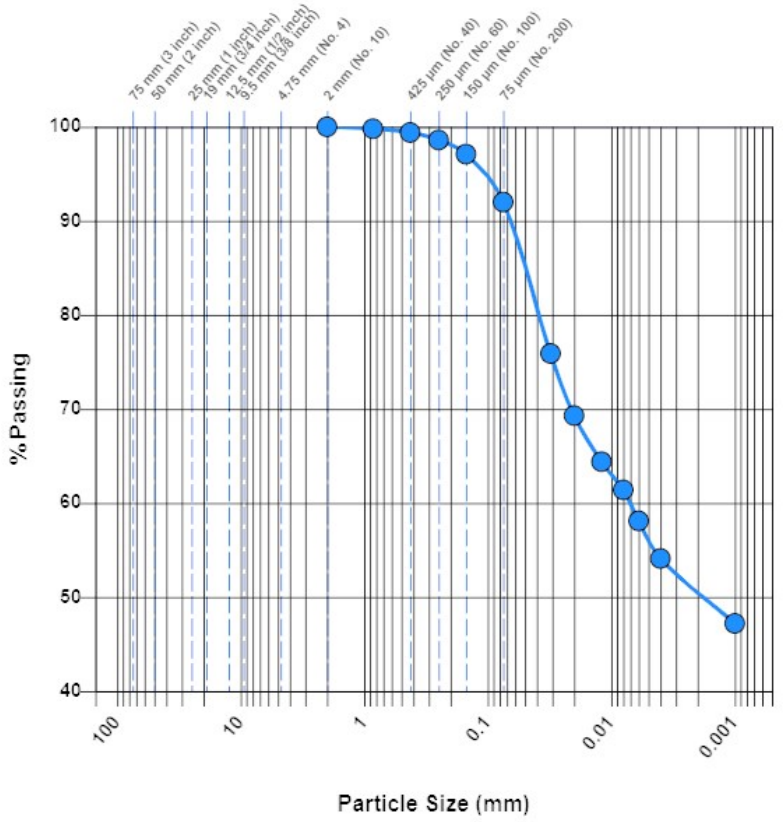
Sample Information

Sample Number:	358897	**Depth (ft):**	0.5-2
Boring Number:	GDRL-069	**Sampled By:**	Drill Crew
Sample Date:	12/28/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.6	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	92.0	-
30.6 (µm)	75.9	-
19.7 (µm)	69.3	-
11.5 (µm)	64.4	-
8.2 (µm)	61.4	-
5.8 (µm)	58.1	-
3.5 (µm)	54.1	-
1.0 (µm)	47.2	-



Soil Classification: CH Fat Clay, black to dark gray, A-7-6(36)

Gravel (%):	0	**Sand (%):**	8.0	**Silt (%):**	35.9	**Clay (%):**	56.1

D_{60} (µm): 7.2

General

Remarks: LL=60, PL=26, PI=34

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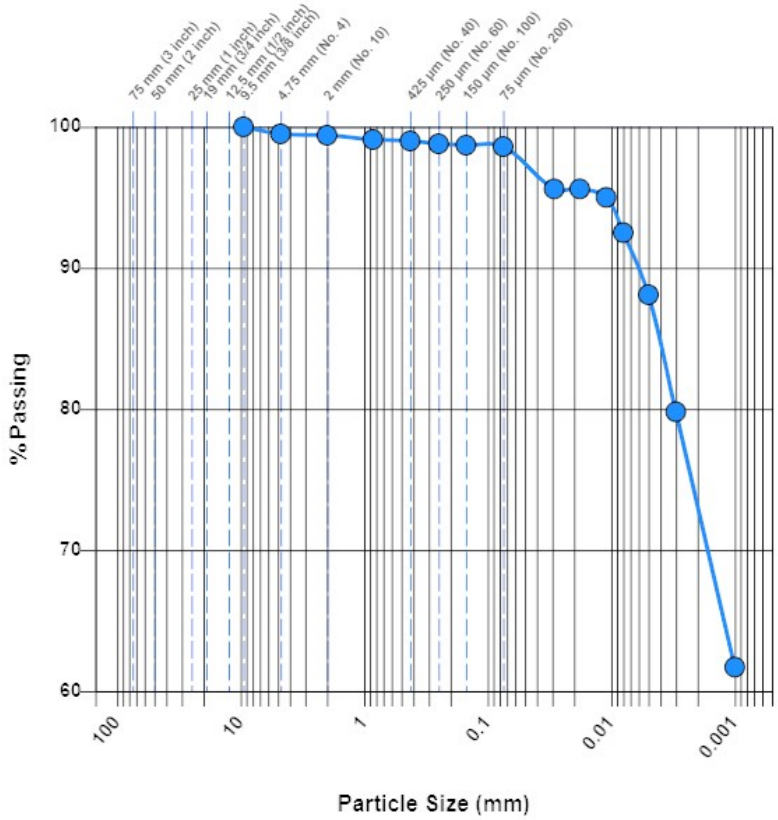
Sample Information

Sample Number:	358898	**Depth (ft):**	9.5-11
Boring Number:	GDRL-069	**Sampled By:**	Drill Crew
Sample Date:	12/28/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.5	-
2 mm (No. 10)	99.4	-
850 µm (No. 20)	99.1	-
425 µm (No. 40)	99.0	-
250 µm (No. 60)	98.8	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.6	-
29.0 (µm)	95.6	-
18.3 (µm)	95.6	-
10.6 (µm)	95.0	-
7.5 (µm)	92.5	-
5.4 (µm)	88.1	-
3.3 (µm)	79.8	-
1.0 (µm)	61.7	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(57)

Gravel (%): 0.5 **Sand (%):** 0.9 **Silt (%):** 10.5 **Clay (%):** 88.1

General

Remarks: LL=82, PL=35, PI=47

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

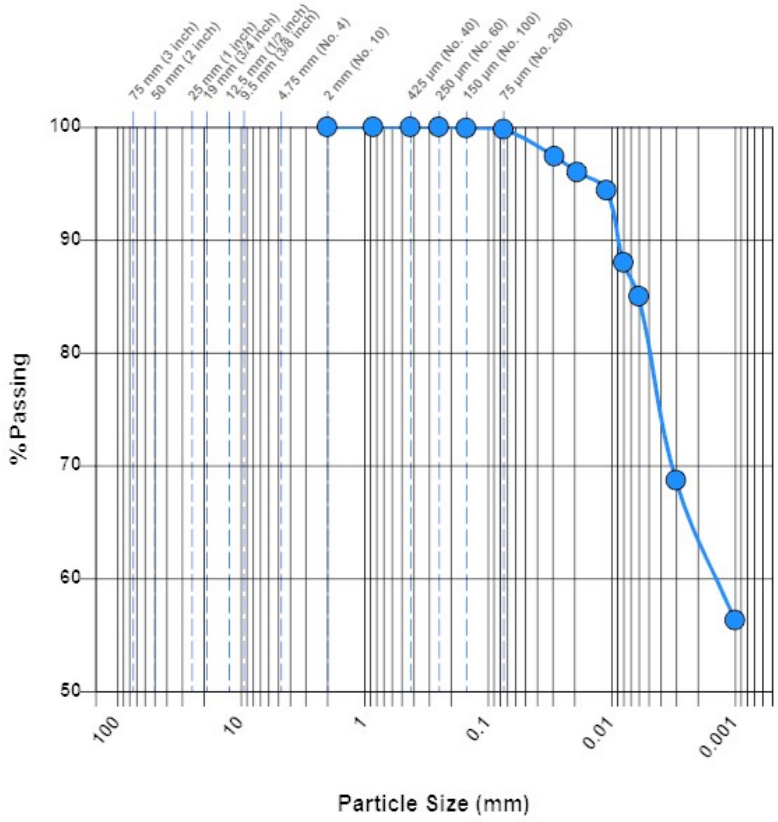
Sample Information

Sample Number:	358900	**Depth (ft):**	4.5-6
Boring Number:	GDRL-070	**Sampled By:**	Drill Crew
Sample Date:	12/28/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.8	-
29.2 (µm)	97.4	-
18.6 (µm)	96.0	-
10.8 (µm)	94.4	-
7.8 (µm)	88.0	-
5.5 (µm)	85.0	-
2.8 (µm)	68.7	-
1.3 (µm)	56.3	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(59)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	20.2	**Clay (%):**	79.6
D_{60} (µm):	1.6						

General

Remarks: LL=79, PL=30, PI=49

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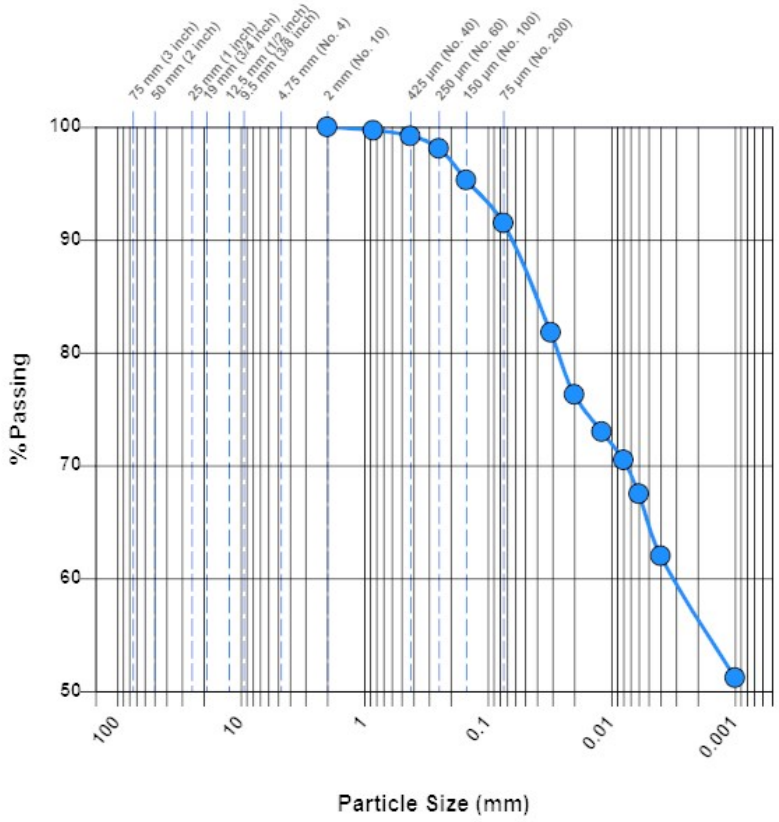
Sample Information

Sample Number:	358901	**Depth (ft):**	0.5-2
Boring Number:	CAA-071	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
250 µm (No. 60)	98.1	-
150 µm (No. 100)	95.3	-
75 µm (No. 200)	91.5	-
30.8 (µm)	81.8	-
19.7 (µm)	76.3	-
11.5 (µm)	73.0	-
8.0 (µm)	70.5	-
5.8 (µm)	67.5	-
3.5 (µm)	62.0	-
1.0 (µm)	51.2	-



Soil Classification: CH Fat Clay, black, A-7-6(39)

Gravel (%):	0	**Sand (%):**	8.5	**Silt (%):**	26.7	**Clay (%):**	64.8
D_{60} (µm):	3.4						

General

Remarks: LL=64, PL=27, PI=37

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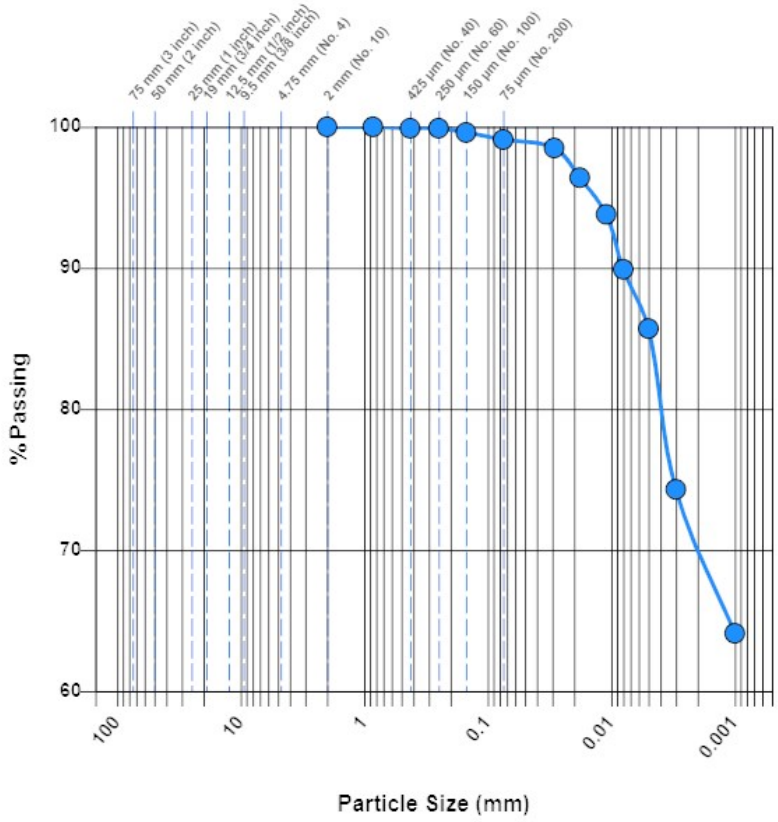
Sample Information

Sample Number:	358902	**Depth (ft):**	9.5-11
Boring Number:	CAA-071	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
75 µm (No. 200)	99.1	-
28.7 (µm)	98.5	-
18.3 (µm)	96.4	-
10.6 (µm)	93.8	-
7.6 (µm)	89.9	-
5.4 (µm)	85.7	-
2.7 (µm)	74.3	-
1.0 (µm)	64.1	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(59)

Gravel (%): 0 **Sand (%):** 0.9 **Silt (%):** 13.4 **Clay (%):** 85.7

General

Remarks: LL=82, PL=33, PI=49

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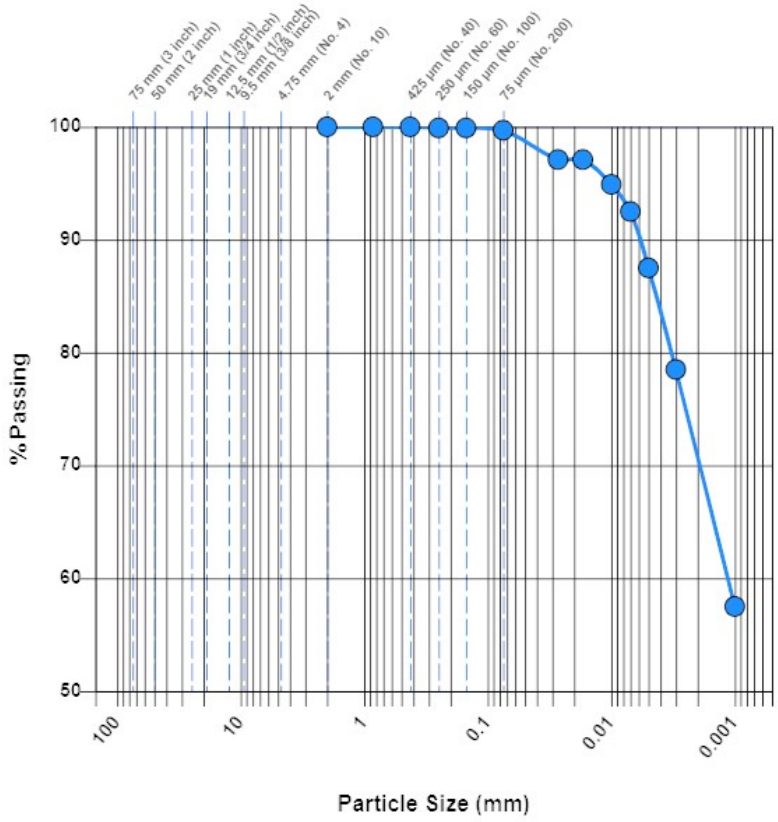
Sample Information

Sample Number:	358904	**Depth (ft):**	19.5-21
Boring Number:	CAA-071	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
27.4 (µm)	97.1	-
17.4 (µm)	97.1	-
10.1 (µm)	94.9	-
7.2 (µm)	92.5	-
5.2 (µm)	87.5	-
3.2 (µm)	78.5	-
1.0 (µm)	57.5	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(58)

Gravel (%):	0	**Sand (%):**	0.3	**Silt (%):**	12.2	**Clay (%):**	87.5

D_{60} (µm): 1.2

General

Remarks: LL=81, PL=33, PI=48

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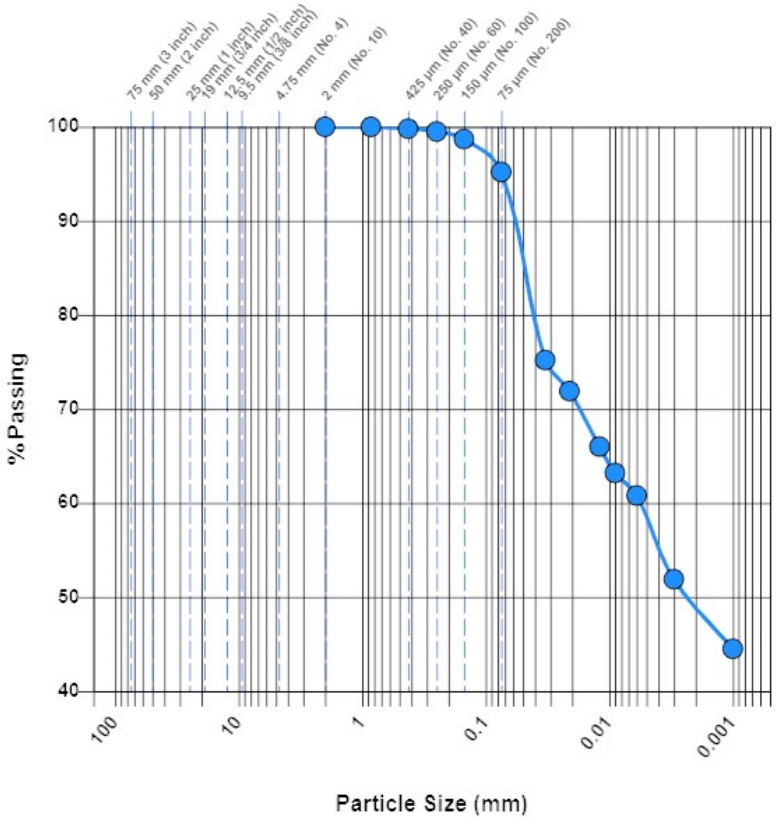
Sample Information

Sample Number:	358906	**Depth (ft):**	4.5-6
Boring Number:	GDRL-072	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	95.2	-
33.2 (µm)	75.2	-
21.1 (µm)	71.9	-
12.3 (µm)	66.0	-
8.7 (µm)	63.2	-
6.2 (µm)	60.8	-
3.1 (µm)	51.9	-
1.4 (µm)	44.5	-



Soil Classification: CH Fat Clay, black to gray, A-7-5(39)

Gravel (%):	0	**Sand (%):**	4.8	**Silt (%):**	37.4	**Clay (%):**	57.8

D_{60} (µm): 5.7

General

Remarks: LL=64, PL=30, PI=34

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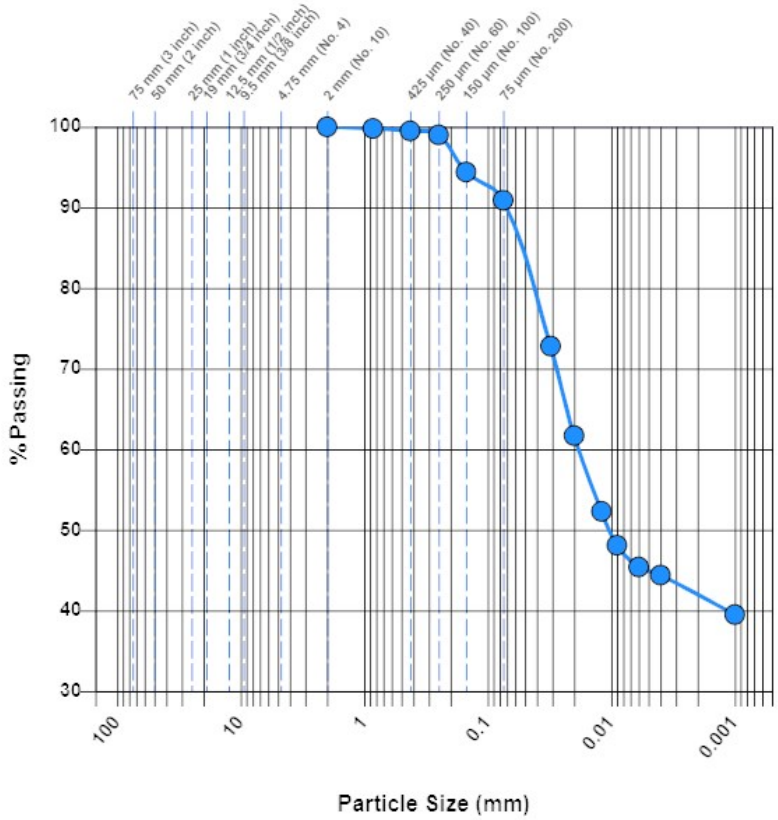
Sample Information

Sample Number:	358908	**Depth (ft):**	0.5-2
Boring Number:	GDRL-073	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	94.4	-
75 µm (No. 200)	90.9	-
30.7 (µm)	72.8	-
20.0 (µm)	61.7	-
11.8 (µm)	52.3	-
8.5 (µm)	48.1	-
6.0 (µm)	45.4	-
3.6 (µm)	44.4	-
1.0 (µm)	39.5	-



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

Gravel (%):	0	**Sand (%):**	9.1	**Silt (%):**	46.0	**Clay (%):**	44.9

D_{60} (µm): 18.6

General

Remarks: LL=54, PL=22, PI=32

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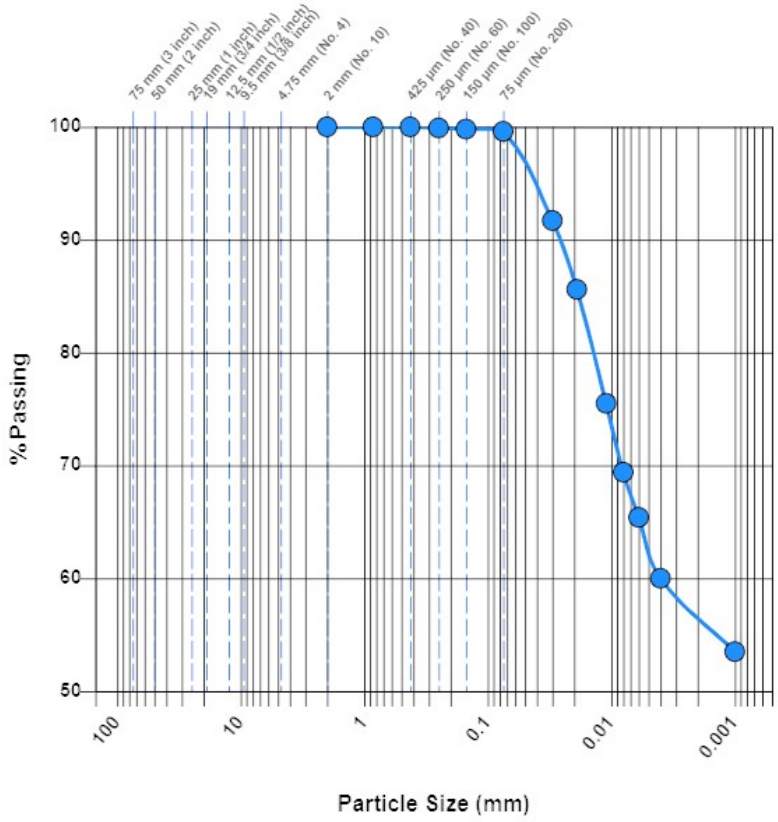
Sample Information

Sample Number:	358909	**Depth (ft):**	9.5-11
Boring Number:	GDRL-073	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
75 µm (No. 200)	99.6	-
30.0 (µm)	91.7	-
19.3 (µm)	85.6	-
11.4 (µm)	75.5	-
7.9 (µm)	69.4	-
5.8 (µm)	65.4	-
3.5 (µm)	60.0	-
1.0 (µm)	53.5	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(46)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	36.9	**Clay (%):**	62.7

D_{60} (µm): 4.0

General

Remarks: LL=68, PL=29, PI=39

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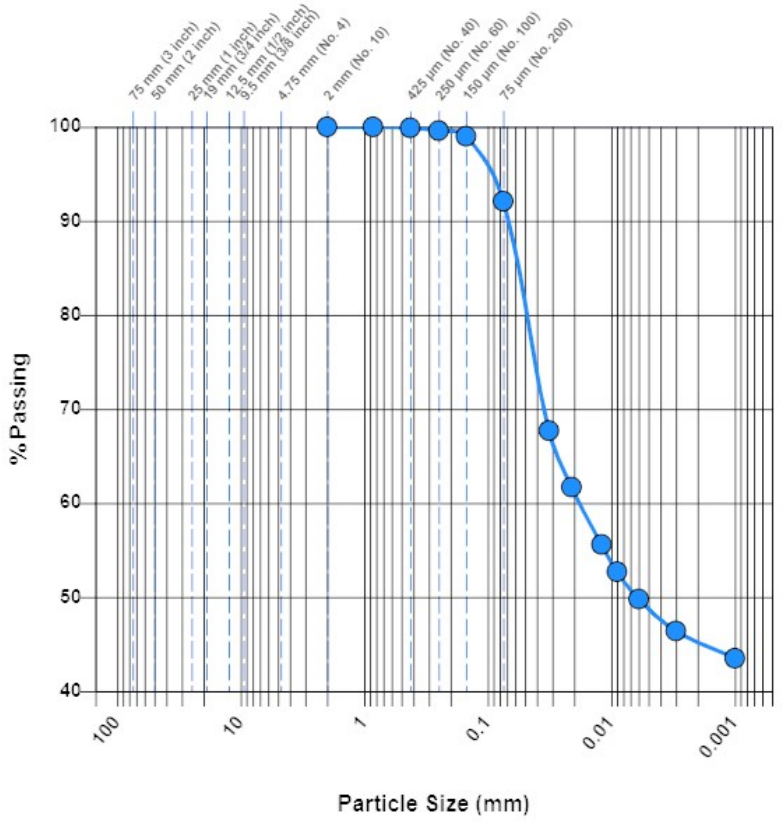
Sample Information

Sample Number:	358910	**Depth (ft):**	0.5-2
Boring Number:	CAA-074	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	92.1	-
32.2 (µm)	67.7	-
20.7 (µm)	61.7	-
12.1 (µm)	55.6	-
8.6 (µm)	52.7	-
6.1 (µm)	49.8	-
3.0 (µm)	46.4	-
1.4 (µm)	43.5	-



Soil Classification: CH Fat Clay, black to dark gray, A-7-6(32)

Gravel (%):	0	**Sand (%):**	7.9	**Silt (%):**	43.4	**Clay (%):**	48.7

D_{60} (µm): 18.5

General

Remarks: LL=55, PL=24, PI=31

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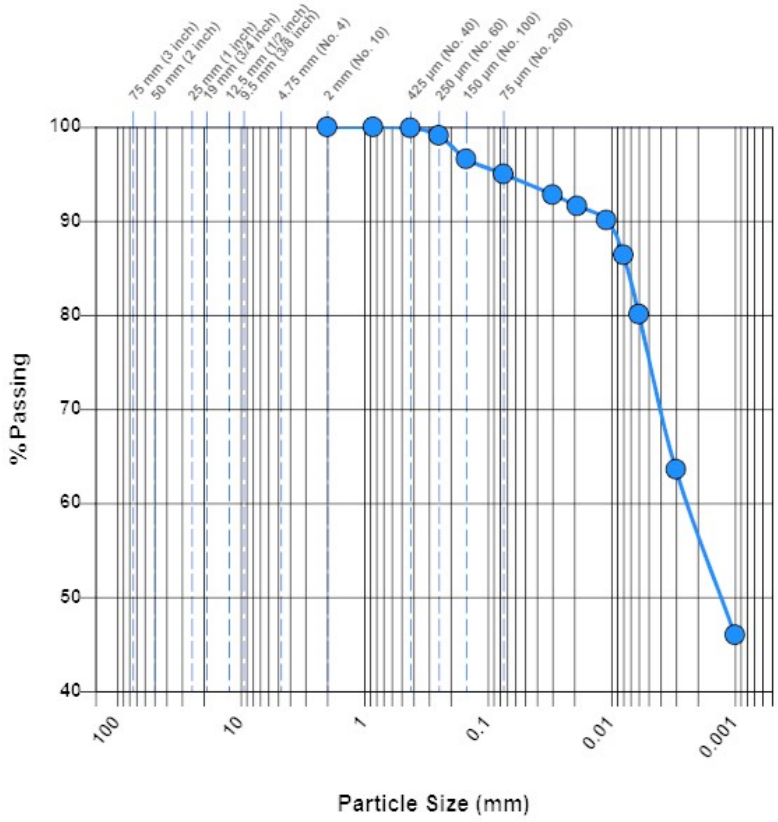
Sample Information

Sample Number:	358911	**Depth (ft):**	14.5-16
Boring Number:	CAA-074	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.1	-
150 µm (No. 100)	96.6	-
75 µm (No. 200)	95.0	-
30.0 (µm)	92.8	-
19.1 (µm)	91.6	-
11.0 (µm)	90.1	-
7.9 (µm)	86.4	-
5.7 (µm)	80.1	-
2.9 (µm)	63.6	-
1.2 (µm)	46.0	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(46)

Gravel (%):	0	**Sand (%):**	5.0	**Silt (%):**	20.4	**Clay (%):**	74.6
D_{60} (µm):	2.6						

General

Remarks: LL=71, PL=30, PI=41

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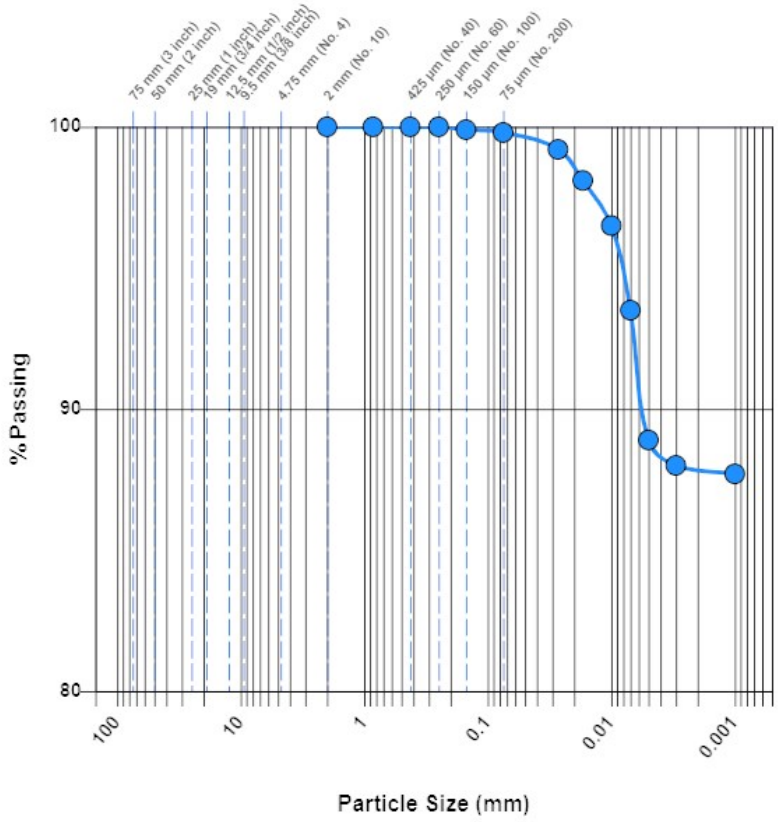
Sample Information

Sample Number:	358912	**Depth (ft):**	0.5-2
Boring Number:	GDRL-075	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.8	-
27.2 (µm)	99.2	-
17.3 (µm)	98.1	-
10.0 (µm)	96.5	-
7.2 (µm)	93.5	-
5.2 (µm)	88.9	-
2.5 (µm)	88.0	-
0.9 (µm)	87.7	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(53)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	10.9	**Clay (%):**	88.9

General

Remarks: LL=76, PL=32, PI=44

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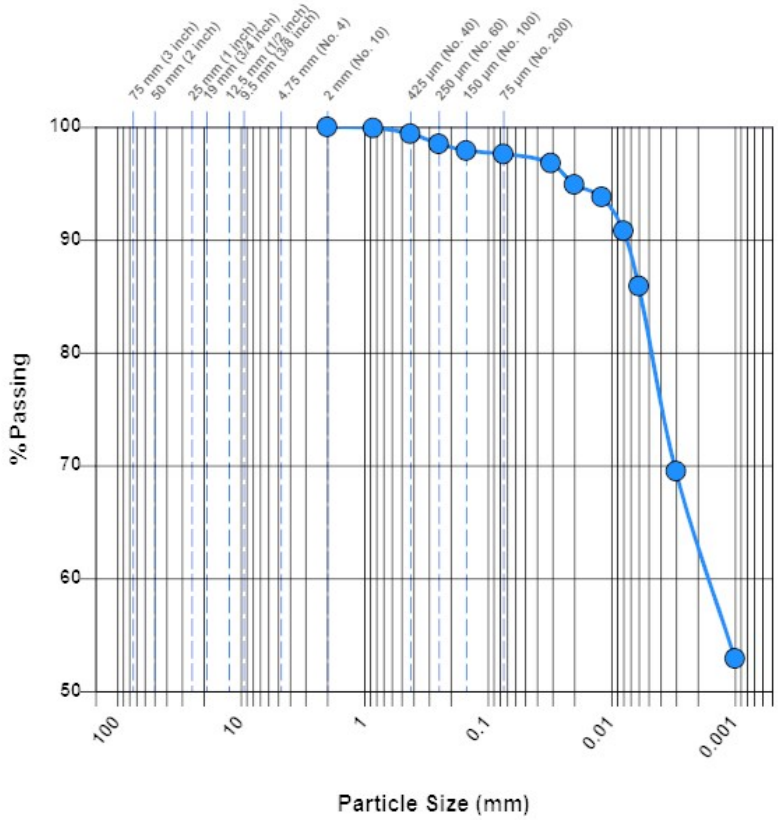
Sample Information

Sample Number:	358914	**Depth (ft):**	9.5-11
Boring Number:	GDRL-075	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
250 µm (No. 60)	98.5	-
150 µm (No. 100)	97.9	-
75 µm (No. 200)	97.6	-
31.2 (µm)	96.8	-
19.8 (µm)	94.9	-
11.5 (µm)	93.8	-
8.2 (µm)	90.8	-
5.8 (µm)	85.9	-
2.9 (µm)	69.5	-
1.3 (µm)	52.9	-



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

Gravel (%):	0	**Sand (%):**	2.4	**Silt (%):**	17.2	**Clay (%):**	80.4
D_{60} (µm):	1.9						

General

Remarks: LL=90, PL=26, PI=64

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

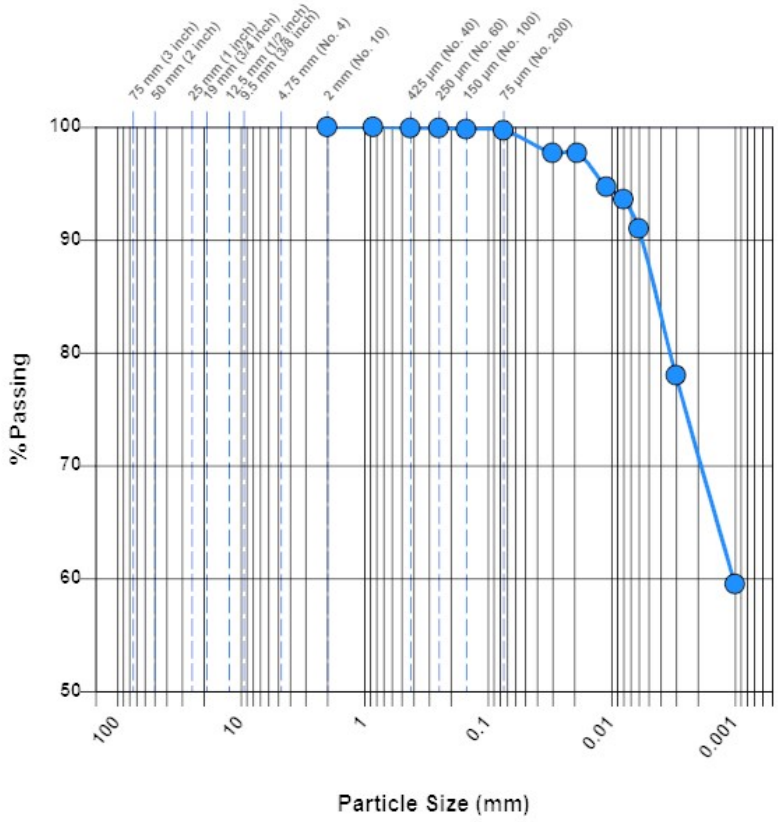
Sample Information

Sample Number:	358915	**Depth (ft):**	4.5-6
Boring Number:	GDRL-076	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
30.4 (µm)	97.7	-
19.3 (µm)	97.7	-
11.2 (µm)	94.7	-
7.9 (µm)	93.6	-
5.6 (µm)	91.0	-
2.8 (µm)	78.0	-
1.2 (µm)	59.5	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(62)

Gravel (%):	0	**Sand (%):**	0.3	**Silt (%):**	13.0	**Clay (%):**	86.7

D_{60} (µm): 1.1

General

Remarks: LL=81, PL=29, PI=52

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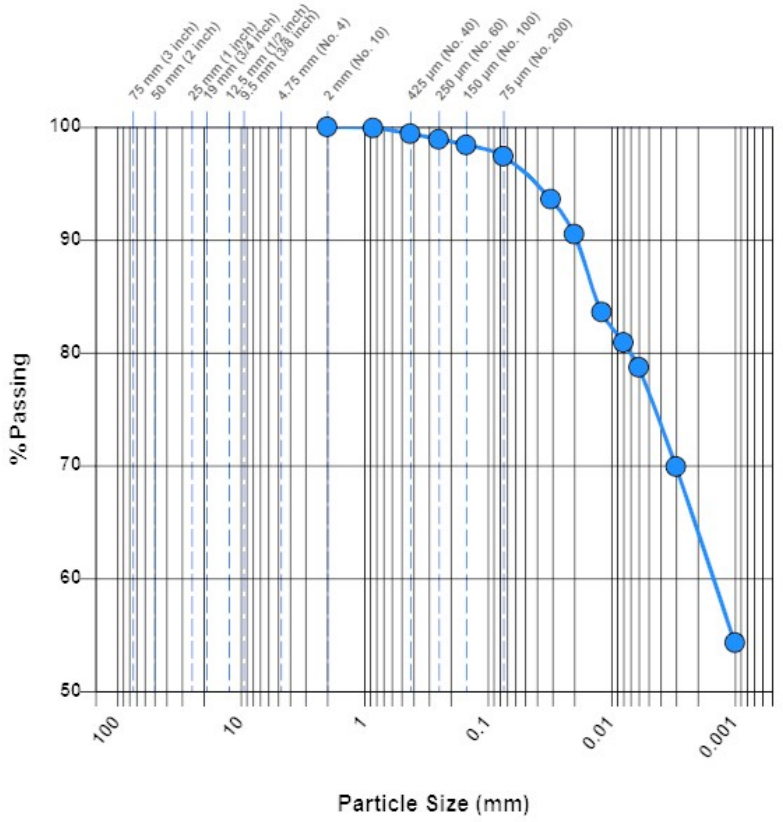
Sample Information

Sample Number:	358916	**Depth (ft):**	0.5-2
Boring Number:	GDRL-077	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	98.4	-
75 µm (No. 200)	97.4	-
31.4 (µm)	93.6	-
20.0 (µm)	90.5	-
11.7 (µm)	83.6	-
8.3 (µm)	80.9	-
5.9 (µm)	78.7	-
2.9 (µm)	69.9	-
1.3 (µm)	54.3	-



Soil Classification: CH Fat Clay, black to dark gray, A-7-6(58)

Gravel (%):	0	**Sand (%):**	2.6	**Silt (%):**	21.6	**Clay (%):**	75.8

D_{60} (µm): 1.7

General

Remarks: LL=75, PL=23, PI=52

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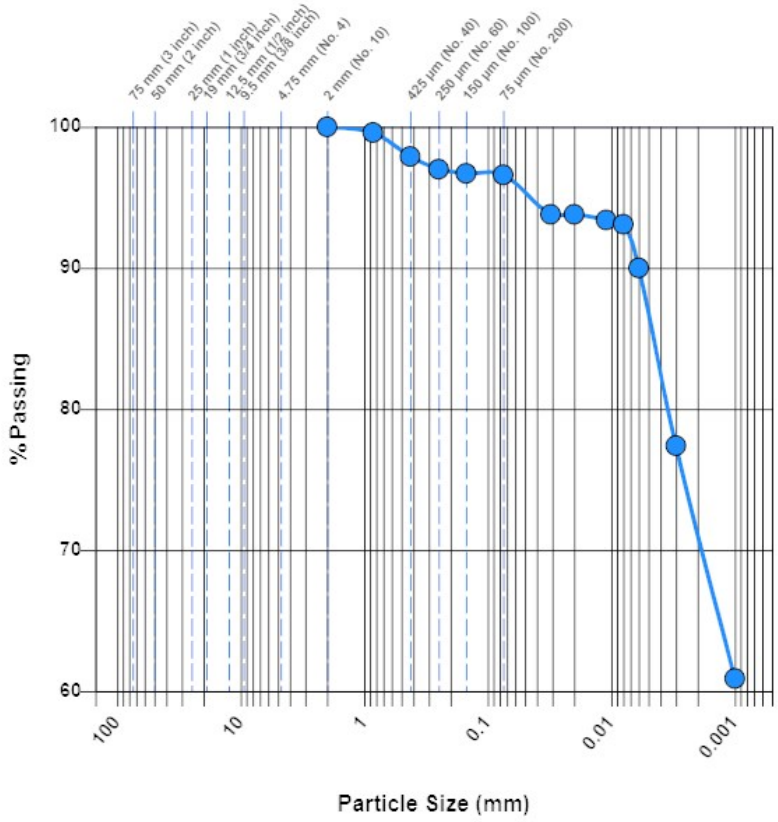
Sample Information

Sample Number:	358917	**Depth (ft):**	9.5-11
Boring Number:	GDRL-077	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	97.9	-
250 µm (No. 60)	97.0	-
150 µm (No. 100)	96.7	-
75 µm (No. 200)	96.6	-
31.1 (µm)	93.8	-
19.7 (µm)	93.8	-
11.4 (µm)	93.4	-
8.1 (µm)	93.1	-
5.7 (µm)	90.0	-
2.9 (µm)	77.4	-
1.2 (µm)	60.9	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(57)

Gravel (%): 0 **Sand (%):** 3.4 **Silt (%):** 10.8 **Clay (%):** 85.8

General

Remarks: LL=81, PL=32, PI=49

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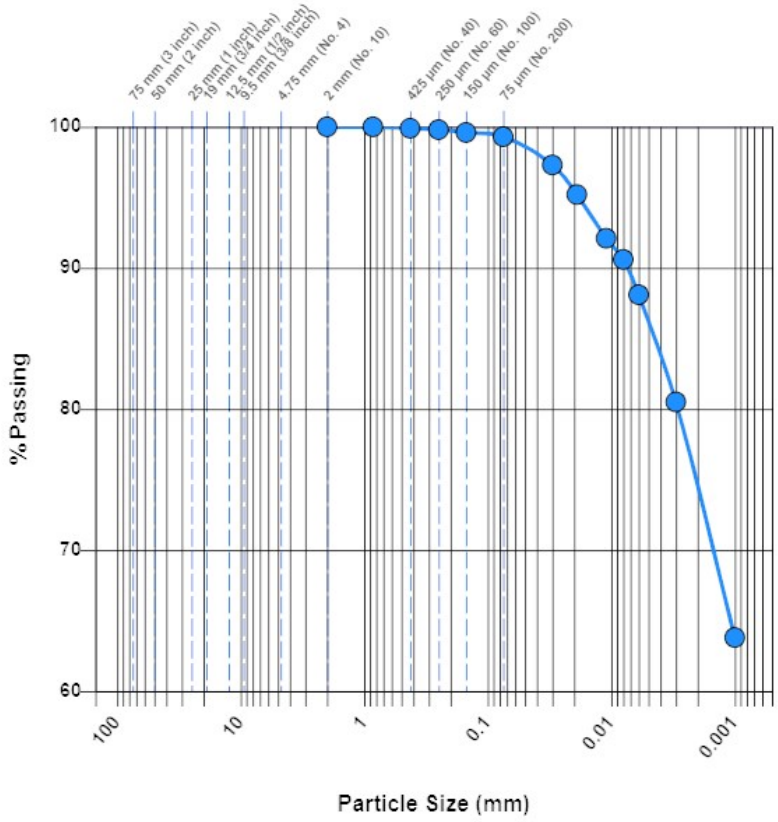
Sample Information

Sample Number:	358918	**Depth (ft):**	4.5-6
Boring Number:	GDRL-078	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.3	-
29.6 (µm)	97.3	-
18.8 (µm)	95.2	-
11.0 (µm)	92.1	-
7.8 (µm)	90.6	-
5.5 (µm)	88.1	-
3.3 (µm)	80.5	-
1.0 (µm)	63.8	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(60)

Gravel (%): 0 **Sand (%):** 0.7 **Silt (%):** 13.7 **Clay (%):** 85.6

General

Remarks: LL=80, PL=29, PI=51

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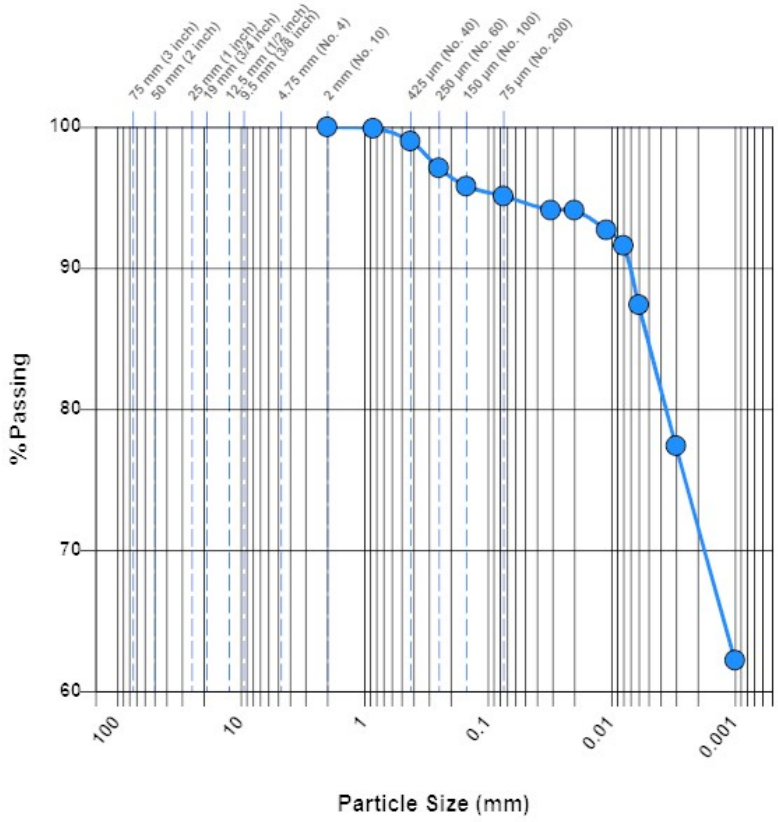
Sample Information

Sample Number:	358919	**Depth (ft):**	9.5-11
Boring Number:	GDRL-078	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
250 µm (No. 60)	97.1	-
150 µm (No. 100)	95.8	-
75 µm (No. 200)	95.1	-
31.1 (µm)	94.1	-
19.7 (µm)	94.1	-
11.4 (µm)	92.7	-
8.1 (µm)	91.6	-
5.7 (µm)	87.4	-
2.9 (µm)	77.4	-
1.2 (µm)	62.2	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(53)

Gravel (%): 0 **Sand (%):** 4.9 **Silt (%):** 11.0 **Clay (%):** 84.1

General

Remarks: LL=79, PL=33, PI=46

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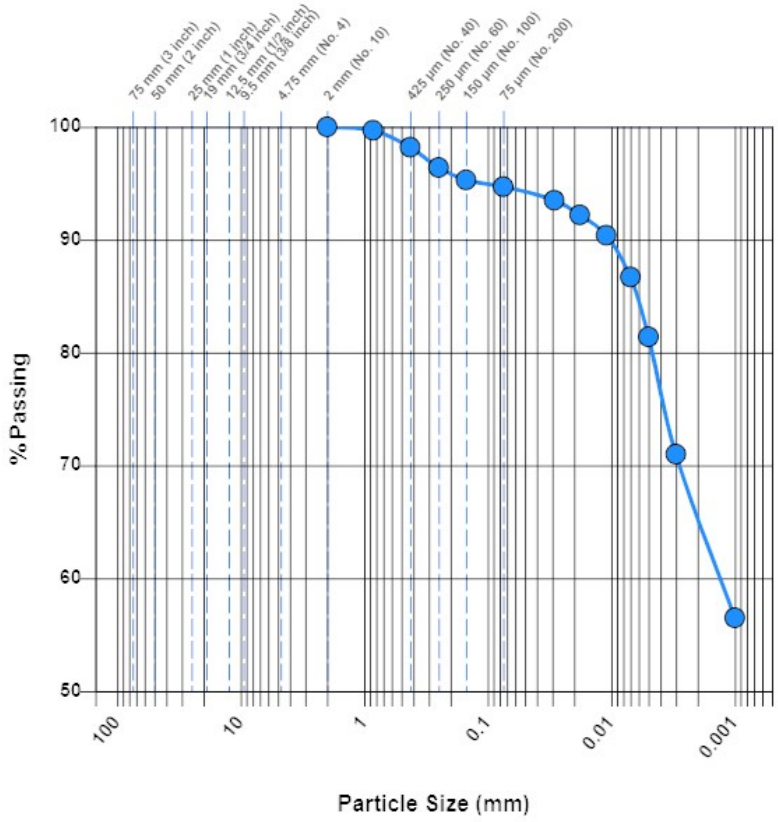
Sample Information

Sample Number:	358920	**Depth (ft):**	4.5-6
Boring Number:	CAA-079	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.2	-
250 µm (No. 60)	96.4	-
150 µm (No. 100)	95.3	-
75 µm (No. 200)	94.7	-
28.5 (µm)	93.5	-
18.1 (µm)	92.2	-
10.5 (µm)	90.4	-
7.4 (µm)	86.7	-
5.4 (µm)	81.4	-
3.3 (µm)	71.0	-
1.3 (µm)	56.5	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(49)

Gravel (%):	0	**Sand (%):**	5.3	**Silt (%):**	13.3	**Clay (%):**	81.4

D_{60} (µm): 1.5

General

Remarks: LL=72, PL=27, PI=45

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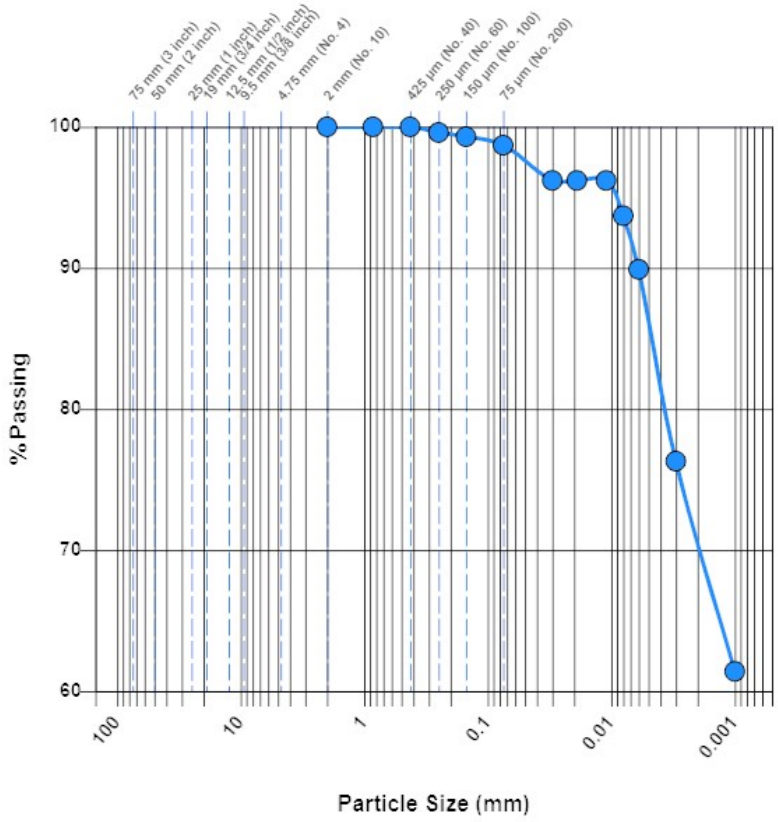
Sample Information

Sample Number:	358921	**Depth (ft):**	14.5-16
Boring Number:	CAA-079	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.7	-
30.4 (µm)	96.2	-
19.2 (µm)	96.2	-
11.1 (µm)	96.2	-
7.9 (µm)	93.7	-
5.6 (µm)	89.9	-
2.8 (µm)	76.3	-
1.3 (µm)	61.4	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(65)

Gravel (%): 0 **Sand (%):** 1.3 **Silt (%):** 13.3 **Clay (%):** 85.4

General

Remarks: LL=85, PL=30, PI=55

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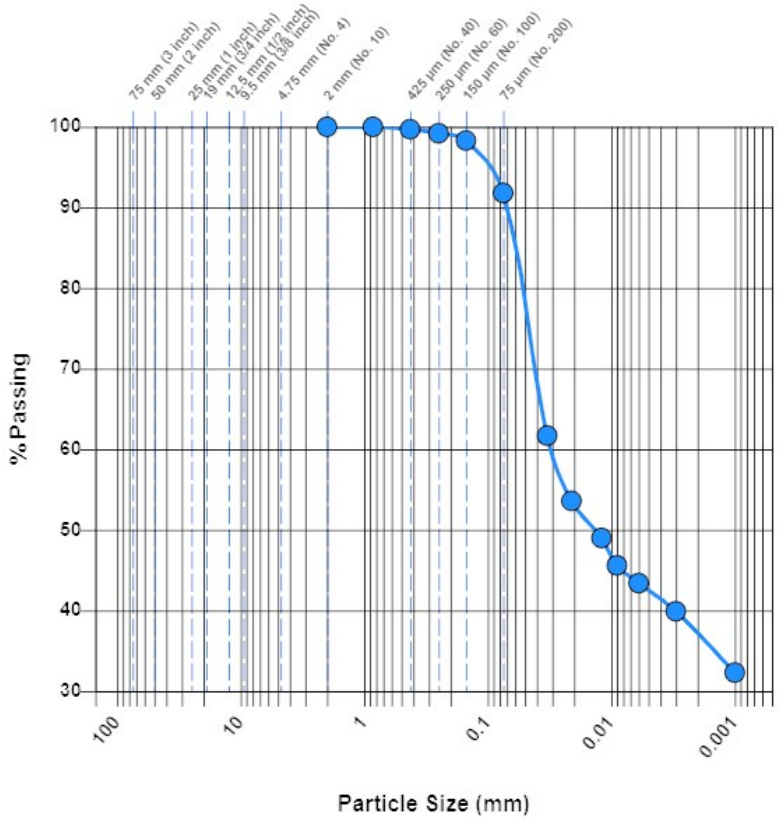
Sample Information

Sample Number:	358923	**Depth (ft):**	0.5-2
Boring Number:	CAA-080	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	91.8	-
32.7 (µm)	61.7	-
21.0 (µm)	53.6	-
12.3 (µm)	49.0	-
8.7 (µm)	45.6	-
6.2 (µm)	43.4	-
3.0 (µm)	39.9	-
1.3 (µm)	32.3	-



Soil Classification: CL Lean Clay, black to dark gray, A-7-6(22)

Gravel (%):	0	**Sand (%):**	8.2	**Silt (%):**	49.6	**Clay (%):**	42.2

D_{60} (µm): 30.5

General

Remarks: LL=41, PL=17, PI=24

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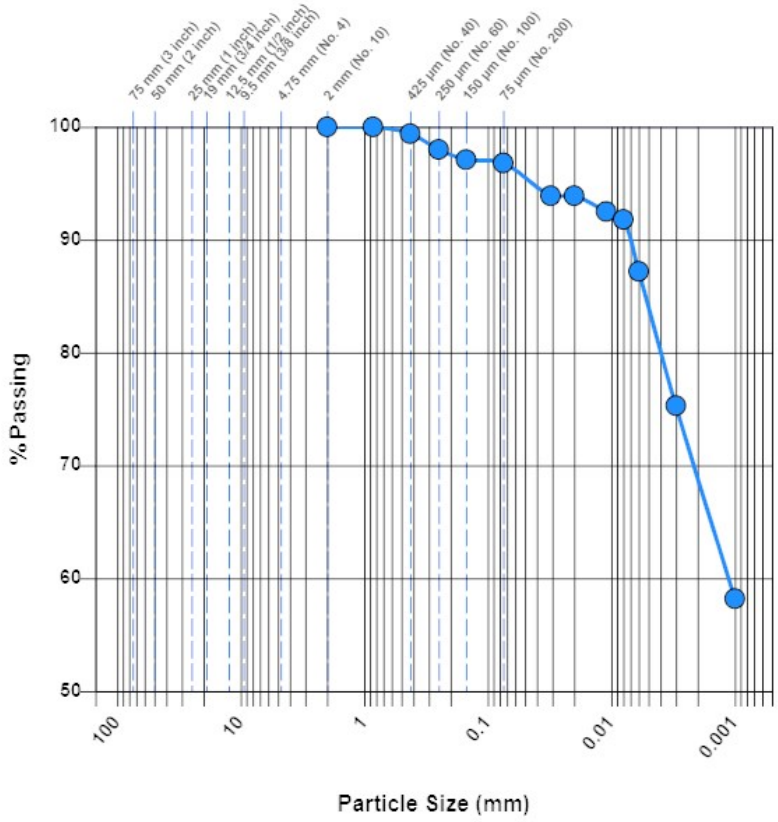
Sample Information

Sample Number:	358924	**Depth (ft):**	9.5-11
Boring Number:	CAA-080	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	96.8	-
31.0 (µm)	93.9	-
19.6 (µm)	93.9	-
11.4 (µm)	92.5	-
8.1 (µm)	91.8	-
5.7 (µm)	87.2	-
2.9 (µm)	75.3	-
1.2 (µm)	58.2	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(52)

Gravel (%):	0	**Sand (%):**	3.2	**Silt (%):**	13.6	**Clay (%):**	83.2

D_{60} (µm): 1.2

General

Remarks: LL=77, PL=33, PI=44

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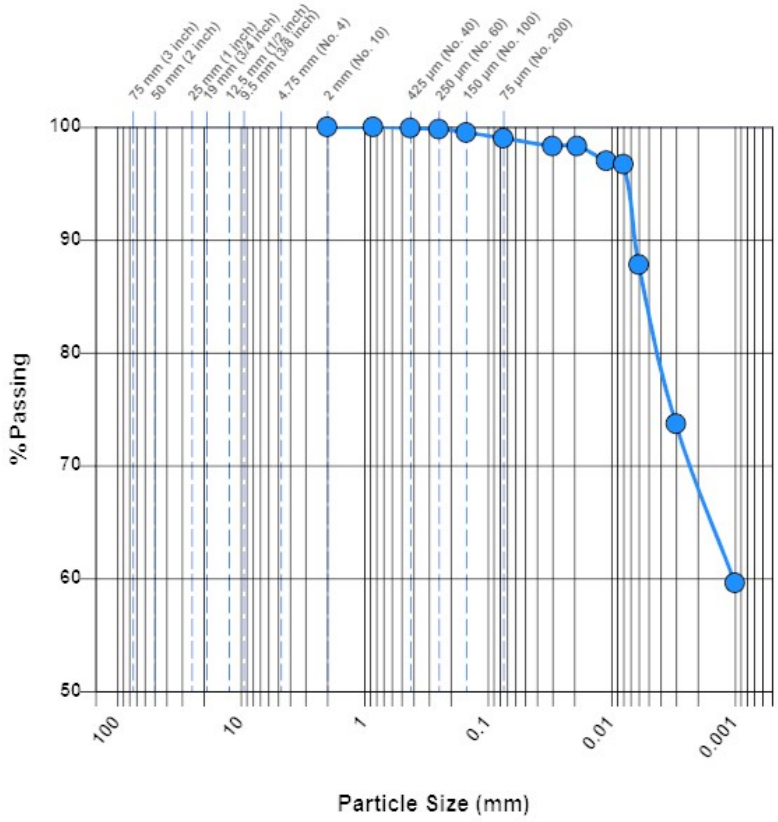
Sample Information

Sample Number:	358925	**Depth (ft):**	19.5-21
Boring Number:	CAA-080	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
75 µm (No. 200)	99.0	-
30.3 (µm)	98.3	-
19.1 (µm)	98.3	-
11.1 (µm)	97.0	-
7.8 (µm)	96.7	-
5.7 (µm)	87.8	-
2.8 (µm)	73.7	-
1.3 (µm)	59.6	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(54)

Gravel (%):	0	**Sand (%):**	1.0	**Silt (%):**	15.9	**Clay (%):**	83.1

D_{60} (µm): 1.1

General

Remarks: LL=79, PL=35, PI=44

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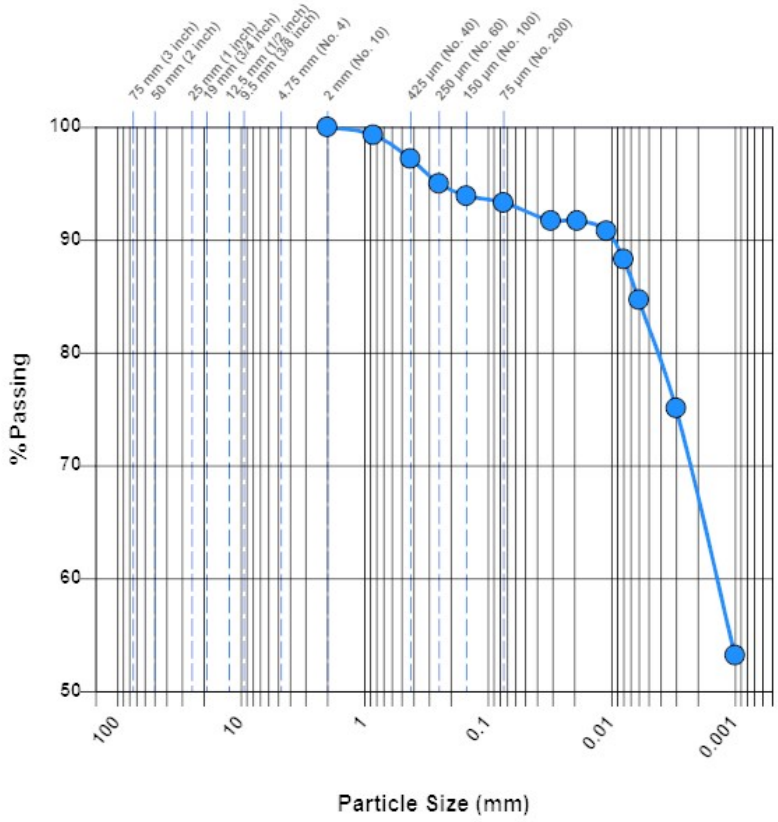
Sample Information

Sample Number:	358926	**Depth (ft):**	4.5-6
Boring Number:	GDRL-081	**Sampled By:**	Drill Crew
Sample Date:	12/30/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	97.2	-
250 µm (No. 60)	95.0	-
150 µm (No. 100)	93.9	-
75 µm (No. 200)	93.3	-
30.5 (µm)	91.7	-
19.3 (µm)	91.7	-
11.2 (µm)	90.8	-
7.9 (µm)	88.3	-
5.7 (µm)	84.7	-
2.8 (µm)	75.1	-
1.3 (µm)	53.2	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(53)

Gravel (%):	0	**Sand (%):**	6.7	**Silt (%):**	11.8	**Clay (%):**	81.5

D_{60} (µm): 1.6

General

Remarks: LL=77, PL=28, PI=49

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

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Bismarck, ND 58504
Phone: 701-255-7180

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

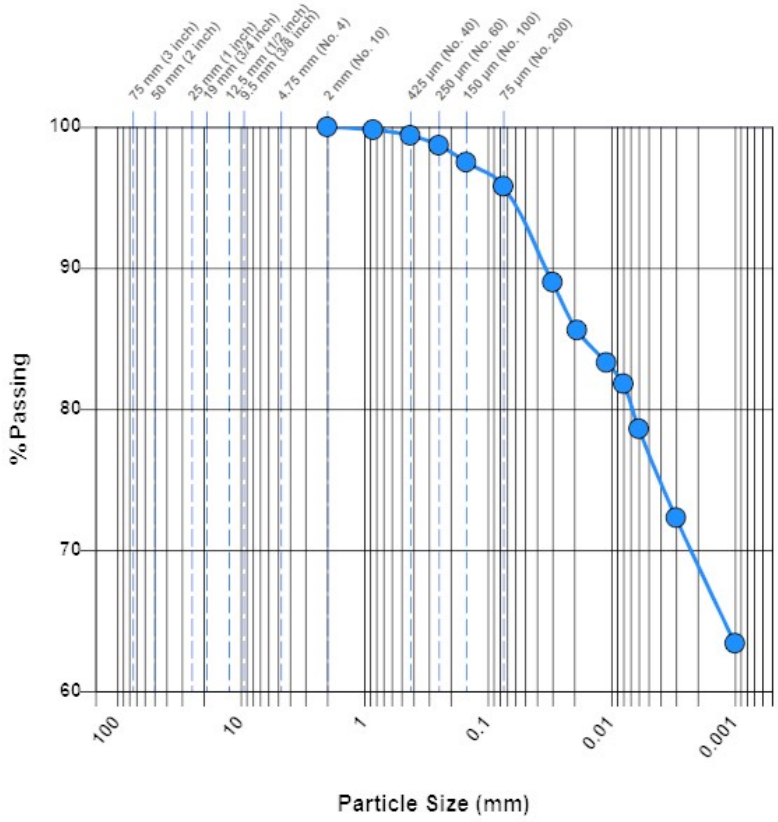
Sample Information

Sample Number:	358927	**Depth (ft):**	0.5-2
Boring Number:	GDRL-082	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.7	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	95.8	-
30.2 (µm)	89.0	-
19.3 (µm)	85.6	-
11.2 (µm)	83.3	-
8.0 (µm)	81.8	-
5.7 (µm)	78.6	-
2.8 (µm)	72.3	-
1.2 (µm)	63.4	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(59)

Gravel (%): 0 **Sand (%):** 4.2 **Silt (%):** 19.3 **Clay (%):** 76.5

General

Remarks: LL=81, PL=29, PI=52

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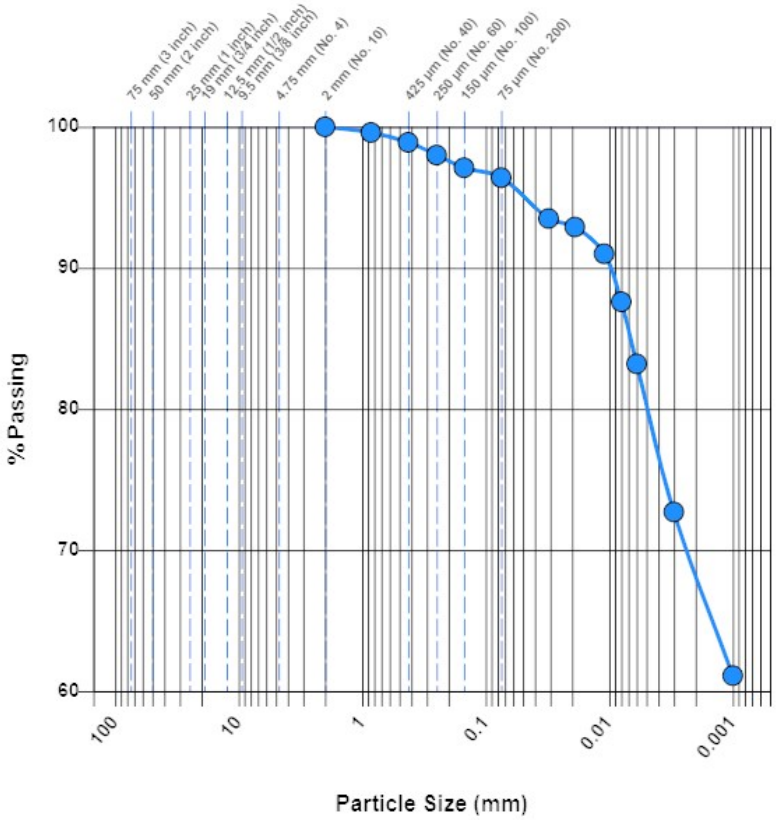
Sample Information

Sample Number:	358928	**Depth (ft):**	9.5-11
Boring Number:	GDRL-082	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	96.4	-
30.6 (µm)	93.5	-
19.4 (µm)	92.9	-
11.2 (µm)	91.0	-
8.0 (µm)	87.6	-
5.7 (µm)	83.2	-
2.8 (µm)	72.7	-
1.3 (µm)	61.1	-



Soil Classification: CH Fat Clay, brown and gray, A-7-5(58)

Gravel (%): 0 **Sand (%):** 3.6 **Silt (%):** 16.7 **Clay (%):** 79.7

General

Remarks: LL=82, PL=32, PI=50

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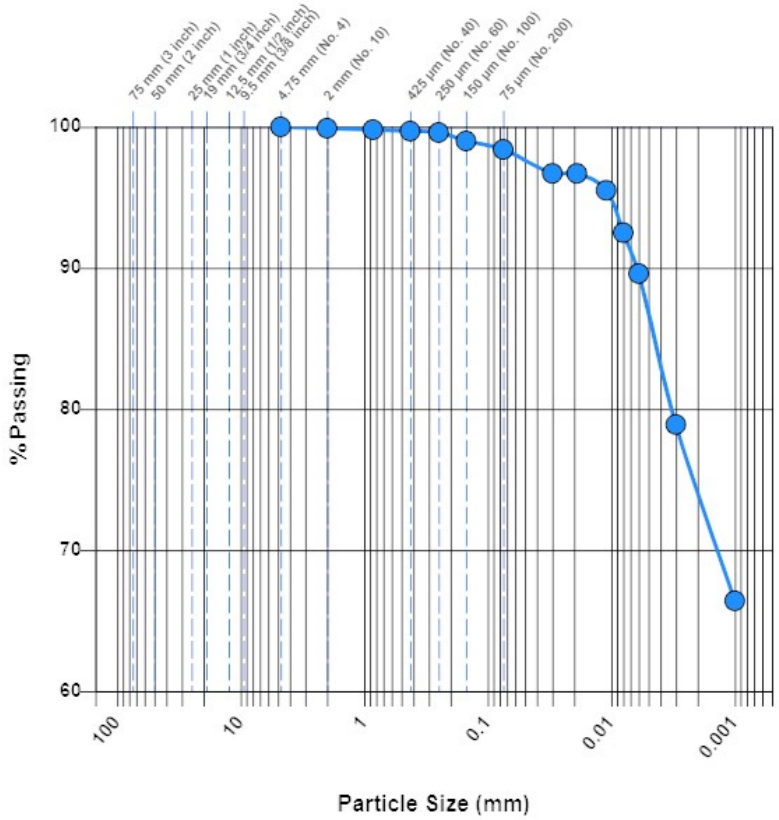
Sample Information

Sample Number:	358929	**Depth (ft):**	4.5-6
Boring Number:	CAA-083	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
425 µm (No. 40)	99.7	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	98.4	-
29.8 (µm)	96.7	-
18.9 (µm)	96.7	-
10.9 (µm)	95.5	-
7.8 (µm)	92.5	-
5.5 (µm)	89.6	-
2.8 (µm)	78.9	-
1.2 (µm)	66.4	-



Soil Classification: CH Fat Clay, gray, A-7-5(75)

Gravel (%): 0.0 **Sand (%):** 1.6 **Silt (%):** 12.4 **Clay (%):** 86.0

General

Remarks: LL=96, PL=32, PI=64

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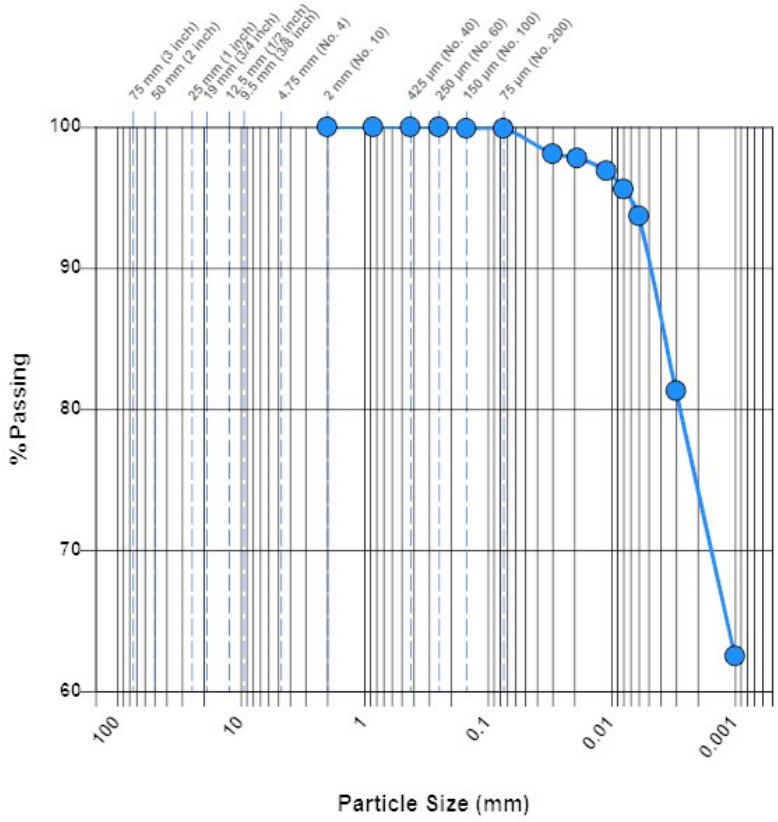
Sample Information

Sample Number:	358930	**Depth (ft):**	14.5-16
Boring Number:	CAA-083	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
30.2 (µm)	98.1	-
19.1 (µm)	97.8	-
11.1 (µm)	96.9	-
7.9 (µm)	95.6	-
5.6 (µm)	93.7	-
2.8 (µm)	81.3	-
1.3 (µm)	62.5	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(64)

Gravel (%): 0 **Sand (%):** 0.1 **Silt (%):** 10.3 **Clay (%):** 89.6

General

Remarks: LL=83, PL=29, PI=54

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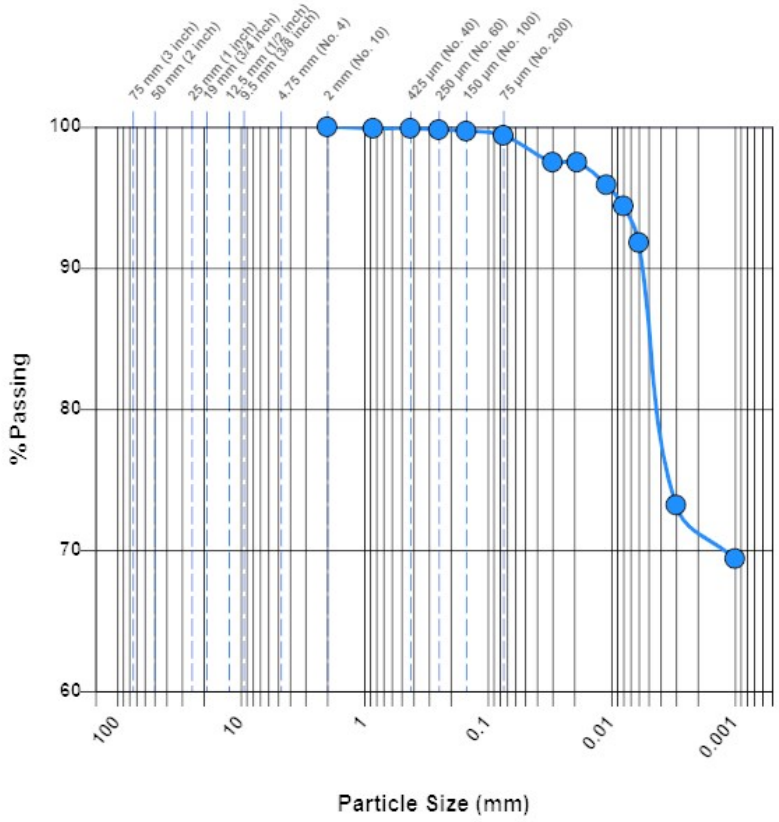
Sample Information

Sample Number:	358931	**Depth (ft):**	0.5-2
Boring Number:	GDRL-084	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
250 µm (No. 60)	99.8	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.4	-
30.4 (µm)	97.5	-
19.2 (µm)	97.5	-
11.1 (µm)	95.9	-
7.9 (µm)	94.4	-
5.6 (µm)	91.8	-
3.4 (µm)	73.2	-
1.2 (µm)	69.4	-



Soil Classification: CH Fat Clay, black, A-7-6(66)

Gravel (%): 0 **Sand (%):** 0.6 **Silt (%):** 13.8 **Clay (%):** 85.6

General

Remarks: LL=84, PL=28, PI=56

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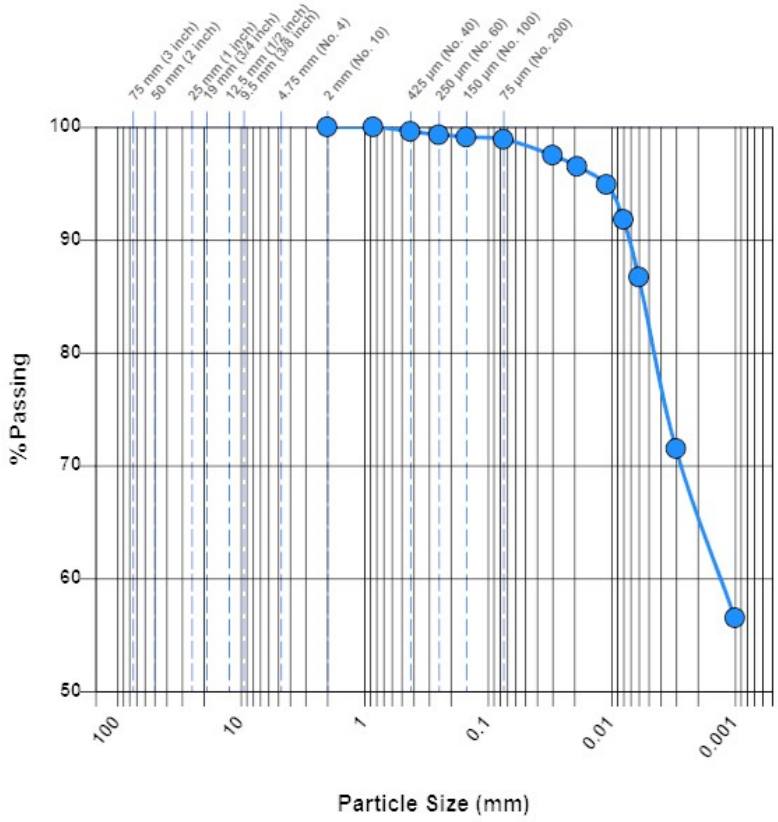
Sample Information

Sample Number:	358933	**Depth (ft):**	9.5-11
Boring Number:	GDRL-084	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	99.1	-
75 µm (No. 200)	98.9	-
30.3 (µm)	97.5	-
19.2 (µm)	96.5	-
11.1 (µm)	94.9	-
7.9 (µm)	91.8	-
5.7 (µm)	86.7	-
2.8 (µm)	71.5	-
1.3 (µm)	56.5	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(61)

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	17.3	**Clay (%):**	81.6

D_{60} (µm): 1.5

General

Remarks: LL=79, PL=26, PI=53

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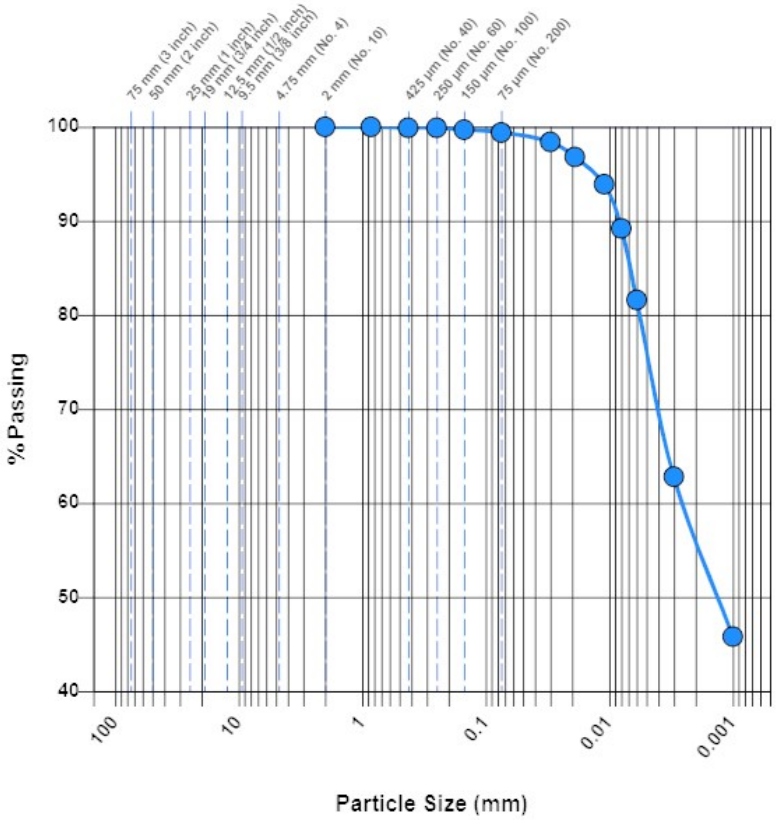
Sample Information

Sample Number:	358936	**Depth (ft):**	4.5-6
Boring Number:	GDRL-085	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
75 µm (No. 200)	99.4	-
30.3 (µm)	98.4	-
19.2 (µm)	96.8	-
11.2 (µm)	93.9	-
8.0 (µm)	89.2	-
5.7 (µm)	81.6	-
2.9 (µm)	62.8	-
1.3 (µm)	45.8	-



Soil Classification: CH Fat Clay, gray and brown, A-7-6(53)

Gravel (%):	0	**Sand (%):**	0.6	**Silt (%):**	24.1	**Clay (%):**	75.3

D_{60} (µm): 2.7

General

Remarks: LL=73, PL=28, PI=45

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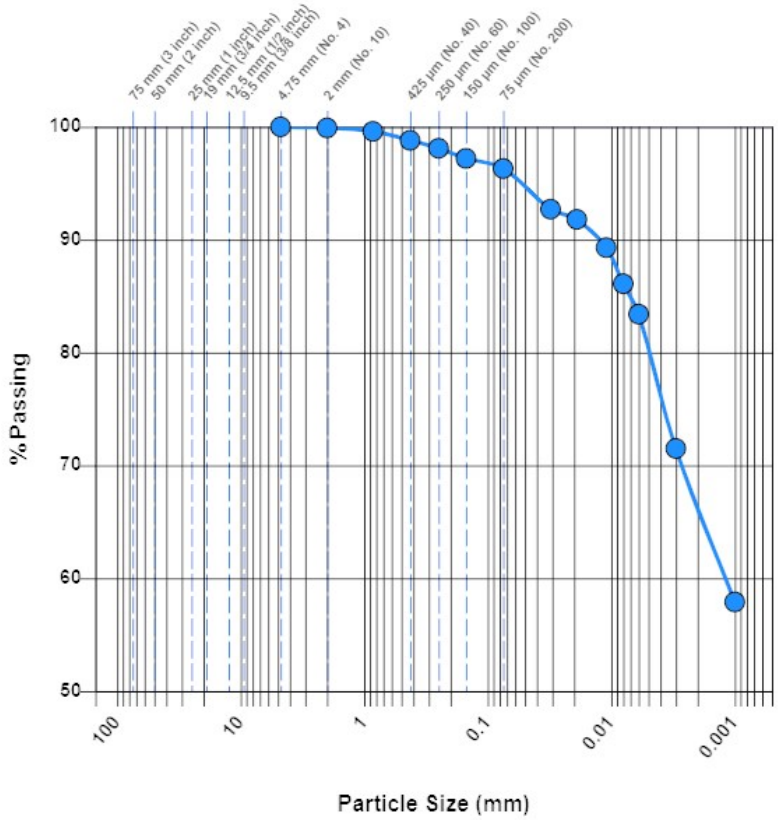
Sample Information

Sample Number:	358938	**Depth (ft):**	0.5-2
Boring Number:	GDRL-086	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
425 µm (No. 40)	98.8	-
250 µm (No. 60)	98.1	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	96.3	-
30.5 (µm)	92.7	-
19.4 (µm)	91.8	-
11.2 (µm)	89.3	-
8.0 (µm)	86.1	-
5.7 (µm)	83.4	-
2.8 (µm)	71.5	-
1.3 (µm)	57.9	-



Soil Classification: CH Fat Clay, black to gray, A-7-6(59)

Gravel (%):	0.0	**Sand (%):**	3.7	**Silt (%):**	16.9	**Clay (%):**	79.4
D_{60} (µm):	1.3						

General

Remarks: LL=80, PL=27, PI=53

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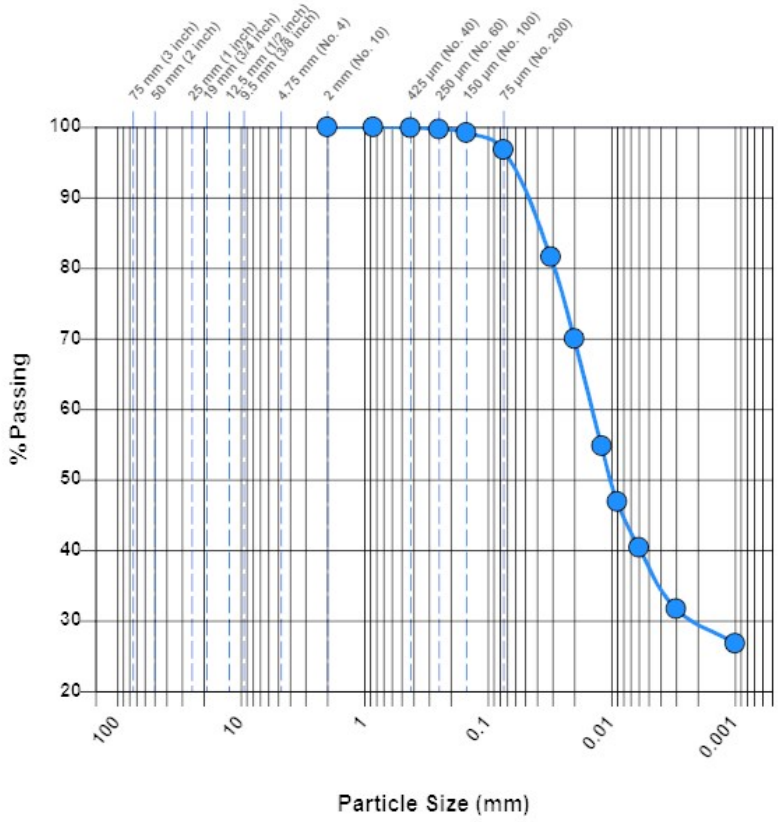
Sample Information

Sample Number:	358939	**Depth (ft):**	9.5-11
Boring Number:	GDRL-086	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	96.8	-
31.1 (µm)	81.6	-
20.3 (µm)	70.0	-
12.1 (µm)	54.8	-
8.7 (µm)	46.9	-
6.2 (µm)	40.4	-
3.1 (µm)	31.7	-
1.4 (µm)	26.8	-



Soil Classification: CL Lean Clay, gray, A-7-6(25)

Gravel (%):	0	**Sand (%):**	3.2	**Silt (%):**	59.3	**Clay (%):**	37.5
D_{60} (µm):	14.7	**D_{30} (µm):**	2.3				

General

Remarks: LL=48, PL=26, PI=22

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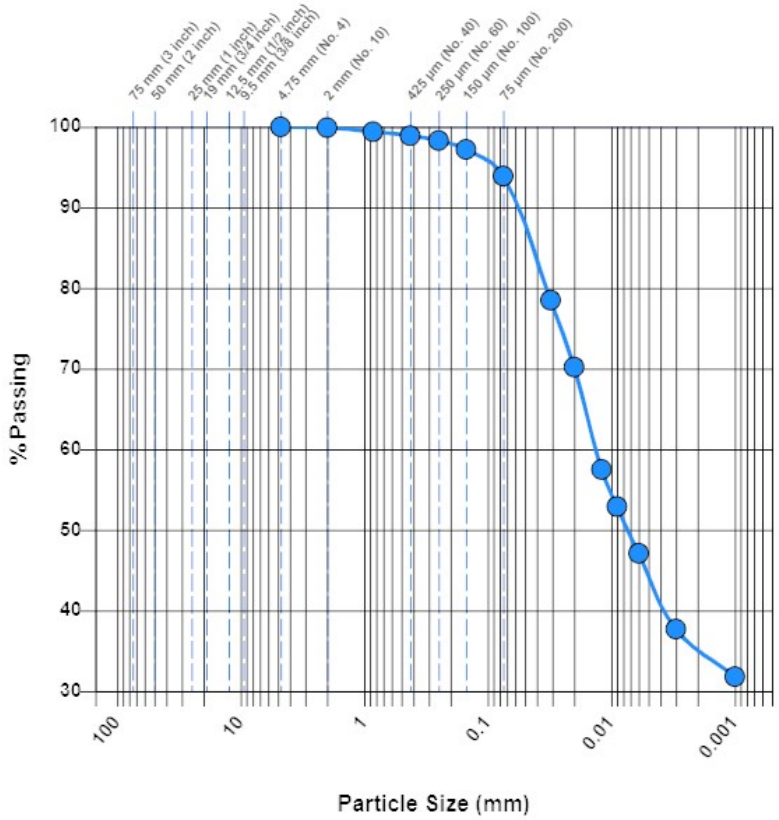
Sample Information

Sample Number:	358940	**Depth (ft):**	4.5-6
Boring Number:	CAA-087	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.3	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	93.9	-
30.8 (µm)	78.5	-
19.9 (µm)	70.2	-
11.9 (µm)	57.5	-
8.5 (µm)	52.9	-
6.1 (µm)	47.1	-
3.0 (µm)	37.7	-
1.3 (µm)	31.8	-



Soil Classification: CH Fat Clay, gray, A-7-5(31)

Gravel (%):	0.0	**Sand (%):**	6.1	**Silt (%):**	49.9	**Clay (%):**	44.0
D_{60} (µm):	13.6						

General

Remarks: LL=58, PL=30, PI=28

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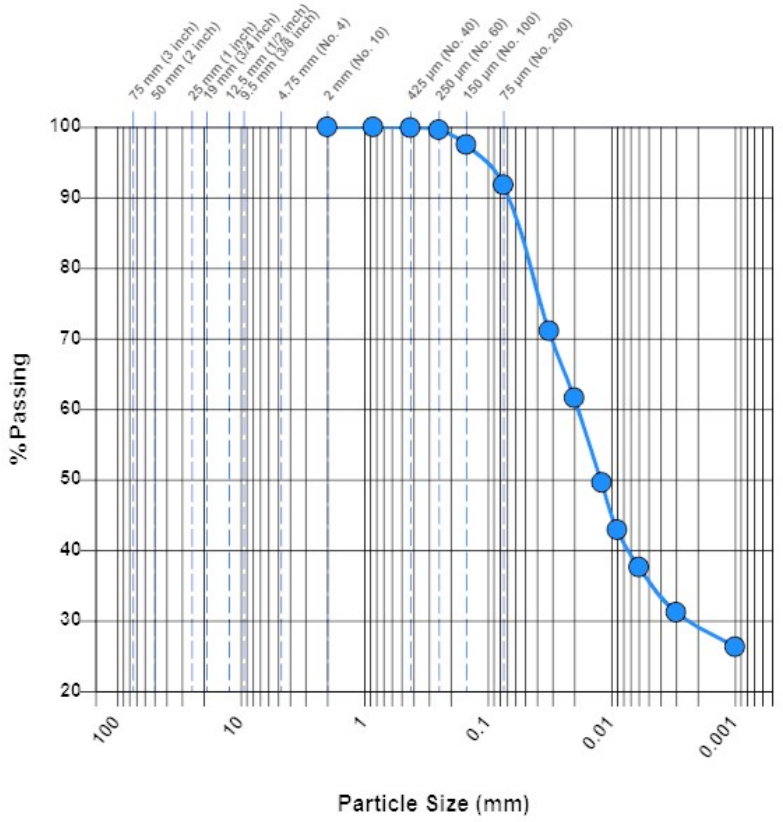
Sample Information

Sample Number:	358941	**Depth (ft):**	14.5-16
Boring Number:	CAA-087	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	91.8	-
31.5 (µm)	71.1	-
20.4 (µm)	61.6	-
12.2 (µm)	49.6	-
8.7 (µm)	42.9	-
6.2 (µm)	37.6	-
3.1 (µm)	31.2	-
1.4 (µm)	26.3	-



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

Gravel (%):	0	**Sand (%):**	8.2	**Silt (%):**	56.3	**Clay (%):**	35.5
D_{60} (µm):	18.9	**D_{30} (µm):**	2.5				

General

Remarks: LL=43, PL=21, PI=22

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Hydrometer And Sieve Analysis

ASTM D422

2/24/2021

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Phone: 701-255-7180

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

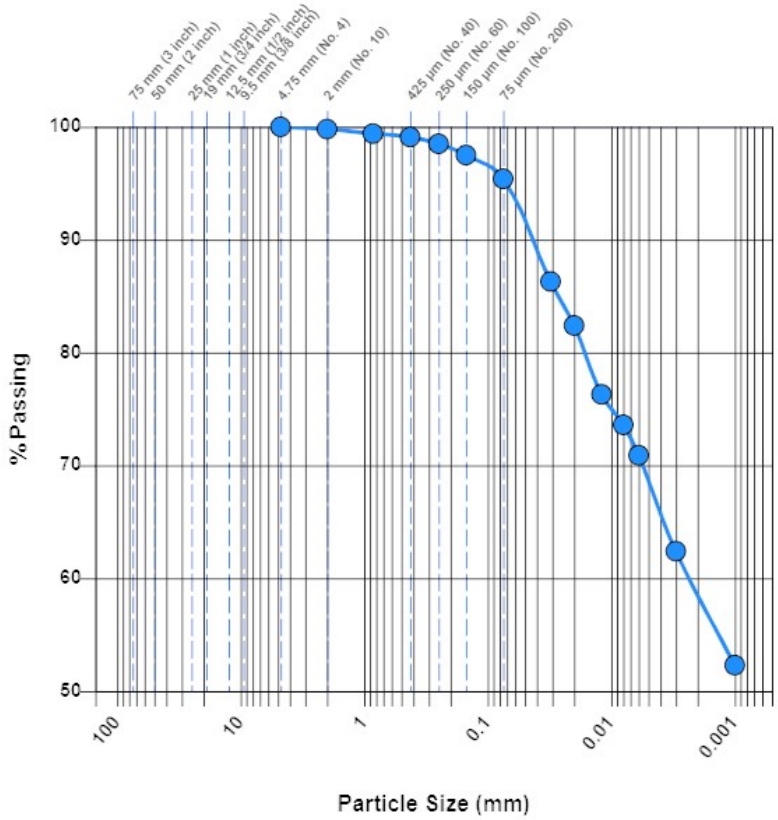
Sample Information

Sample Number:	358942	**Depth (ft):**	0.5-2
Boring Number:	CAA-088	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
425 µm (No. 40)	99.1	-
250 µm (No. 60)	98.5	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	95.4	-
30.8 (µm)	86.3	-
19.7 (µm)	82.4	-
11.5 (µm)	76.3	-
8.2 (µm)	73.6	-
5.8 (µm)	70.9	-
2.9 (µm)	62.4	-
1.3 (µm)	52.3	-



Soil Classification: CH Fat Clay, black to gray, A-7-6(46)

Gravel (%):	0.0	**Sand (%):**	4.6	**Silt (%):**	27.3	**Clay (%):**	68.1

D_{60} (µm): 2.5

General

Remarks: LL=67, PL=25, PI=42

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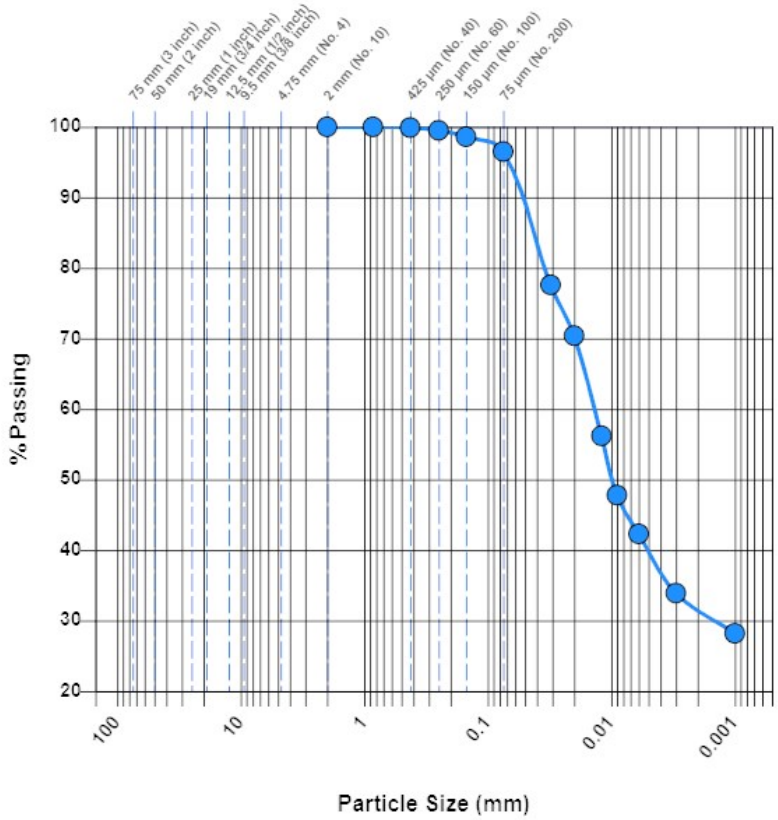
Sample Information

Sample Number:	358944	**Depth (ft):**	9.5-11
Boring Number:	CAA-088	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	96.5	-
31.2 (µm)	77.6	-
20.1 (µm)	70.4	-
12.0 (µm)	56.2	-
8.7 (µm)	47.8	-
6.2 (µm)	42.3	-
3.0 (µm)	33.9	-
1.4 (µm)	28.2	-



Soil Classification: CH Fat Clay, brown and gray, A-7-6(25)

Gravel (%):	0	**Sand (%):**	3.5	**Silt (%):**	57.0	**Clay (%):**	39.5
D_{60} (µm):	14.1	**D_{30} (µm):**	1.6				

General

Remarks: LL=50, PL=28, PI=22

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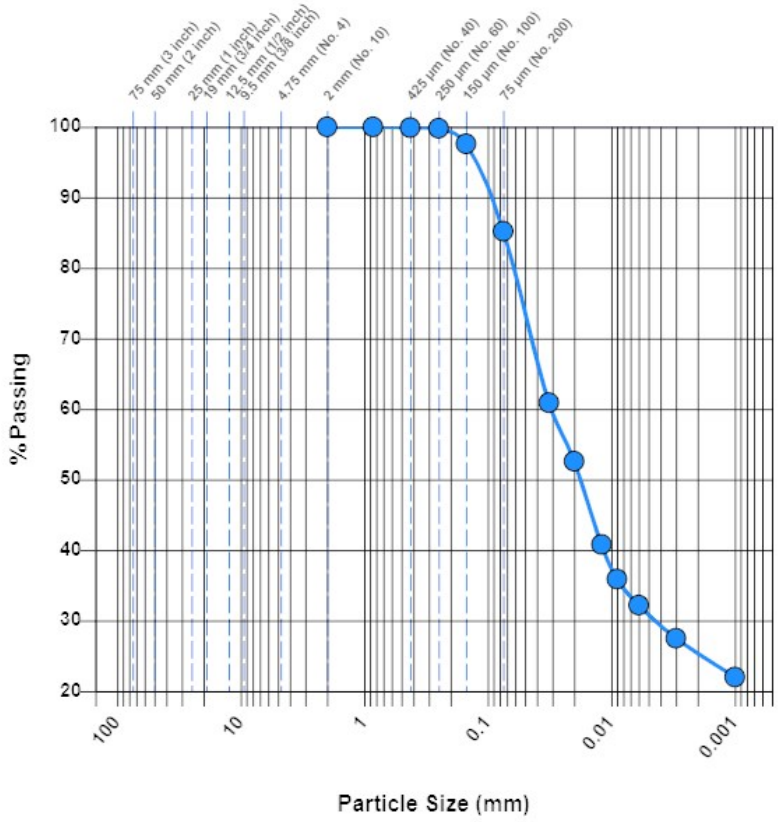
Sample Information

Sample Number:	358945	**Depth (ft):**	19.5-21
Boring Number:	CAA-088	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	97.6	-
75 µm (No. 200)	85.2	-
31.5 (µm)	60.9	-
20.4 (µm)	52.6	-
12.2 (µm)	40.8	-
8.7 (µm)	35.9	-
6.2 (µm)	32.2	-
3.1 (µm)	27.5	-
1.4 (µm)	22.0	-



Soil Classification:
CL Lean Clay with sand, brown and gray, A-6(16)

Gravel (%):	0	**Sand (%):**	14.8	**Silt (%):**	54.6	**Clay (%):**	30.6
D_{60} (µm):	30.7	**D_{30} (µm):**	4.6				

General

Remarks: LL=40, PL=21, PI=19

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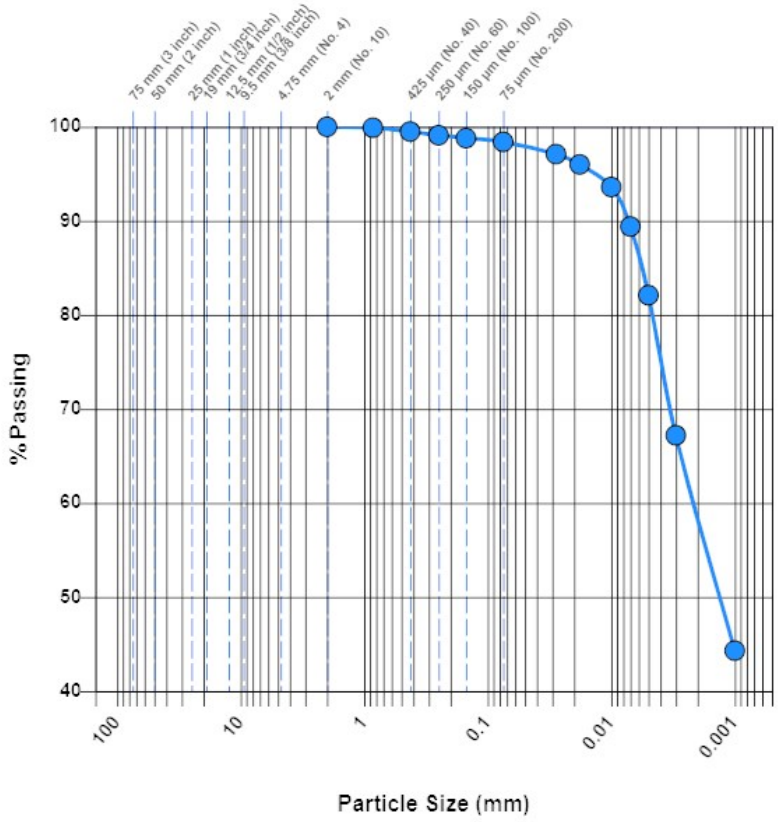
Sample Information

Sample Number:	358948	**Depth (ft):**	4.5-6
Boring Number:	GDRL-089	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.1	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	98.4	-
27.8 (µm)	97.1	-
17.6 (µm)	96.0	-
10.3 (µm)	93.6	-
7.4 (µm)	89.4	-
5.4 (µm)	82.1	-
2.8 (µm)	67.2	-
0.7 (µm)	44.3	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(54)

Gravel (%):	0	**Sand (%):**	1.6	**Silt (%):**	16.3	**Clay (%):**	82.1

D_{60} (µm): 2.4

General

Remarks: LL=77, PL=32, PI=45

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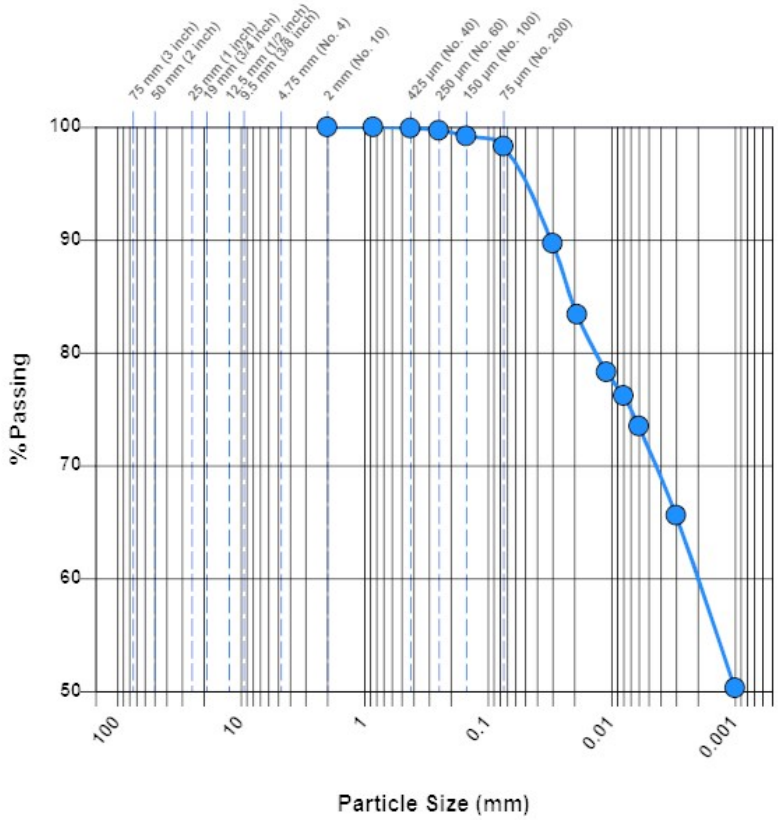
Sample Information

Sample Number:	358949	**Depth (ft):**	0.5-2
Boring Number:	GDRL-090	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.3	-
29.5 (µm)	89.7	-
19.0 (µm)	83.4	-
11.2 (µm)	78.3	-
7.8 (µm)	76.2	-
5.7 (µm)	73.5	-
2.8 (µm)	65.6	-
0.7 (µm)	50.3	-



Soil Classification: CH Fat Clay, black to gray, A-7-6(46)

Gravel (%):	0	**Sand (%):**	1.7	**Silt (%):**	27.4	**Clay (%):**	70.9

D_{60} (µm): 2.3

General

Remarks: LL=67, PL=27, PI=40

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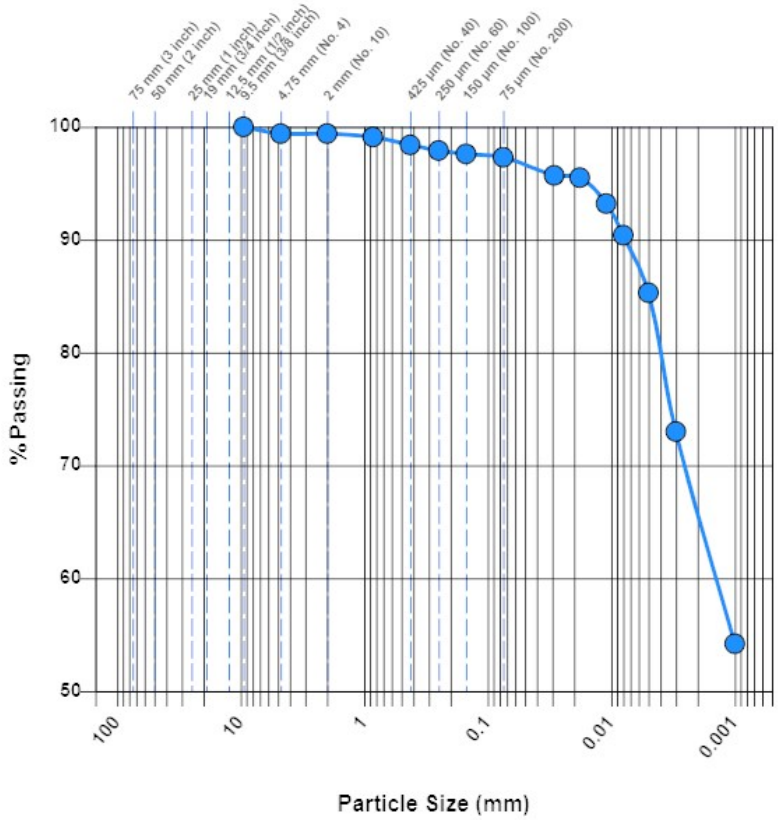
Sample Information

Sample Number:	358950	**Depth (ft):**	9.5-11
Boring Number:	GDRL-090	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.4	-
2 mm (No. 10)	99.4	-
850 µm (No. 20)	99.1	-
425 µm (No. 40)	98.4	-
250 µm (No. 60)	97.9	-
150 µm (No. 100)	97.6	-
75 µm (No. 200)	97.3	-
28.7 (µm)	95.7	-
18.1 (µm)	95.5	-
10.6 (µm)	93.2	-
7.5 (µm)	90.4	-
5.4 (µm)	85.3	-
2.7 (µm)	73.0	-
0.7 (µm)	54.2	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(69)

Gravel (%):	0.6	**Sand (%):**	2.1	**Silt (%):**	12.0	**Clay (%):**	85.3
D_{60} (µm):	1.6						

General

Remarks: LL=90, PL=30, PI=60

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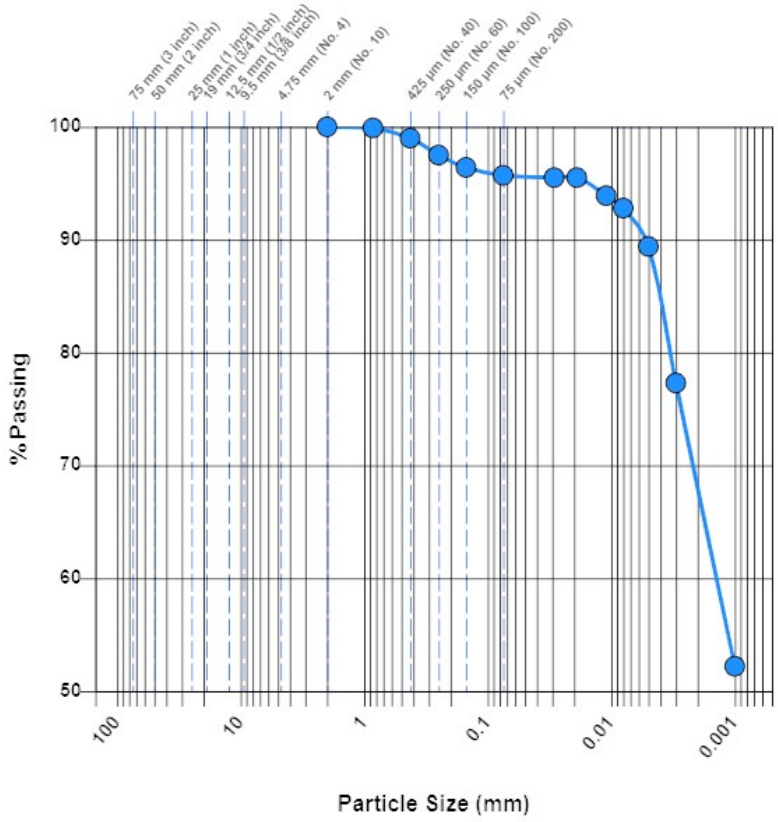
Sample Information

Sample Number:	358951	**Depth (ft):**	4.5-6
Boring Number:	GDRL-091	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
250 µm (No. 60)	97.5	-
150 µm (No. 100)	96.4	-
75 µm (No. 200)	95.7	-
29.2 (µm)	95.5	-
18.5 (µm)	95.5	-
10.7 (µm)	93.9	-
7.6 (µm)	92.8	-
5.4 (µm)	89.4	-
2.7 (µm)	77.3	-
0.7 (µm)	52.2	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(61)

Gravel (%):	0	**Sand (%):**	4.3	**Silt (%):**	6.3	**Clay (%):**	89.4
D_{60} (µm):	1.6						

General

Remarks: LL=86, PL=33, PI=53

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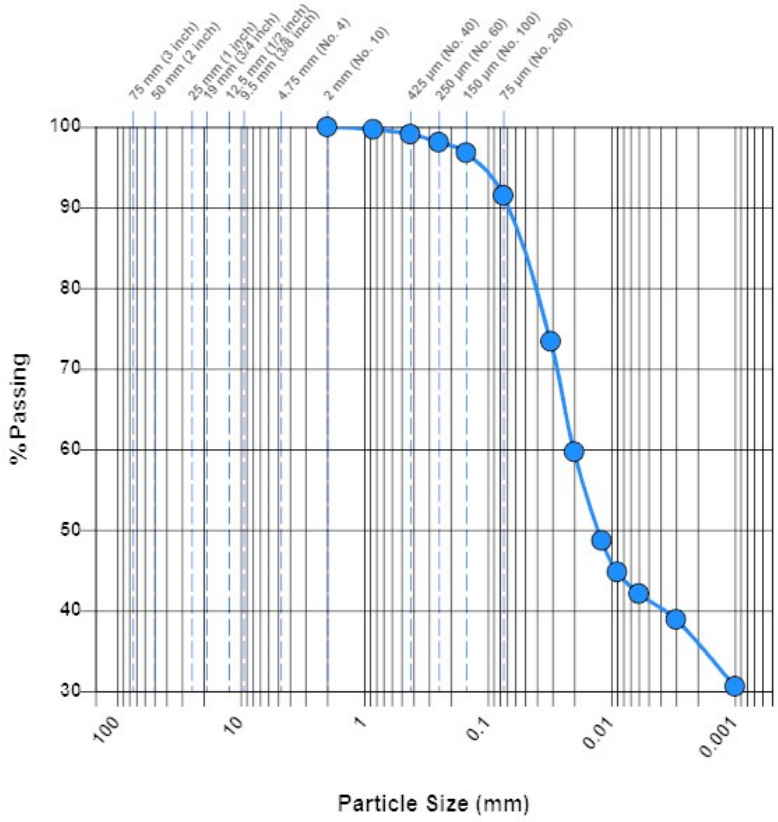
Sample Information

Sample Number:	358952	**Depth (ft):**	0.5-2
Boring Number:	GDRL-092	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.1	-
250 µm (No. 60)	98.1	-
150 µm (No. 100)	96.8	-
75 µm (No. 200)	91.5	-
30.7 (µm)	73.4	-
20.2 (µm)	59.7	-
12.0 (µm)	48.7	-
8.6 (µm)	44.8	-
6.1 (µm)	42.1	-
3.0 (µm)	38.9	-
0.8 (µm)	30.6	-



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

Gravel (%):	0	**Sand (%):**	8.5	**Silt (%):**	50.5	**Clay (%):**	41.0

D_{60} (µm): 20.2

General

Remarks: LL=54, PL=23, PI=31

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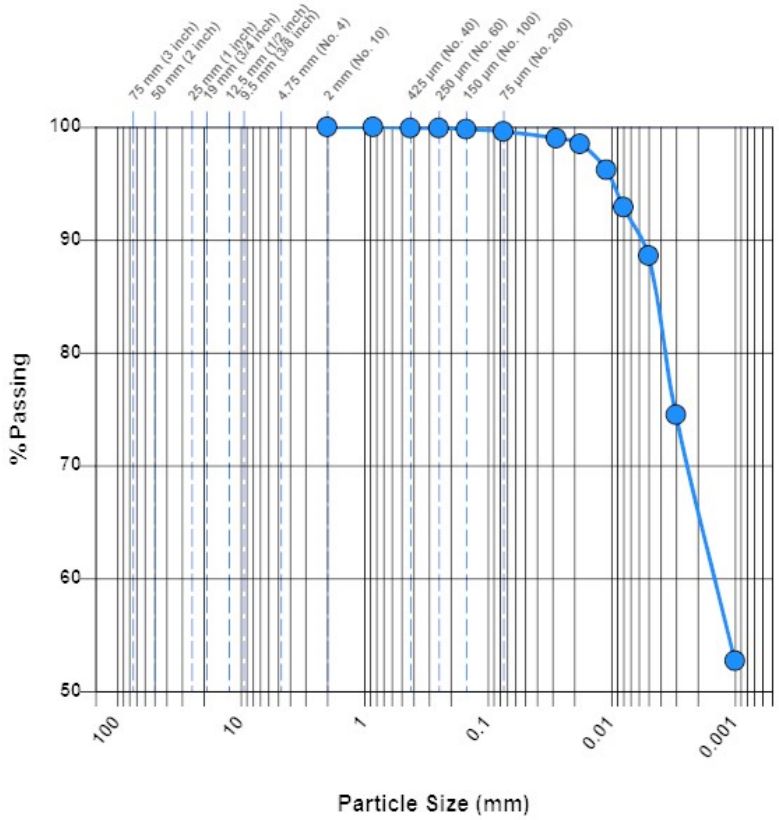
Sample Information

Sample Number:	358953	**Depth (ft):**	9.5-11
Boring Number:	GDRL-092	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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	-
28.4 (µm)	99.0	-
18.0 (µm)	98.5	-
10.5 (µm)	96.2	-
7.5 (µm)	92.9	-
5.4 (µm)	88.6	-
2.7 (µm)	74.5	-
0.7 (µm)	52.7	-



Soil Classification: CH Fat Clay, brown, A-7-5(68)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	11.0	**Clay (%):**	88.6

D_{60} (µm): 1.7

General

Remarks: LL=90, PL=34, PI=56

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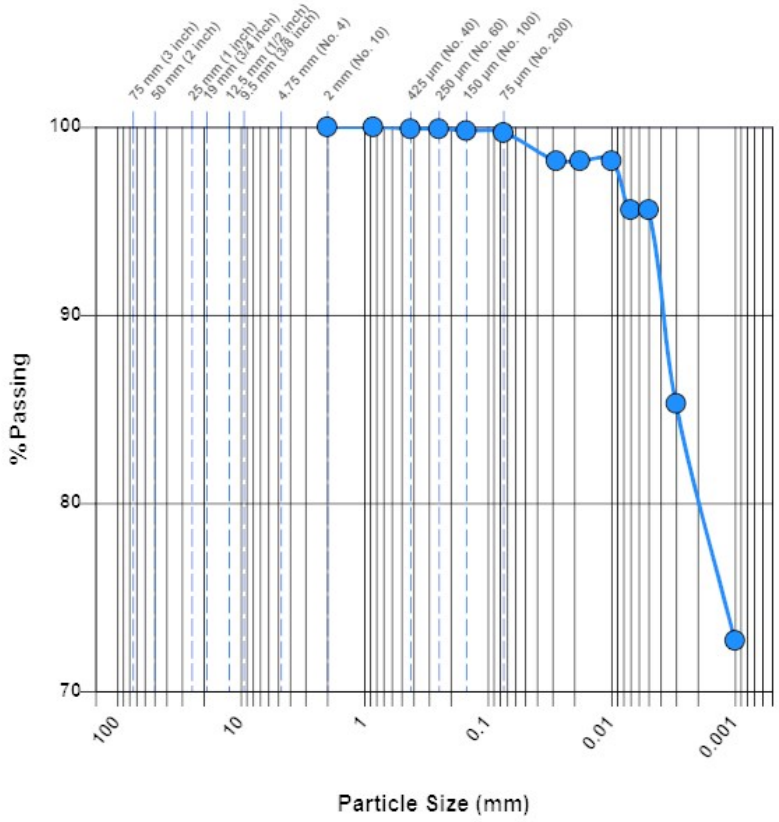
Sample Information

Sample Number:	358954	**Depth (ft):**	4.5-6
Boring Number:	CAA-093	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
28.3 (µm)	98.2	-
17.9 (µm)	98.2	-
10.3 (µm)	98.2	-
7.4 (µm)	95.6	-
5.2 (µm)	95.6	-
2.6 (µm)	85.3	-
1.3 (µm)	72.7	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(91)

Gravel (%): 0 **Sand (%):** 0.3 **Silt (%):** 4.1 **Clay (%):** 95.6

General

Remarks: LL=108, PL=32, PI=76

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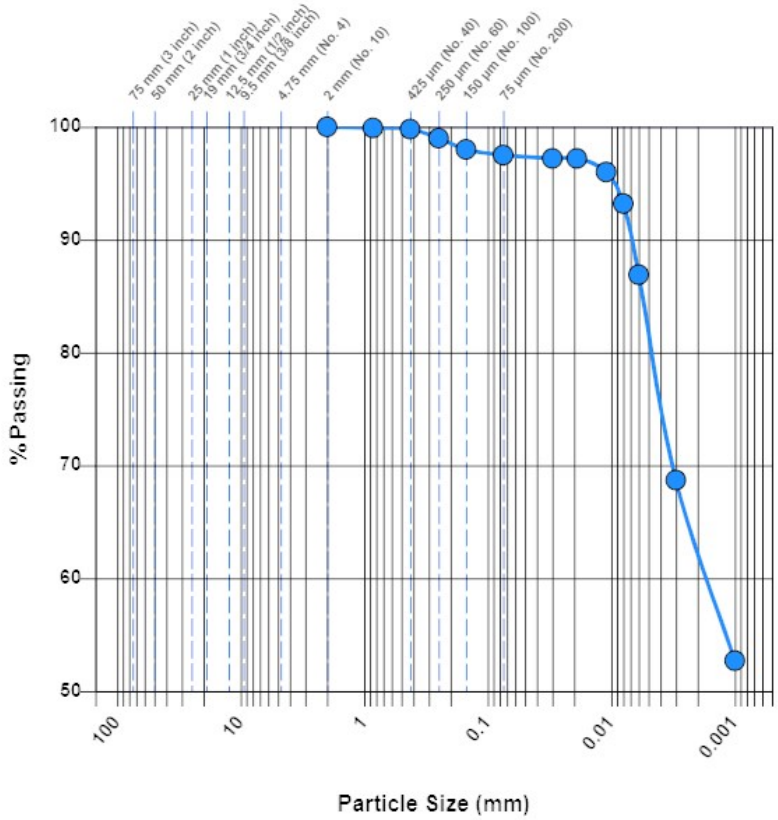
Sample Information

Sample Number:	358955	**Depth (ft):**	14.5-16
Boring Number:	CAA-093	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
150 µm (No. 100)	98.0	-
75 µm (No. 200)	97.5	-
29.9 (µm)	97.2	-
18.9 (µm)	97.2	-
11.0 (µm)	96.0	-
7.8 (µm)	93.2	-
5.6 (µm)	86.9	-
2.8 (µm)	68.7	-
1.4 (µm)	52.7	-



Soil Classification: CH Fat Clay, gray and brown, A-7-5(56)

Gravel (%):	0	**Sand (%):**	2.5	**Silt (%):**	16.7	**Clay (%):**	80.8
D_{60} (µm):	1.9						

General

Remarks: LL=79, PL=31, PI=48

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Hydrometer And Sieve Analysis

ASTM D422

2/25/2021

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Phone: 701-255-7180

Client:

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

Project:

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

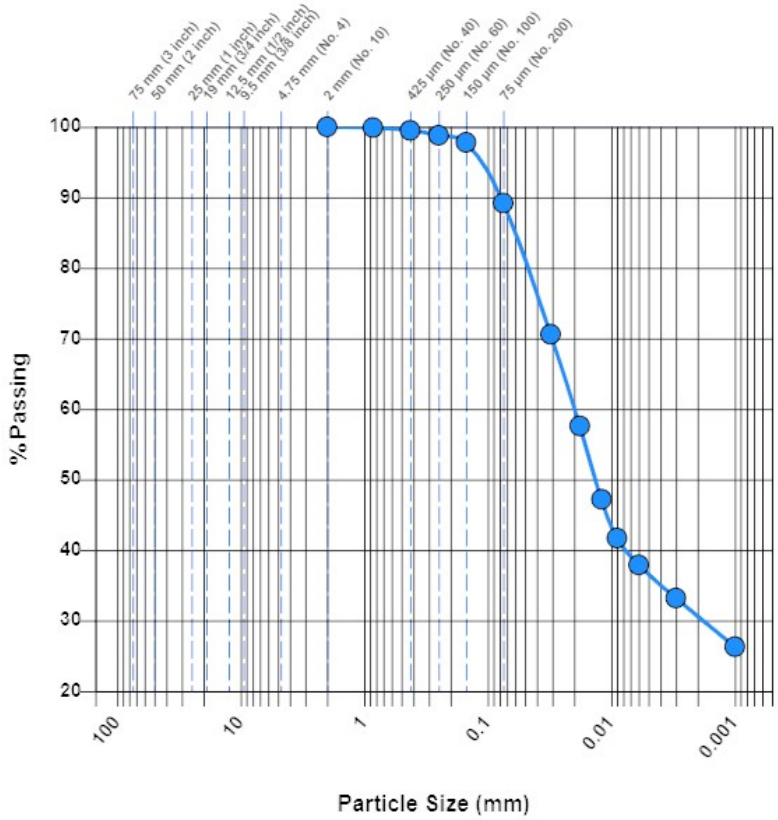
Sample Information

Sample Number:	358956	**Depth (ft):**	0.5-2
Boring Number:	GDRL-094	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.8	-
150 µm (No. 100)	97.8	-
75 µm (No. 200)	89.2	-
30.7 (µm)	70.6	-
18.4 (µm)	57.6	-
12.0 (µm)	47.2	-
8.6 (µm)	41.7	-
6.2 (µm)	37.9	-
3.0 (µm)	33.2	-
0.8 (µm)	26.3	-



Soil Classification: CL Lean clay, black to gray, A-7-6(22)

Gravel (%):	0	**Sand (%):**	10.8	**Silt (%):**	52.9	**Clay (%):**	36.3
D_{60} (µm):	20.4	**D_{30} (µm):**	2.1				

General

Remarks: LL=44, PL=20, PI=24

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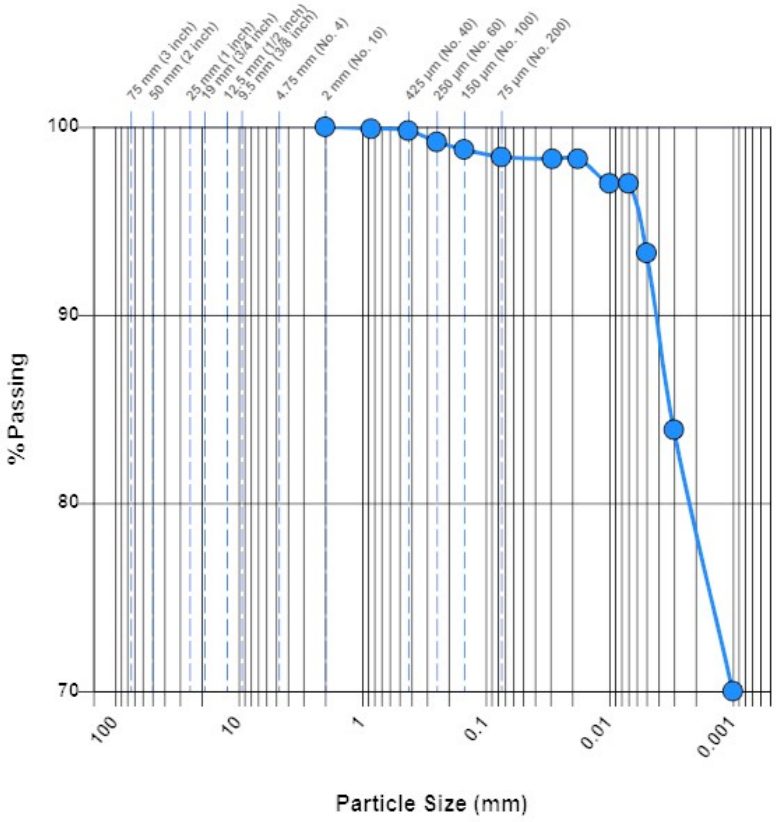
Sample Information

Sample Number:	358957	**Depth (ft):**	9.5-11
Boring Number:	GDRL-094	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	98.4	-
28.5 (µm)	98.3	-
18.0 (µm)	98.3	-
10.4 (µm)	97.0	-
7.4 (µm)	97.0	-
5.3 (µm)	93.3	-
2.6 (µm)	83.9	-
1.3 (µm)	70.0	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(64)

Gravel (%): 0 **Sand (%):** 1.6 **Silt (%):** 5.1 **Clay (%):** 93.3

General

Remarks: LL=84, PL=29, PI=55

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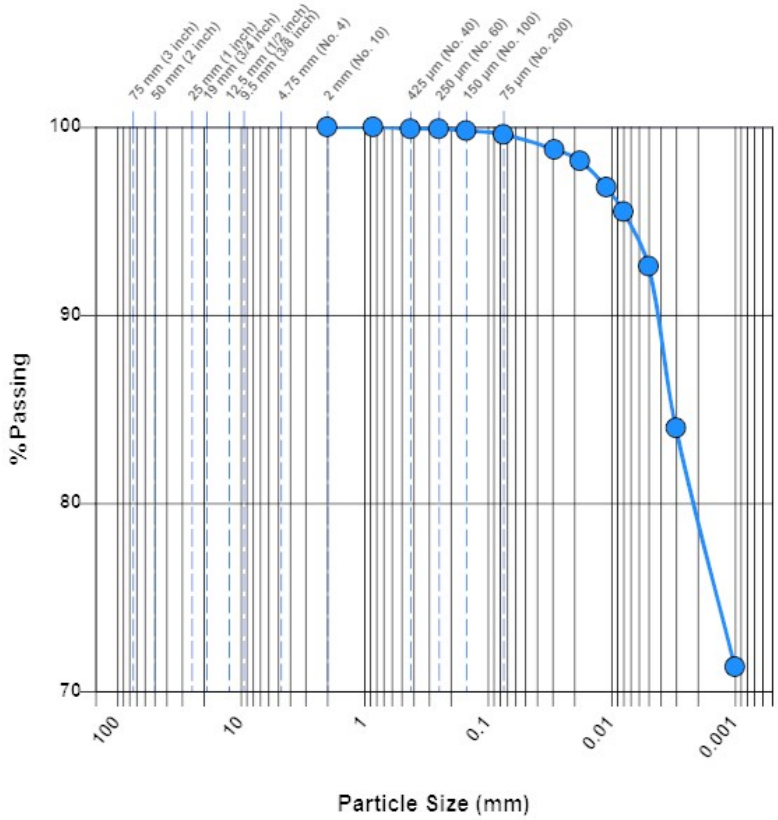
Sample Information

Sample Number:	358958	**Depth (ft):**	4.5-6
Boring Number:	CAA-095	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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	-
29.0 (µm)	98.8	-
18.4 (µm)	98.2	-
10.6 (µm)	96.8	-
7.5 (µm)	95.5	-
5.4 (µm)	92.6	-
2.7 (µm)	84.0	-
1.2 (µm)	71.3	-



Soil Classification: CH Fat clay, gray to brown, A-7-5(77)

Gravel (%): 0 **Sand (%):** 0.4 **Silt (%):** 7.0 **Clay (%):** 92.6

General

Remarks: LL=97, PL=33, PI=64

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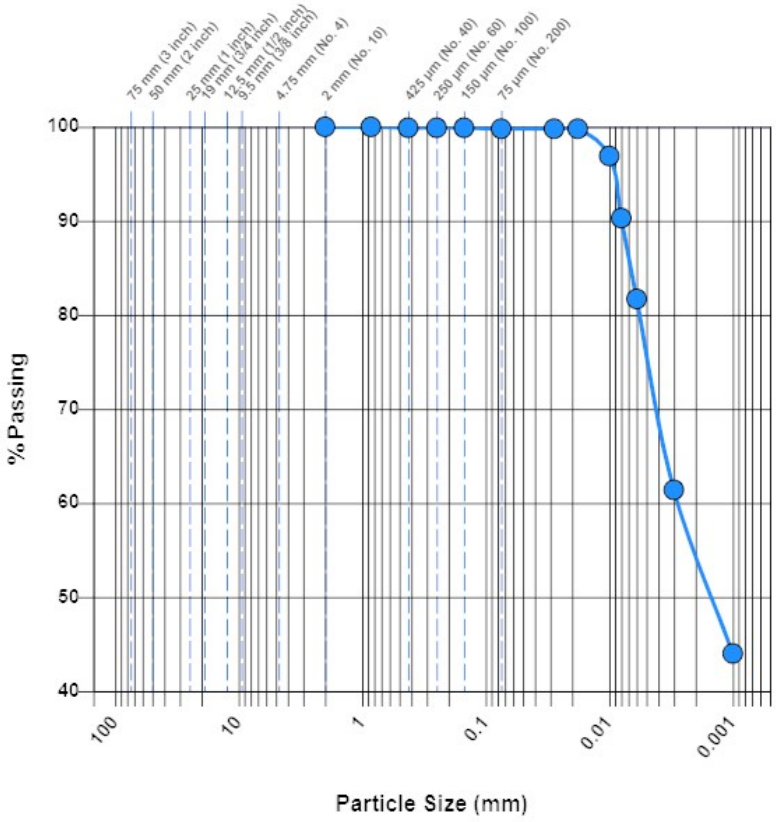
Sample Information

Sample Number:	358959	**Depth (ft):**	14.5-16
Boring Number:	CAA-095	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
75 µm (No. 200)	99.8	-
28.3 (µm)	99.8	-
17.9 (µm)	99.8	-
10.4 (µm)	96.9	-
7.5 (µm)	90.3	-
5.5 (µm)	81.7	-
2.8 (µm)	61.4	-
1.3 (µm)	44.0	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(55)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	24.9	**Clay (%):**	74.9

D_{60} (µm): 2.8

General

Remarks: LL=75, PL=29, PI=46

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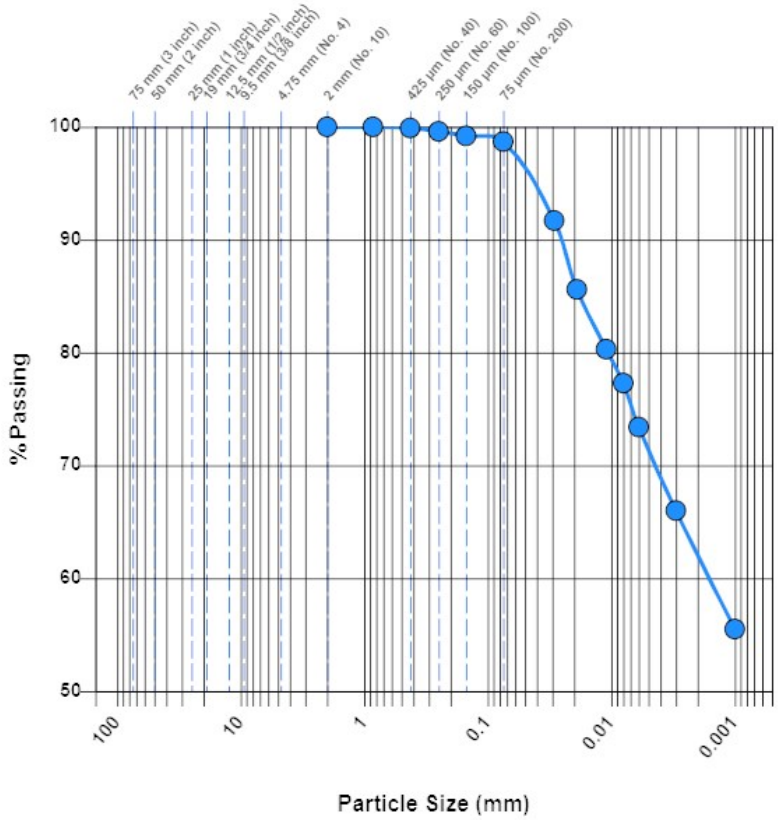
Sample Information

Sample Number:	358960	**Depth (ft):**	0.5-2
Boring Number:	GDRL-096	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.7	-
28.9 (µm)	91.7	-
18.7 (µm)	85.6	-
10.6 (µm)	80.3	-
7.8 (µm)	77.3	-
5.6 (µm)	73.4	-
2.8 (µm)	66.0	-
1.3 (µm)	55.5	-



Soil Classification: CH Fat clay, dark gray, A-7-6(55)

Gravel (%):	0	**Sand (%):**	1.3	**Silt (%):**	27.8	**Clay (%):**	70.9

D_{60} (µm): 1.9

General

Remarks: LL=73, PL=25, PI=48

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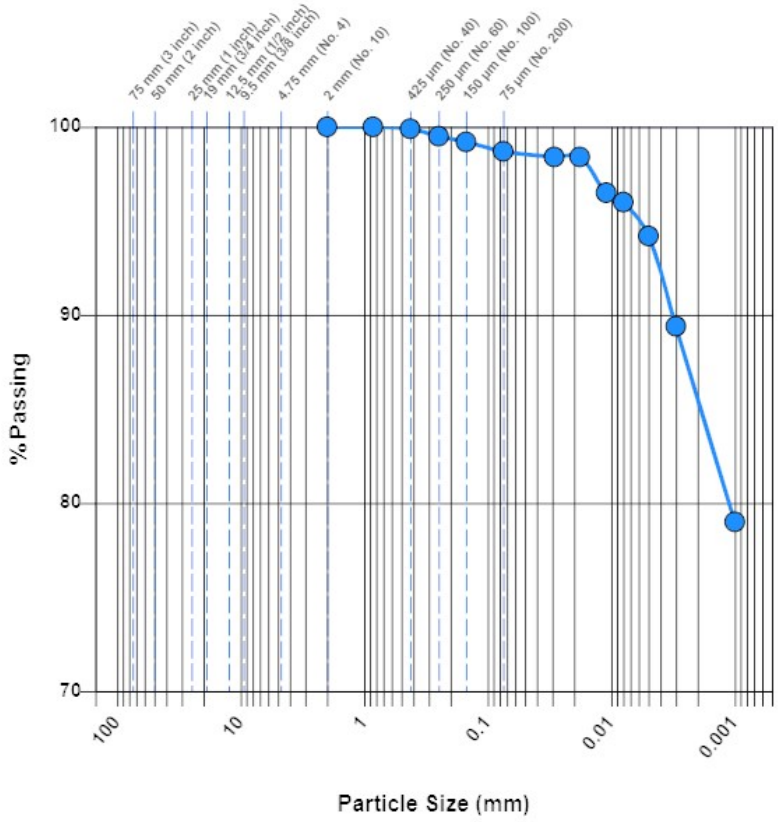
Sample Information

Sample Number:	358961	**Depth (ft):**	9.5-11
Boring Number:	GDRL-096	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.7	-
28.8 (µm)	98.4	-
18.2 (µm)	98.4	-
10.6 (µm)	96.5	-
7.5 (µm)	96.0	-
5.3 (µm)	94.2	-
2.6 (µm)	89.4	-
1.2 (µm)	79.0	-



Soil Classification: CH Fat clay, brown, A-7-5(72)

Gravel (%):	0	**Sand (%):**	1.3	**Silt (%):**	4.5	**Clay (%):**	94.2

General

Remarks: LL=92, PL=31, PI=61

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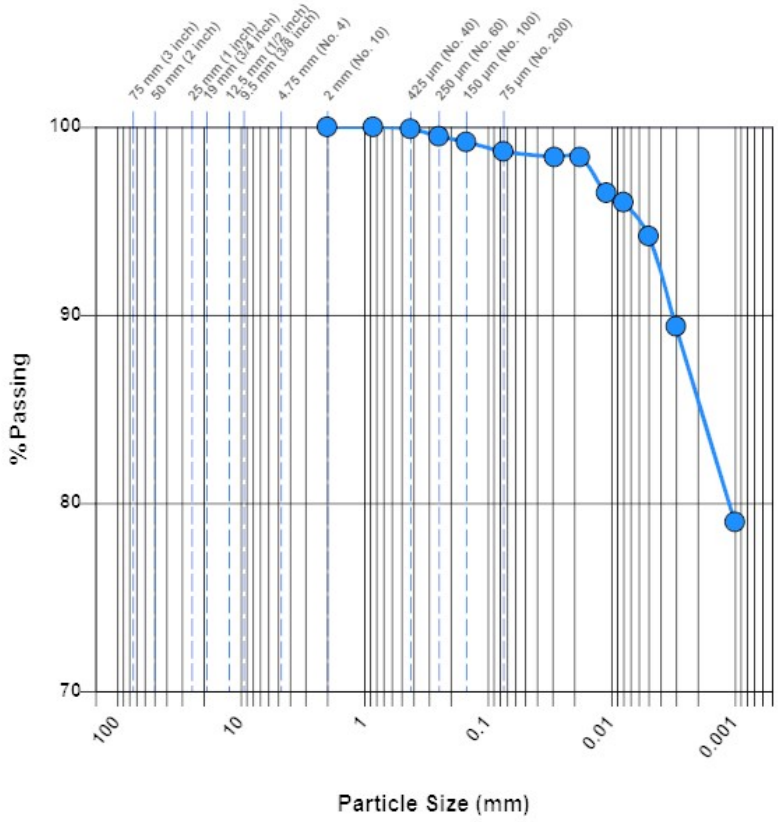
Sample Information

Sample Number:	358962	**Depth (ft):**	4.5-6
Boring Number:	CAA-097	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	98.7	-
28.8 (µm)	98.4	-
18.2 (µm)	98.4	-
10.6 (µm)	96.5	-
7.5 (µm)	96.0	-
5.3 (µm)	94.2	-
2.6 (µm)	89.4	-
1.2 (µm)	79.0	-



Soil Classification: CH Fat clay, gray, A-7-6(55)

Gravel (%): 0 **Sand (%):** 1.3 **Silt (%):** 4.5 **Clay (%):** 94.2

General

Remarks: LL=85, PL=29, PI=56

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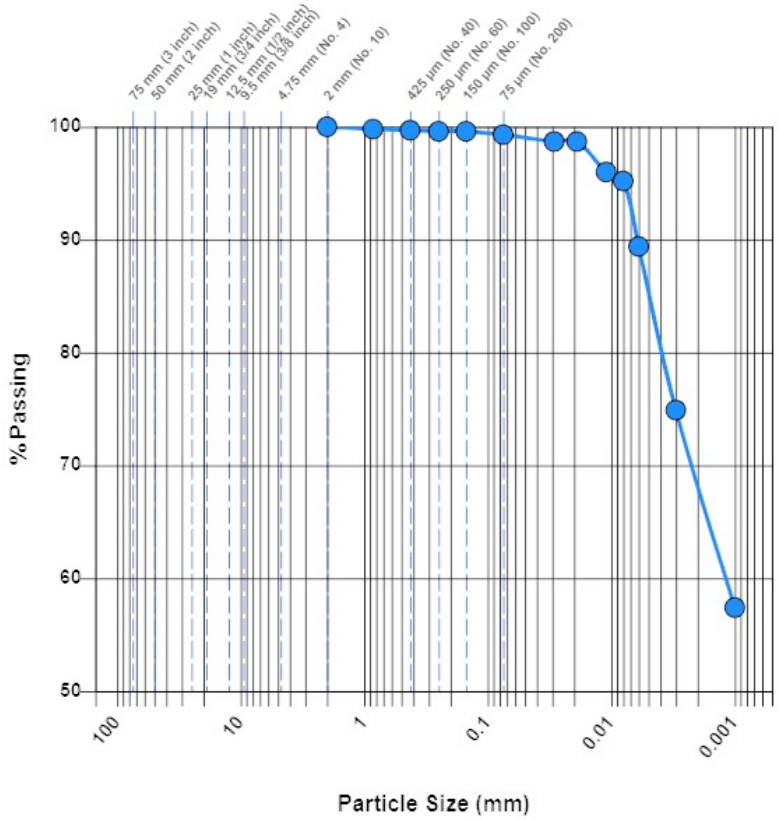
Sample Information

Sample Number:	358963	**Depth (ft):**	14.5-16
Boring Number:	CAA-097	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	99.3	-
29.4 (µm)	98.7	-
18.6 (µm)	98.7	-
10.8 (µm)	96.0	-
7.7 (µm)	95.2	-
5.5 (µm)	89.4	-
2.8 (µm)	74.9	-
1.3 (µm)	57.4	-



Soil Classification: CH Fat clay, gray, A-7-6(57)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	14.7	**Clay (%):**	84.6

D_{60} (µm): 1.3

General

Remarks: LL=78, PL=29, PI=49

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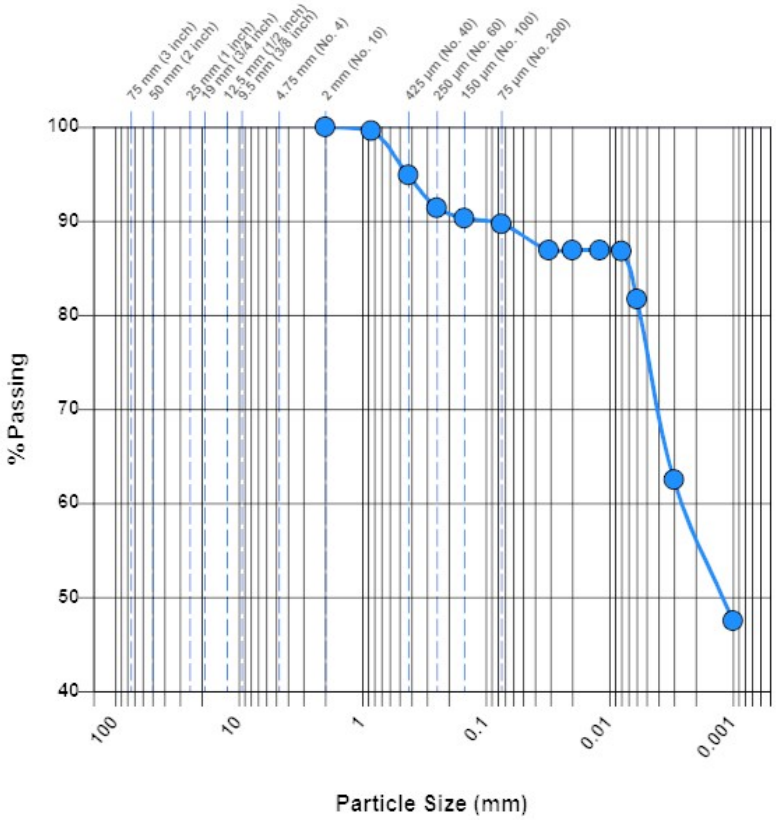
Sample Information

Sample Number:	358964	**Depth (ft):**	19.5-21
Boring Number:	CAA-097	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	94.9	-
250 µm (No. 60)	91.4	-
150 µm (No. 100)	90.3	-
75 µm (No. 200)	89.7	-
31.4 (µm)	86.9	-
19.9 (µm)	86.9	-
11.5 (µm)	86.9	-
8.1 (µm)	86.8	-
5.8 (µm)	81.7	-
2.9 (µm)	62.5	-
1.4 (µm)	47.5	-



Soil Classification: CH Fat clay, gray, A-7-5(40)

Gravel (%):	0	**Sand (%):**	10.3	**Silt (%):**	14.4	**Clay (%):**	75.3

D_{60} (µm): 2.7

General

Remarks: LL=69, PL=31, PI=38

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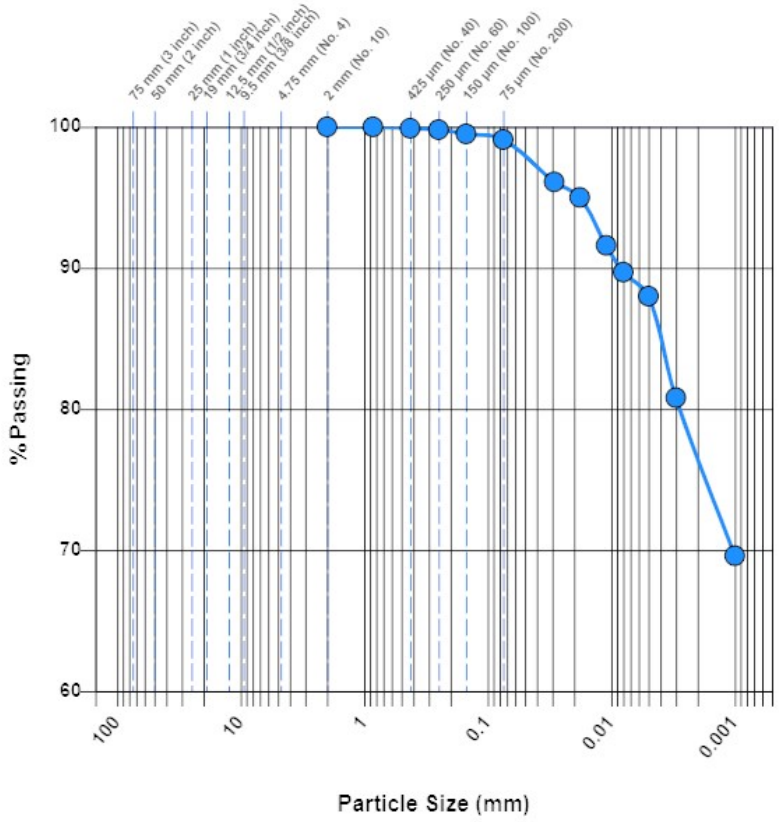
Sample Information

Sample Number:	358965	**Depth (ft):**	4.5-6
Boring Number:	GDRL-098	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
75 µm (No. 200)	99.1	-
28.8 (µm)	96.1	-
18.3 (µm)	95.0	-
10.7 (µm)	91.6	-
7.6 (µm)	89.7	-
5.4 (µm)	88.0	-
2.7 (µm)	80.8	-
1.2 (µm)	69.6	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(64)

Gravel (%):	0	**Sand (%):**	0.9	**Silt (%):**	11.1	**Clay (%):**	88.0

General

Remarks: LL=87, PL=34, PI=53

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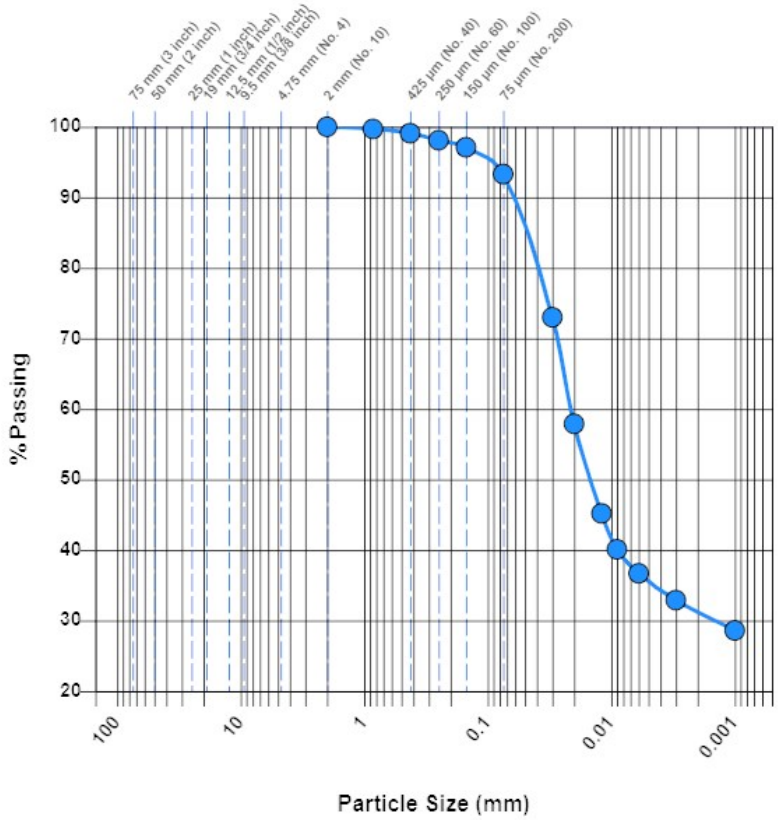
Sample Information

Sample Number:	358966	**Depth (ft):**	0.5-2
Boring Number:	CAA-099	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.1	-
250 µm (No. 60)	98.1	-
150 µm (No. 100)	97.1	-
75 µm (No. 200)	93.3	-
30.1 (µm)	73.0	-
20.0 (µm)	57.9	-
12.0 (µm)	45.2	-
8.6 (µm)	40.1	-
6.1 (µm)	36.7	-
3.0 (µm)	32.9	-
1.4 (µm)	28.6	-



Soil Classification: CL Lean clay, black to brown, A-7-6(27)

Gravel (%):	0	**Sand (%):**	6.7	**Silt (%):**	57.9	**Clay (%):**	35.4
D_{60} (µm):	21.4	**D_{30} (µm):**	1.7				

General

Remarks: LL=49, PL=23, PI=26

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Hydrometer And Sieve Analysis

ASTM D422

2/25/2021

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Client:

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3203 32nd Avenue South
Suite 201
Fargo, ND 58106

Project:

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8-029(200)069; PCN 22888
Interstate 29
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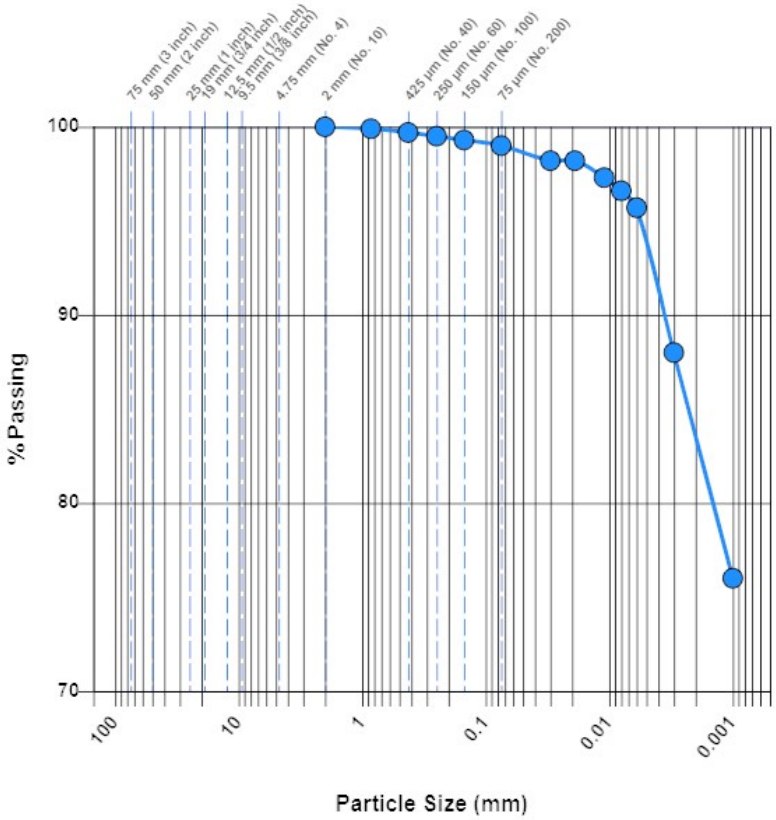
Sample Information

Sample Number:	358967	**Depth (ft):**	9.5-11
Boring Number:	CAA-099	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	99.0	-
30.1 (µm)	98.2	-
19.0 (µm)	98.2	-
11.0 (µm)	97.3	-
7.8 (µm)	96.6	-
5.5 (µm)	95.7	-
2.7 (µm)	88.0	-
1.3 (µm)	76.0	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(83)

Gravel (%): 0 **Sand (%):** 1.0 **Silt (%):** 5.9 **Clay (%):** 93.1

General

Remarks: LL=103, PL=33, PI=70

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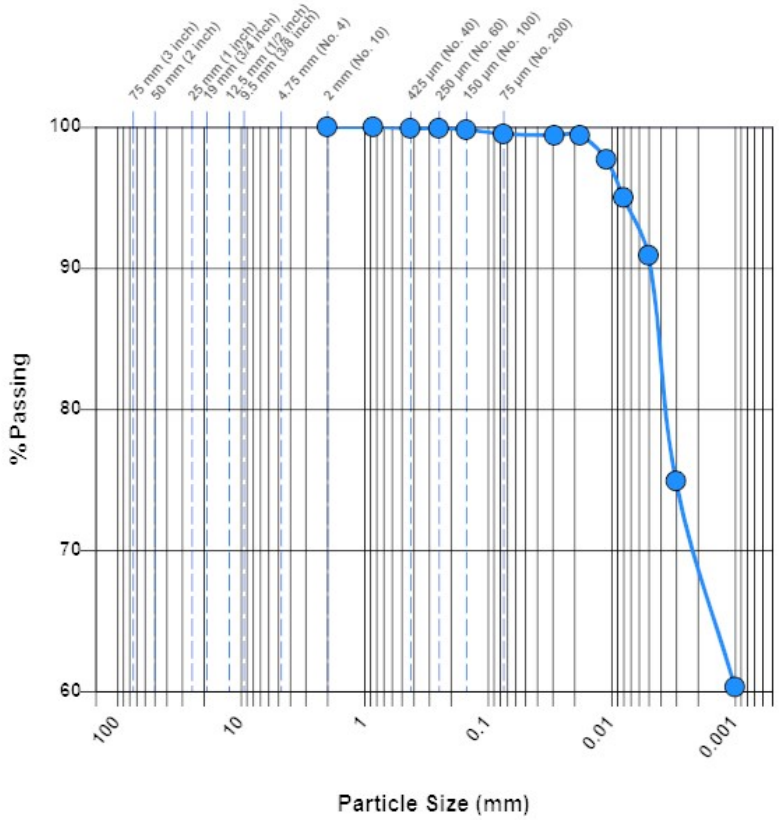
Sample Information

Sample Number:	358968	**Depth (ft):**	19.5-21
Boring Number:	CAA-099	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
28.8 (µm)	99.4	-
18.2 (µm)	99.4	-
10.6 (µm)	97.7	-
7.5 (µm)	95.0	-
5.4 (µm)	90.9	-
2.7 (µm)	74.9	-
1.3 (µm)	60.3	-



Soil Classification: CH Fat clay, gray, A-7-5(61)

Gravel (%):	0	**Sand (%):**	0.5	**Silt (%):**	8.6	**Clay (%):**	90.9

General

Remarks: LL=81, PL=30, PI=51

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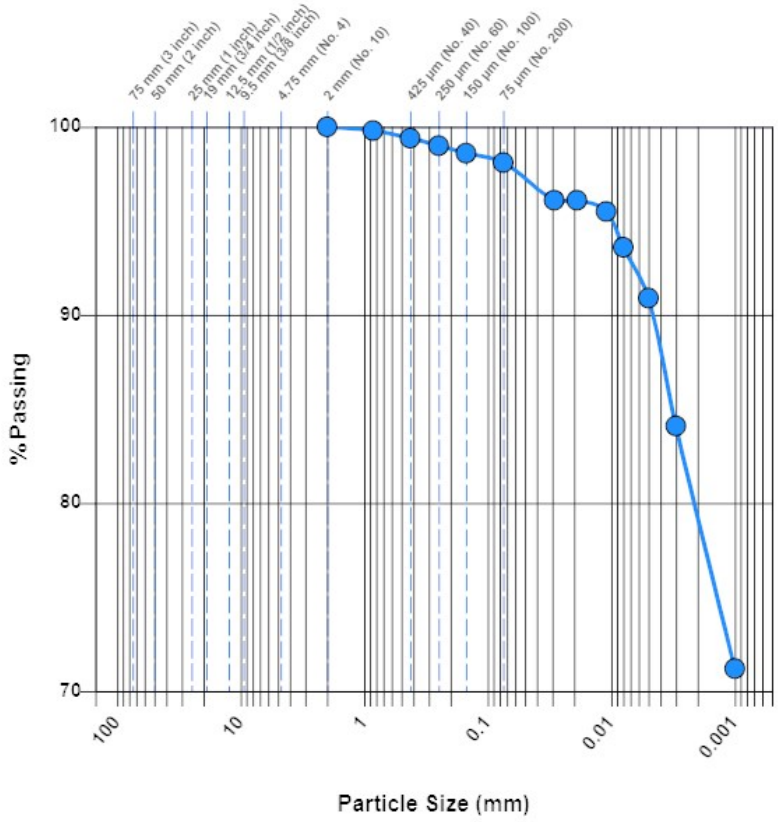
Sample Information

Sample Number:	358969	**Depth (ft):**	9.5-11
Boring Number:	GDRL-100	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	98.1	-
29.3 (µm)	96.1	-
18.6 (µm)	96.1	-
10.7 (µm)	95.5	-
7.6 (µm)	93.6	-
5.4 (µm)	90.9	-
2.7 (µm)	84.1	-
1.2 (µm)	71.2	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(69)

Gravel (%): 0 **Sand (%):** 1.9 **Silt (%):** 7.2 **Clay (%):** 90.9

General

Remarks: LL=91, PL=33, PI=58

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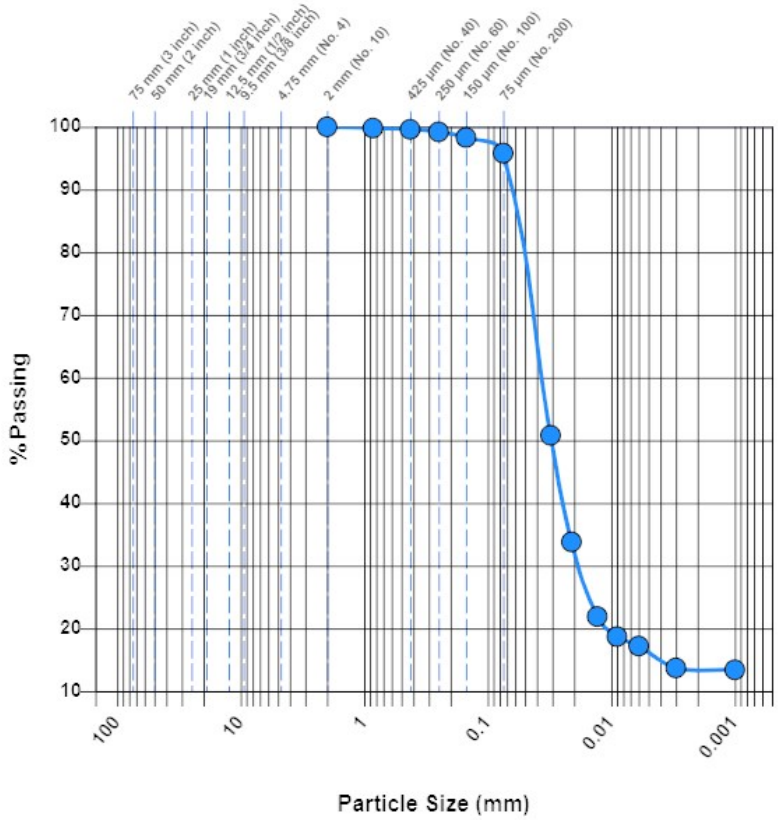
Sample Information

Sample Number:	358970	**Depth (ft):**	4.5-6
Boring Number:	GDRL-101	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	95.8	-
30.9 (µm)	50.8	-
20.9 (µm)	33.8	-
12.6 (µm)	21.9	-
9.0 (µm)	18.7	-
6.4 (µm)	17.2	-
3.1 (µm)	13.7	-
1.4 (µm)	13.4	-



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

Gravel (%):	0	**Sand (%):**	4.2	**Silt (%):**	79.8	**Clay (%):**	16.0
D_{60} (µm):	40.0	**D_{30} (µm):**	18.4				

General

Remarks: LL=32, PL=24, PI=8

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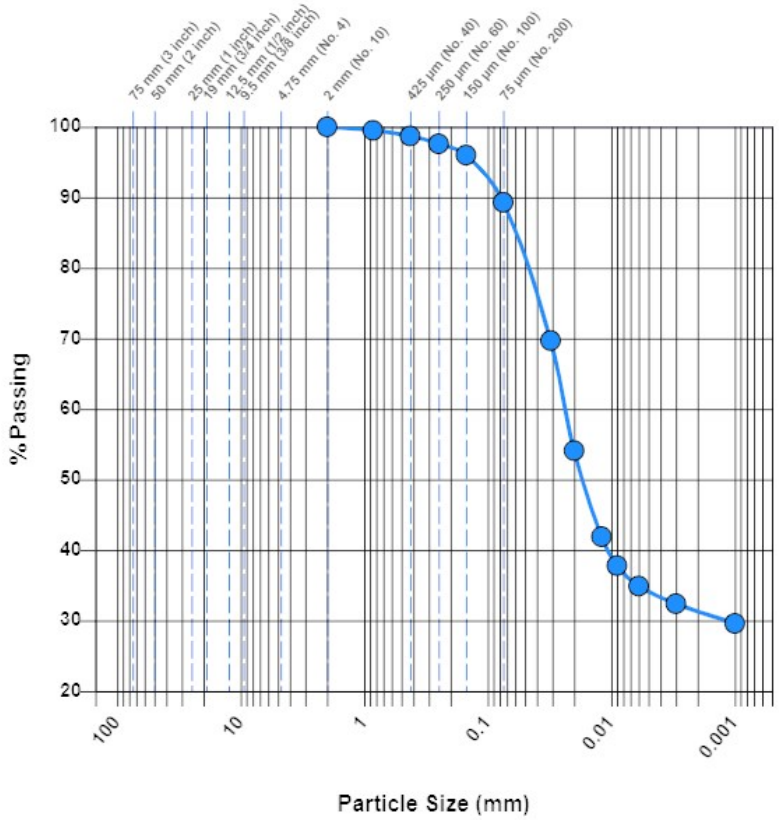
Sample Information

Sample Number:	358971	**Depth (ft):**	0.5-2
Boring Number:	CAA-102	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.7	-
250 µm (No. 60)	97.6	-
150 µm (No. 100)	96.0	-
75 µm (No. 200)	89.3	-
30.5 (µm)	69.7	-
20.3 (µm)	54.1	-
12.1 (µm)	41.9	-
8.7 (µm)	37.8	-
6.2 (µm)	34.9	-
3.0 (µm)	32.4	-
1.4 (µm)	29.6	-



Soil Classification: CL Lean clay, black, A-7-6(23)

Gravel (%):	0	**Sand (%):**	10.7	**Silt (%):**	55.2	**Clay (%):**	34.1
D_{60} (µm):	24.2	**D_{30} (µm):**	1.3				

General

Remarks: LL=45, PL=21, PI=24

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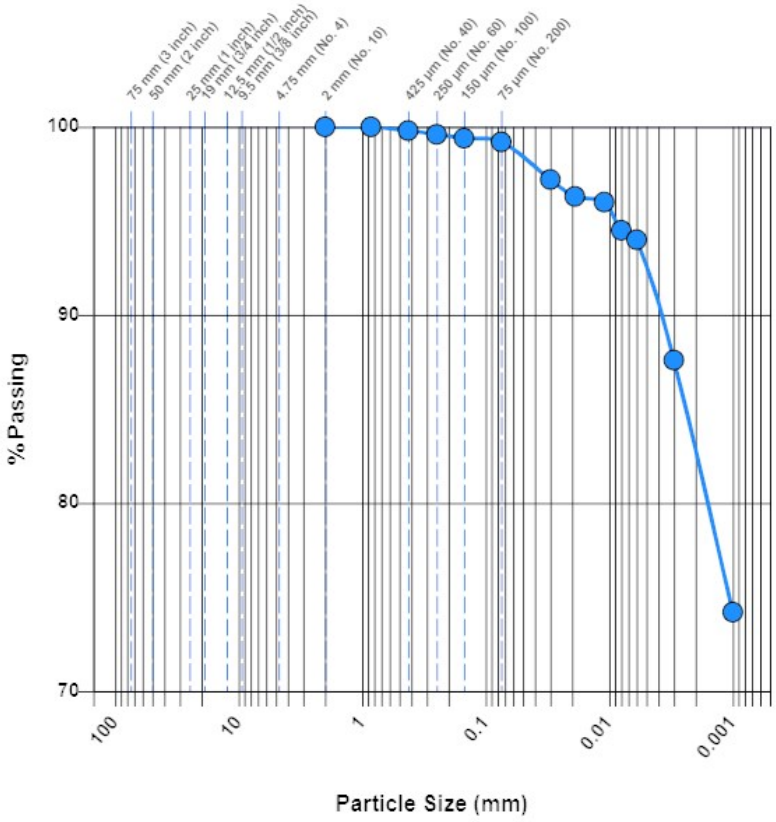
Sample Information

Sample Number:	358972	**Depth (ft):**	9.5-11
Boring Number:	CAA-102	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
29.8 (µm)	97.2	-
18.9 (µm)	96.3	-
10.9 (µm)	96.0	-
7.7 (µm)	94.5	-
5.5 (µm)	94.0	-
2.7 (µm)	87.6	-
1.2 (µm)	74.2	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(73)

Gravel (%): 0 **Sand (%):** 0.8 **Silt (%):** 7.3 **Clay (%):** 91.9

General

Remarks: LL=93, PL=32, PI=61

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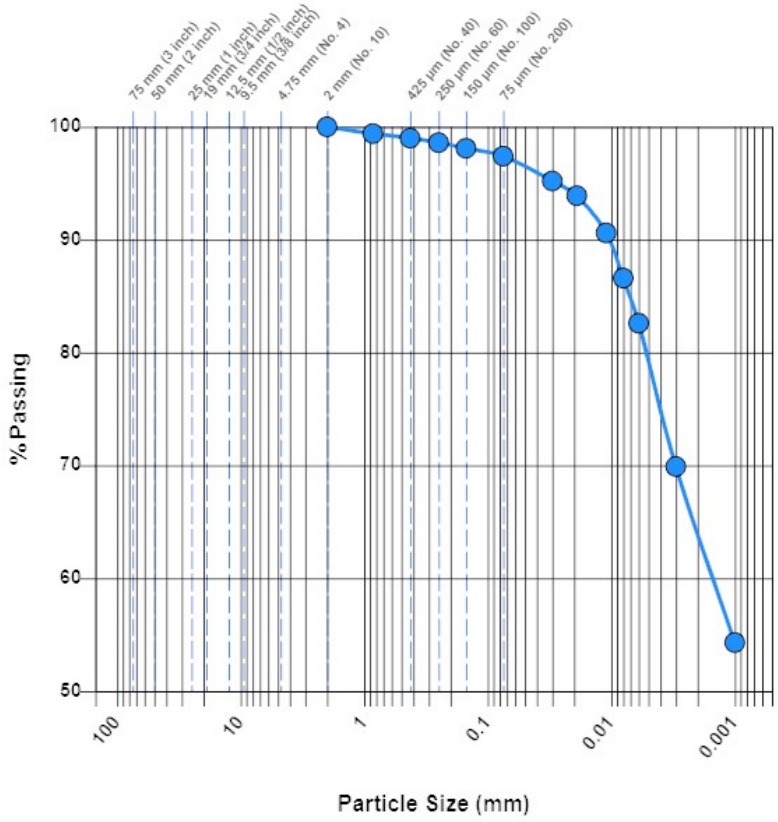
Sample Information

Sample Number:	358973	**Depth (ft):**	19.5-21
Boring Number:	CAA-102	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	99.0	-
250 µm (No. 60)	98.6	-
150 µm (No. 100)	98.1	-
75 µm (No. 200)	97.4	-
30.2 (µm)	95.2	-
19.2 (µm)	93.9	-
11.2 (µm)	90.6	-
8.0 (µm)	86.6	-
5.7 (µm)	82.6	-
2.8 (µm)	69.9	-
1.3 (µm)	54.3	-



Soil Classification: CH Fat clay, gray and brown, A-7-5(49)

Gravel (%):	0	**Sand (%):**	2.6	**Silt (%):**	19.0	**Clay (%):**	78.4

D_{60} (µm): 1.7

General

Remarks: LL=72, PL=30, PI=42

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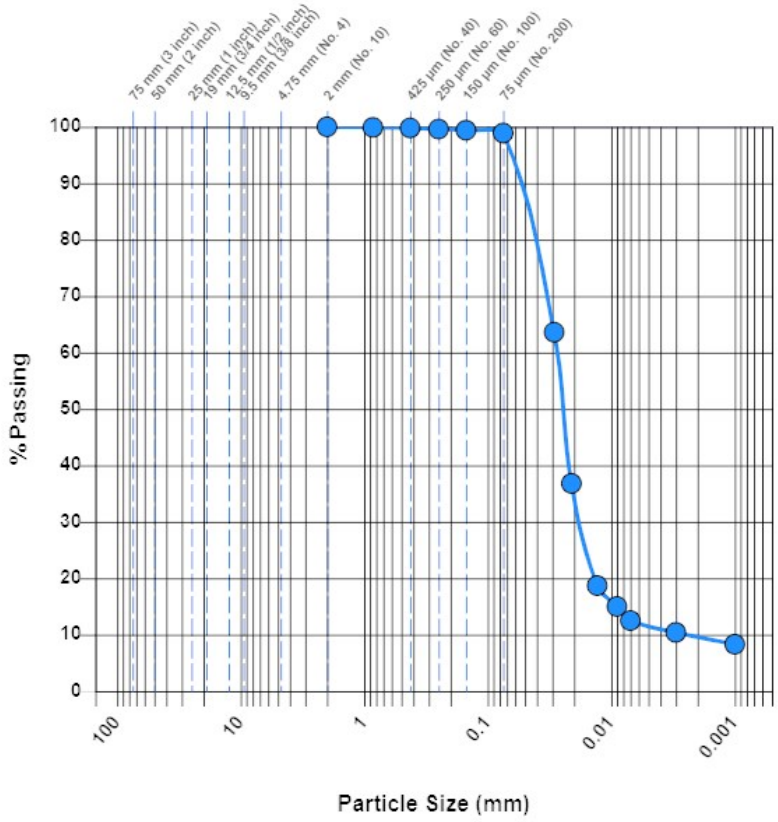
Sample Information

Sample Number:	358974	**Depth (ft):**	4.5-6
Boring Number:	GDRL-103	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	98.9	-
29.1 (µm)	63.6	-
20.7 (µm)	36.8	-
12.7 (µm)	18.7	-
9.1 (µm)	15.0	-
6.5 (µm)	12.5	-
3.2 (µm)	10.4	-
1.4 (µm)	8.3	-



Soil Classification: ML Lean clay, brown, A-4(10)

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	87.4	**Clay (%):**	11.5		
D_{60} (µm):	27.9	**D_{30} (µm):**	18.0	**D_{10} (µm):**	2.6	**C_u:**	10.73	**C_c:**	4.47

General

Remarks: LL=35, PL=27, PI=8

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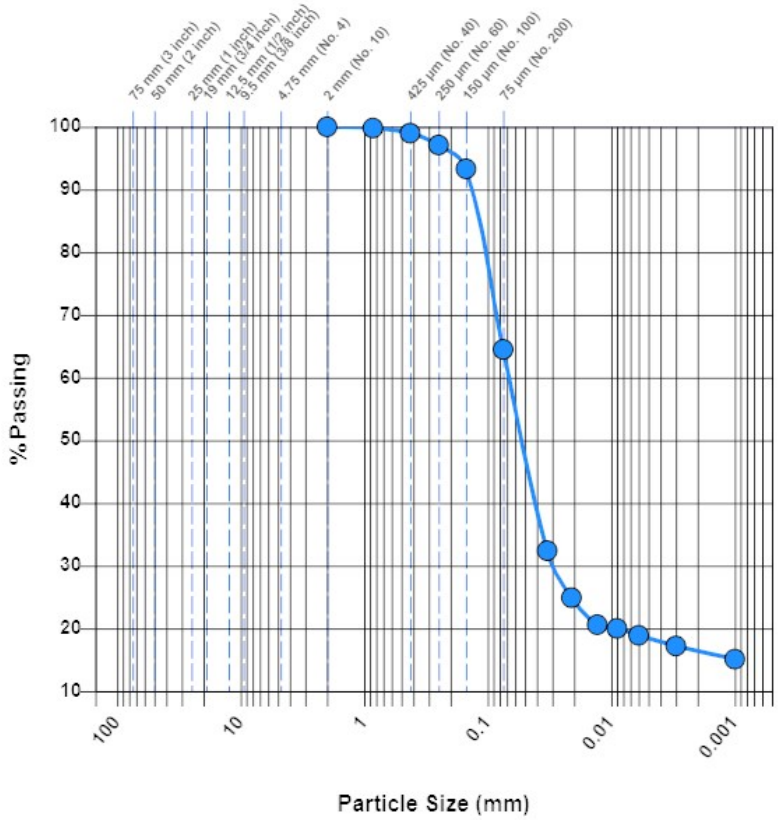
Sample Information

Sample Number:	358975	**Depth (ft):**	0.5-2
Boring Number:	GDRL-104	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
250 µm (No. 60)	97.1	-
150 µm (No. 100)	93.3	-
75 µm (No. 200)	64.5	-
32.5 (µm)	32.4	-
21.2 (µm)	24.9	-
12.5 (µm)	20.6	-
8.8 (µm)	20.0	-
6.3 (µm)	18.9	-
3.1 (µm)	17.2	-
1.4 (µm)	15.1	-



Soil Classification: CL-ML Sandy silty clay, black, A-4(2)

Gravel (%):	0	**Sand (%):**	35.5	**Silt (%):**	46.2	**Clay (%):**	18.3
D_{60} (µm):	69.1	**D_{30} (µm):**	29.2				

General

Remarks: LL=27, PL=20, PI=7

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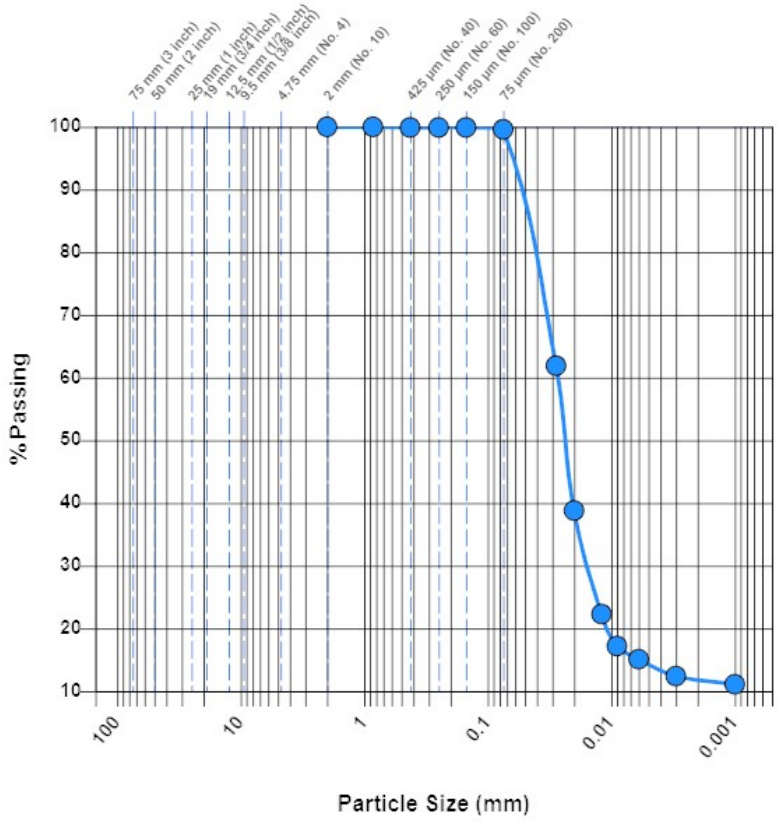
Sample Information

Sample Number:	358976	**Depth (ft):**	9.5-11
Boring Number:	GDRL-104	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
75 µm (No. 200)	99.6	-
28.0 (µm)	61.9	-
20.0 (µm)	38.8	-
12.4 (µm)	22.3	-
9.0 (µm)	17.2	-
6.4 (µm)	15.1	-
3.1 (µm)	12.4	-
1.4 (µm)	11.1	-



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

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	85.4	**Clay (%):**	14.2
D_{60} (µm):	27.3	**D_{30} (µm):**	15.7				

General

Remarks: LL=31, PL=29, PI=2

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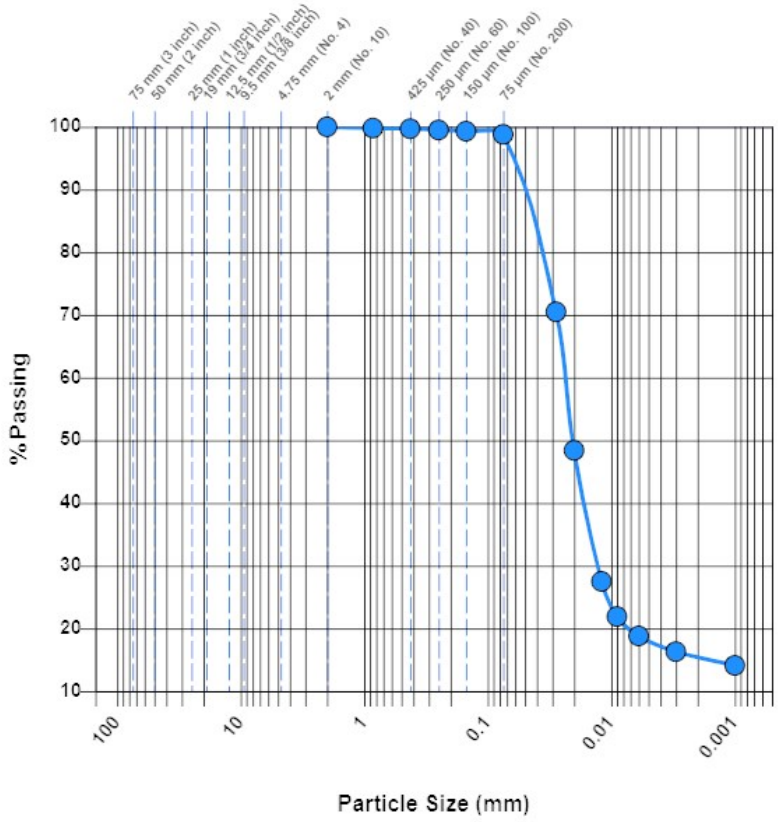
Sample Information

Sample Number:	358978	**Depth (ft):**	4.5-6
Boring Number:	GDRL-105	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	98.8	-
27.5 (µm)	70.5	-
19.5 (µm)	48.4	-
12.3 (µm)	27.5	-
8.8 (µm)	21.9	-
6.3 (µm)	18.8	-
3.1 (µm)	16.3	-
1.4 (µm)	14.1	-



Soil Classification: ML Silt, gray and brown, A-4(10)

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	80.8	**Clay (%):**	18.0
D_{60} (µm):	24.2	**D_{30} (µm):**	13.0				

General

Remarks: LL=38, PL=30, PI=8

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ASTM D422

2/25/2021

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Phone: 701-255-7180

Client:

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3203 32nd Avenue South
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Fargo, ND 58106

Project:

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8-029(200)069; PCN 22888
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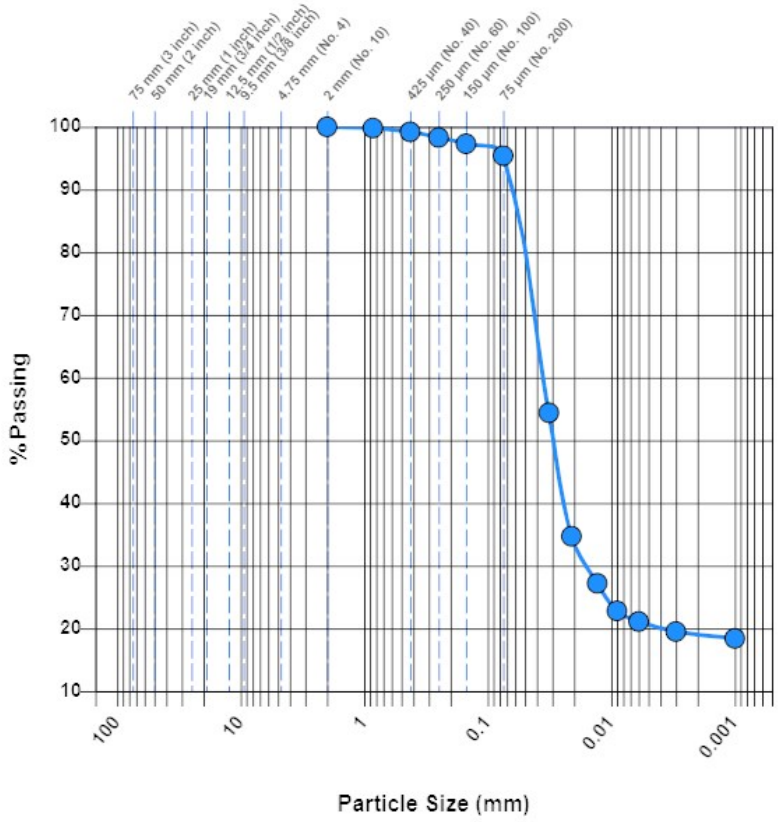
Sample Information

Sample Number:	358979	**Depth (ft):**	0.5-2
Boring Number:	CAA-106	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	98.3	-
150 µm (No. 100)	97.3	-
75 µm (No. 200)	95.4	-
31.6 (µm)	54.4	-
21.3 (µm)	34.7	-
12.5 (µm)	27.2	-
9.0 (µm)	22.8	-
6.4 (µm)	21.1	-
3.1 (µm)	19.5	-
1.4 (µm)	18.4	-



Soil Classification: CL Lean clay, brown, A-4(10)

Gravel (%):	0	**Sand (%):**	4.6	**Silt (%):**	74.8	**Clay (%):**	20.6
D_{60} (µm):	37.9	**D_{30} (µm):**	16.0				

General

Remarks: LL=33, PL=23, PI=10

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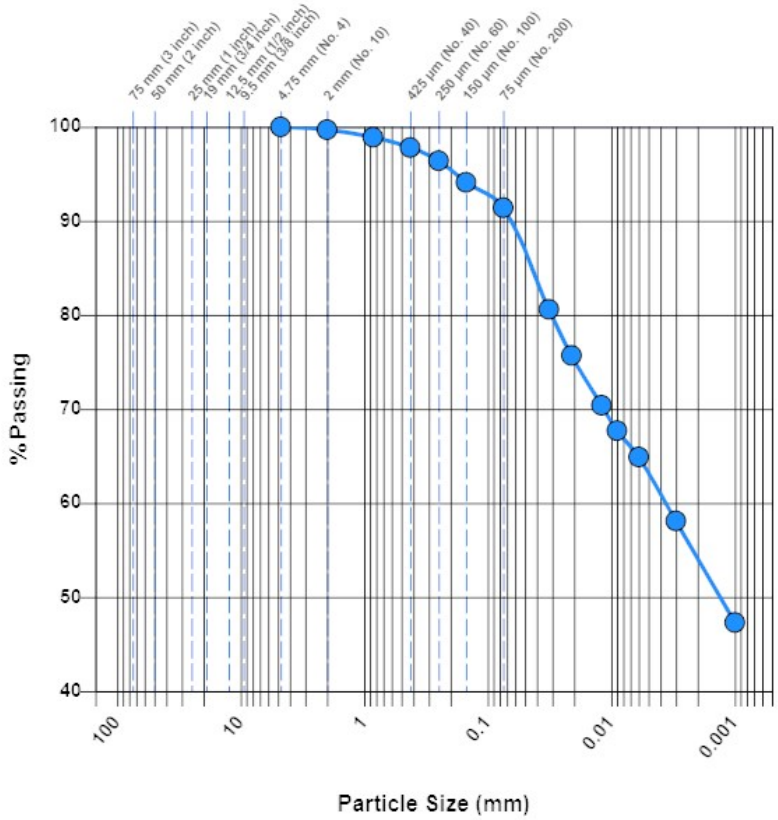
Sample Information

Sample Number:	358980	**Depth (ft):**	9.5-11
Boring Number:	CAA-106	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	98.9	-
425 µm (No. 40)	97.8	-
250 µm (No. 60)	96.4	-
150 µm (No. 100)	94.1	-
75 µm (No. 200)	91.4	-
32.1 (µm)	80.6	-
20.5 (µm)	75.7	-
12.0 (µm)	70.4	-
8.5 (µm)	67.7	-
6.0 (µm)	64.9	-
3.0 (µm)	58.1	-
1.4 (µm)	47.3	-



Soil Classification: CH Fat clay, brown to gray, A-7-6(45)

Gravel (%):	0.0	**Sand (%):**	8.6	**Silt (%):**	28.8	**Clay (%):**	62.6
D_{60} (µm):	3.8						

General

Remarks: LL=65, PL=20, PI=45

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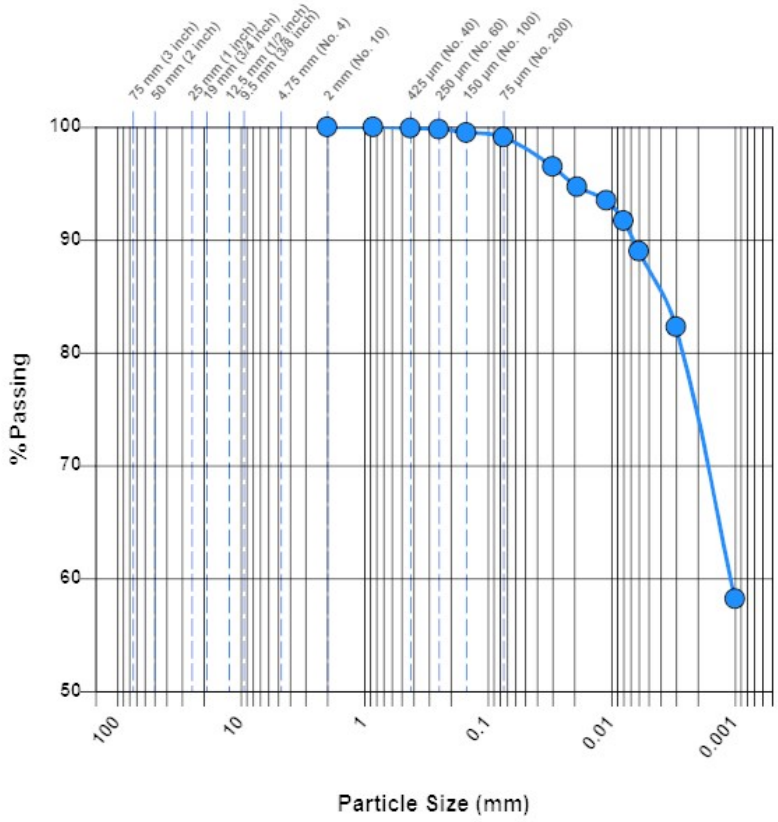
Sample Information

Sample Number:	358981	**Depth (ft):**	19.5-21
Boring Number:	CAA-106	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
75 µm (No. 200)	99.1	-
29.9 (µm)	96.5	-
19.0 (µm)	94.7	-
11.0 (µm)	93.5	-
7.8 (µm)	91.7	-
5.6 (µm)	89.0	-
2.8 (µm)	82.3	-
0.7 (µm)	58.2	-



Soil Classification: CH Fat clay, brown to gray, A-7-6(81)

Gravel (%):	0	**Sand (%):**	0.9	**Silt (%):**	12.3	**Clay (%):**	86.8

D_{60} (µm): 1.1

General

Remarks: LL=98, PL=29, PI=69

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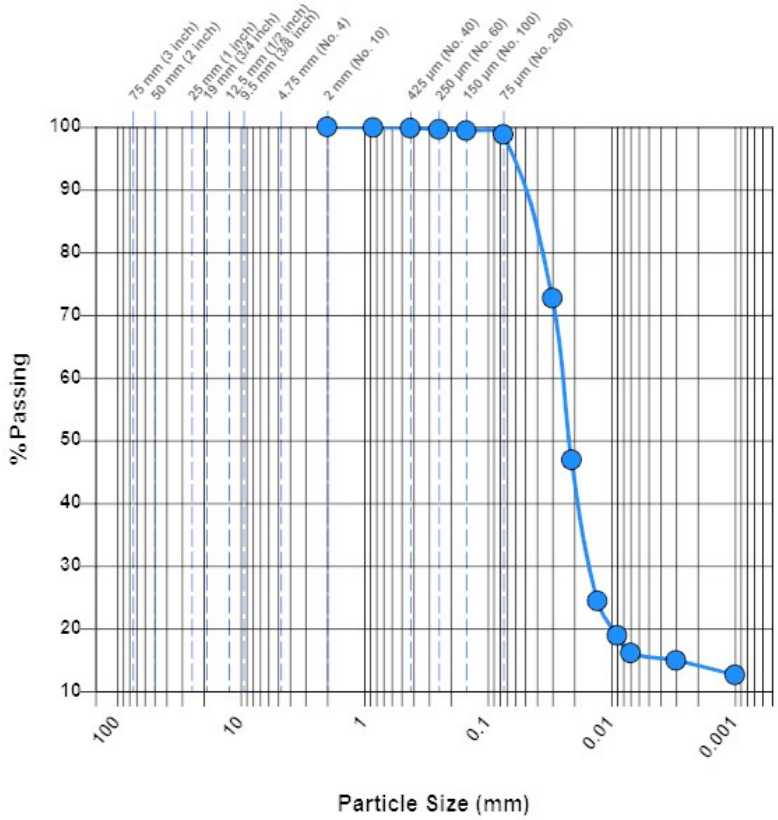
Sample Information

Sample Number:	358982	**Depth (ft):**	4.5-6
Boring Number:	GDRL-107	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	98.8	-
30.1 (µm)	72.7	-
20.7 (µm)	46.9	-
12.7 (µm)	24.4	-
9.1 (µm)	18.9	-
6.5 (µm)	16.1	-
3.2 (µm)	14.9	-
1.4 (µm)	12.6	-



Soil Classification: ML Silt, brown, A-4(10)

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	83.3	**Clay (%):**	15.5
D_{60} (µm):	25.6	**D_{30} (µm):**	15.0				

General

Remarks: LL=38, PL=31, PI=7

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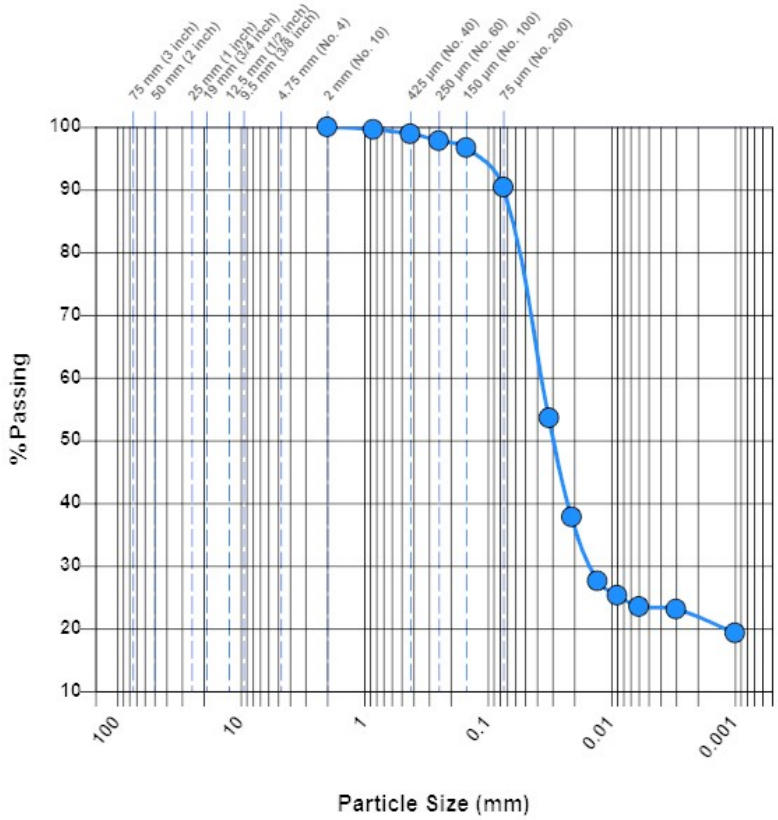
Sample Information

Sample Number:	358983	**Depth (ft):**	0.5-2
Boring Number:	GDRL-108	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	97.8	-
150 µm (No. 100)	96.7	-
75 µm (No. 200)	90.4	-
31.9 (µm)	53.6	-
21.2 (µm)	37.8	-
12.6 (µm)	27.6	-
9.0 (µm)	25.3	-
6.4 (µm)	23.5	-
3.1 (µm)	23.1	-
1.4 (µm)	19.3	-



Soil Classification: CL Lean clay, black to brown, A-6(12)

Gravel (%):	0	**Sand (%):**	9.6	**Silt (%):**	67.0	**Clay (%):**	23.4
D_{60} (µm):	39.5	**D_{30} (µm):**	14.9				

General

Remarks: LL=36, PL=23, PI=13

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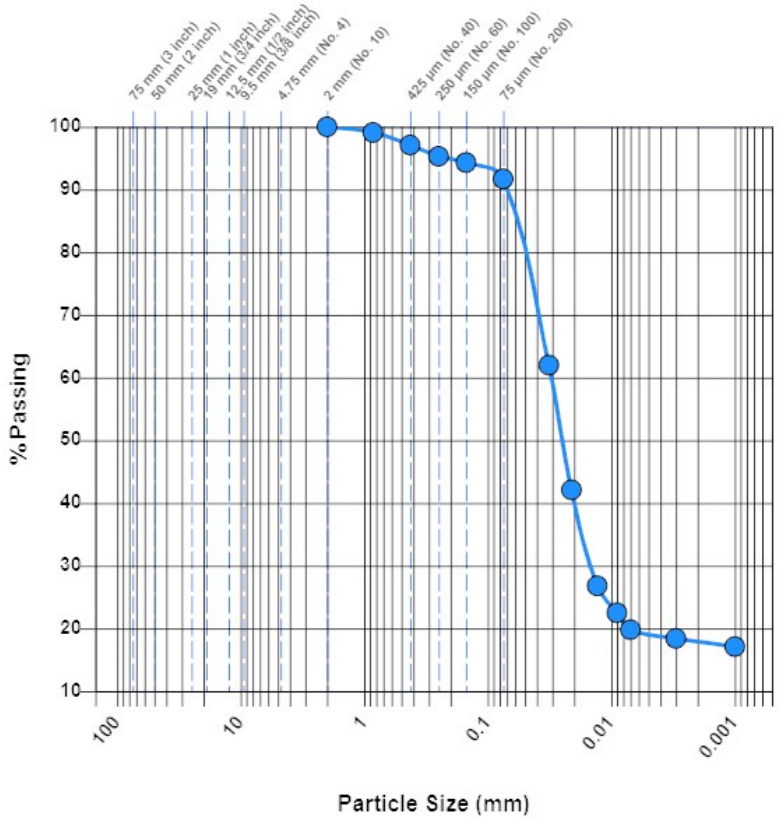
Sample Information

Sample Number:	358985	**Depth (ft):**	9.5-11
Boring Number:	GDRL-108	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.1	-
425 µm (No. 40)	97.1	-
250 µm (No. 60)	95.3	-
150 µm (No. 100)	94.3	-
75 µm (No. 200)	91.7	-
32.2 (µm)	62.0	-
21.4 (µm)	42.1	-
12.8 (µm)	26.8	-
9.1 (µm)	22.5	-
6.5 (µm)	19.8	-
3.2 (µm)	18.4	-
1.4 (µm)	17.1	-



Soil Classification: CL Lean clay, brown, A-6(11)

Gravel (%):	0	**Sand (%):**	8.3	**Silt (%):**	72.6	**Clay (%):**	19.1
D_{60} (µm):	30.9	**D_{30} (µm):**	14.7				

General

Remarks: LL=35, PL=24, PI=11

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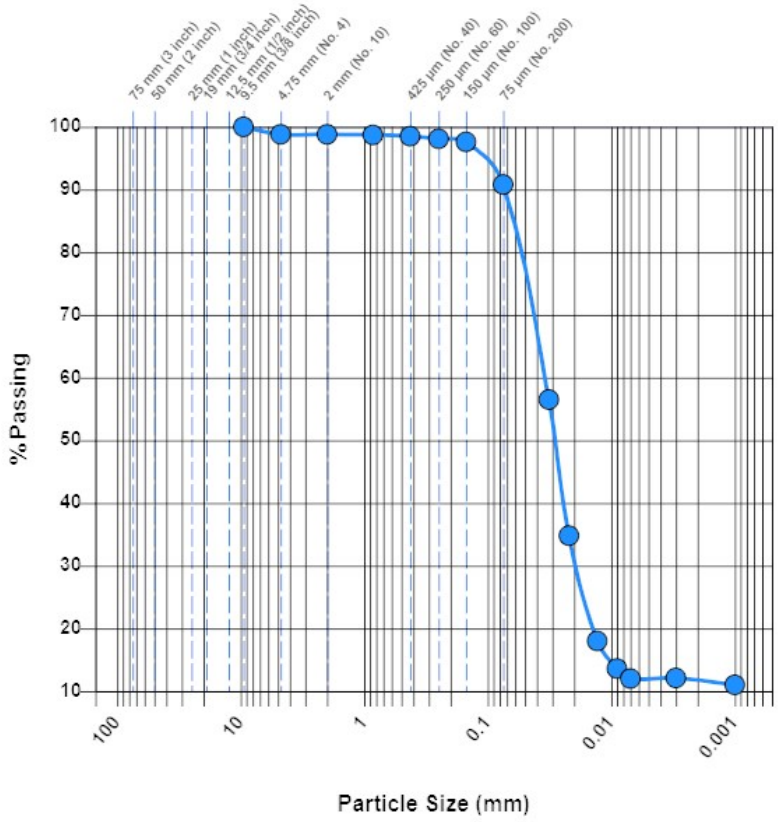
Sample Information

Sample Number:	358986	**Depth (ft):**	4.5-6
Boring Number:	GDRL-109	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.8	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	98.7	-
425 µm (No. 40)	98.5	-
250 µm (No. 60)	98.1	-
150 µm (No. 100)	97.6	-
75 µm (No. 200)	90.8	-
32.0 (µm)	56.5	-
21.5 (µm)	34.8	-
13.0 (µm)	18.0	-
9.3 (µm)	13.6	-
6.6 (µm)	12.0	-
3.2 (µm)	12.1	-
1.4 (µm)	11.0	-



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

Gravel (%):	1.2	**Sand (%):**	8.0	**Silt (%):**	78.7	**Clay (%):**	12.1
D_{60} (µm):	36.4	**D_{30} (µm):**	19.4				

General

Remarks: LL=32, PL=27, PI=5

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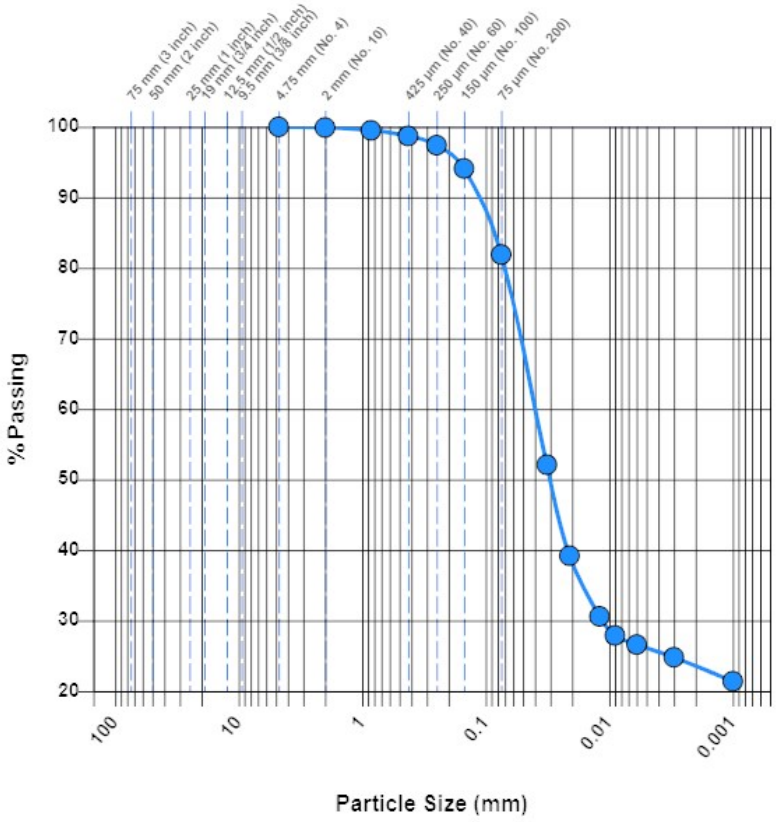
Sample Information

Sample Number:	358987	**Depth (ft):**	0.5-2
Boring Number:	GDRL-110	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
425 µm (No. 40)	98.7	-
250 µm (No. 60)	97.4	-
150 µm (No. 100)	94.1	-
75 µm (No. 200)	81.9	-
31.8 (µm)	52.1	-
21.0 (µm)	39.2	-
12.4 (µm)	30.6	-
8.9 (µm)	27.9	-
6.3 (µm)	26.6	-
3.1 (µm)	24.8	-
1.4 (µm)	21.4	-



Soil Classification:
CL Lean clay with sand, black to brown, A-6(8)

Gravel (%):	0.0	**Sand (%):**	18.1	**Silt (%):**	55.9	**Clay (%):**	26.0
D_{60} (µm):	43.4	**D_{30} (µm):**	11.3				

General

Remarks: LL=31, PL=20, PI=11

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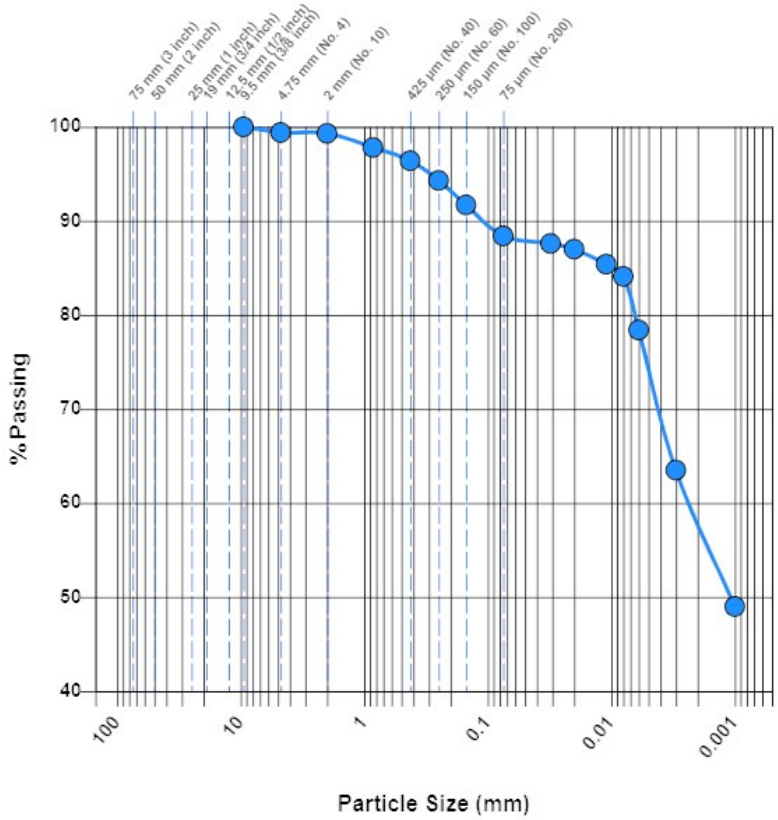
Sample Information

Sample Number:	358988	**Depth (ft):**	9.5-11
Boring Number:	GDRL-110	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.4	-
2 mm (No. 10)	99.3	-
850 µm (No. 20)	97.8	-
425 µm (No. 40)	96.4	-
250 µm (No. 60)	94.3	-
150 µm (No. 100)	91.7	-
75 µm (No. 200)	88.4	-
31.0 (µm)	87.6	-
19.6 (µm)	87.0	-
11.4 (µm)	85.4	-
8.1 (µm)	84.1	-
5.8 (µm)	78.4	-
2.9 (µm)	63.5	-
1.3 (µm)	49.0	-



Soil Classification: CH Fat clay, brown, A-7-6(38)

Gravel (%):	0.6	**Sand (%):**	11.0	**Silt (%):**	15.0	**Clay (%):**	73.4
D_{60} (µm):	2.5						

General

Remarks: LL=72, PL=36, PI=36

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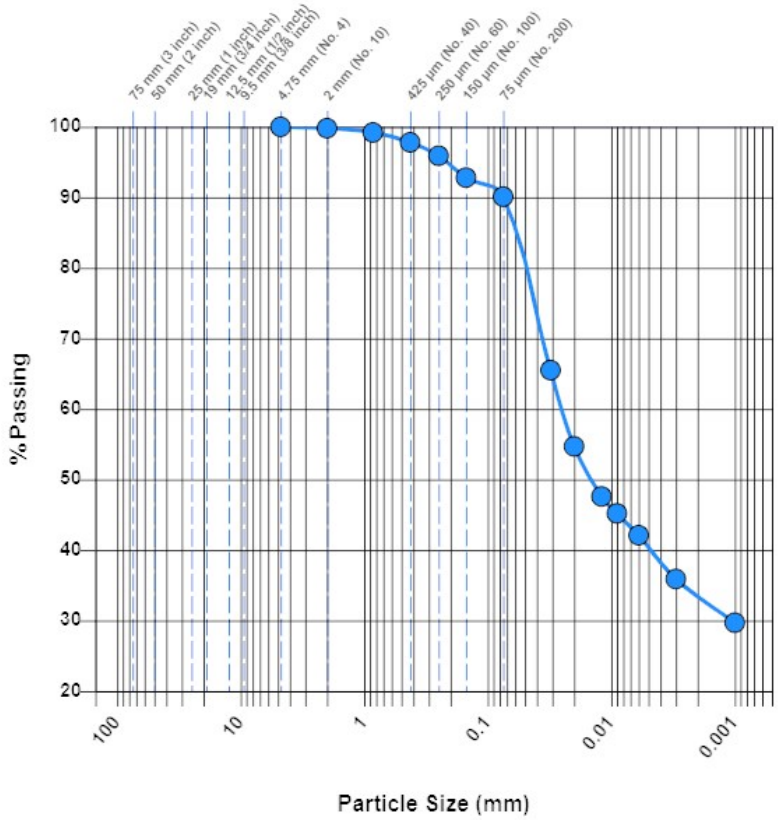
Sample Information

Sample Number:	358989	**Depth (ft):**	4.5-6
Boring Number:	CAA-111	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
425 µm (No. 40)	97.8	-
250 µm (No. 60)	95.9	-
150 µm (No. 100)	92.8	-
75 µm (No. 200)	90.1	-
31.1 (µm)	65.5	-
20.3 (µm)	54.7	-
12.0 (µm)	47.6	-
8.5 (µm)	45.2	-
6.1 (µm)	42.1	-
3.0 (µm)	35.9	-
1.3 (µm)	29.7	-



Soil Classification: CL Lean clay, brown, A-7-6(22)

Gravel (%):	0.0	**Sand (%):**	9.9	**Silt (%):**	50.1	**Clay (%):**	40.0
D_{60} (µm):	25.4	**D_{30} (µm):**	1.1				

General

Remarks: LL=46, PL=23, PI=23

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Hydrometer And Sieve Analysis

ASTM D422

2/25/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

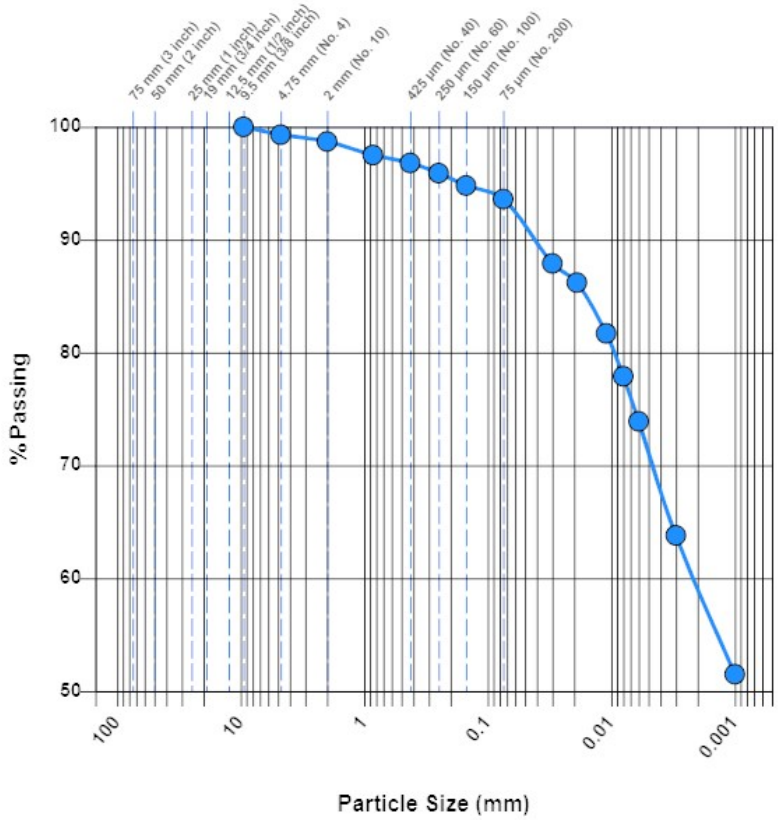
Sample Information

Sample Number:	358990	**Depth (ft):**	14.5-16
Boring Number:	CAA-111	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.3	-
2 mm (No. 10)	98.7	-
850 µm (No. 20)	97.5	-
425 µm (No. 40)	96.8	-
250 µm (No. 60)	95.9	-
150 µm (No. 100)	94.8	-
75 µm (No. 200)	93.6	-
30.4 (µm)	87.9	-
19.3 (µm)	86.2	-
11.3 (µm)	81.7	-
8.1 (µm)	77.9	-
5.8 (µm)	73.9	-
2.9 (µm)	63.8	-
1.3 (µm)	51.5	-



Soil Classification: CH Fat Clay, dark gray, A-7-6(53)

Gravel (%):	0.7	**Sand (%):**	5.7	**Silt (%):**	23.1	**Clay (%):**	70.5
D_{60} (µm):	2.4						

General

Remarks: LL=73, PL=23, PI=50

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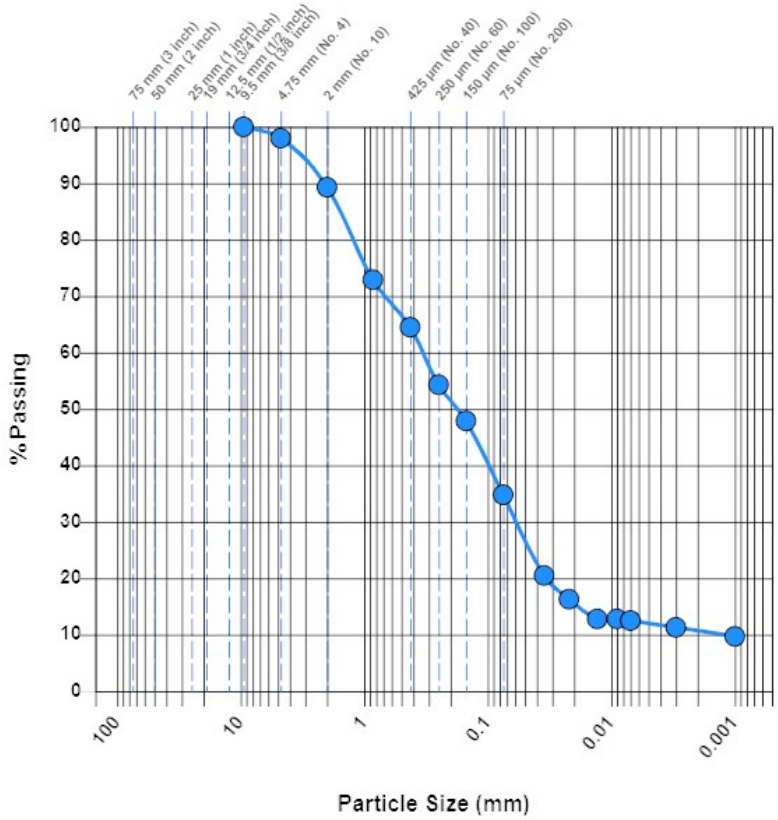
Sample Information

Sample Number:	358992	**Depth (ft):**	0.5-2
Boring Number:	GDRL-112	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.0	-
2 mm (No. 10)	89.3	-
850 µm (No. 20)	72.9	-
425 µm (No. 40)	64.5	-
250 µm (No. 60)	54.3	-
150 µm (No. 100)	47.9	-
75 µm (No. 200)	34.8	-
34.5 (µm)	20.5	-
22.2 (µm)	16.3	-
13.0 (µm)	12.8	-
9.2 (µm)	12.8	-
6.5 (µm)	12.5	-
3.2 (µm)	11.3	-
1.4 (µm)	9.7	-



Soil Classification: SM Silty sand, brown, A-2-4(0)

Gravel (%):	2.0	**Sand (%):**	63.2	**Silt (%):**	22.9	**Clay (%):**	11.9		
D_{60} (µm):	347.8	**D_{30} (µm):**	61.6	**D_{10} (µm):**	1.4	**C_u:**	248.43	**C_c:**	7.79

General

Remarks: LL=23, PL=20, PI=3

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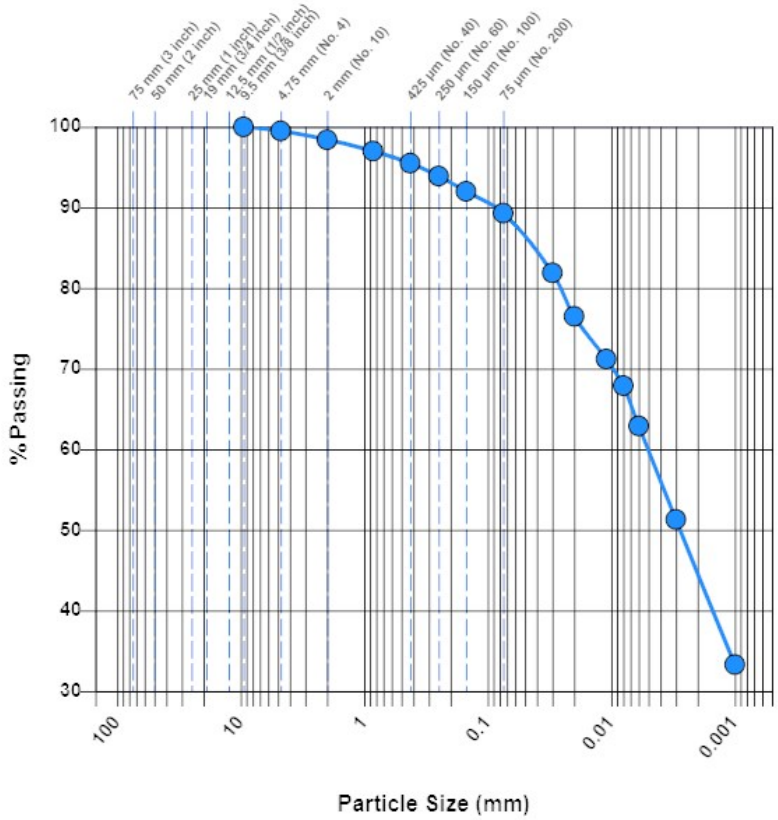
Sample Information

Sample Number:	358993	**Depth (ft):**	9.5-11
Boring Number:	GDRL-112	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.5	-
2 mm (No. 10)	98.4	-
850 µm (No. 20)	97.0	-
425 µm (No. 40)	95.5	-
250 µm (No. 60)	93.9	-
150 µm (No. 100)	92.0	-
75 µm (No. 200)	89.3	-
30.3 (µm)	81.9	-
19.5 (µm)	76.5	-
11.4 (µm)	71.2	-
8.2 (µm)	67.9	-
5.8 (µm)	62.9	-
2.9 (µm)	51.3	-
0.8 (µm)	33.3	-



Soil Classification: CH Fat clay, brown, A-7-6(31)

Gravel (%):	0.5	**Sand (%):**	10.2	**Silt (%):**	30.3	**Clay (%):**	59.0
D_{60} (µm):	5.3						

General

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

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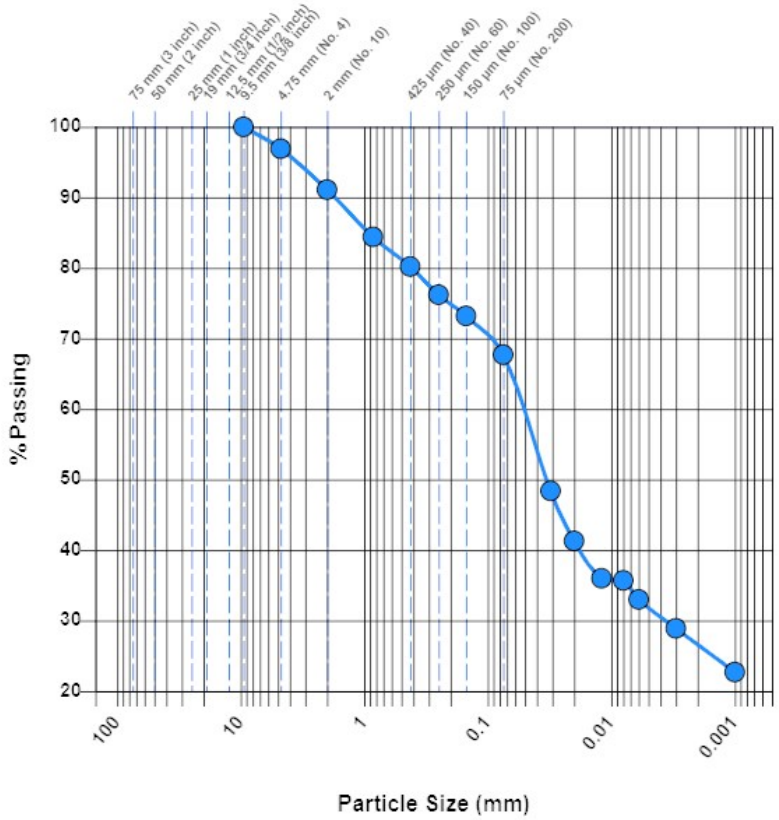
Sample Information

Sample Number:	358994	**Depth (ft):**	4.5-6
Boring Number:	CAA-113	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	96.9	-
2 mm (No. 10)	91.1	-
850 µm (No. 20)	84.4	-
425 µm (No. 40)	80.2	-
250 µm (No. 60)	76.2	-
150 µm (No. 100)	73.2	-
75 µm (No. 200)	67.7	-
31.0 (µm)	48.4	-
20.2 (µm)	41.3	-
11.9 (µm)	36.0	-
8.4 (µm)	35.7	-
6.0 (µm)	33.0	-
3.0 (µm)	28.9	-
1.4 (µm)	22.7	-



Soil Classification: CL Sandy lean clay, brown, A-6(12)

Gravel (%):	3.1	**Sand (%):**	29.2	**Silt (%):**	36.1	**Clay (%):**	31.6
D_{60} (µm):	57.4	**D_{30} (µm):**	3.8				

General

Remarks: LL=38, PL=17, PI=21

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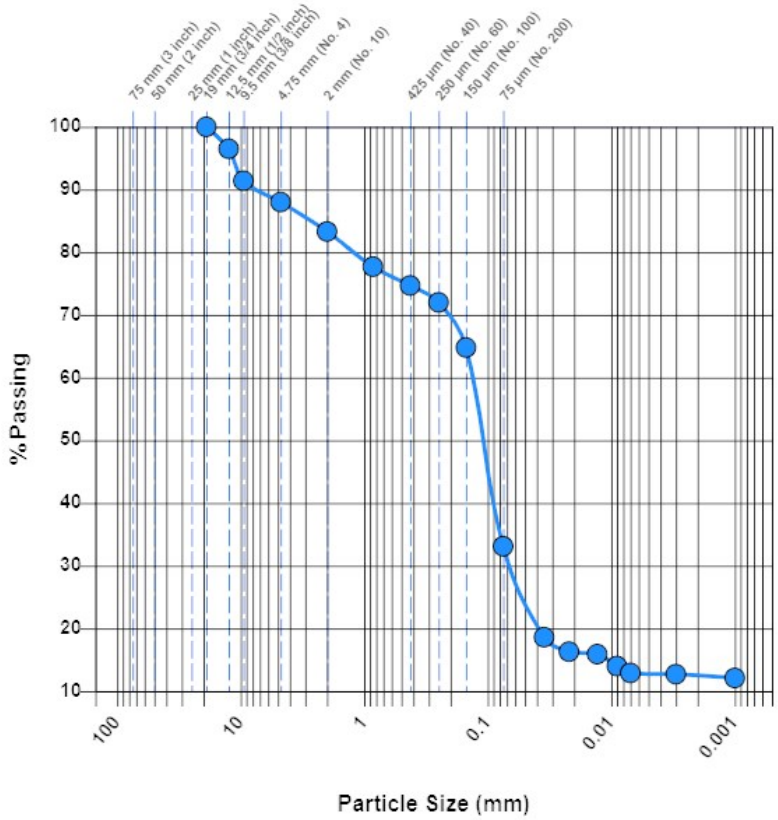
Sample Information

Sample Number:	358995	**Depth (ft):**	14.5-16
Boring Number:	CAA-113	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	96.5	-
9.5 mm (3/8 inch)	91.4	-
4.75 mm (No. 4)	88.0	-
2 mm (No. 10)	83.3	-
850 µm (No. 20)	77.7	-
425 µm (No. 40)	74.7	-
250 µm (No. 60)	72.0	-
150 µm (No. 100)	64.8	-
75 µm (No. 200)	33.1	-
35.0 (µm)	18.6	-
22.3 (µm)	16.3	-
12.9 (µm)	15.9	-
9.2 (µm)	14.0	-
6.5 (µm)	12.9	-
3.2 (µm)	12.7	-
1.4 (µm)	12.1	-



Soil Classification: SM Silty sand, gray, A-2-4(0)

Gravel (%):	12.0	**Sand (%):**	54.9	**Silt (%):**	20.3	**Clay (%):**	12.8
D_{60} (µm):	138.6	**D_{30} (µm):**	66.4				

General

Remarks: LL=24, PL=22, PI=2

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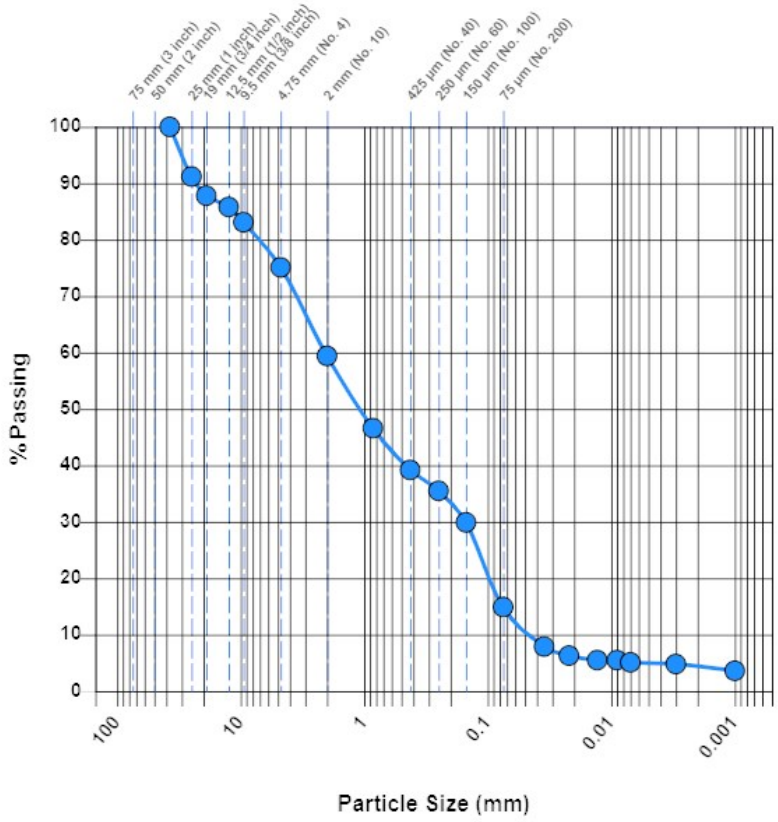
Sample Information

Sample Number:	358996	**Depth (ft):**	0.5-2
Boring Number:	CAA-114	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
37.5 mm (1.5 inch)	100.0	-
25 mm (1 inch)	91.2	-
19 mm (3/4 inch)	87.8	-
12.5 mm (1/2 inch)	85.8	-
9.5 mm (3/8 inch)	83.1	-
4.75 mm (No. 4)	75.1	-
2 mm (No. 10)	59.4	-
850 µm (No. 20)	46.6	-
425 µm (No. 40)	39.2	-
250 µm (No. 60)	35.5	-
150 µm (No. 100)	29.9	-
75 µm (No. 200)	14.9	-
35.0 (µm)	7.9	-
22.4 (µm)	6.3	-
13.0 (µm)	5.5	-
9.2 (µm)	5.5	-
6.5 (µm)	5.1	-
3.2 (µm)	4.8	-
1.4 (µm)	3.6	-



Soil Classification: SM Silty sand with gravel, brown, A-1-b

Gravel (%):	24.9	**Sand (%):**	60.2	**Silt (%):**	9.9	**Clay (%):**	5.0
D_{60} (µm):	2105.1	**D_{30} (µm):**	151.8	**D_{10} (µm):**	47.0	**C_u:**	44.79	**C_c:**	0.23

General

Remarks: Non Plastic.

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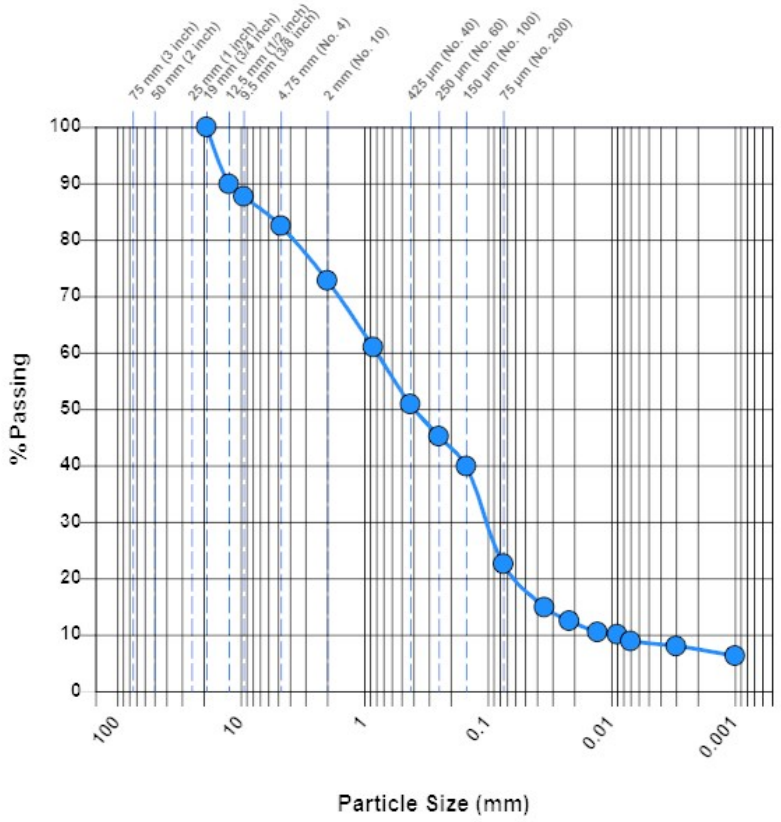
Sample Information

Sample Number:	358998	**Depth (ft):**	9.5-11
Boring Number:	CAA-114	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	89.9	-
9.5 mm (3/8 inch)	87.7	-
4.75 mm (No. 4)	82.5	-
2 mm (No. 10)	72.8	-
850 µm (No. 20)	61.0	-
425 µm (No. 40)	50.9	-
250 µm (No. 60)	45.2	-
150 µm (No. 100)	39.9	-
75 µm (No. 200)	22.6	-
34.7 (µm)	14.9	-
22.2 (µm)	12.5	-
12.9 (µm)	10.5	-
9.2 (µm)	10.1	-
6.5 (µm)	8.9	-
3.2 (µm)	8.0	-
1.4 (µm)	6.3	-



Soil Classification: SM Silty sand with gravel, brown, A-2-4(0)

Gravel (%):	17.5	**Sand (%):**	59.9	**Silt (%):**	14.1	**Clay (%):**	8.5		
D_{60} (µm):	807.9	**D_{30} (µm):**	107.1	**D_{10} (µm):**	8.8	**C_u:**	91.81	**C_c:**	1.61

General

Remarks: Non Plastic.

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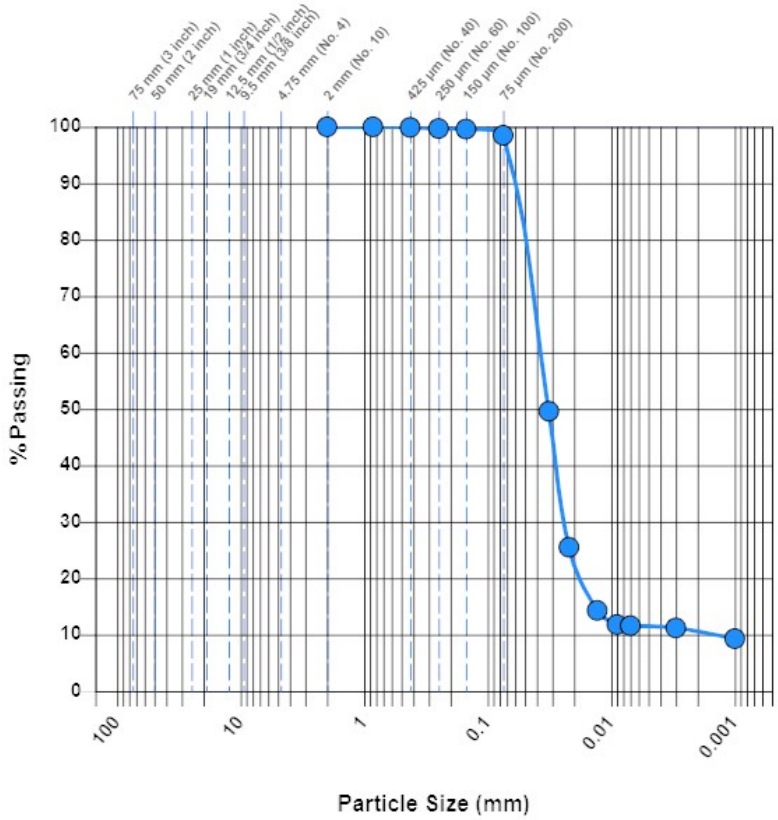
Sample Information

Sample Number:	358999	**Depth (ft):**	19.5-21
Boring Number:	CAA-114	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	98.5	-
31.7 (µm)	49.6	-
21.7 (µm)	25.5	-
13.0 (µm)	14.3	-
9.2 (µm)	11.8	-
6.5 (µm)	11.6	-
3.2 (µm)	11.2	-
1.4 (µm)	9.3	-



Soil Classification: ML Silt, gray, A-4-(0)

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	87.1	**Clay (%):**	11.4		
D_{60} (µm):	41.1	**D_{30} (µm):**	23.9	**D_{10} (µm):**	1.7	**C_u:**	24.18	**C_c:**	8.18

General

Remarks: Non Plastic.

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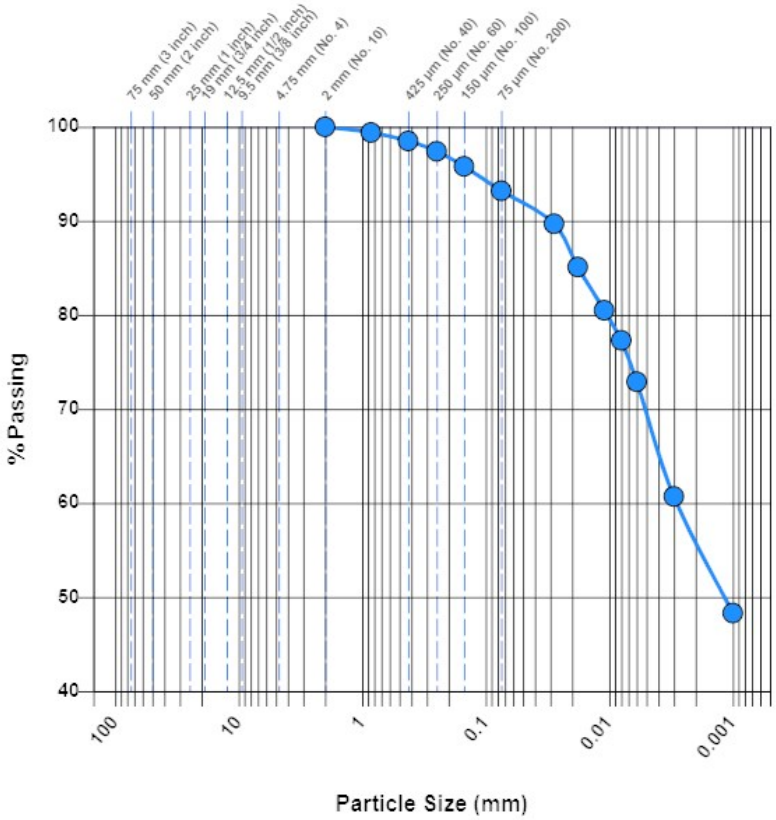
Sample Information

Sample Number:	359000	**Depth (ft):**	4.5-6
Boring Number:	GDRL-115	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	98.5	-
250 µm (No. 60)	97.4	-
150 µm (No. 100)	95.8	-
75 µm (No. 200)	93.2	-
28.2 (µm)	89.7	-
18.2 (µm)	85.1	-
10.7 (µm)	80.5	-
7.6 (µm)	77.3	-
5.5 (µm)	72.9	-
2.8 (µm)	60.7	-
1.2 (µm)	48.3	-



Soil Classification: CH Fat clay, gray, A-7-6(43)

Gravel (%):	0	**Sand (%):**	6.8	**Silt (%):**	24.4	**Clay (%):**	68.8
D_{60} (µm):	2.9						

General

Remarks: LL=62, PL=20, PI=42

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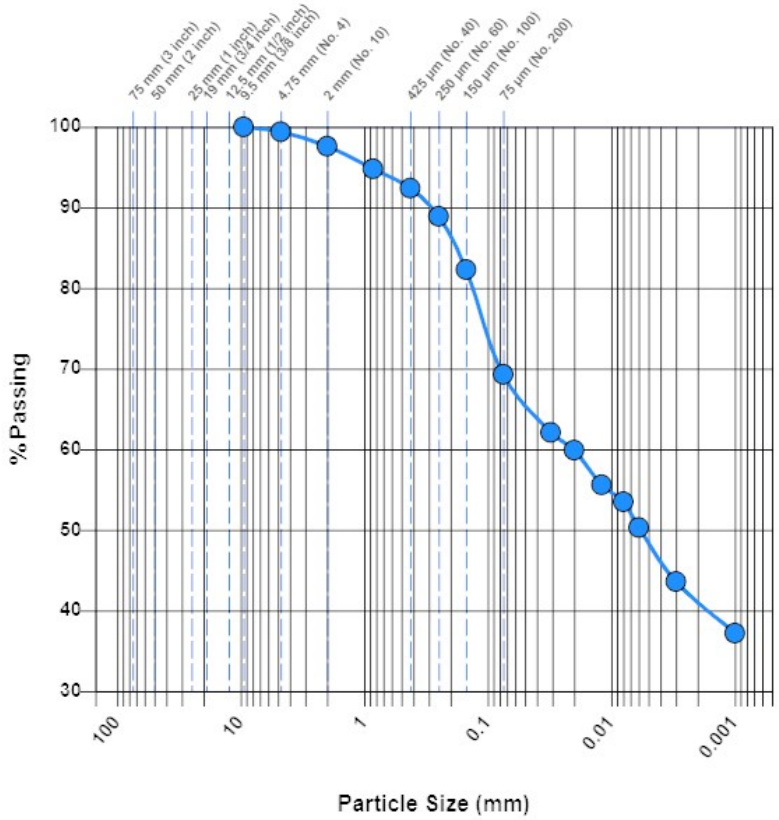
Sample Information

Sample Number:	359001	**Depth (ft):**	0.5-2
Boring Number:	CAA-116	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.4	-
2 mm (No. 10)	97.6	-
850 µm (No. 20)	94.8	-
425 µm (No. 40)	92.4	-
250 µm (No. 60)	88.9	-
150 µm (No. 100)	82.3	-
75 µm (No. 200)	69.3	-
30.7 (µm)	62.1	-
19.6 (µm)	59.9	-
11.5 (µm)	55.6	-
8.2 (µm)	53.5	-
5.8 (µm)	50.3	-
2.9 (µm)	43.6	-
1.3 (µm)	37.2	-



Soil Classification: CH Sandy fat clay, black to brown, A-7-6(21)

Gravel (%):	0.6	**Sand (%):**	30.1	**Silt (%):**	21.2	**Clay (%):**	48.1
D_{60} (µm):	20.5						

General

Remarks: LL=50, PL=17, PI=33

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Hydrometer And Sieve Analysis

ASTM D422

2/25/2021

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Bismarck, ND 58504
Phone: 701-255-7180

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

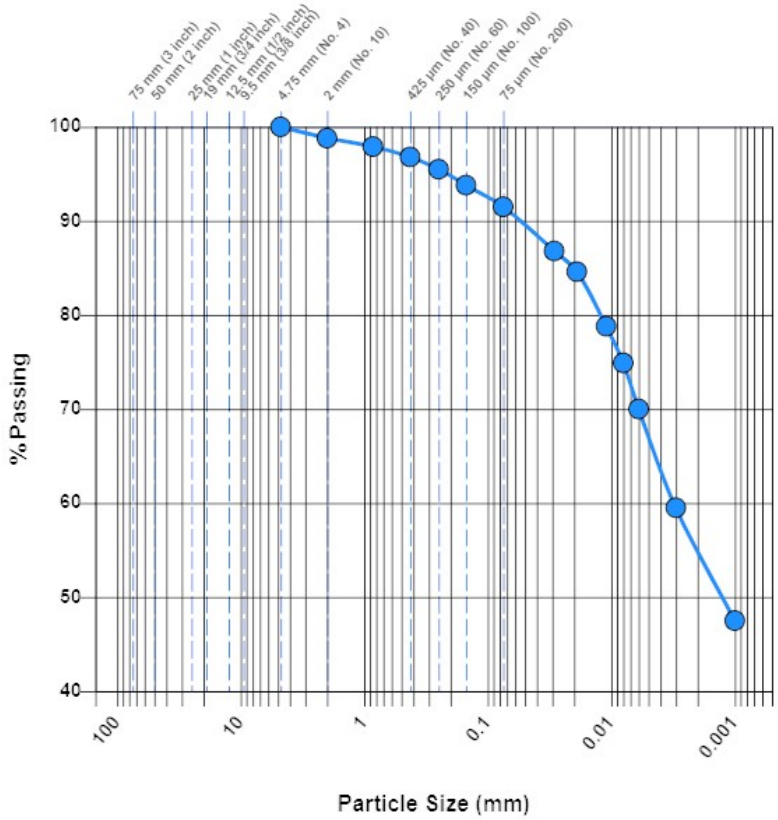
Sample Information

Sample Number:	359003	**Depth (ft):**	9.5-11
Boring Number:	CAA-116	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	97.9	-
425 µm (No. 40)	96.8	-
250 µm (No. 60)	95.5	-
150 µm (No. 100)	93.8	-
75 µm (No. 200)	91.5	-
29.0 (µm)	86.8	-
18.5 (µm)	84.6	-
10.9 (µm)	78.8	-
7.8 (µm)	74.9	-
5.6 (µm)	70.0	-
2.8 (µm)	59.5	-
1.3 (µm)	47.5	-



Soil Classification: CH Fat clay, brown, A-7-6(44)

Gravel (%):	0.0	**Sand (%):**	8.5	**Silt (%):**	25.0	**Clay (%):**	66.5
D_{60} (µm):	3.1						

General

Remarks: LL=65, PL=21, PI=44

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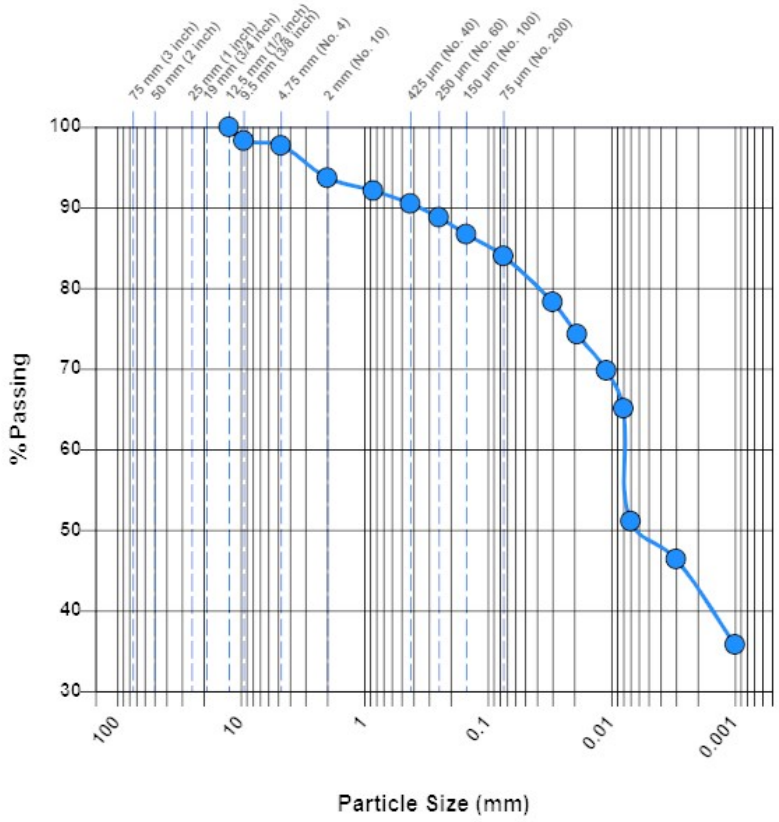
Sample Information

Sample Number:	359004	**Depth (ft):**	19.5-21
Boring Number:	CAA-116	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
12.5 mm (1/2 inch)	100.0	-
9.5 mm (3/8 inch)	98.3	-
4.75 mm (No. 4)	97.7	-
2 mm (No. 10)	93.7	-
850 µm (No. 20)	92.1	-
425 µm (No. 40)	90.5	-
250 µm (No. 60)	88.8	-
150 µm (No. 100)	86.7	-
75 µm (No. 200)	84.0	-
30.0 (µm)	78.3	-
19.2 (µm)	74.3	-
11.3 (µm)	69.8	-
8.1 (µm)	65.1	-
7.1 (µm)	51.1	-
2.9 (µm)	46.4	-
1.4 (µm)	35.8	-



Soil Classification: CH Fat clay with sand, brown, A-7-6(30)

Gravel (%):	2.3	**Sand (%):**	13.7	**Silt (%):**	35.2	**Clay (%):**	48.8
D_{60} (µm):	7.6						

General

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

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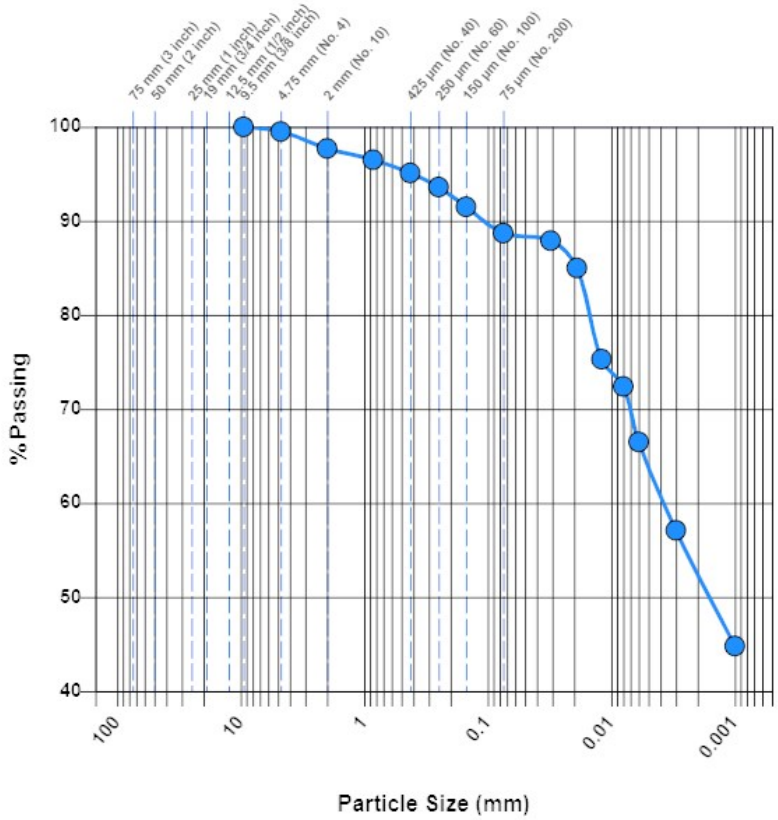
Sample Information

Sample Number:	359005	**Depth (ft):**	4.5-6
Boring Number:	GDRL-117	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.5	-
2 mm (No. 10)	97.7	-
850 µm (No. 20)	96.5	-
425 µm (No. 40)	95.1	-
250 µm (No. 60)	93.6	-
150 µm (No. 100)	91.5	-
75 µm (No. 200)	88.7	-
30.5 (µm)	87.9	-
19.4 (µm)	85.0	-
11.5 (µm)	75.3	-
8.2 (µm)	72.4	-
5.9 (µm)	66.5	-
2.9 (µm)	57.1	-
1.3 (µm)	44.8	-



Soil Classification: CH Fat clay, brown, A-7-6(39)

Gravel (%):	0.5	**Sand (%):**	10.8	**Silt (%):**	25.3	**Clay (%):**	63.4
D_{60} (µm):	3.9						

General

Remarks: LL=62, PL=21, PI=41

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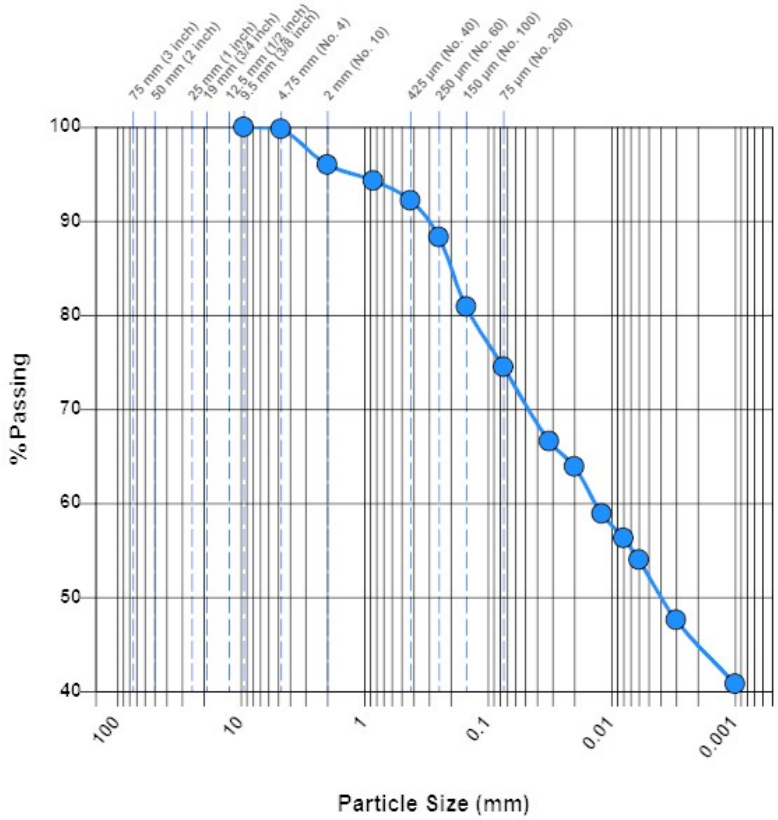
Sample Information

Sample Number:	359006	**Depth (ft):**	0.5-2
Boring Number:	GDRL-118	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.8	-
2 mm (No. 10)	96.0	-
850 µm (No. 20)	94.3	-
425 µm (No. 40)	92.2	-
250 µm (No. 60)	88.3	-
150 µm (No. 100)	80.9	-
75 µm (No. 200)	74.5	-
31.6 (µm)	66.6	-
20.1 (µm)	63.9	-
11.8 (µm)	58.9	-
8.4 (µm)	56.3	-
6.0 (µm)	54.0	-
3.0 (µm)	47.6	-
1.3 (µm)	40.8	-



Soil Classification: CH Fat clay with sand, gray, A-7-6(25)

Gravel (%):	0.2	**Sand (%):**	25.3	**Silt (%):**	22.6	**Clay (%):**	51.9

D_{60} (µm): 13.8

General

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

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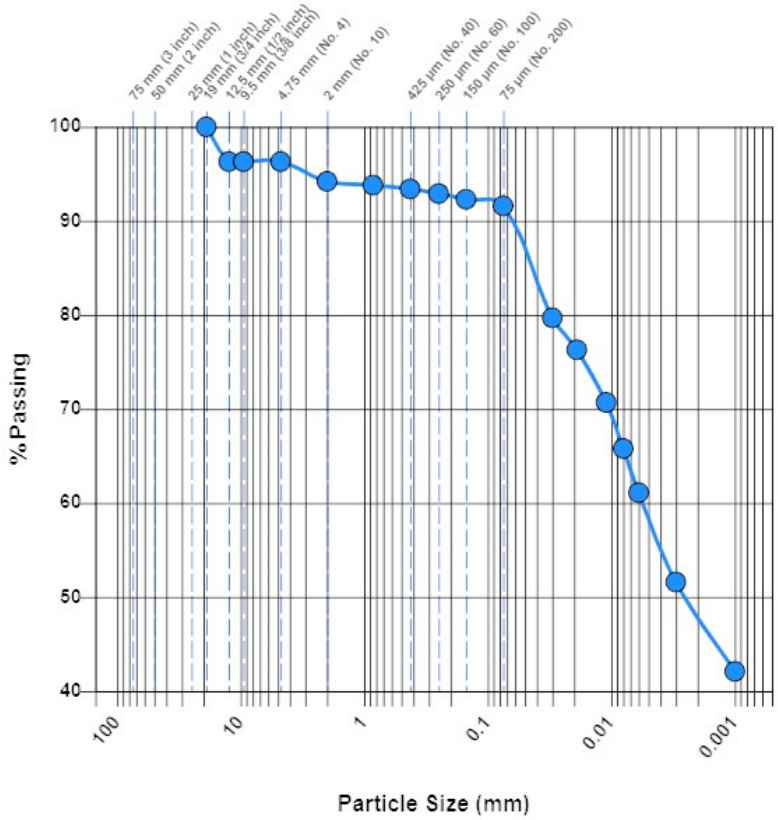
Sample Information

Sample Number:	359008	**Depth (ft):**	9.5-11
Boring Number:	GDRL-118	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	96.3	-
9.5 mm (3/8 inch)	96.3	-
4.75 mm (No. 4)	96.3	-
2 mm (No. 10)	94.2	-
850 µm (No. 20)	93.8	-
425 µm (No. 40)	93.4	-
250 µm (No. 60)	92.9	-
150 µm (No. 100)	92.3	-
75 µm (No. 200)	91.6	-
30.2 (µm)	79.7	-
19.3 (µm)	76.3	-
11.3 (µm)	70.7	-
8.1 (µm)	65.8	-
5.8 (µm)	61.1	-
2.9 (µm)	51.6	-
1.3 (µm)	42.1	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(41)

Gravel (%):	3.7	**Sand (%):**	4.7	**Silt (%):**	33.7	**Clay (%):**	57.9
D_{60} (µm):	5.7						

General

Remarks: LL=64, PL=24, PI=40

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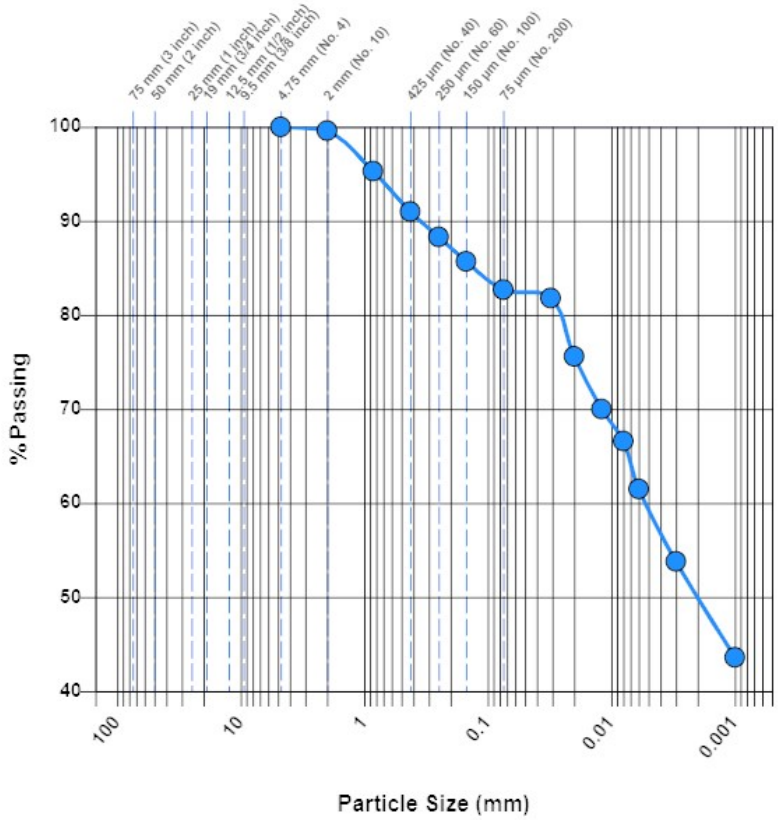
Sample Information

Sample Number:	359009	**Depth (ft):**	4.5-6
Boring Number:	GDRL-119	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.6	-
850 µm (No. 20)	95.3	-
425 µm (No. 40)	91.0	-
250 µm (No. 60)	88.3	-
150 µm (No. 100)	85.7	-
75 µm (No. 200)	82.7	-
30.7 (µm)	81.8	-
19.7 (µm)	75.6	-
11.6 (µm)	70.0	-
8.3 (µm)	66.6	-
5.9 (µm)	61.5	-
2.9 (µm)	53.8	-
1.3 (µm)	43.6	-



Soil Classification: CH Fat clay with sand, gray, A-7-6(37)

Gravel (%):	0.0	**Sand (%):**	17.3	**Silt (%):**	23.8	**Clay (%):**	58.9

D_{60} (µm): 5.4

General

Remarks: LL=64, PL=22, PI=42

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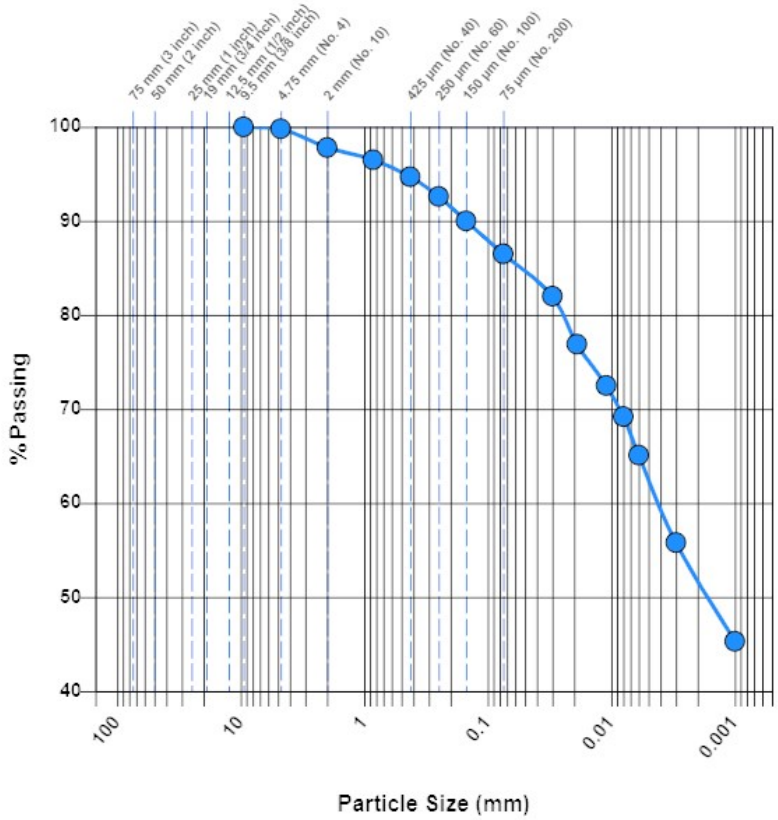
Sample Information

Sample Number:	359010	**Depth (ft):**	0.5-2
Boring Number:	CAA-120	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.8	-
2 mm (No. 10)	97.8	-
850 µm (No. 20)	96.5	-
425 µm (No. 40)	94.7	-
250 µm (No. 60)	92.6	-
150 µm (No. 100)	90.0	-
75 µm (No. 200)	86.5	-
30.0 (µm)	82.0	-
19.3 (µm)	76.9	-
11.3 (µm)	72.5	-
8.0 (µm)	69.2	-
5.8 (µm)	65.1	-
2.9 (µm)	55.8	-
1.3 (µm)	45.3	-



Soil Classification: CH Fat clay, brown, A-7-6(31)

Gravel (%):	0.2	**Sand (%):**	13.3	**Silt (%):**	24.5	**Clay (%):**	62.0
D_{60} (µm):	4.4						

General

Remarks: LL=55, PL=21, PI=34

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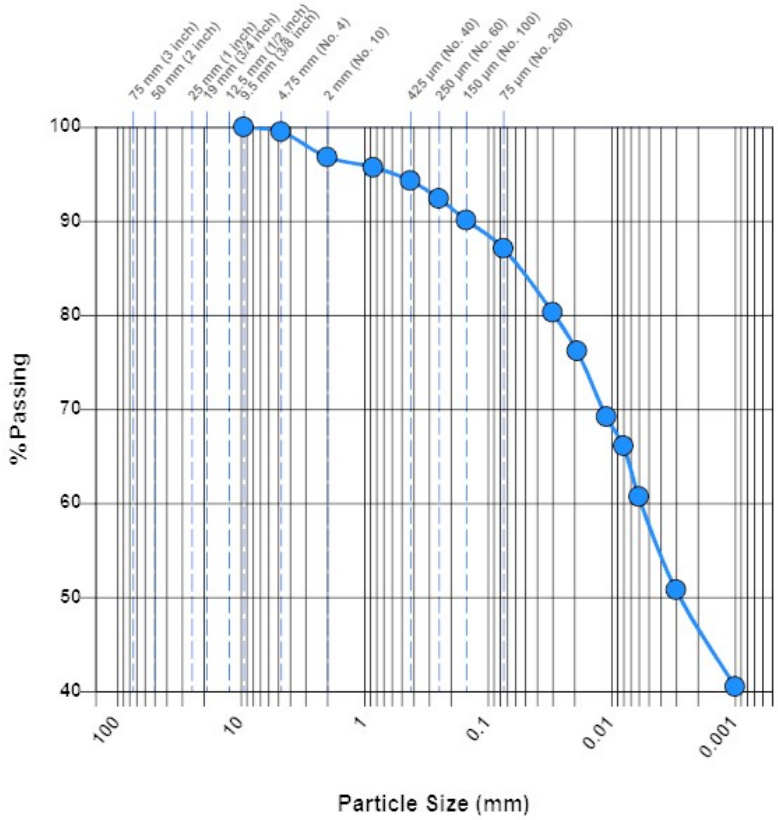
Sample Information

Sample Number:	359011	**Depth (ft):**	9.5-11
Boring Number:	CAA-120	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.5	-
2 mm (No. 10)	96.8	-
850 µm (No. 20)	95.7	-
425 µm (No. 40)	94.3	-
250 µm (No. 60)	92.4	-
150 µm (No. 100)	90.1	-
75 µm (No. 200)	87.1	-
30.3 (µm)	80.3	-
19.4 (µm)	76.2	-
11.4 (µm)	69.2	-
8.1 (µm)	66.1	-
5.8 (µm)	60.7	-
2.9 (µm)	50.8	-
1.3 (µm)	40.5	-



Soil Classification: CH Fat clay, brown, A-7-6(29)

Gravel (%):	0.5	**Sand (%):**	12.4	**Silt (%):**	29.7	**Clay (%):**	57.4
D_{60} (µm):	5.8						

General

Remarks: LL=57, PL=27, PI=30

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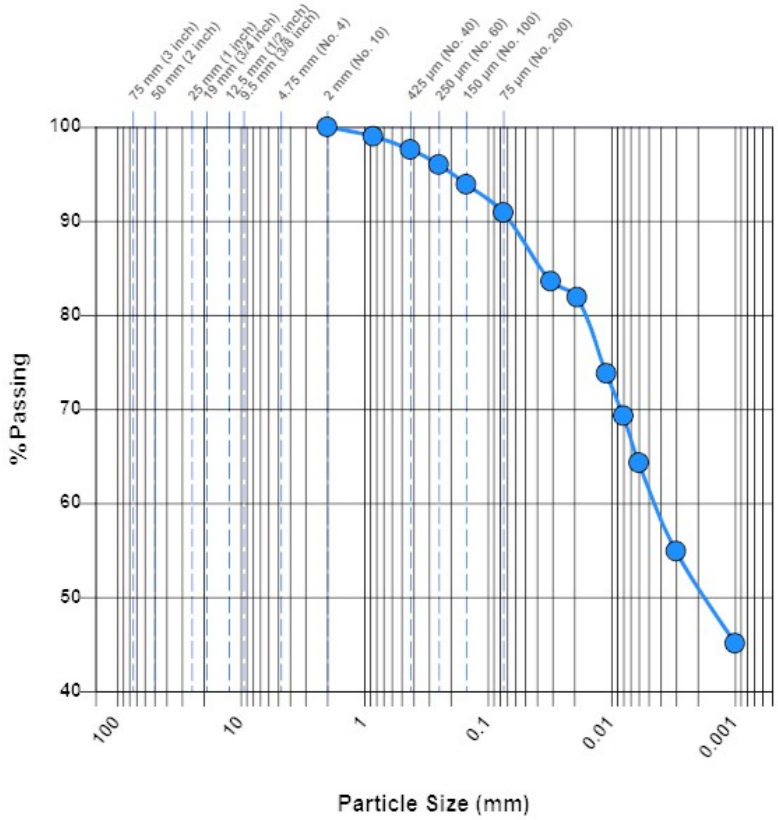
Sample Information

Sample Number:	359012	**Depth (ft):**	19.5-21
Boring Number:	CAA-120	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/03/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.0	-
425 µm (No. 40)	97.6	-
250 µm (No. 60)	96.0	-
150 µm (No. 100)	93.9	-
75 µm (No. 200)	90.9	-
30.5 (µm)	83.6	-
19.4 (µm)	81.9	-
11.4 (µm)	73.8	-
8.2 (µm)	69.3	-
5.9 (µm)	64.3	-
2.9 (µm)	54.9	-
1.3 (µm)	45.1	-



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

Gravel (%):	0	**Sand (%):**	9.1	**Silt (%):**	29.7	**Clay (%):**	61.2

D_{60} (µm): 4.6

General

Remarks: LL=60, PL=24, PI=36

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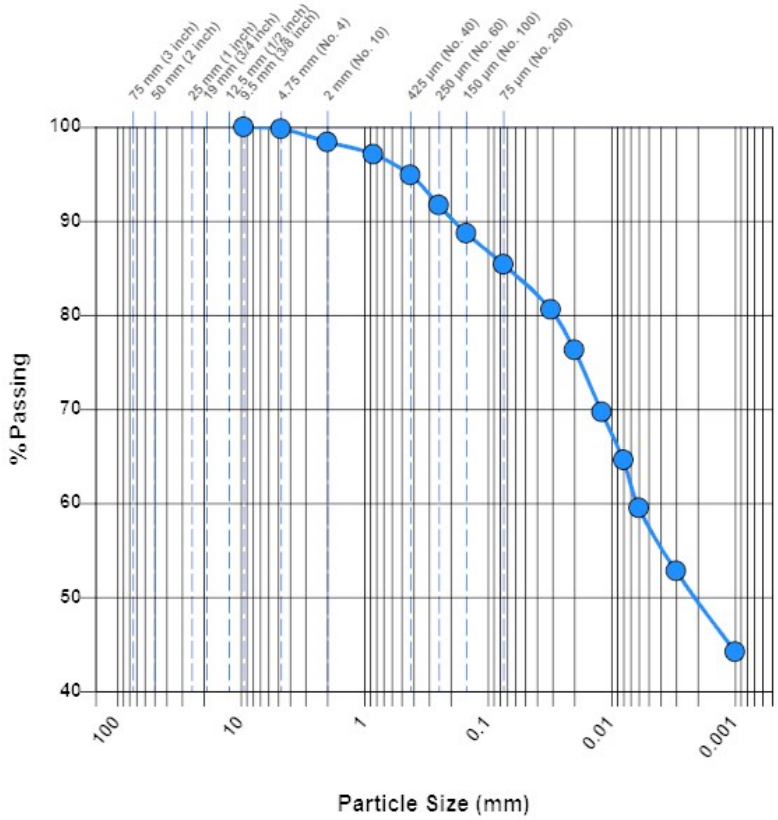
Sample Information

Sample Number:	359013	**Depth (ft):**	4.5-6
Boring Number:	GDRL-121	**Sampled By:**	Drill Crew
Sample Date:	12/31/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.8	-
2 mm (No. 10)	98.4	-
850 µm (No. 20)	97.1	-
425 µm (No. 40)	94.9	-
250 µm (No. 60)	91.7	-
150 µm (No. 100)	88.7	-
75 µm (No. 200)	85.4	-
30.7 (µm)	80.6	-
19.6 (µm)	76.3	-
11.5 (µm)	69.7	-
8.3 (µm)	64.6	-
5.9 (µm)	59.5	-
2.9 (µm)	52.8	-
1.4 (µm)	44.2	-



Soil Classification: CH Fat clay, dark gray, A-7-6(34)

Gravel (%):	0.2	**Sand (%):**	14.4	**Silt (%):**	28.1	**Clay (%):**	57.3
D_{60} (µm):	6.2						

General

Remarks: LL=57, PL=19, PI=38

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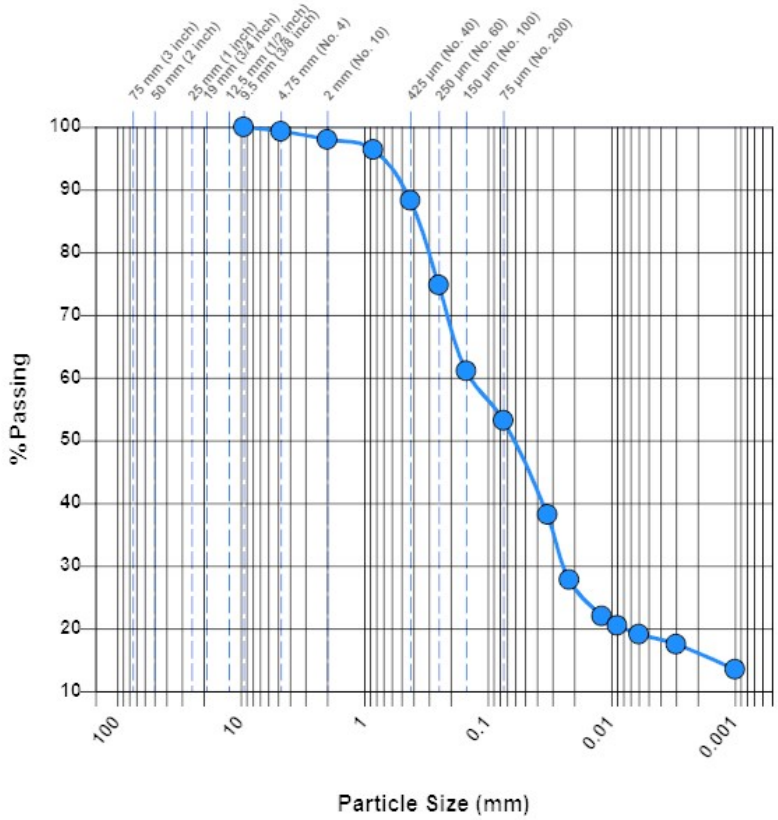
Sample Information

Sample Number:	359014	**Depth (ft):**	0.5-2
Boring Number:	CAA-122	**Sampled By:**	Drill Crew
Sample Date:	12/29/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.3	-
2 mm (No. 10)	98.0	-
850 µm (No. 20)	96.4	-
425 µm (No. 40)	88.3	-
250 µm (No. 60)	74.8	-
150 µm (No. 100)	61.1	-
75 µm (No. 200)	53.2	-
33.3 (µm)	38.2	-
21.7 (µm)	27.8	-
11.9 (µm)	22.0	-
9.0 (µm)	20.5	-
6.4 (µm)	19.1	-
3.1 (µm)	17.5	-
1.4 (µm)	13.5	-



Soil Classification: CL-ML Sandy silty clay, brown, A-4(1)

Gravel (%):	0.7	**Sand (%):**	46.1	**Silt (%):**	34.6	**Clay (%):**	18.6
D_{60} (µm):	139.6	**D_{30} (µm):**	24.3				

General

Remarks: LL=26, PL=19, PI=7

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Client:

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3203 32nd Avenue South
Suite 201
Fargo, ND 58106

Project:

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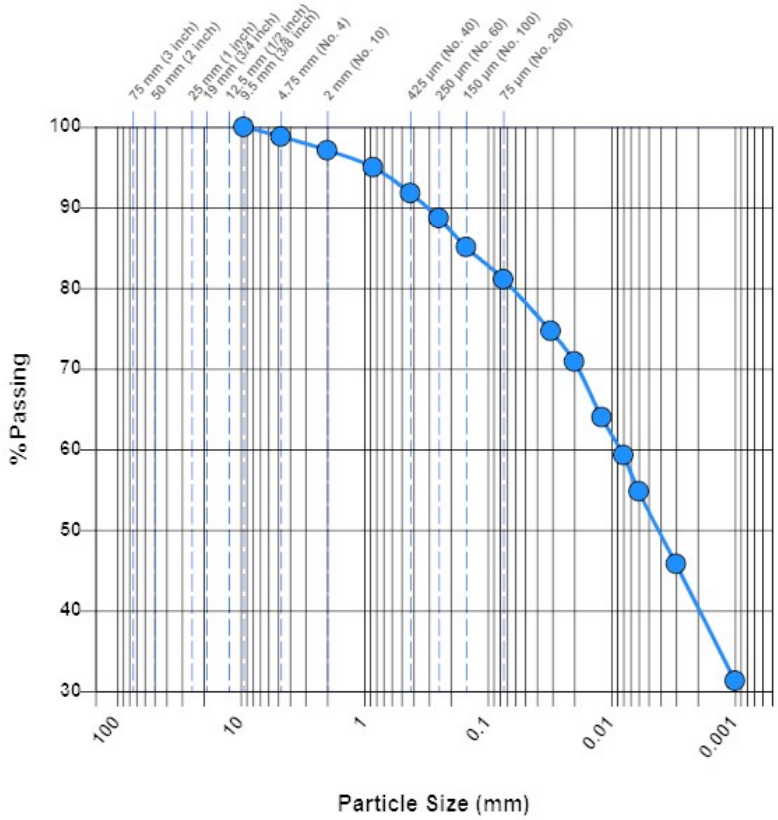
Sample Information

Sample Number:	359015	**Depth (ft):**	9.5-11
Boring Number:	CAA-122	**Sampled By:**	Drill Crew
Sample Date:	12/29/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.8	-
2 mm (No. 10)	97.1	-
850 µm (No. 20)	95.0	-
425 µm (No. 40)	91.8	-
250 µm (No. 60)	88.7	-
150 µm (No. 100)	85.1	-
75 µm (No. 200)	81.1	-
30.5 (µm)	74.7	-
19.5 (µm)	70.9	-
11.5 (µm)	64.0	-
8.2 (µm)	59.3	-
5.9 (µm)	54.8	-
2.9 (µm)	45.8	-
0.8 (µm)	31.3	-



Soil Classification: CH Fat clay, gray and brown, A-7-6(29)

Gravel (%):	1.2	**Sand (%):**	17.7	**Silt (%):**	29.3	**Clay (%):**	51.8
D_{60} (µm):	8.6						

General

Remarks: LL=55, PL=20, PI=35

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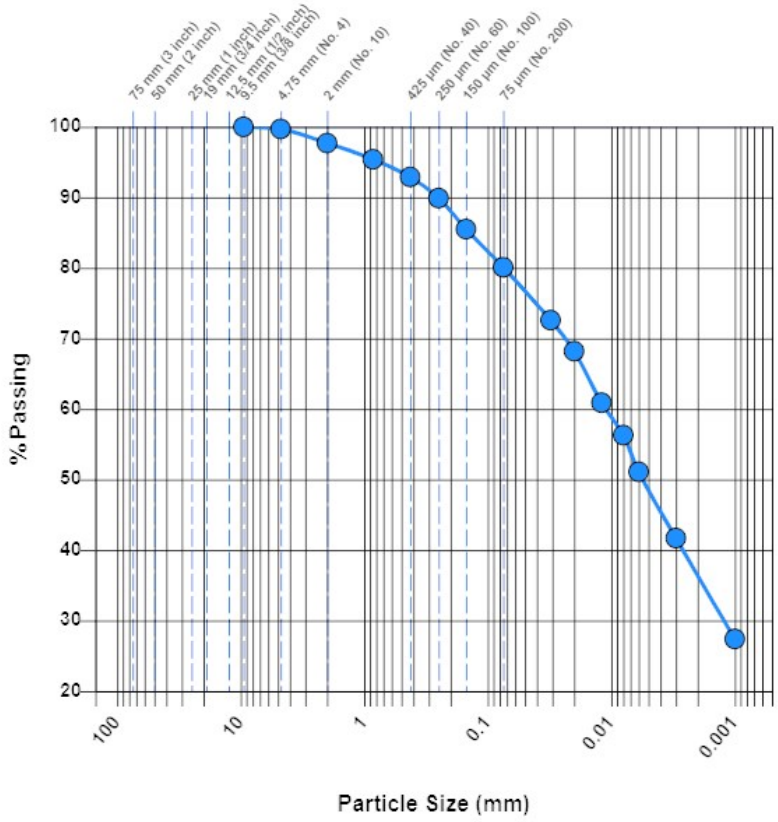
Sample Information

Sample Number:	359017	**Depth (ft):**	14.5-16
Boring Number:	CAA-122	**Sampled By:**	Drill Crew
Sample Date:	12/29/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.7	-
2 mm (No. 10)	97.7	-
850 µm (No. 20)	95.4	-
425 µm (No. 40)	92.9	-
250 µm (No. 60)	89.9	-
150 µm (No. 100)	85.5	-
75 µm (No. 200)	80.1	-
30.9 (µm)	72.6	-
19.8 (µm)	68.2	-
11.7 (µm)	60.9	-
8.3 (µm)	56.3	-
6.0 (µm)	51.1	-
3.0 (µm)	41.7	-
0.8 (µm)	27.4	-



Soil Classification:
CL Lean clay with sand, gray and brown, A-7-6(22)

Gravel (%):	0.3	**Sand (%):**	19.6	**Silt (%):**	32.1	**Clay (%):**	48.0
D_{60} (µm):	11.2	**D_{30} (µm):**	1.4				

General

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

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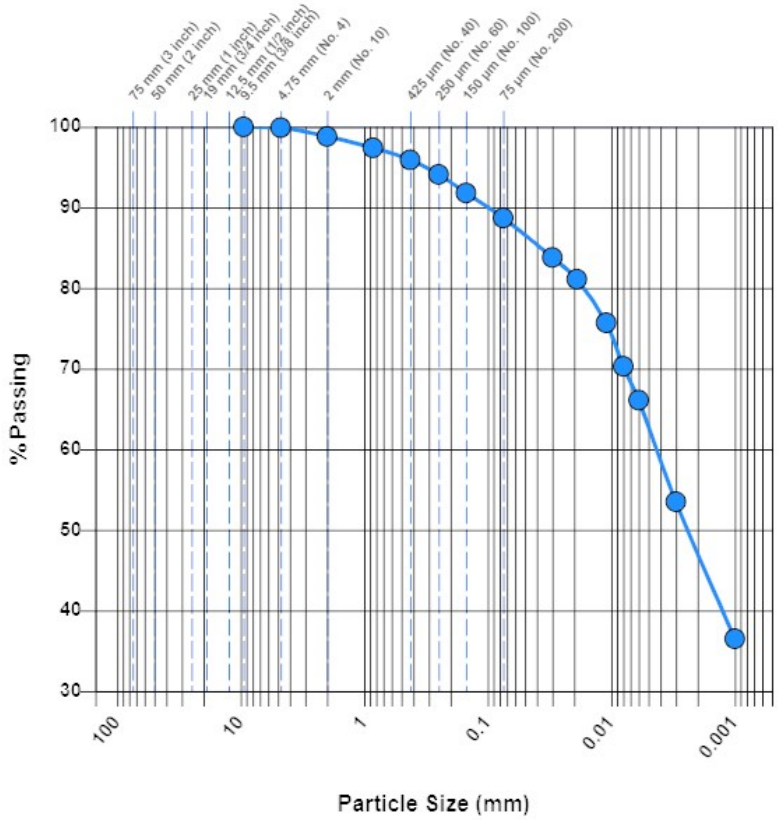
Sample Information

Sample Number:	359018	**Depth (ft):**	19.5-21
Boring Number:	CAA-122	**Sampled By:**	Drill Crew
Sample Date:	12/29/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	98.8	-
850 µm (No. 20)	97.4	-
425 µm (No. 40)	95.9	-
250 µm (No. 60)	94.1	-
150 µm (No. 100)	91.8	-
75 µm (No. 200)	88.7	-
30.2 (µm)	83.8	-
19.3 (µm)	81.1	-
11.3 (µm)	75.7	-
8.1 (µm)	70.3	-
5.8 (µm)	66.1	-
2.9 (µm)	53.5	-
0.7 (µm)	36.5	-



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

Gravel (%):	0.1	**Sand (%):**	11.2	**Silt (%):**	26.8	**Clay (%):**	61.9
D_{60} (µm):	4.5						

General

Remarks: LL=60, PL=21, PI=39

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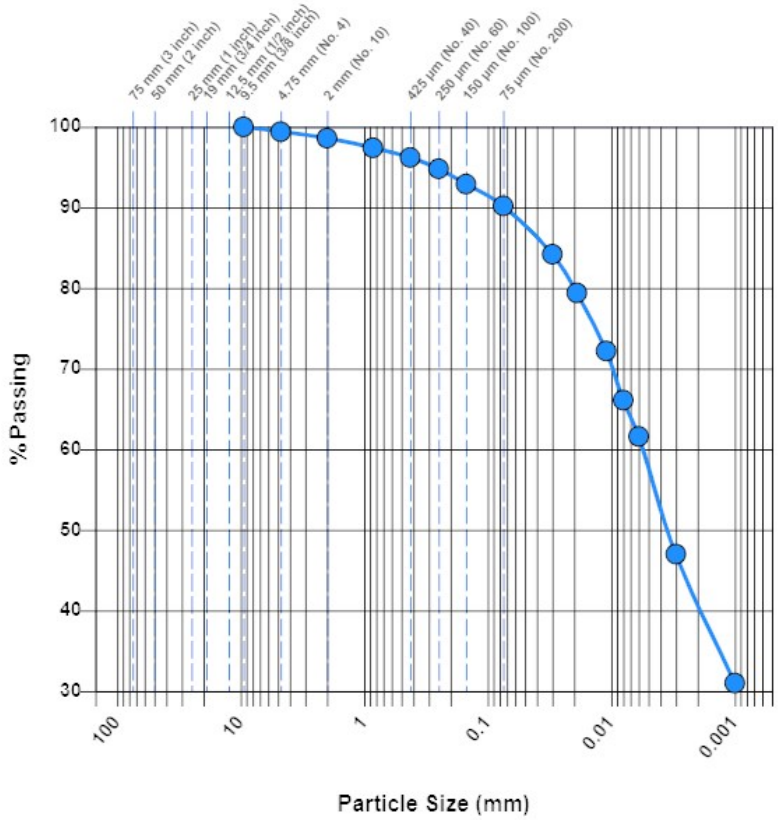
Sample Information

Sample Number:	359019	**Depth (ft):**	4.5-6
Boring Number:	GDRL-123	**Sampled By:**	Drill Crew
Sample Date:	12/29/2020		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.4	-
2 mm (No. 10)	98.6	-
850 µm (No. 20)	97.4	-
425 µm (No. 40)	96.2	-
250 µm (No. 60)	94.8	-
150 µm (No. 100)	92.9	-
75 µm (No. 200)	90.2	-
30.0 (µm)	84.2	-
19.3 (µm)	79.4	-
11.3 (µm)	72.2	-
8.2 (µm)	66.1	-
5.8 (µm)	61.6	-
3.0 (µm)	47.0	-
0.8 (µm)	31.0	-



Soil Classification: CH Fat clay, dark gray, A-7-6(31)

Gravel (%):	0.6	**Sand (%):**	9.2	**Silt (%):**	33.5	**Clay (%):**	56.7
D_{60} (µm):	5.7						

General

Remarks: LL=51, PL=19, PI=32

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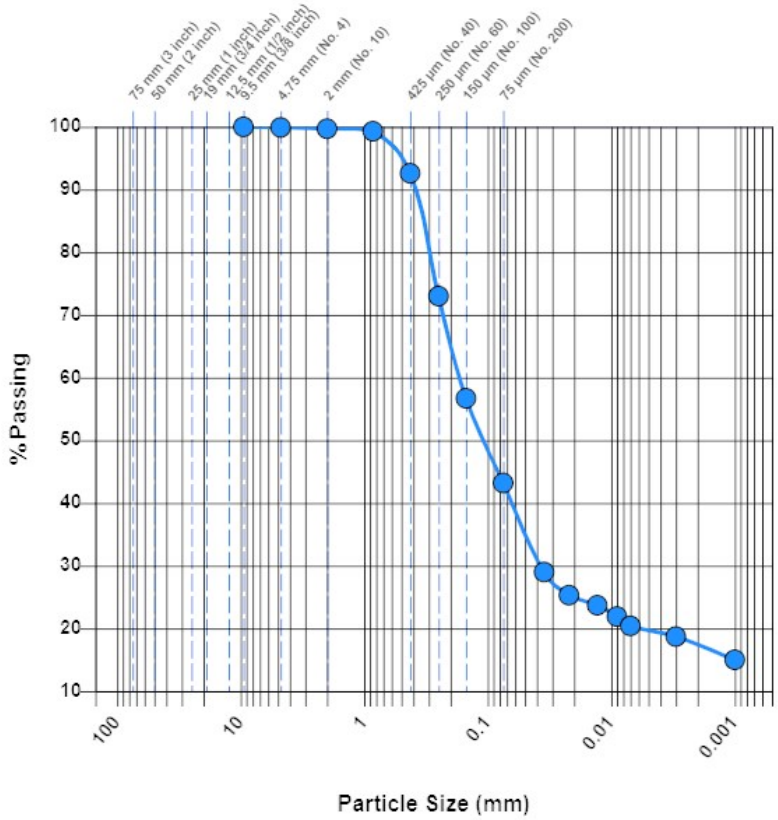
Sample Information

Sample Number:	359020	**Depth (ft):**	0.5-2
Boring Number:	GDRL-124	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	92.6	-
250 µm (No. 60)	73.0	-
150 µm (No. 100)	56.7	-
75 µm (No. 200)	43.2	-
34.8 (µm)	29.0	-
22.2 (µm)	25.3	-
12.8 (µm)	23.7	-
9.1 (µm)	21.9	-
6.5 (µm)	20.4	-
3.2 (µm)	18.7	-
0.8 (µm)	15.0	-



Soil Classification: SC Clayey sand, black to gray, A-6(1)

Gravel (%):	0.1	**Sand (%):**	56.7	**Silt (%):**	23.6	**Clay (%):**	19.6
D_{60} (µm):	170.2	**D_{30} (µm):**	37.8				

General

Remarks: LL=28, PL=17, PI=11

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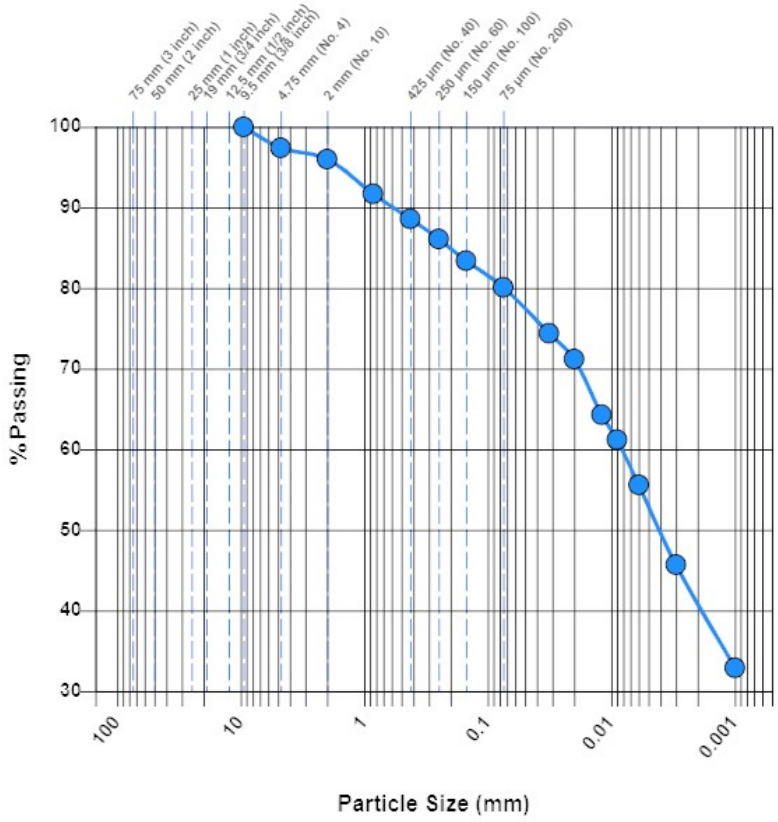
Sample Information

Sample Number:	359021	**Depth (ft):**	9.5-11
Boring Number:	GDRL-124	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	97.4	-
2 mm (No. 10)	96.0	-
850 µm (No. 20)	91.7	-
425 µm (No. 40)	88.6	-
250 µm (No. 60)	86.1	-
150 µm (No. 100)	83.4	-
75 µm (No. 200)	80.1	-
31.8 (µm)	74.4	-
20.3 (µm)	71.2	-
11.9 (µm)	64.3	-
8.5 (µm)	61.2	-
6.1 (µm)	55.6	-
3.0 (µm)	45.7	-
0.8 (µm)	32.9	-



Soil Classification: CH Fat clay with sand, gray, A-7-6(29)

Gravel (%):	2.6	**Sand (%):**	17.3	**Silt (%):**	27.8	**Clay (%):**	52.3
D_{60} (µm):	8.4						

General

Remarks: LL=57, PL=22, PI=35

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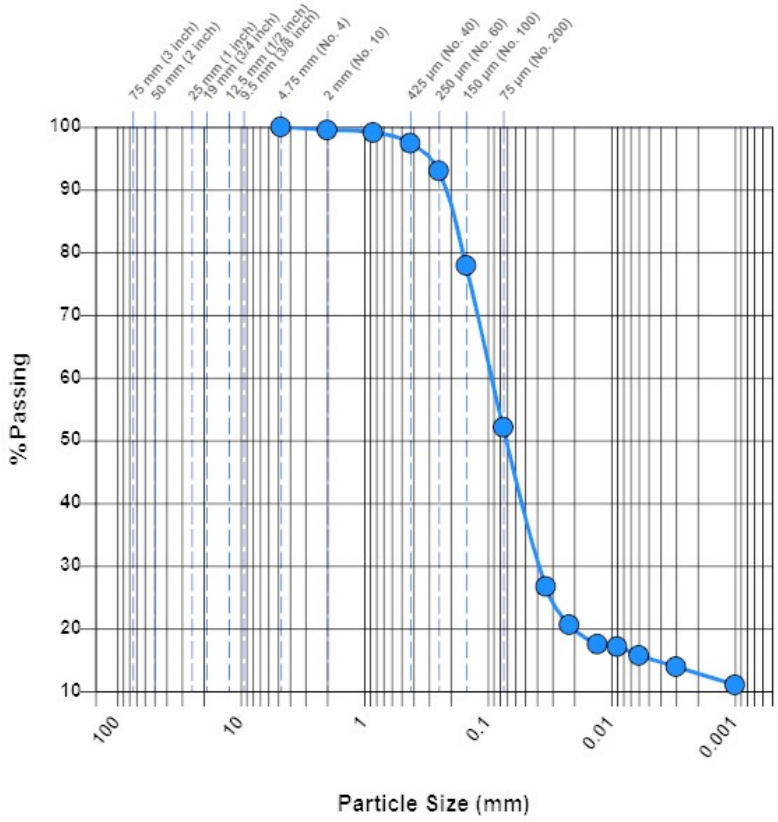
Sample Information

Sample Number:	359023	**Depth (ft):**	4.5-6
Boring Number:	CAA-125	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.5	-
850 µm (No. 20)	99.1	-
425 µm (No. 40)	97.4	-
250 µm (No. 60)	93.0	-
150 µm (No. 100)	77.9	-
75 µm (No. 200)	52.1	-
34.2 (µm)	26.7	-
22.0 (µm)	20.6	-
12.8 (µm)	17.5	-
9.1 (µm)	17.1	-
6.4 (µm)	15.7	-
3.2 (µm)	13.9	-
0.8 (µm)	11.0	-



Soil Classification: ML Sandy silt, brown, A-4(0)

Gravel (%):	0.0	**Sand (%):**	47.9	**Silt (%):**	37.0	**Clay (%):**	15.1
D_{60} (µm):	98.0	**D_{30} (µm):**	39.3				

General

Remarks: Non Plastic.

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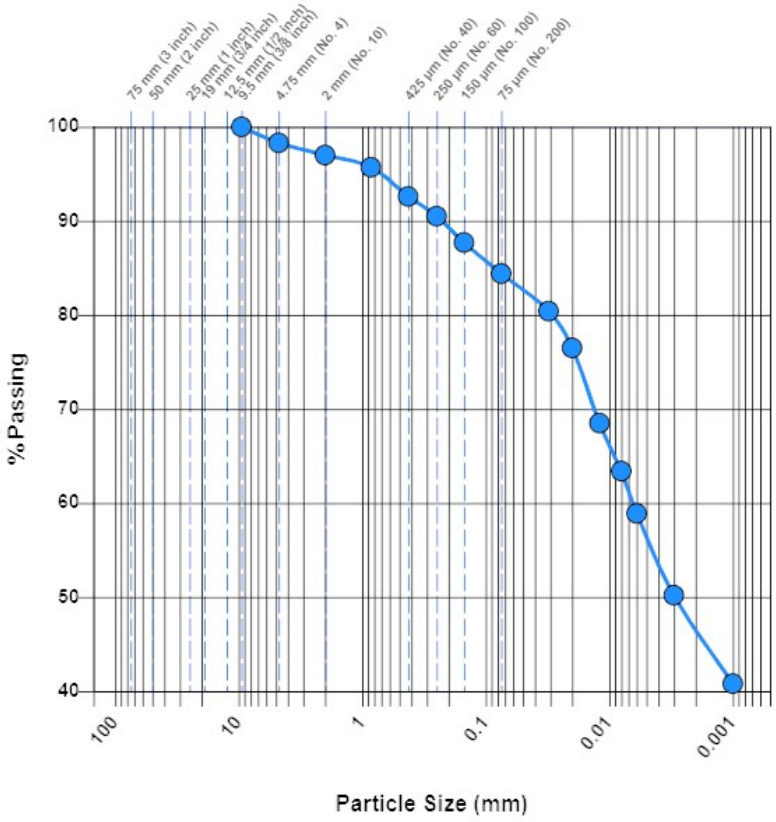
Sample Information

Sample Number:	359024	**Depth (ft):**	14.5-16
Boring Number:	CAA-125	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.3	-
2 mm (No. 10)	97.0	-
850 µm (No. 20)	95.7	-
425 µm (No. 40)	92.6	-
250 µm (No. 60)	90.5	-
150 µm (No. 100)	87.7	-
75 µm (No. 200)	84.4	-
31.1 (µm)	80.4	-
19.9 (µm)	76.5	-
11.7 (µm)	68.5	-
8.3 (µm)	63.4	-
6.0 (µm)	58.9	-
3.0 (µm)	50.2	-
1.4 (µm)	40.8	-



Soil Classification:
CH Fat clay with sand, brown to gray, A-7-6(30)

Gravel (%):	1.7	**Sand (%):**	13.9	**Silt (%):**	28.4	**Clay (%):**	56.0
D_{60} (µm):	6.5						

General

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

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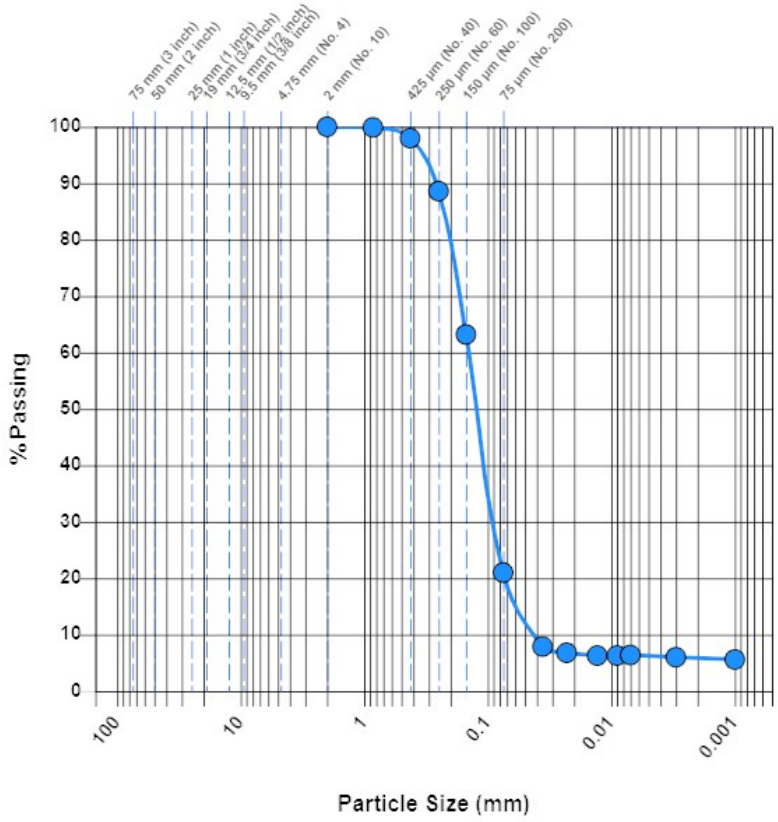
Sample Information

Sample Number:	359025	**Depth (ft):**	0.5-2
Boring Number:	GDRL-126	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	98.0	-
250 µm (No. 60)	88.6	-
150 µm (No. 100)	63.2	-
75 µm (No. 200)	21.0	-
36.1 (µm)	7.9	-
22.9 (µm)	6.8	-
13.2 (µm)	6.3	-
9.4 (µm)	6.3	-
6.6 (µm)	6.4	-
3.2 (µm)	6.0	-
0.8 (µm)	5.6	-



Soil Classification: SM Silty sand, brown, A-2-4(1)

Gravel (%):	0	**Sand (%):**	79.0	**Silt (%):**	14.8	**Clay (%):**	6.2		
D_{60} (µm):	144.3	**D_{30} (µm):**	91.0	**D_{10} (µm):**	42.3	**C_u:**	3.41	**C_c:**	1.36

General

Remarks: Non Plastic.

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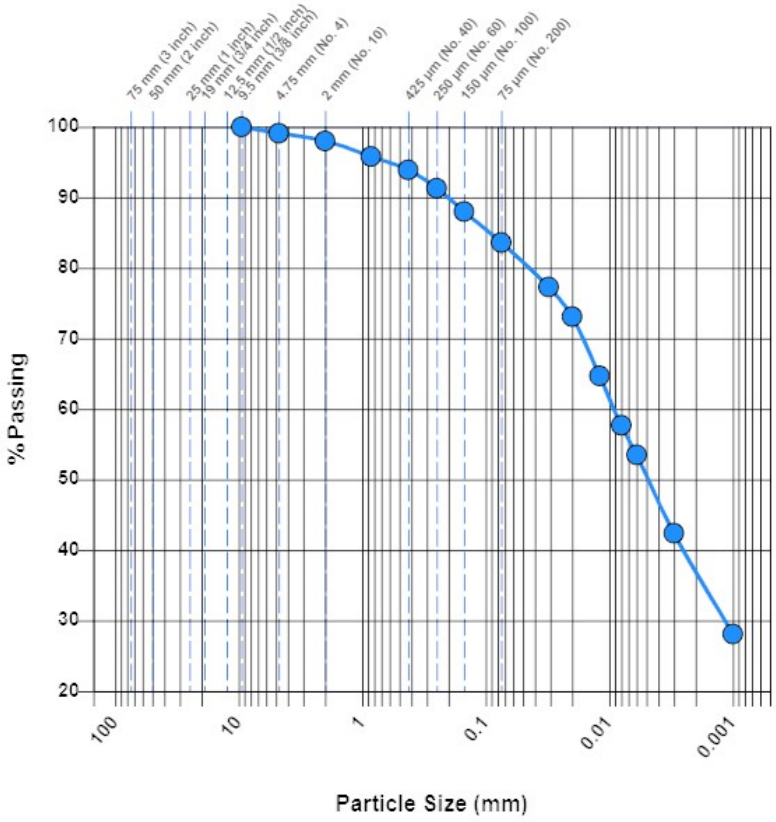
Sample Information

Sample Number:	359026	**Depth (ft):**	9.5-11
Boring Number:	GDRL-126	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.1	-
2 mm (No. 10)	98.0	-
850 µm (No. 20)	95.8	-
425 µm (No. 40)	93.9	-
250 µm (No. 60)	91.3	-
150 µm (No. 100)	88.0	-
75 µm (No. 200)	83.6	-
30.9 (µm)	77.3	-
19.8 (µm)	73.1	-
11.7 (µm)	64.7	-
8.4 (µm)	57.7	-
6.0 (µm)	53.5	-
3.0 (µm)	42.4	-
0.8 (µm)	28.1	-



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

Gravel (%):	0.9	**Sand (%):**	15.5	**Silt (%):**	33.8	**Clay (%):**	49.8
D_{60} (µm):	9.3	**D_{30} (µm):**	1.3				

General

Remarks: LL=49, PL=21, PI=28

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Hydrometer And Sieve Analysis

ASTM D422

2/25/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

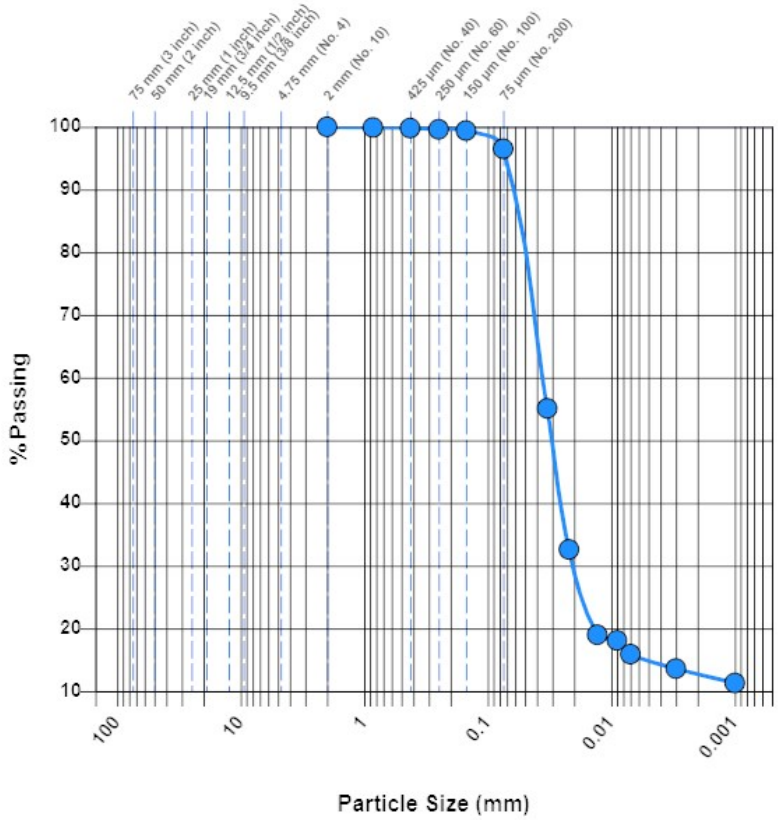
Sample Information

Sample Number:	359027	**Depth (ft):**	4.5-6
Boring Number:	GDRL-127	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	96.5	-
32.9 (µm)	55.1	-
21.9 (µm)	32.6	-
13.0 (µm)	19.0	-
9.2 (µm)	18.1	-
6.5 (µm)	15.9	-
3.2 (µm)	13.6	-
1.4 (µm)	11.3	-



Soil Classification: ML Silt, brown to gray, A-4(2)

Gravel (%):	0	**Sand (%):**	3.5	**Silt (%):**	81.7	**Clay (%):**	14.8
D_{60} (µm):	38.0	**D_{30} (µm):**	20.3				

General

Remarks: LL=31, PL=30, PI=1

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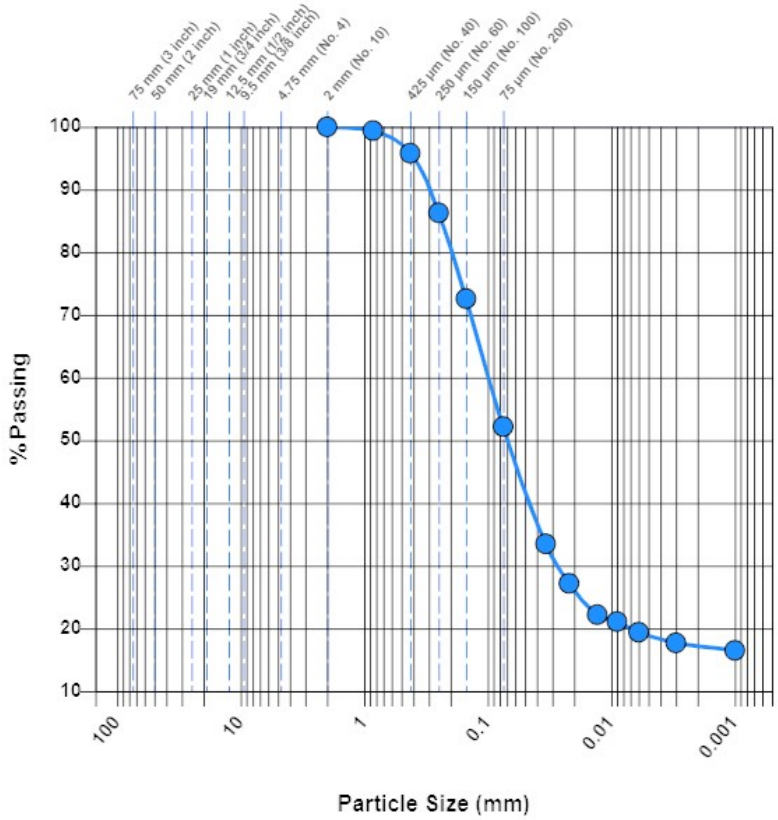
Sample Information

Sample Number:	359028	**Depth (ft):**	0.5-2
Boring Number:	GDRL-128	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	95.8	-
250 µm (No. 60)	86.3	-
150 µm (No. 100)	72.6	-
75 µm (No. 200)	52.2	-
33.7 (µm)	33.5	-
21.7 (µm)	27.2	-
12.7 (µm)	22.2	-
9.0 (µm)	21.1	-
6.4 (µm)	19.4	-
3.1 (µm)	17.7	-
1.4 (µm)	16.5	-



Soil Classification: ML Silt, black, A-4(1)

Gravel (%):	0	**Sand (%):**	47.8	**Silt (%):**	33.4	**Clay (%):**	18.8
D_{60} (µm):	103.7	**D_{30} (µm):**	27.3				

General

Remarks: LL=32, PL=28, PI=4

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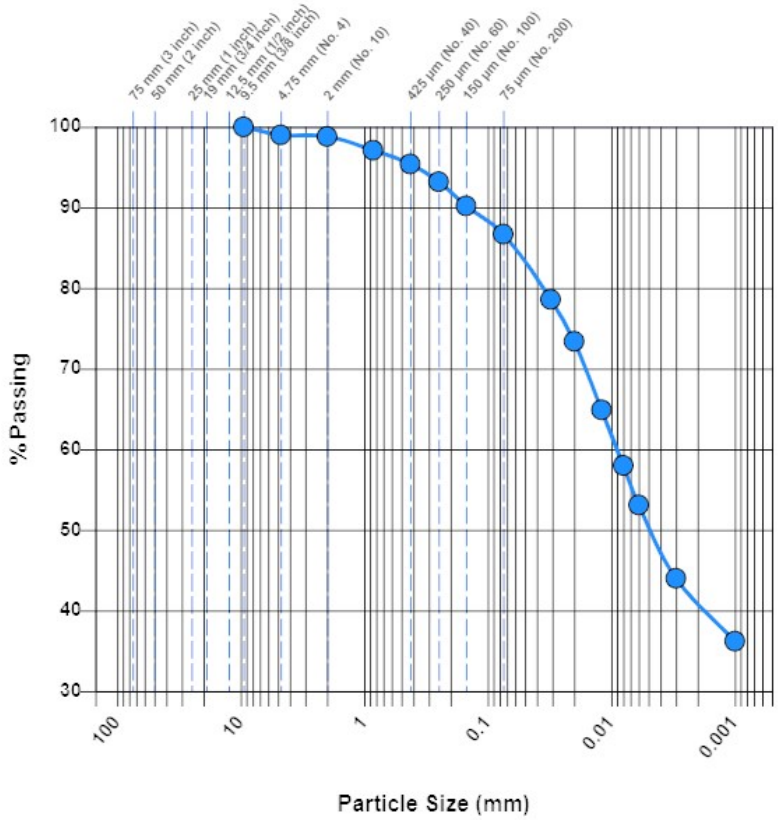
Sample Information

Sample Number:	359029	**Depth (ft):**	9.5-11
Boring Number:	GDRL-128	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.0	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	97.1	-
425 µm (No. 40)	95.4	-
250 µm (No. 60)	93.2	-
150 µm (No. 100)	90.2	-
75 µm (No. 200)	86.7	-
31.0 (µm)	78.6	-
19.8 (µm)	73.4	-
11.7 (µm)	64.9	-
8.4 (µm)	58.0	-
6.0 (µm)	53.1	-
3.0 (µm)	44.0	-
1.4 (µm)	36.2	-



Soil Classification: CH Fat clay, gray, A-7-6(25)

Gravel (%): 1.0 **Sand (%):** 12.3 **Silt (%):** 36.6 **Clay (%):** 50.1

D_{60} (µm): 9.2

General

Remarks: LL=51, PL=24, PI=27

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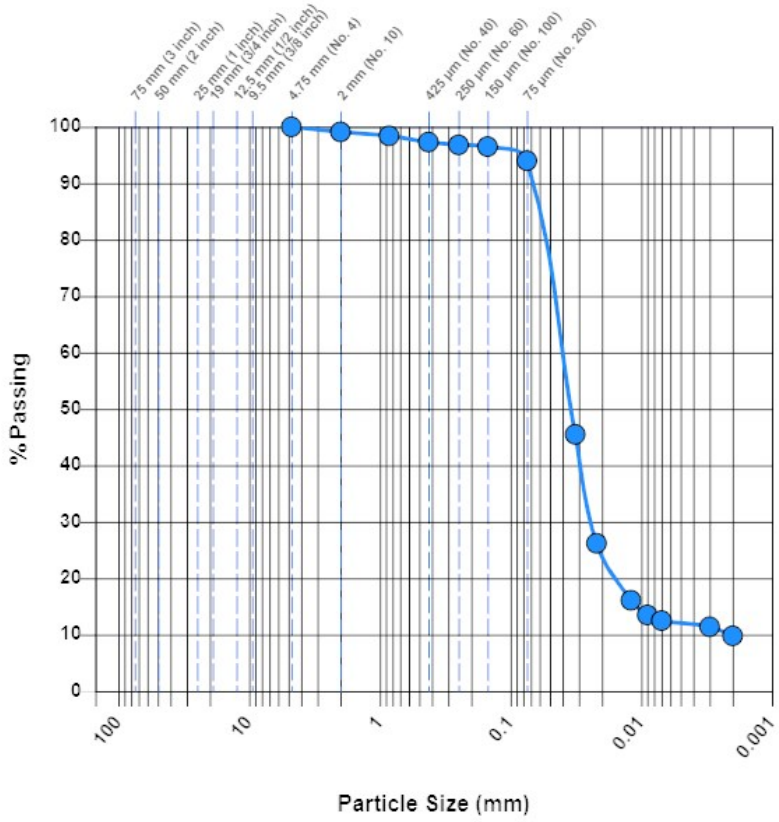
Sample Information

Sample Number:	359031	**Depth (ft):**	4.5-6
Boring Number:	GDRL-129	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.1	-
850 µm (No. 20)	98.4	-
425 µm (No. 40)	97.3	-
250 µm (No. 60)	96.8	-
150 µm (No. 100)	96.5	-
75 µm (No. 200)	94.0	-
31.8 (µm)	45.5	-
21.5 (µm)	26.2	-
12.4 (µm)	16.1	-
9.1 (µm)	13.5	-
6.5 (µm)	12.5	-
3.2 (µm)	11.4	-
1.5 (µm)	9.8	-



Soil Classification: ML Silt, gray to brown, A-4(8)

Gravel (%):	0.0	**Sand (%):**	6.0	**Silt (%):**	82.0	**Clay (%):**	12.0		
D_{60} (µm):	44.9	**D_{30} (µm):**	24.0	**D_{10} (µm):**	2.1	**C_u:**	21.38	**C_c:**	6.11

General

Remarks: LL=34, PL=27, PI=7

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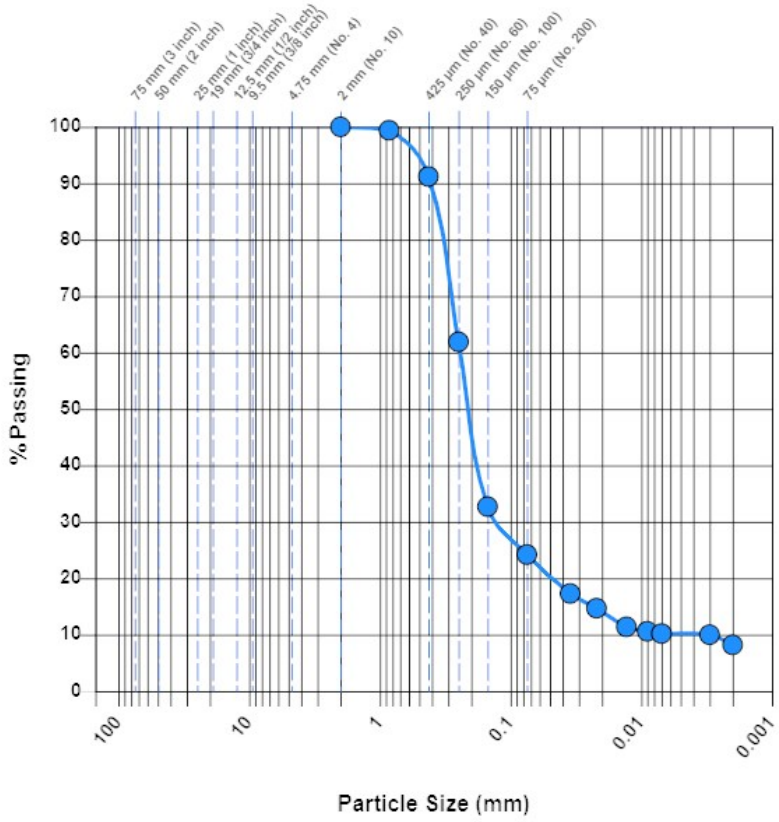
Sample Information

Sample Number:	359033	**Depth (ft):**	0.5-2
Boring Number:	GDRL-130	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	91.2	-
250 µm (No. 60)	61.9	-
150 µm (No. 100)	32.7	-
75 µm (No. 200)	24.2	-
34.8 (µm)	17.3	-
22.2 (µm)	14.7	-
12.6 (µm)	11.4	-
9.2 (µm)	10.6	-
6.5 (µm)	10.2	-
3.2 (µm)	10.0	-
1.5 (µm)	8.2	-



Soil Classification: SM Silty sand, brown, A-2-4(0)

Gravel (%):	0	**Sand (%):**	75.8	**Silt (%):**	14.1	**Clay (%):**	10.1		
D_{60} (µm):	243.5	**D_{30} (µm):**	126.2	**D_{10} (µm):**	3.0	**C_u:**	81.17	**C_c:**	21.80

General

Remarks: Non Plastic.

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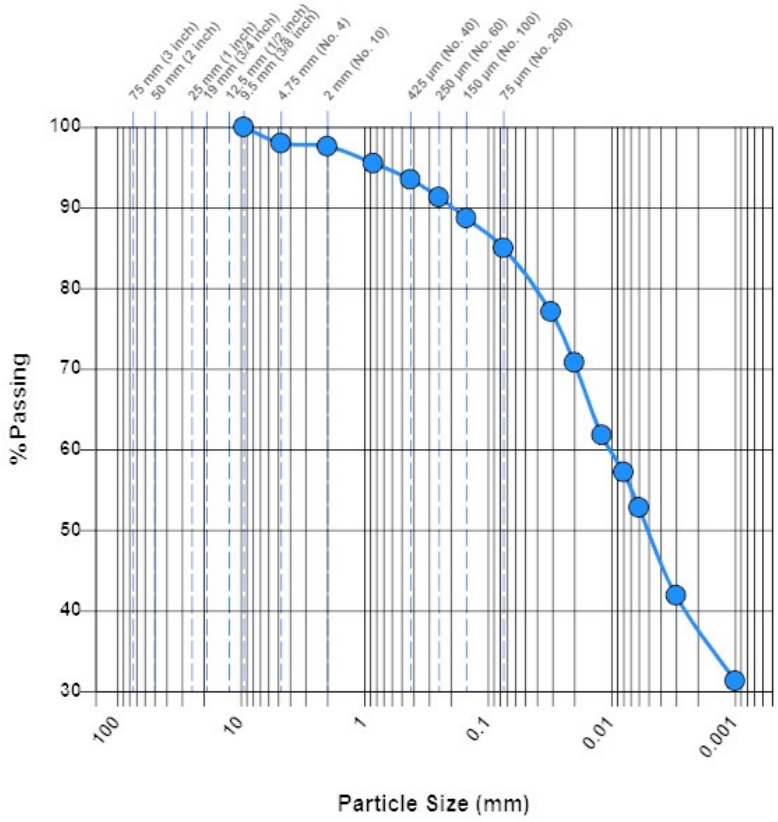
Sample Information

Sample Number:	359034	**Depth (ft):**	9.5-11
Boring Number:	GDRL-130	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.0	-
2 mm (No. 10)	97.6	-
850 µm (No. 20)	95.5	-
425 µm (No. 40)	93.5	-
250 µm (No. 60)	91.3	-
150 µm (No. 100)	88.7	-
75 µm (No. 200)	85.0	-
30.9 (µm)	77.1	-
19.9 (µm)	70.8	-
11.7 (µm)	61.8	-
8.4 (µm)	57.2	-
6.0 (µm)	52.8	-
3.0 (µm)	41.9	-
1.3 (µm)	31.3	-



Soil Classification: CL Lean clay with sand, gray, A-7-6(23)

Gravel (%): 2.0 **Sand (%):** 13.0 **Silt (%):** 35.8 **Clay (%):** 49.2

D_{60} (µm): 10.4

General

Remarks: LL=47, PL=21, PI=26

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Hydrometer And Sieve Analysis

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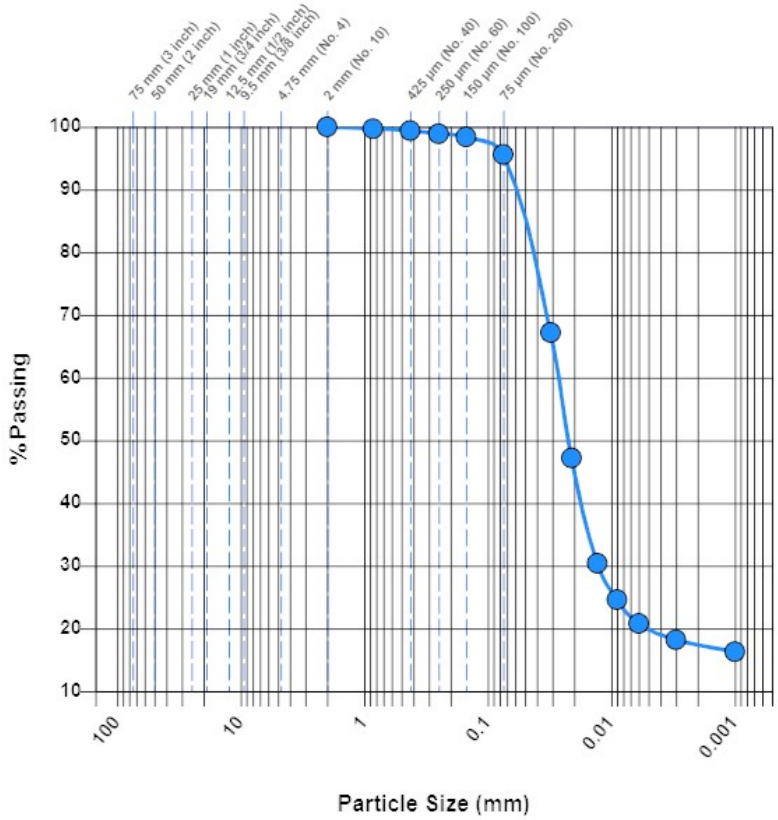
Sample Information

Sample Number:	359035	**Depth (ft):**	4.5-6
Boring Number:	CAA-131	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	98.9	-
150 µm (No. 100)	98.4	-
75 µm (No. 200)	95.6	-
31.3 (µm)	67.2	-
20.9 (µm)	47.2	-
12.6 (µm)	30.4	-
9.0 (µm)	24.6	-
6.4 (µm)	20.8	-
3.1 (µm)	18.2	-
1.4 (µm)	16.3	-



Soil Classification: ML Silt, gray, A-4(11)

Gravel (%):	0	**Sand (%):**	4.4	**Silt (%):**	75.7	**Clay (%):**	19.9
D_{60} (µm):	27.4	**D_{30} (µm):**	12.7				

General

Remarks: LL=37, PL=27, PI=10

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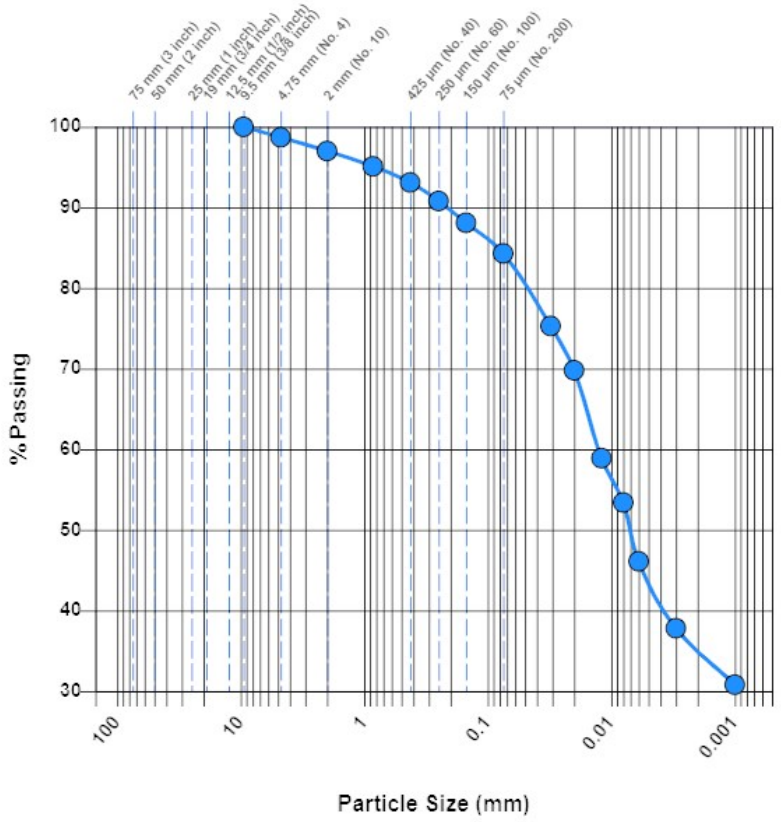
Sample Information

Sample Number:	359036	**Depth (ft):**	14.5-16
Boring Number:	CAA-131	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	98.7	-
2 mm (No. 10)	97.0	-
850 µm (No. 20)	95.1	-
425 µm (No. 40)	93.1	-
250 µm (No. 60)	90.8	-
150 µm (No. 100)	88.1	-
75 µm (No. 200)	84.3	-
30.9 (µm)	75.3	-
19.8 (µm)	69.8	-
11.8 (µm)	58.9	-
8.4 (µm)	53.4	-
6.1 (µm)	46.1	-
3.0 (µm)	37.8	-
1.4 (µm)	30.8	-



Soil Classification: CL Lean clay with sand, brown, A-7-6(21)

Gravel (%):	1.3	**Sand (%):**	14.4	**Silt (%):**	41.0	**Clay (%):**	43.3

D_{60} (µm): 12.8

General

Remarks: LL=46, PL=22, PI=24

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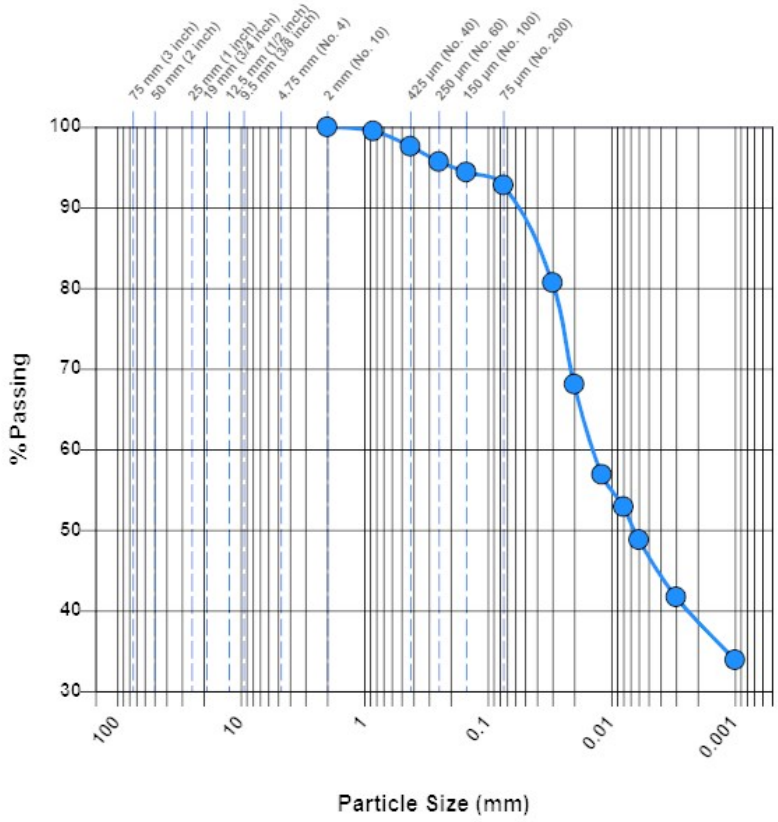
Sample Information

Sample Number:	359038	**Depth (ft):**	0.5-2
Boring Number:	GDRL-132	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	97.6	-
250 µm (No. 60)	95.7	-
150 µm (No. 100)	94.4	-
75 µm (No. 200)	92.8	-
29.5 (µm)	80.7	-
19.5 (µm)	68.1	-
11.6 (µm)	56.9	-
8.3 (µm)	52.9	-
6.0 (µm)	48.8	-
3.0 (µm)	41.7	-
1.3 (µm)	33.9	-



Soil Classification: CL Lean clay, black to brown, A-7-6(23)

Gravel (%):	0	**Sand (%):**	7.2	**Silt (%):**	46.4	**Clay (%):**	46.4
D_{60} (µm):	14.2						

General

Remarks: LL=43, PL=20, PI=23

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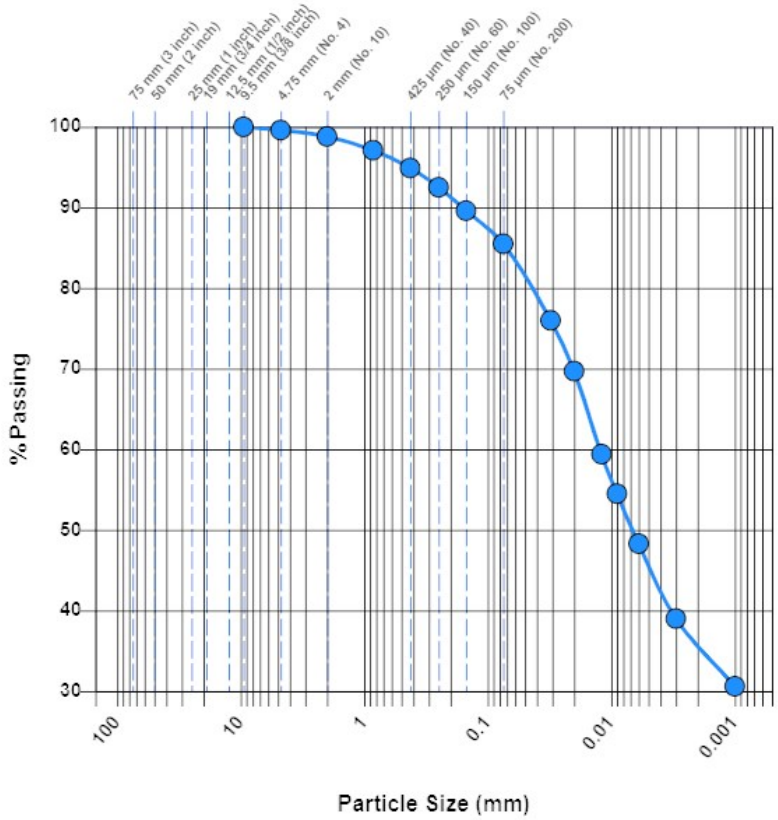
Sample Information

Sample Number:	359039	**Depth (ft):**	9.5-11
Boring Number:	GDRL-132	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.6	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	97.1	-
425 µm (No. 40)	94.9	-
250 µm (No. 60)	92.5	-
150 µm (No. 100)	89.6	-
75 µm (No. 200)	85.5	-
31.1 (µm)	76.0	-
20.0 (µm)	69.7	-
11.8 (µm)	59.4	-
8.5 (µm)	54.5	-
6.1 (µm)	48.3	-
3.0 (µm)	39.0	-
1.4 (µm)	30.6	-



Soil Classification: CH Fat clay, brown, A-7-6(24)

Gravel (%):	0.4	**Sand (%):**	14.1	**Silt (%):**	40.3	**Clay (%):**	45.2

D_{60} (µm): 12.5

General

Remarks: LL=51, PL=25, PI=26

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Hydrometer And Sieve Analysis

ASTM D422

3/1/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

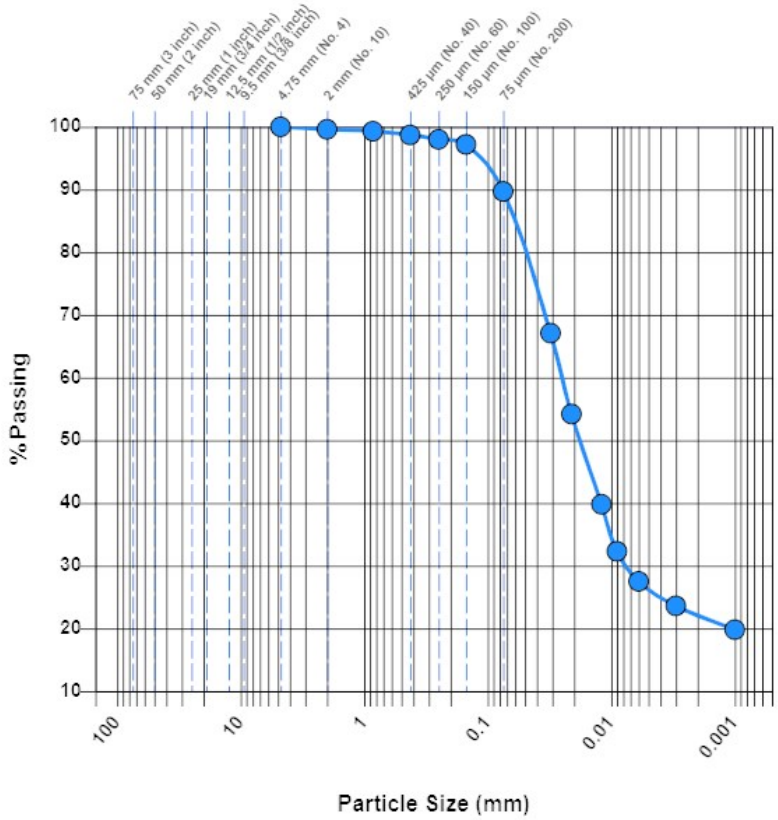
Sample Information

Sample Number:	359040	**Depth (ft):**	4.5-6
Boring Number:	GDRL-133	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.6	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	98.7	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	89.7	-
31.3 (µm)	67.1	-
20.5 (µm)	54.2	-
12.3 (µm)	39.8	-
8.8 (µm)	32.3	-
6.3 (µm)	27.5	-
3.1 (µm)	23.6	-
1.4 (µm)	19.8	-



Soil Classification: ML Silt, brown, A-4-(10)

Gravel (%):	0.0	**Sand (%):**	10.3	**Silt (%):**	63.5	**Clay (%):**	26.2
D_{60} (µm):	25.5	**D_{30} (µm):**	7.6				

General

Remarks: LL=37, PL=27, PI=10

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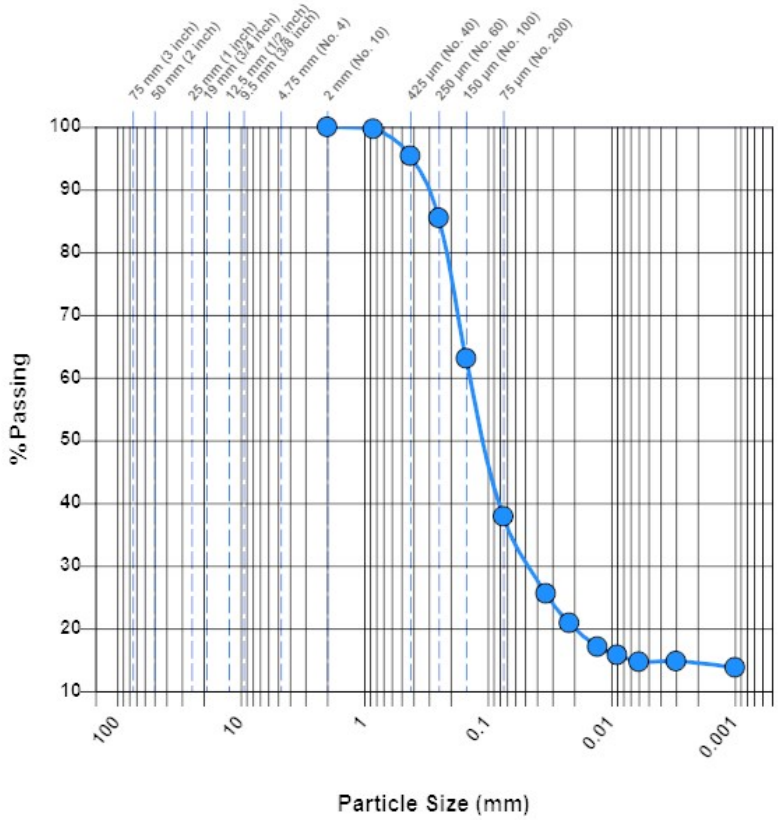
Sample Information

Sample Number:	359043	**Depth (ft):**	0.5-2
Boring Number:	CAA-134	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/04/2021	**Tested By:**	Tschida, Simone T.

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)	95.4	-
250 µm (No. 60)	85.5	-
150 µm (No. 100)	63.1	-
75 µm (No. 200)	37.9	-
34.1 (µm)	25.6	-
21.9 (µm)	20.9	-
12.8 (µm)	17.1	-
9.1 (µm)	15.8	-
6.4 (µm)	14.7	-
3.1 (µm)	14.8	-
1.4 (µm)	13.8	-



Soil Classification: SM Silty sand, brown, A-4(0)

Gravel (%):	0	**Sand (%):**	62.1	**Silt (%):**	23.2	**Clay (%):**	14.7
D_{60} (µm):	140.8	**D_{30} (µm):**	48.7				

General

Remarks: LL=20, PL=18, PI=2

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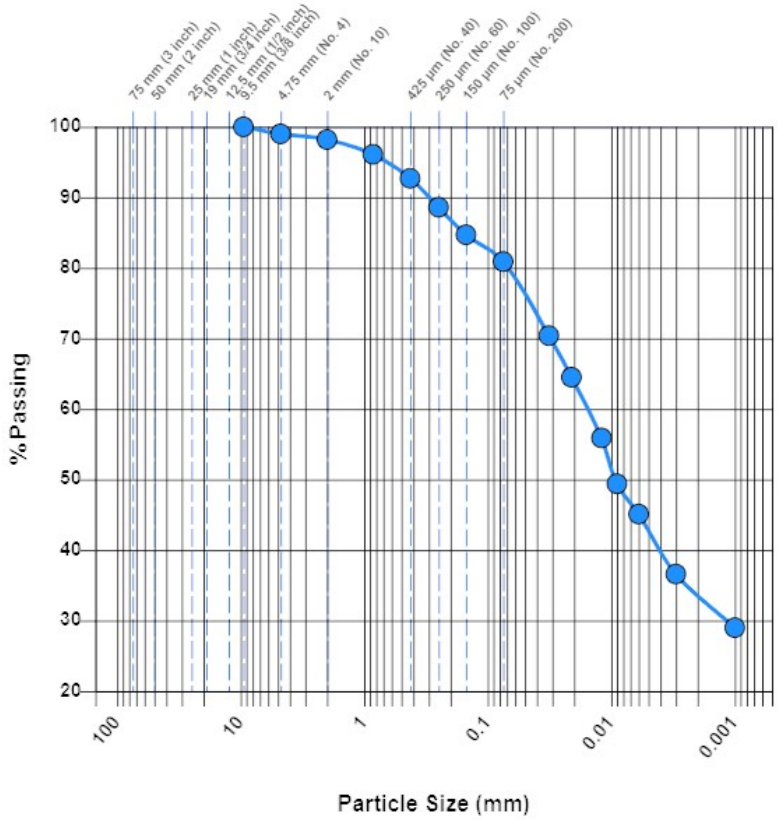
Sample Information

Sample Number:	359044	**Depth (ft):**	9.5-11
Boring Number:	CAA-134	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.0	-
2 mm (No. 10)	98.2	-
850 µm (No. 20)	96.1	-
425 µm (No. 40)	92.7	-
250 µm (No. 60)	88.6	-
150 µm (No. 100)	84.7	-
75 µm (No. 200)	80.9	-
32.0 (µm)	70.4	-
20.5 (µm)	64.5	-
12.1 (µm)	55.9	-
8.7 (µm)	49.4	-
6.2 (µm)	45.1	-
3.1 (µm)	36.6	-
1.3 (µm)	29.0	-



Soil Classification: CL Lean clay with sand, brown, A-7-6(20)

Gravel (%):	1.0	**Sand (%):**	18.1	**Silt (%):**	38.6	**Clay (%):**	42.3
D_{60} (µm):	16.3	**D_{30} (µm):**	1.3				

General

Remarks: LL=47, PL=23, PI=24

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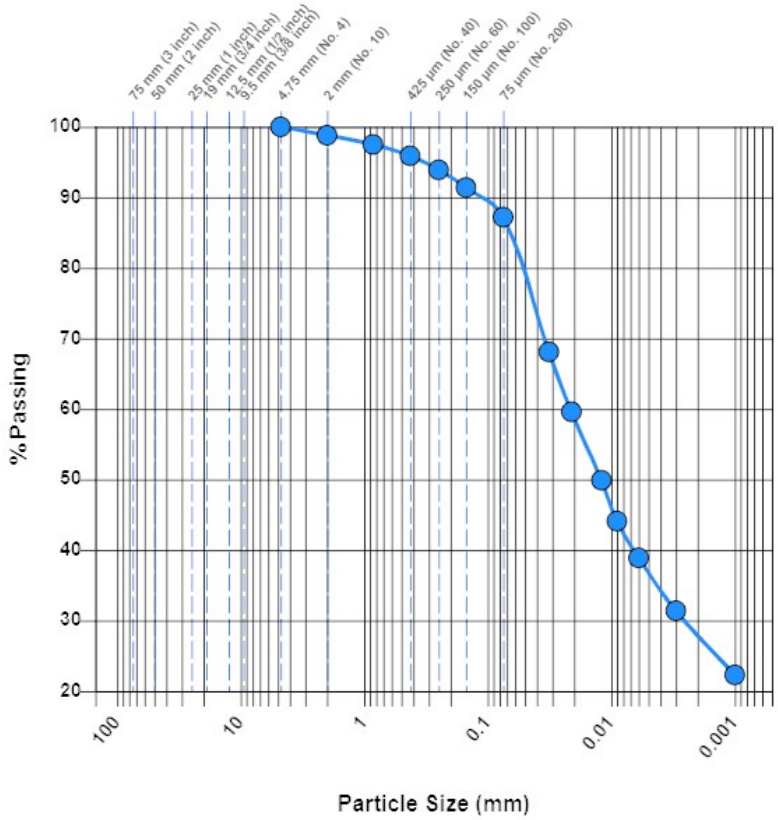
Sample Information

Sample Number:	359045	**Depth (ft):**	19.5-21
Boring Number:	CAA-134	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	98.8	-
850 µm (No. 20)	97.5	-
425 µm (No. 40)	95.9	-
250 µm (No. 60)	93.9	-
150 µm (No. 100)	91.4	-
75 µm (No. 200)	87.2	-
31.6 (µm)	68.1	-
20.5 (µm)	59.6	-
12.1 (µm)	49.9	-
8.7 (µm)	44.1	-
6.2 (µm)	38.9	-
3.1 (µm)	31.4	-
1.4 (µm)	22.3	-



Soil Classification: CL Lean clay, gray, A-6(18)

Gravel (%):	0.0	**Sand (%):**	12.8	**Silt (%):**	50.8	**Clay (%):**	36.4
D_{60} (µm):	21.5	**D_{30} (µm):**	2.7				

General

Remarks: LL=40, PL=20, PI=20

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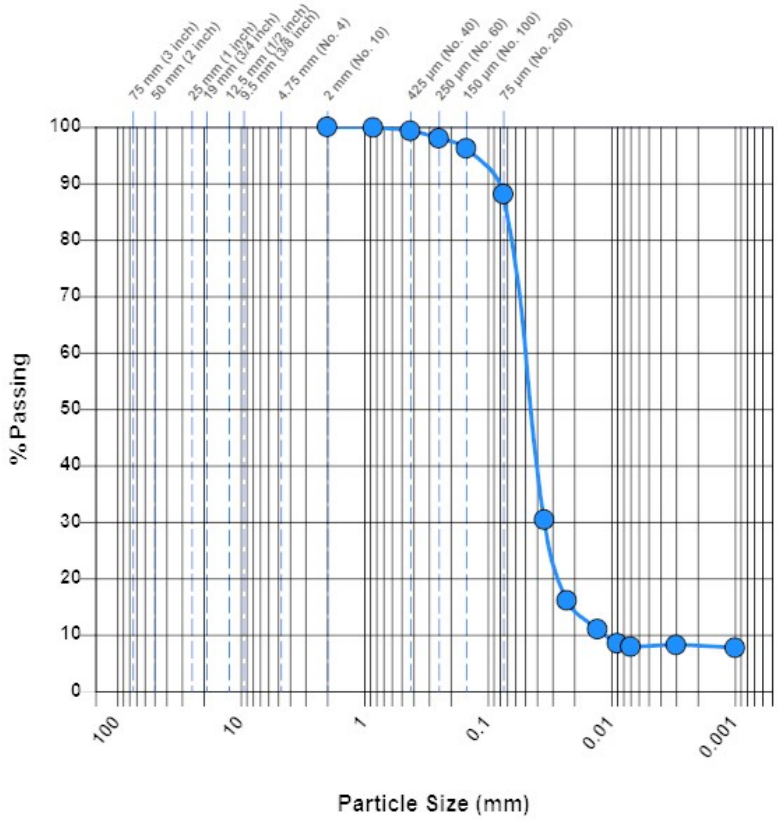
Sample Information

Sample Number:	359046	**Depth (ft):**	4.5-6
Boring Number:	GDRL-135	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.3	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	96.2	-
75 µm (No. 200)	88.1	-
35.0 (µm)	30.4	-
22.8 (µm)	16.1	-
13.3 (µm)	11.0	-
9.4 (µm)	8.5	-
6.7 (µm)	7.9	-
3.2 (µm)	8.2	-
0.8 (µm)	7.7	-



Soil Classification: ML Silt, brown, A-4(0)

Gravel (%):	0	**Sand (%):**	11.9	**Silt (%):**	80.0	**Clay (%):**	8.1		
D_{60} (µm):	55.5	**D_{30} (µm):**	34.7	**D_{10} (µm):**	11.4	**C_u:**	4.87	**C_c:**	1.90

General

Remarks: Non Plastic.

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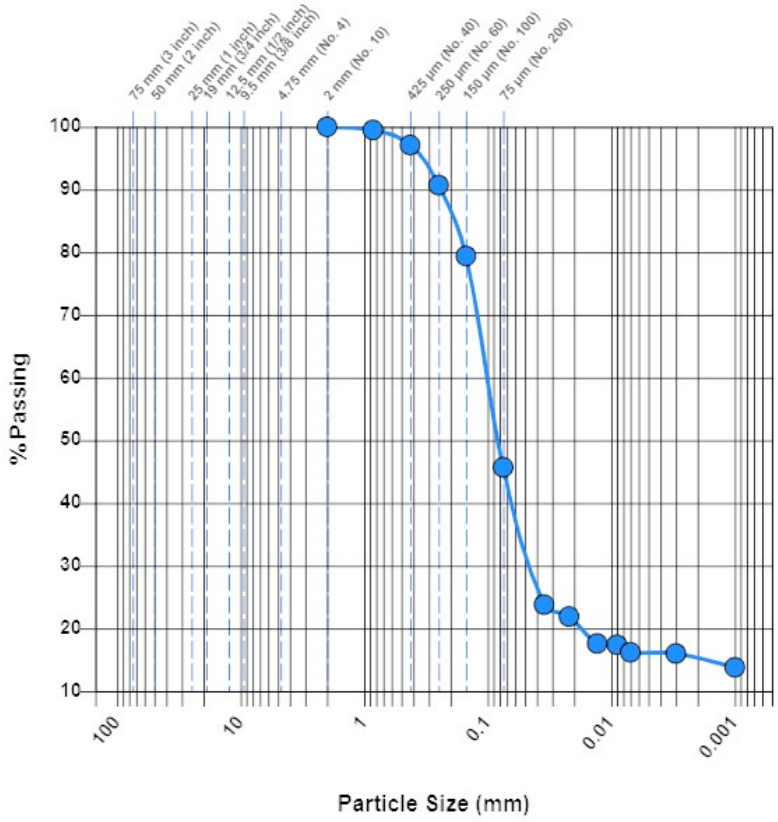
Sample Information

Sample Number:	359047	**Depth (ft):**	0.5-2
Boring Number:	CAA-136	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	97.1	-
250 µm (No. 60)	90.7	-
150 µm (No. 100)	79.4	-
75 µm (No. 200)	45.7	-
35.3 (µm)	23.8	-
22.4 (µm)	21.9	-
13.0 (µm)	17.6	-
9.2 (µm)	17.4	-
6.5 (µm)	16.2	-
3.2 (µm)	16.0	-
0.8 (µm)	13.8	-



Soil Classification: SC-SM Silty clayey sand, black, A-4(0)

Gravel (%):	0	**Sand (%):**	54.3	**Silt (%):**	29.6	**Clay (%):**	16.1
D_{60} (µm):	106.8	**D_{30} (µm):**	46.3				

General

Remarks: Non Plastic.

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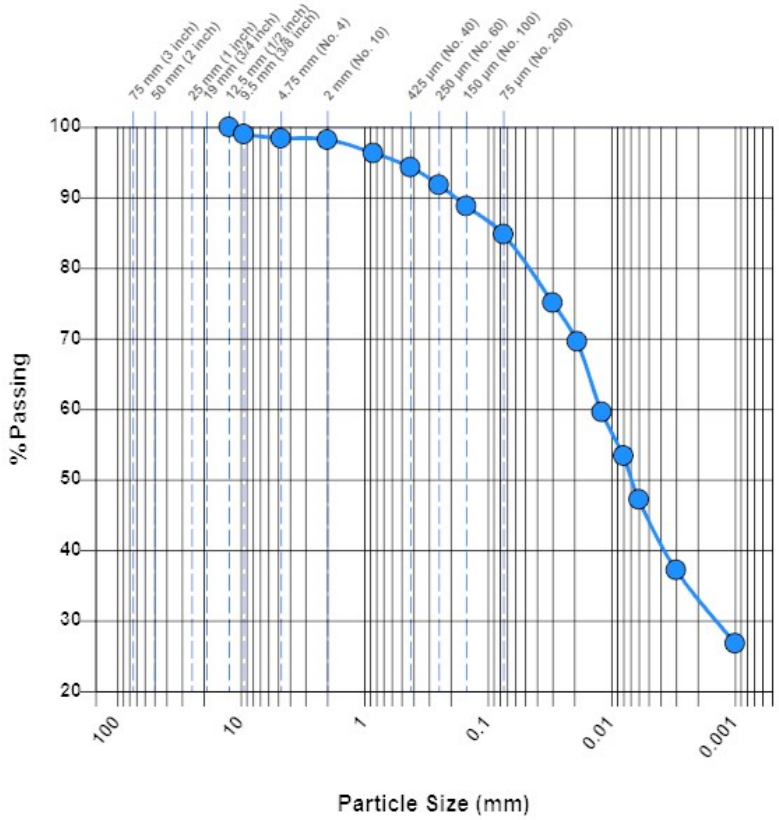
Sample Information

Sample Number:	359048	**Depth (ft):**	9.5-11
Boring Number:	CAA-136	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
12.5 mm (1/2 inch)	100.0	-
9.5 mm (3/8 inch)	99.0	-
4.75 mm (No. 4)	98.4	-
2 mm (No. 10)	98.2	-
850 µm (No. 20)	96.3	-
425 µm (No. 40)	94.3	-
250 µm (No. 60)	91.8	-
150 µm (No. 100)	88.8	-
75 µm (No. 200)	84.8	-
30.1 (µm)	75.1	-
19.4 (µm)	69.6	-
11.6 (µm)	59.6	-
8.3 (µm)	53.4	-
6.0 (µm)	47.2	-
3.0 (µm)	37.2	-
0.8 (µm)	26.8	-



Soil Classification: CH Fat clay with sand, brown, A-7-6(26)

Gravel (%):	1.6	**Sand (%):**	13.6	**Silt (%):**	40.9	**Clay (%):**	43.9
D_{60} (µm):	12.3	**D_{30} (µm):**	1.6				

General

Remarks: LL=51, PL=22, PI=29

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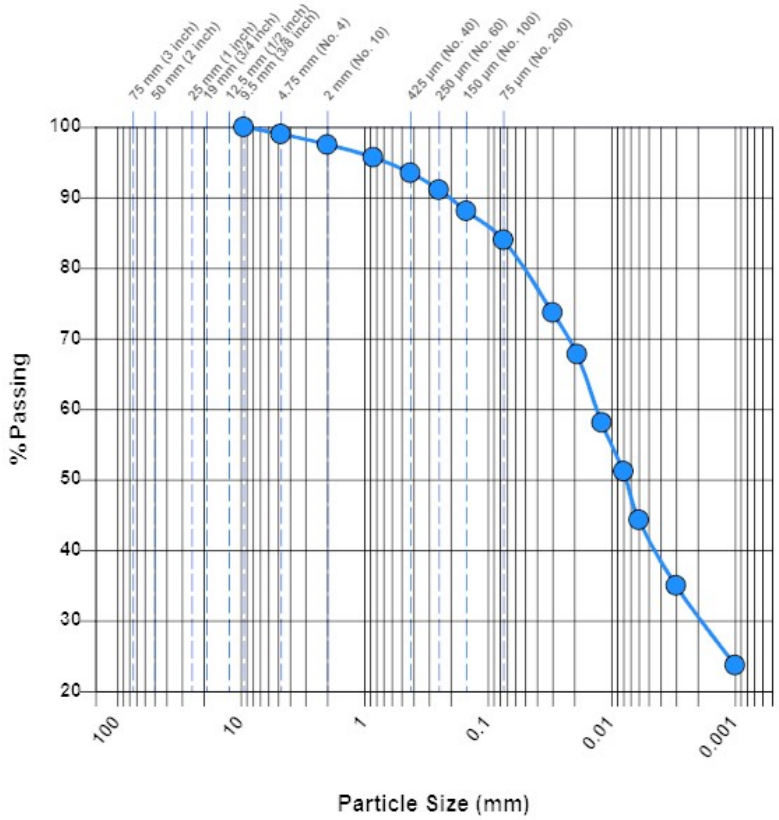
Sample Information

Sample Number:	359049	**Depth (ft):**	19.5-21
Boring Number:	CAA-136	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.0	-
2 mm (No. 10)	97.5	-
850 µm (No. 20)	95.7	-
425 µm (No. 40)	93.5	-
250 µm (No. 60)	91.1	-
150 µm (No. 100)	88.1	-
75 µm (No. 200)	84.0	-
29.9 (µm)	73.7	-
19.3 (µm)	67.8	-
11.5 (µm)	58.1	-
8.3 (µm)	51.2	-
6.0 (µm)	44.3	-
3.0 (µm)	35.0	-
0.8 (µm)	23.7	-



Soil Classification: CL Lean clay with sand, brown, A-7-6(19)

Gravel (%):	1.0	**Sand (%):**	15.0	**Silt (%):**	42.8	**Clay (%):**	41.2
D_{60} (µm):	13.4	**D_{30} (µm):**	2.1				

General

Remarks: LL=43, PL=21, PI=22

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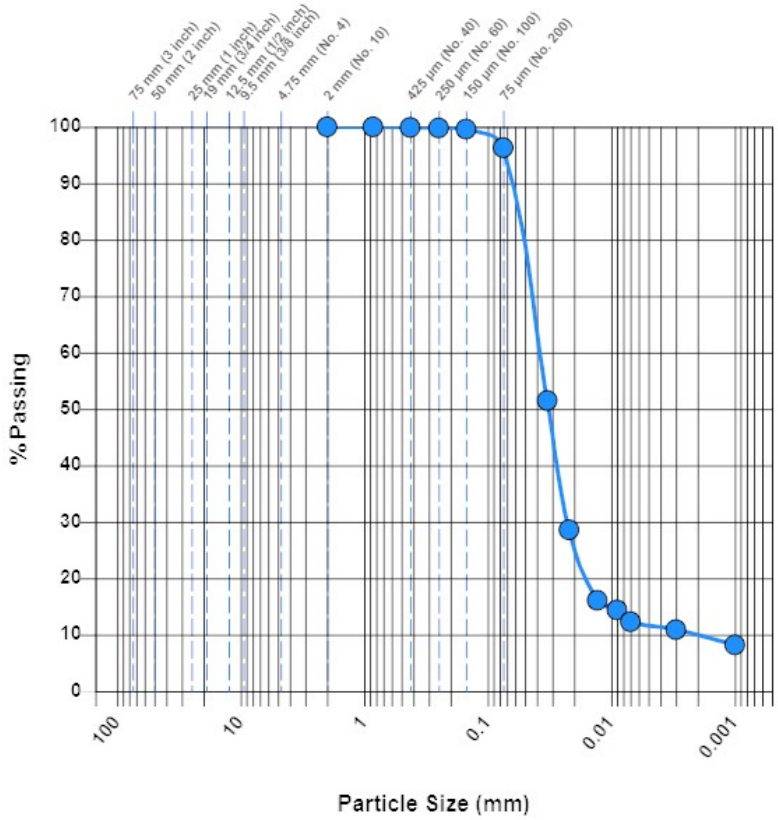
Sample Information

Sample Number:	359050	**Depth (ft):**	4.5-6
Boring Number:	GDRL-137	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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	-
32.5 (µm)	51.5	-
21.9 (µm)	28.6	-
13.0 (µm)	16.1	-
9.2 (µm)	14.4	-
6.6 (µm)	12.3	-
3.2 (µm)	10.9	-
0.8 (µm)	8.2	-



Soil Classification: ML Silt, gray, A-4(0)

Gravel (%):	0	**Sand (%):**	3.7	**Silt (%):**	84.7	**Clay (%):**	11.6		
D_{60} (µm):	41.0	**D_{30} (µm):**	22.7	**D_{10} (µm):**	2.3	**C_u:**	17.83	**C_c:**	5.46

General

Remarks: Non Plastic.

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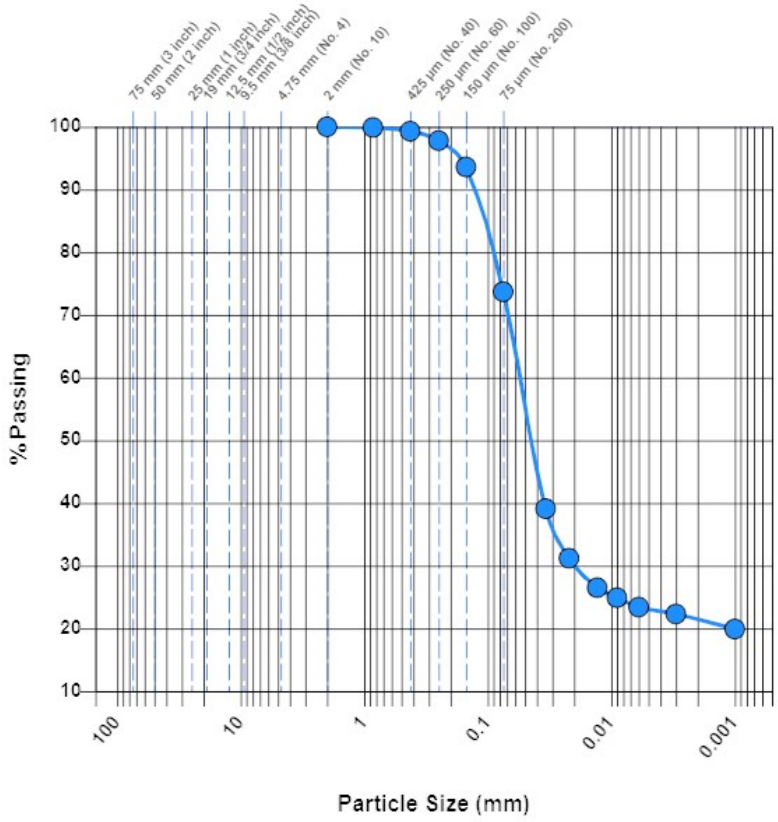
Sample Information

Sample Number:	359052	**Depth (ft):**	0.5-2
Boring Number:	CAA-138	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.3	-
250 µm (No. 60)	97.8	-
150 µm (No. 100)	93.6	-
75 µm (No. 200)	73.7	-
33.7 (µm)	39.1	-
21.7 (µm)	31.2	-
12.7 (µm)	26.5	-
9.0 (µm)	24.9	-
6.4 (µm)	23.4	-
3.1 (µm)	22.3	-
1.4 (µm)	19.9	-



Soil Classification:
CL Lean clay with sand, black to brown, A-4(7)

Gravel (%):	0	**Sand (%):**	26.3	**Silt (%):**	50.7	**Clay (%):**	23.0
D_{60} (µm):	58.8	**D_{30} (µm):**	19.7				

General

Remarks: LL=33, PL=22, PI=11

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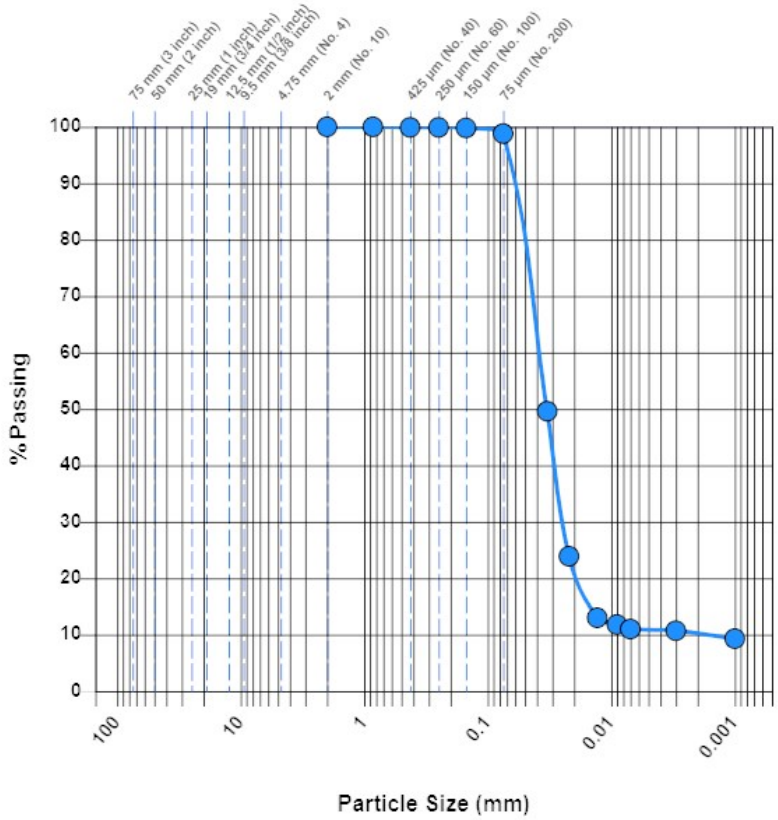
Sample Information

Sample Number:	359053	**Depth (ft):**	9.5-11
Boring Number:	CAA-138	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.8	-
32.6 (µm)	49.6	-
22.0 (µm)	23.9	-
13.1 (µm)	13.0	-
9.2 (µm)	11.8	-
6.6 (µm)	11.0	-
3.2 (µm)	10.7	-
1.4 (µm)	9.3	-



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

Gravel (%):	0	**Sand (%):**	1.2	**Silt (%):**	87.9	**Clay (%):**	10.9		
D_{60} (µm):	41.9	**D_{30} (µm):**	24.6	**D_{10} (µm):**	2.0	**C_u:**	20.95	**C_c:**	7.22

General

Remarks: LL=30, PL=28, PI=2

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Client:

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3203 32nd Avenue South
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Project:

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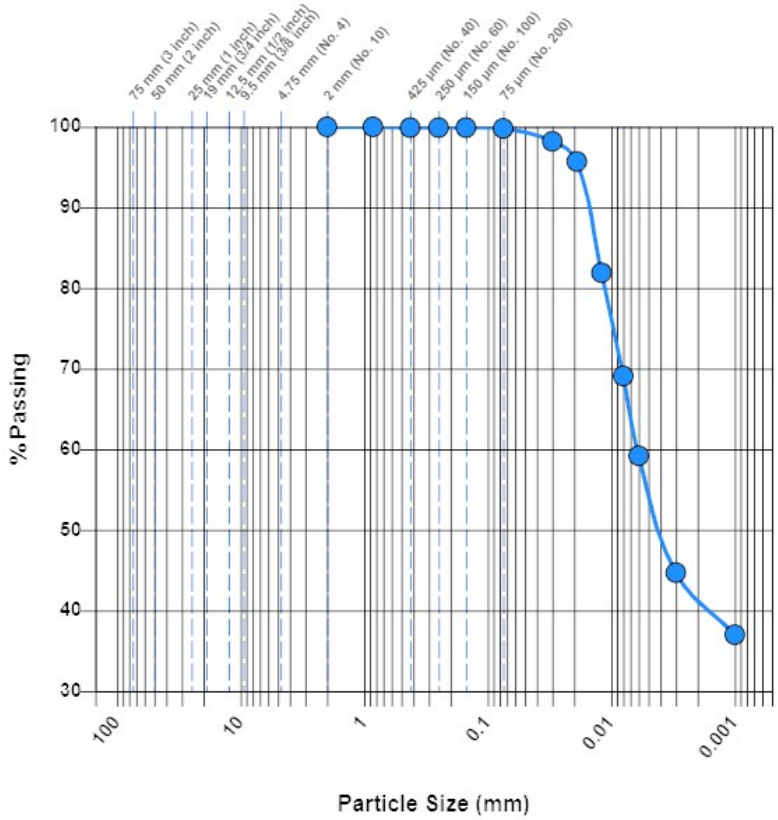
Sample Information

Sample Number:	359054	**Depth (ft):**	19.5-21
Boring Number:	CAA-138	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
75 µm (No. 200)	99.8	-
30.2 (µm)	98.2	-
19.2 (µm)	95.7	-
11.5 (µm)	81.9	-
8.3 (µm)	69.1	-
6.0 (µm)	59.2	-
3.0 (µm)	44.7	-
1.4 (µm)	37.0	-



Soil Classification: CH Fat clay, gray, A-7-6(39)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	45.4	**Clay (%):**	54.4

D_{60} (µm): 6.2

General

Remarks: LL=60, PL=27, PI=33

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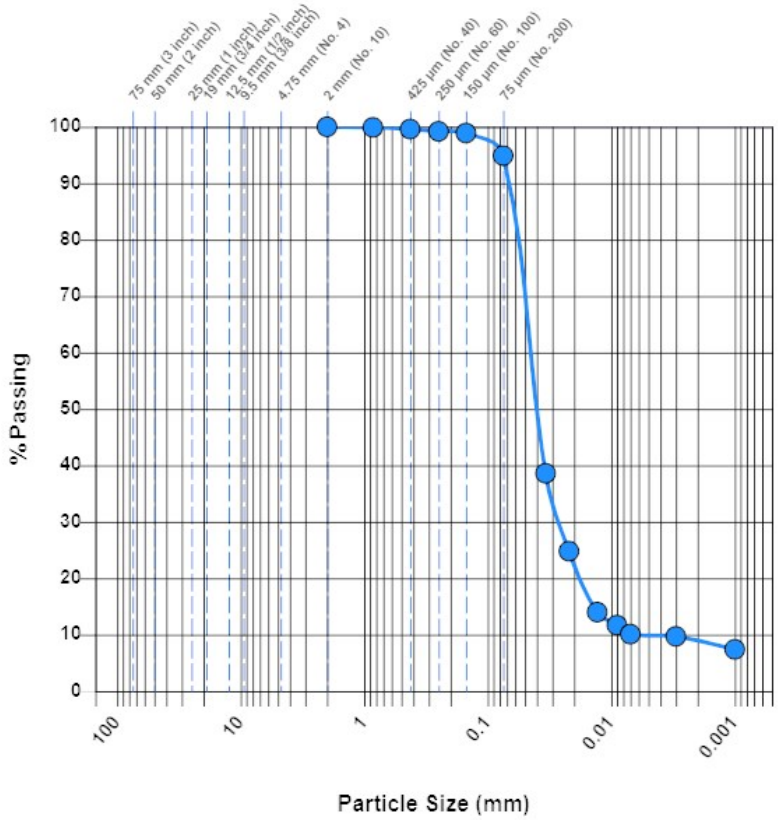
Sample Information

Sample Number:	359055	**Depth (ft):**	4.5-6
Boring Number:	GDRL-139	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	94.9	-
34.2 (µm)	38.6	-
22.3 (µm)	24.8	-
13.1 (µm)	14.0	-
9.3 (µm)	11.7	-
6.6 (µm)	10.1	-
3.2 (µm)	9.7	-
1.4 (µm)	7.4	-



Soil Classification: ML Silt, brown, A-4(0)

Gravel (%):	0	**Sand (%):**	5.1	**Silt (%):**	85.0	**Clay (%):**	9.9		
D_{60} (µm):	49.6	**D_{30} (µm):**	26.5	**D_{10} (µm):**	6.0	**C_u:**	8.27	**C_c:**	2.36

General

Remarks: Non Plastic.

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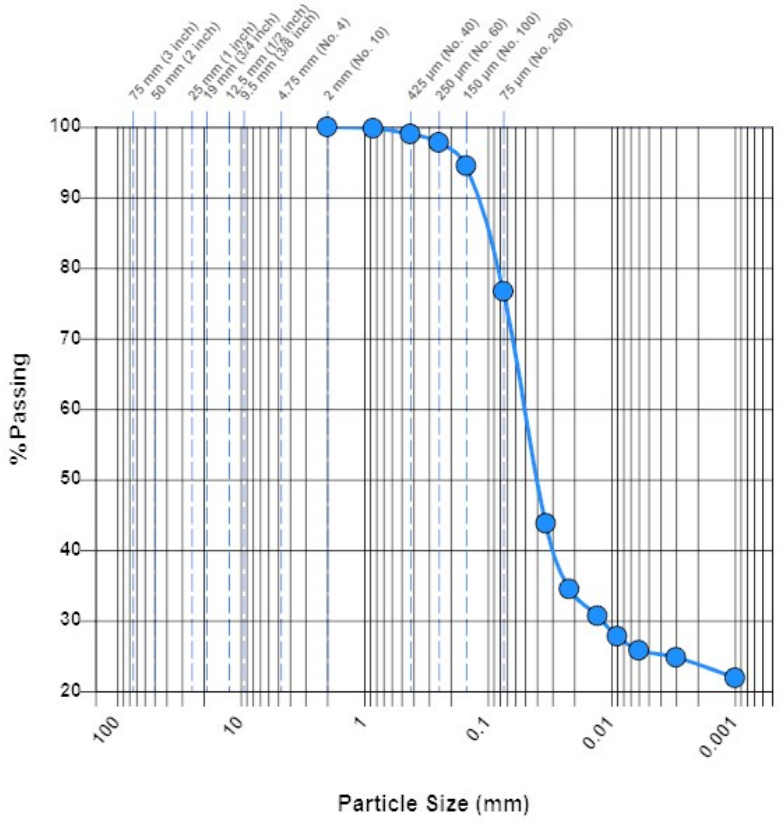
Sample Information

Sample Number:	359056	**Depth (ft):**	0.5-2
Boring Number:	GDRL-140	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
250 µm (No. 60)	97.8	-
150 µm (No. 100)	94.5	-
75 µm (No. 200)	76.7	-
33.7 (µm)	43.8	-
21.8 (µm)	34.5	-
12.7 (µm)	30.7	-
9.0 (µm)	27.8	-
6.4 (µm)	25.8	-
3.1 (µm)	24.8	-
1.4 (µm)	21.9	-



Soil Classification: CL Lean clay with sand, black, A-7-6(13)

Gravel (%):	0	**Sand (%):**	23.3	**Silt (%):**	51.2	**Clay (%):**	25.5
D_{60} (µm):	54.2	**D_{30} (µm):**	12.0				

General

Remarks: LL=41, PL=24, PI=17

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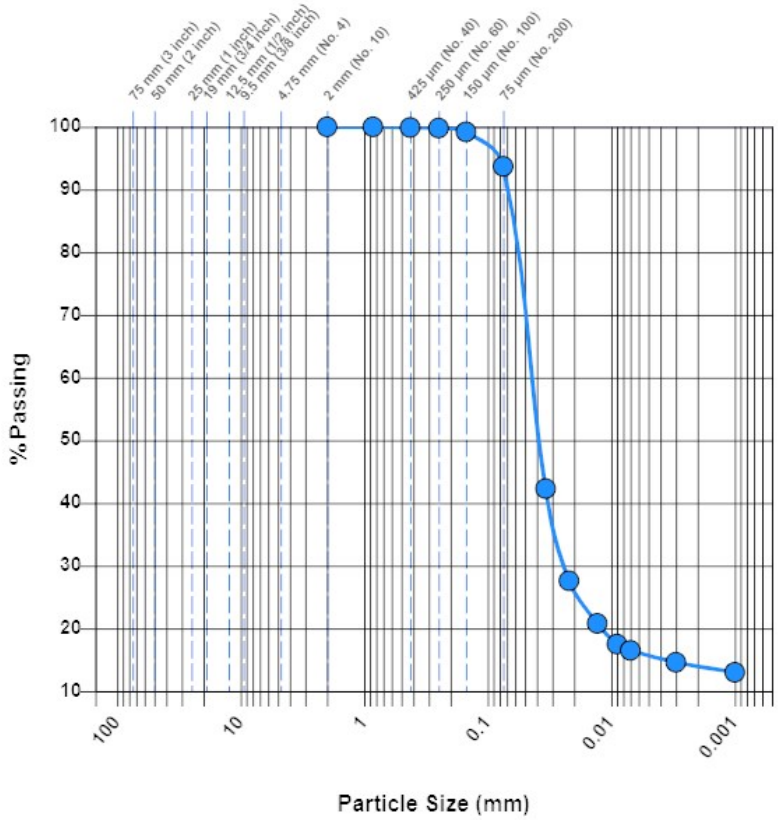
Sample Information

Sample Number:	359057	**Depth (ft):**	9.5-11
Boring Number:	GDRL-140	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
75 µm (No. 200)	93.7	-
33.5 (µm)	42.3	-
21.9 (µm)	27.6	-
12.9 (µm)	20.8	-
9.2 (µm)	17.5	-
6.5 (µm)	16.5	-
3.2 (µm)	14.6	-
1.4 (µm)	13.0	-



Soil Classification: ML Silt, brown to gray, A-4(0)

Gravel (%):	0	**Sand (%):**	6.3	**Silt (%):**	78.1	**Clay (%):**	15.6
D_{60} (µm):	48.1	**D_{30} (µm):**	24.0				

General

Remarks: LL=34, PL=32, PI=2

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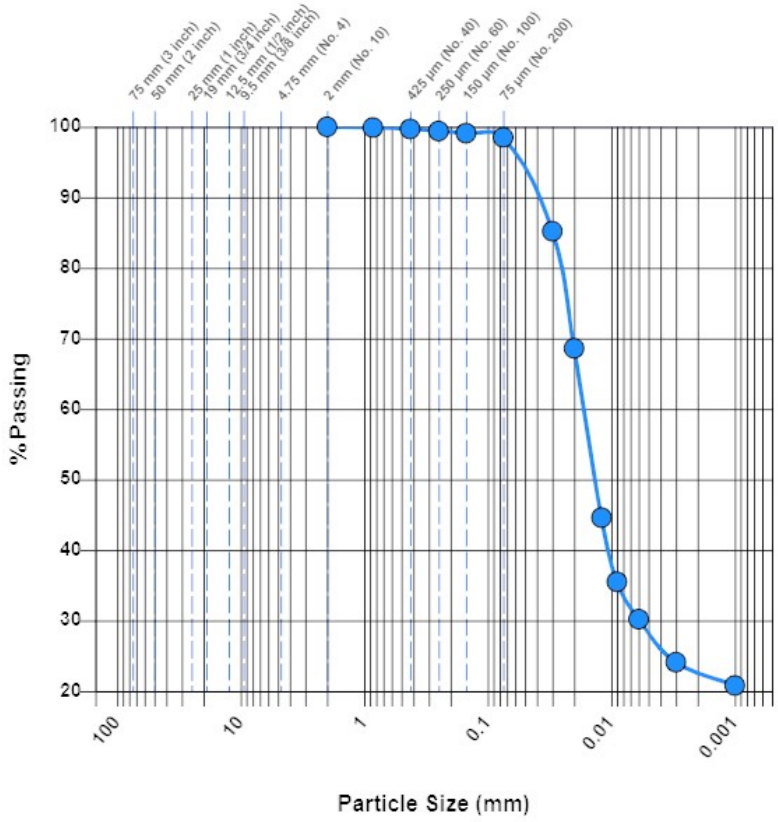
Sample Information

Sample Number:	359058	**Depth (ft):**	4.5-6
Boring Number:	GDRL-141	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.1	-
75 µm (No. 200)	98.5	-
30.4 (µm)	85.2	-
20.1 (µm)	68.6	-
12.3 (µm)	44.6	-
8.8 (µm)	35.5	-
6.3 (µm)	30.2	-
3.1 (µm)	24.1	-
1.4 (µm)	20.8	-



Soil Classification: CL Lean clay, brown, A-7-6(18)

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	70.3	**Clay (%):**	28.2
D_{60} (µm):	17.1	**D_{30} (µm):**	5.9				

General

Remarks: LL=42, PL=27, PI=15

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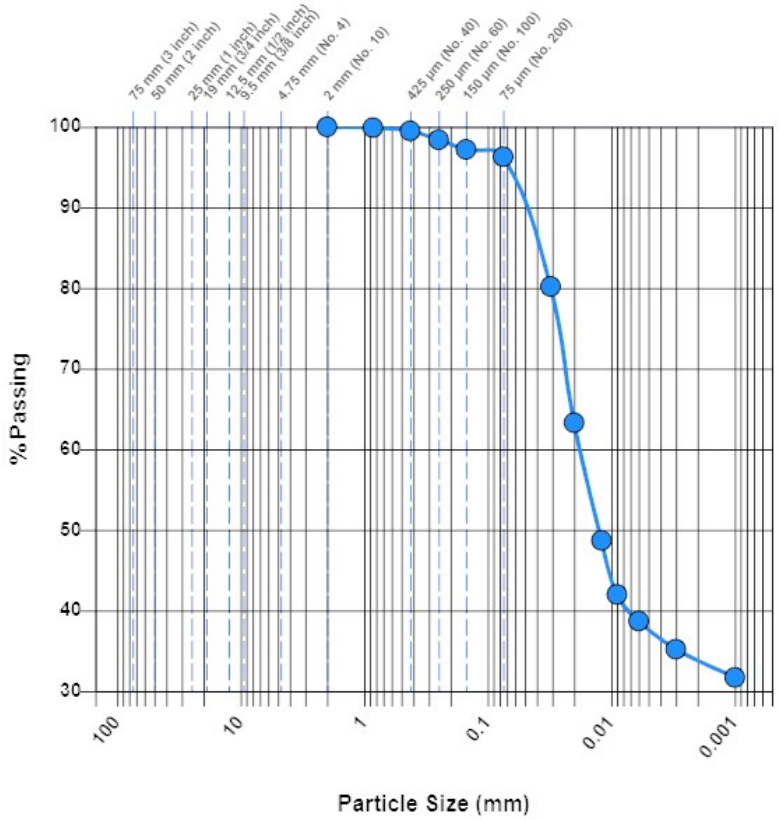
Sample Information

Sample Number:	359059	**Depth (ft):**	0.5-2
Boring Number:	GDRL-142	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.4	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	96.3	-
30.7 (µm)	80.2	-
20.3 (µm)	63.3	-
12.1 (µm)	48.7	-
8.7 (µm)	42.0	-
6.2 (µm)	38.7	-
3.0 (µm)	35.2	-
1.4 (µm)	31.7	-



Soil Classification: CH Fat clay, black, A-7-6(30)

Gravel (%):	0	**Sand (%):**	3.7	**Silt (%):**	58.8	**Clay (%):**	37.5

D_{60} (µm): 18.2

General

Remarks: LL=50, PL=22, PI=28

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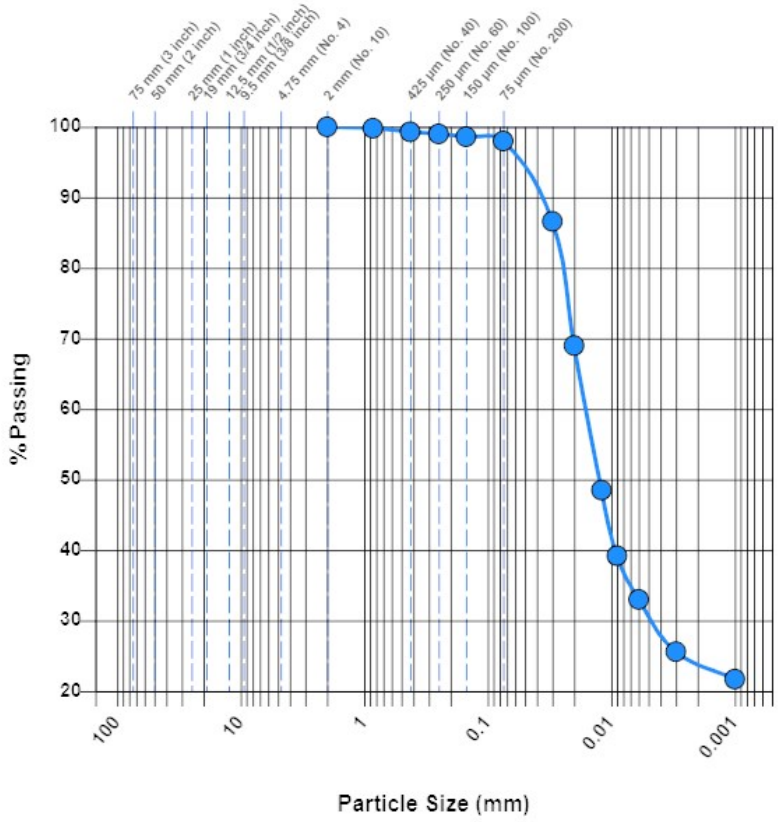
Sample Information

Sample Number:	359060	**Depth (ft):**	9.5-11
Boring Number:	GDRL-142	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	98.0	-
30.4 (µm)	86.6	-
20.1 (µm)	69.0	-
12.2 (µm)	48.5	-
8.8 (µm)	39.2	-
6.3 (µm)	33.0	-
3.1 (µm)	25.6	-
1.4 (µm)	21.7	-



Soil Classification: CL Lean clay, gray to brown, A-7-6(22)

Gravel (%):	0	**Sand (%):**	2.0	**Silt (%):**	67.5	**Clay (%):**	30.5
D_{60} (µm):	16.5	**D_{30} (µm):**	4.8				

General

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

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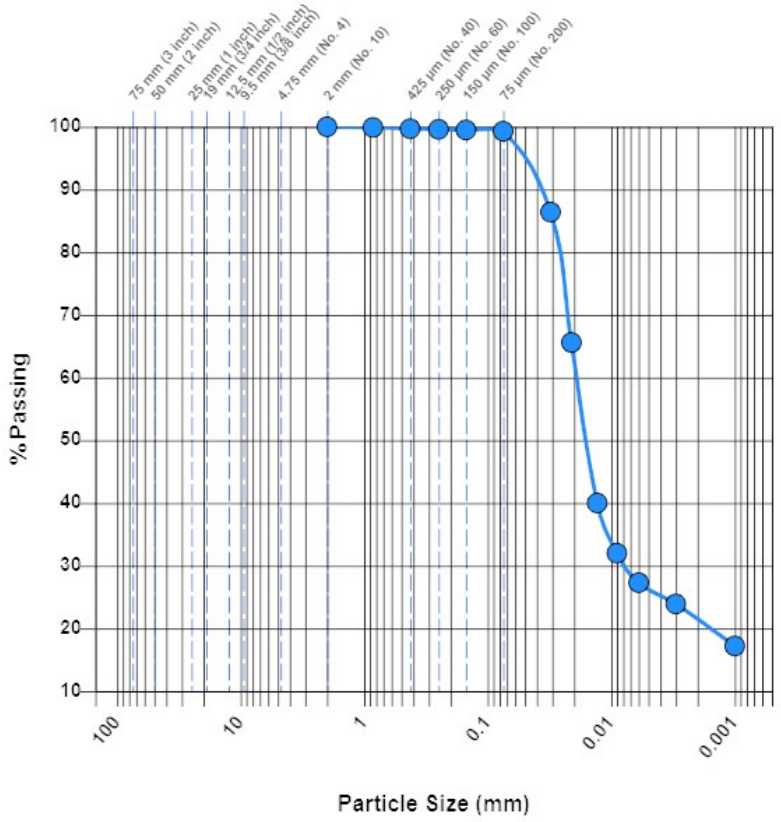
Sample Information

Sample Number:	359061	**Depth (ft):**	4.5-6
Boring Number:	CAA-143	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.3	-
31.1 (µm)	86.4	-
20.6 (µm)	65.6	-
12.5 (µm)	40.0	-
9.0 (µm)	32.0	-
6.4 (µm)	27.3	-
3.2 (µm)	23.9	-
1.4 (µm)	17.2	-



Soil Classification: CL Lean clay, brown and gray, A-7-5(14)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	73.1	**Clay (%):**	26.2
D_{60} (µm):	19.3	**D_{30} (µm):**	7.7				

General

Remarks: LL=42, PL=31, PI=11

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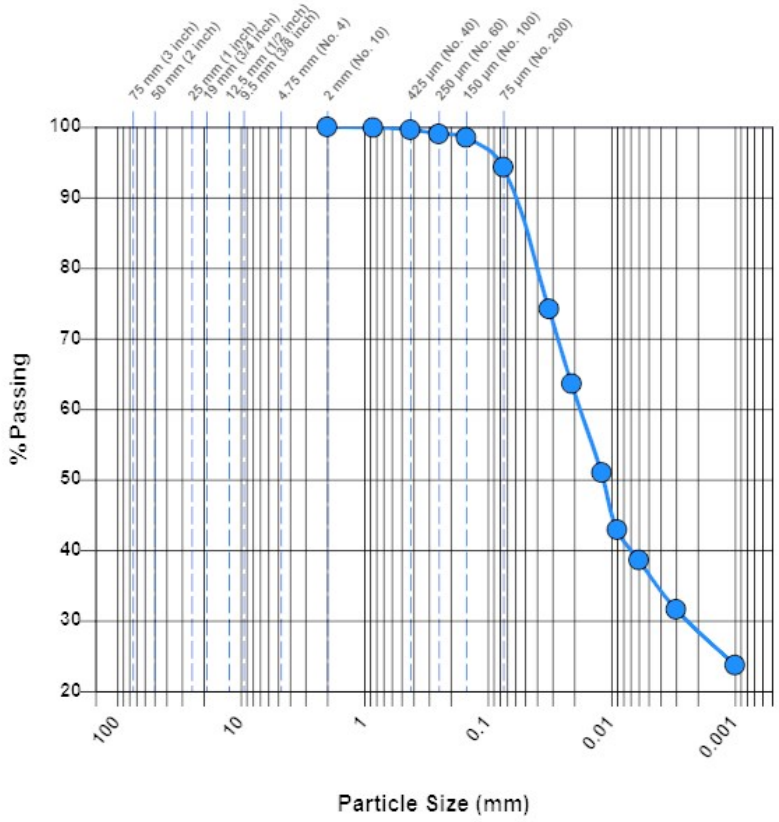
Sample Information

Sample Number:	359062	**Depth (ft):**	14.5-16
Boring Number:	CAA-143	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	94.3	-
31.9 (µm)	74.2	-
20.7 (µm)	63.6	-
12.3 (µm)	51.0	-
8.8 (µm)	42.9	-
6.3 (µm)	38.6	-
3.1 (µm)	31.6	-
1.4 (µm)	23.7	-



Soil Classification: CL Lean clay, brown and gray, A-7-6(23)

Gravel (%):	0	**Sand (%):**	5.7	**Silt (%):**	58.0	**Clay (%):**	36.3
D_{60} (µm):	18.4	**D_{30} (µm):**	2.6				

General

Remarks: LL=43, PL=20, PI=23

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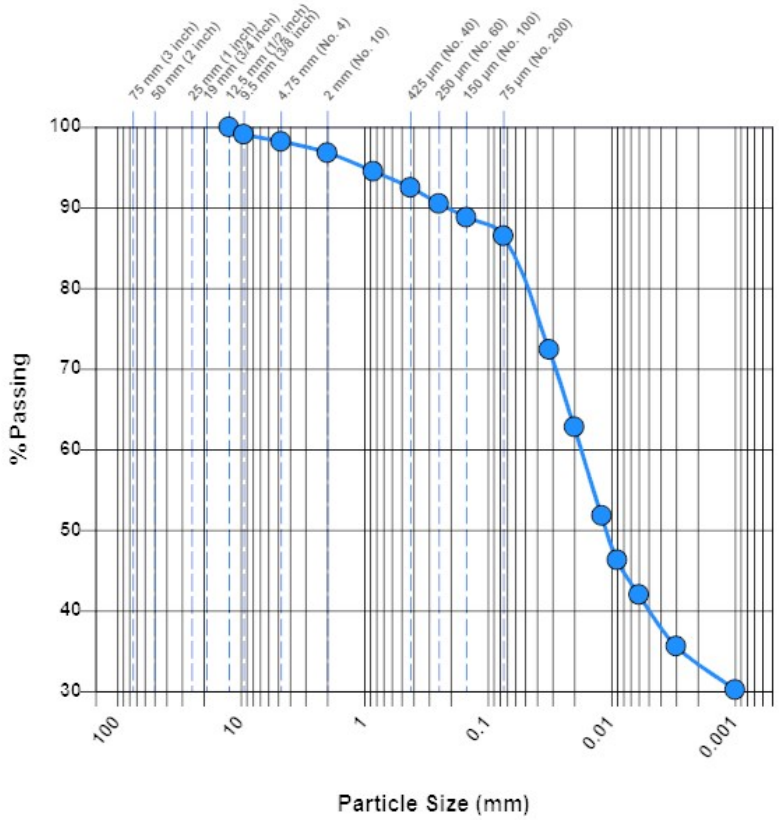
Sample Information

Sample Number:	359064	**Depth (ft):**	0.5-2
Boring Number:	GDRL-144	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
12.5 mm (1/2 inch)	100.0	-
9.5 mm (3/8 inch)	99.1	-
4.75 mm (No. 4)	98.2	-
2 mm (No. 10)	96.8	-
850 µm (No. 20)	94.5	-
425 µm (No. 40)	92.5	-
250 µm (No. 60)	90.5	-
150 µm (No. 100)	88.8	-
75 µm (No. 200)	86.5	-
31.5 (µm)	72.4	-
20.4 (µm)	62.8	-
12.1 (µm)	51.8	-
8.7 (µm)	46.3	-
6.2 (µm)	42.0	-
3.1 (µm)	35.6	-
1.4 (µm)	30.2	-



Soil Classification: CL Lean clay, brown, A-7-6(25)

Gravel (%):	1.8	**Sand (%):**	11.7	**Silt (%):**	46.6	**Clay (%):**	39.9
D_{60} (µm):	18.0						

General

Remarks: LL=49, PL=22, PI=27

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Phone: 701-255-7180

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

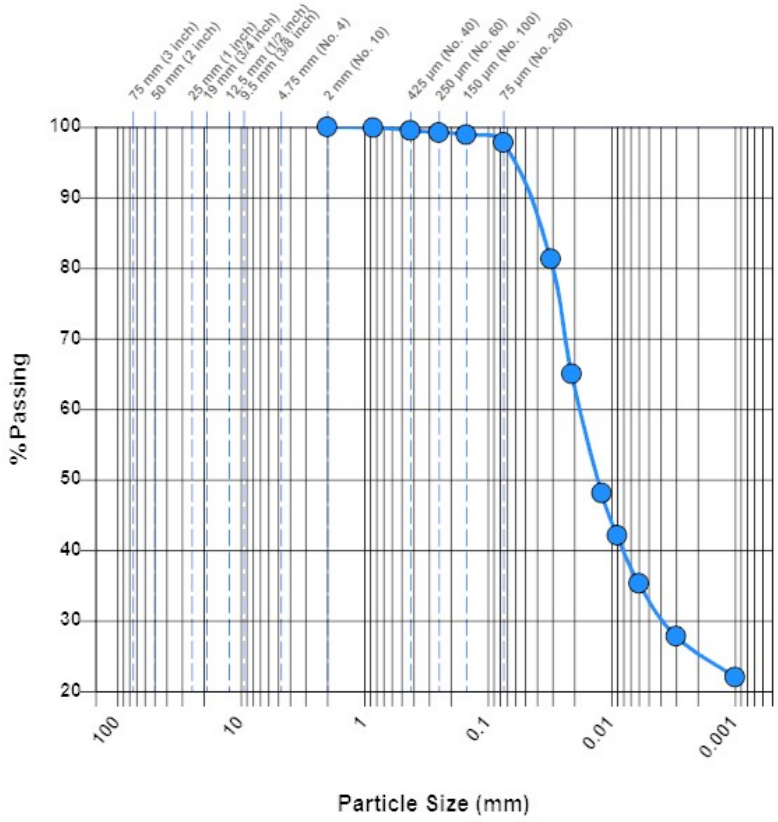
Sample Information

Sample Number:	359065	**Depth (ft):**	9.5-11
Boring Number:	GDRL-144	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	97.8	-
31.3 (µm)	81.3	-
20.6 (µm)	65.0	-
12.4 (µm)	48.1	-
8.9 (µm)	42.1	-
6.3 (µm)	35.3	-
3.1 (µm)	27.8	-
1.4 (µm)	22.0	-



Soil Classification: CL Lean clay, brown, A-7-6(19)

Gravel (%):	0	**Sand (%):**	2.2	**Silt (%):**	65.0	**Clay (%):**	32.8
D_{60} (µm):	18.3	**D_{30} (µm):**	3.9				

General

Remarks: LL=44, PL=28, PI=16

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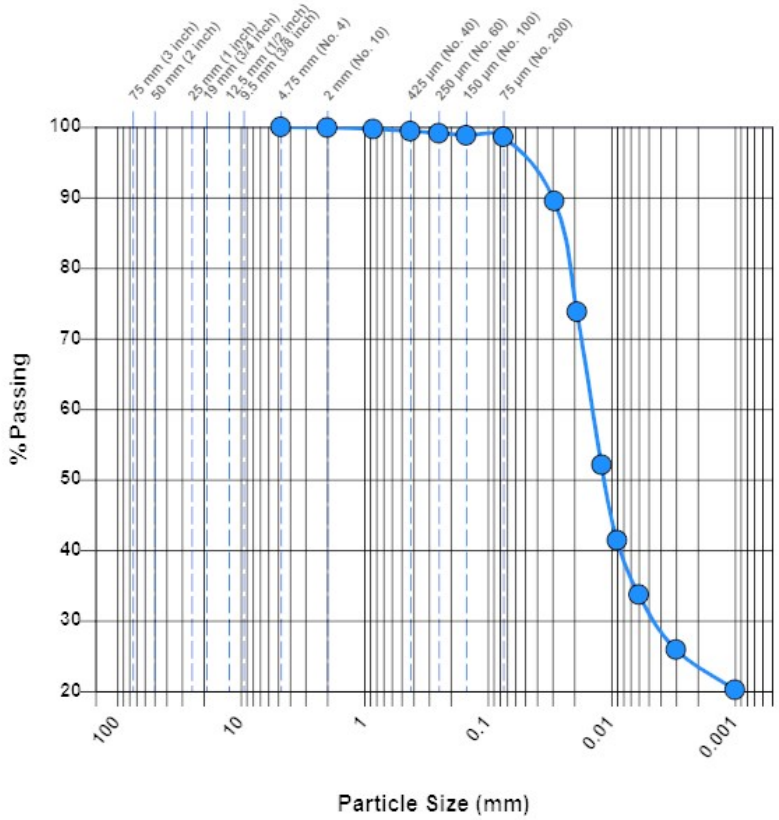
Sample Information

Sample Number:	359066	**Depth (ft):**	4.5-6
Boring Number:	CAA-145	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.8	-
75 µm (No. 200)	98.6	-
29.1 (µm)	89.5	-
19.4 (µm)	73.8	-
11.9 (µm)	52.1	-
8.7 (µm)	41.4	-
6.3 (µm)	33.7	-
3.1 (µm)	25.9	-
1.4 (µm)	20.2	-



Soil Classification: CL Lean clay, brown and gray, A-7-6(21)

Gravel (%):	0.0	**Sand (%):**	1.4	**Silt (%):**	67.5	**Clay (%):**	31.1
D_{60} (µm):	14.5	**D_{30} (µm):**	4.6				

General

Remarks: LL=45, PL=27, PI=18

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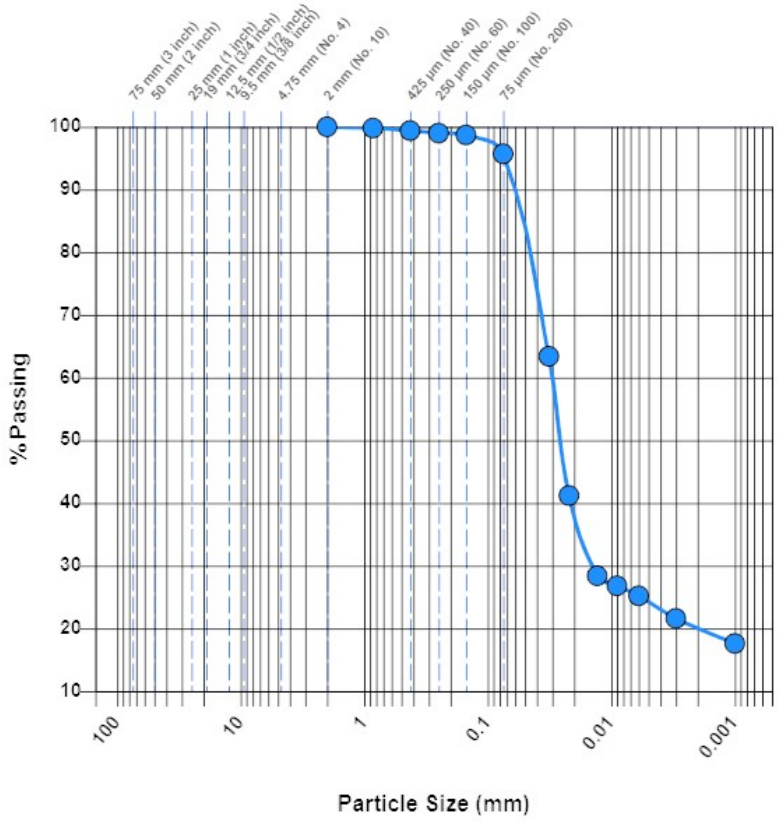
Sample Information

Sample Number:	359067	**Depth (ft):**	14.5-16
Boring Number:	CAA-145	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	95.7	-
32.1 (µm)	63.4	-
21.5 (µm)	41.2	-
12.8 (µm)	28.4	-
9.1 (µm)	26.8	-
6.4 (µm)	25.2	-
3.2 (µm)	21.6	-
1.4 (µm)	17.6	-



Soil Classification: CL Lean clay, brown and gray, A-6(13)

Gravel (%):	0	**Sand (%):**	4.3	**Silt (%):**	71.7	**Clay (%):**	24.0
D_{60} (µm):	30.5	**D_{30} (µm):**	14.1				

General

Remarks: LL=40, PL=29, PI=11

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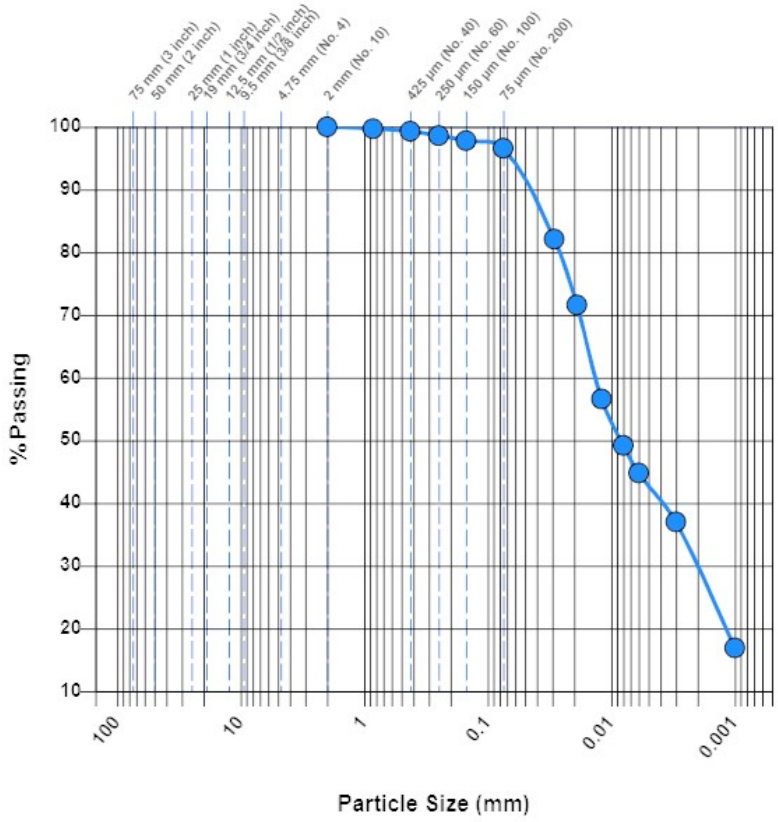
Sample Information

Sample Number:	359068	**Depth (ft):**	0.5-2
Boring Number:	GDRL-146	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.6	-
150 µm (No. 100)	97.8	-
75 µm (No. 200)	96.6	-
29.2 (µm)	82.1	-
19.2 (µm)	71.6	-
11.7 (µm)	56.6	-
8.4 (µm)	49.2	-
6.0 (µm)	44.8	-
3.0 (µm)	37.0	-
1.1 (µm)	16.9	-



Soil Classification: CH Fat clay, brown, A-7-6(33)

Gravel (%):	0	**Sand (%):**	3.4	**Silt (%):**	54.4	**Clay (%):**	42.2
D_{60} (µm):	13.6	**D_{30} (µm):**	2.3				

General

Remarks: LL=53, PL=22, PI=31

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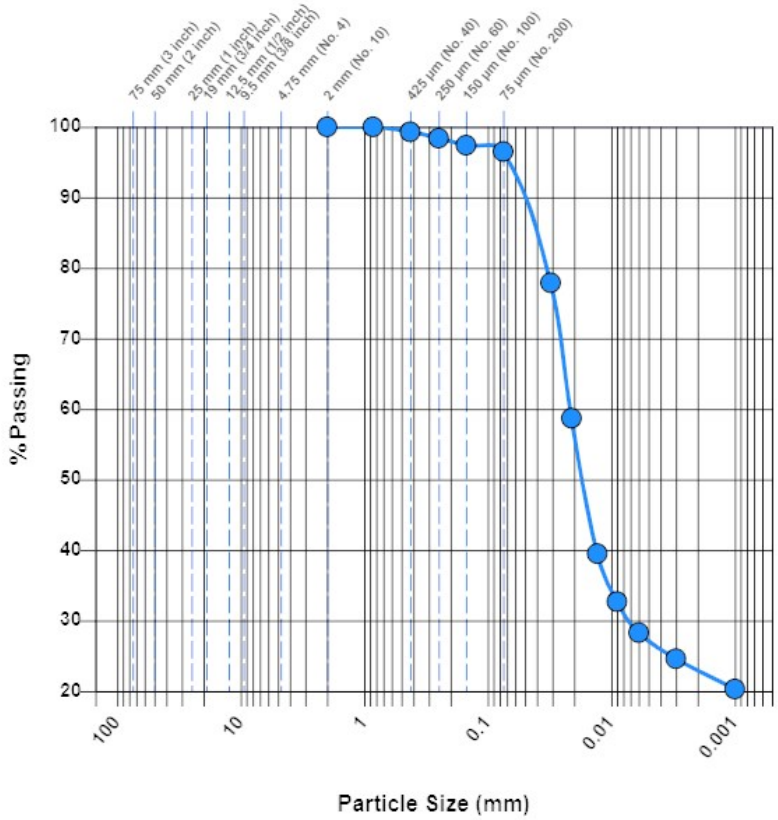
Sample Information

Sample Number:	359069	**Depth (ft):**	9.5-11
Boring Number:	GDRL-146	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.3	-
250 µm (No. 60)	98.4	-
150 µm (No. 100)	97.4	-
75 µm (No. 200)	96.5	-
31.0 (µm)	77.9	-
20.6 (µm)	58.7	-
12.5 (µm)	39.5	-
8.9 (µm)	32.7	-
6.4 (µm)	28.3	-
3.1 (µm)	24.6	-
1.4 (µm)	20.3	-



Soil Classification: CL Lean clay, brown, A-7-6(15)

Gravel (%):	0	**Sand (%):**	3.5	**Silt (%):**	69.4	**Clay (%):**	27.1
D_{60} (µm):	21.7	**D_{30} (µm):**	7.2				

General

Remarks: LL=41, PL=28, PI=13

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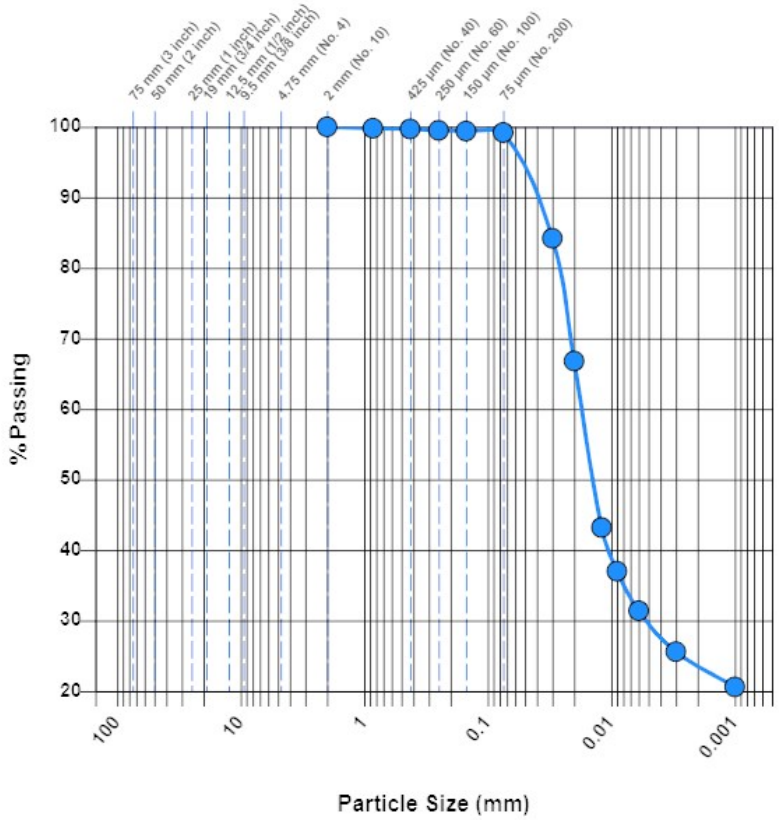
Sample Information

Sample Number:	359070	**Depth (ft):**	4.5-6
Boring Number:	CAA-147	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
29.6 (µm)	84.2	-
19.8 (µm)	66.8	-
12.2 (µm)	43.2	-
8.8 (µm)	37.0	-
6.3 (µm)	31.4	-
3.1 (µm)	25.6	-
1.4 (µm)	20.6	-



Soil Classification: CL Lean clay, brown and gray, A-7-6(19)

Gravel (%):	0	**Sand (%):**	0.8	**Silt (%):**	69.7	**Clay (%):**	29.5
D_{60} (µm):	17.7	**D_{30} (µm):**	5.3				

General

Remarks: LL=44, PL=28, PI=16

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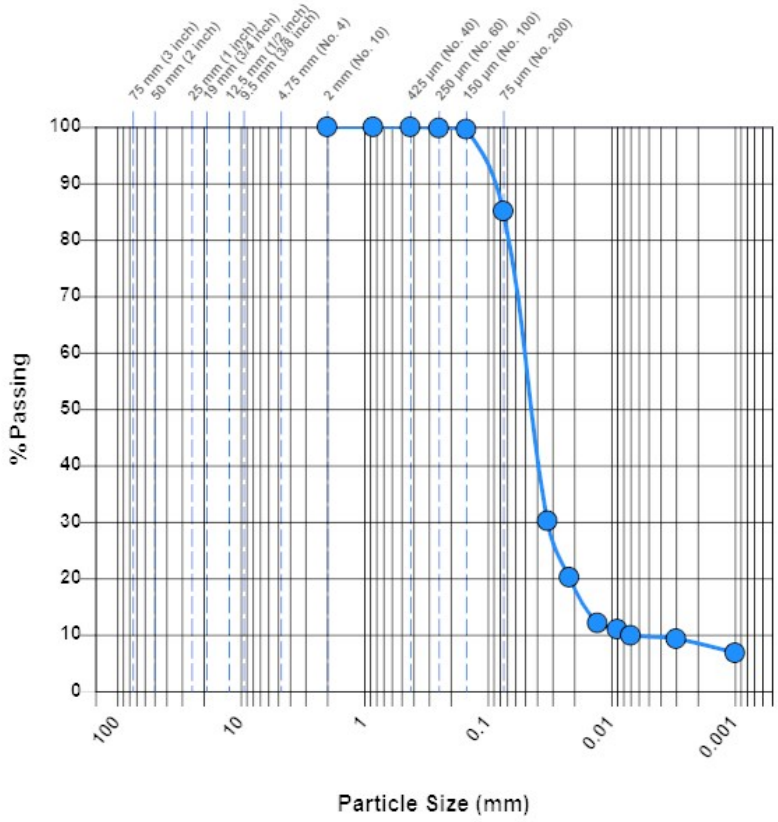
Sample Information

Sample Number:	359071	**Depth (ft):**	14.5-16
Boring Number:	CAA-147	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	85.1	-
33.3 (µm)	30.2	-
21.9 (µm)	20.2	-
13.0 (µm)	12.1	-
9.2 (µm)	11.0	-
6.5 (µm)	9.9	-
3.2 (µm)	9.3	-
1.4 (µm)	6.8	-



Soil Classification: CL-ML Silty clay, gray, A-4(1)

Gravel (%):	0	**Sand (%):**	14.9	**Silt (%):**	75.5	**Clay (%):**	9.6		
D_{60} (µm):	55.8	**D_{30} (µm):**	32.8	**D_{10} (µm):**	7.2	**C_u:**	7.75	**C_c:**	2.68

General

Remarks: LL=22, PL=18, PI=4

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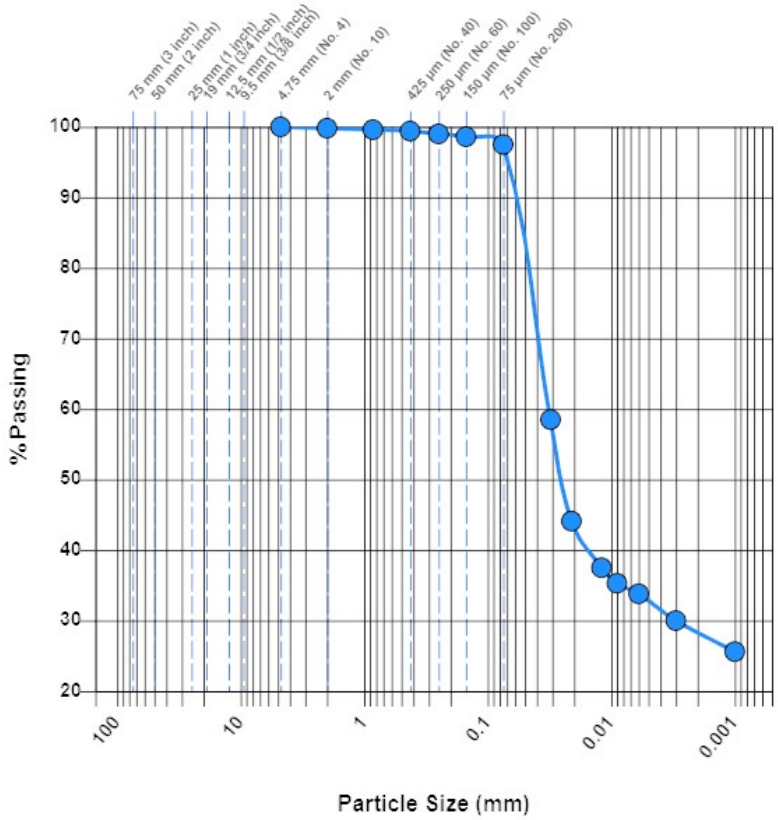
Sample Information

Sample Number:	359072	**Depth (ft):**	0.5-2
Boring Number:	CAA-148	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
425 µm (No. 40)	99.4	-
250 µm (No. 60)	99.0	-
150 µm (No. 100)	98.6	-
75 µm (No. 200)	97.5	-
31.3 (µm)	58.5	-
20.7 (µm)	44.1	-
12.2 (µm)	37.5	-
8.7 (µm)	35.3	-
6.2 (µm)	33.8	-
3.0 (µm)	30.0	-
1.4 (µm)	25.6	-



Soil Classification: CL Lean clay, brown, A-6(20)

Gravel (%):	0.0	**Sand (%):**	2.5	**Silt (%):**	65.0	**Clay (%):**	32.5
D_{60} (µm):	32.7	**D_{30} (µm):**	3.0				

General

Remarks: LL=39, PL=20, PI=19

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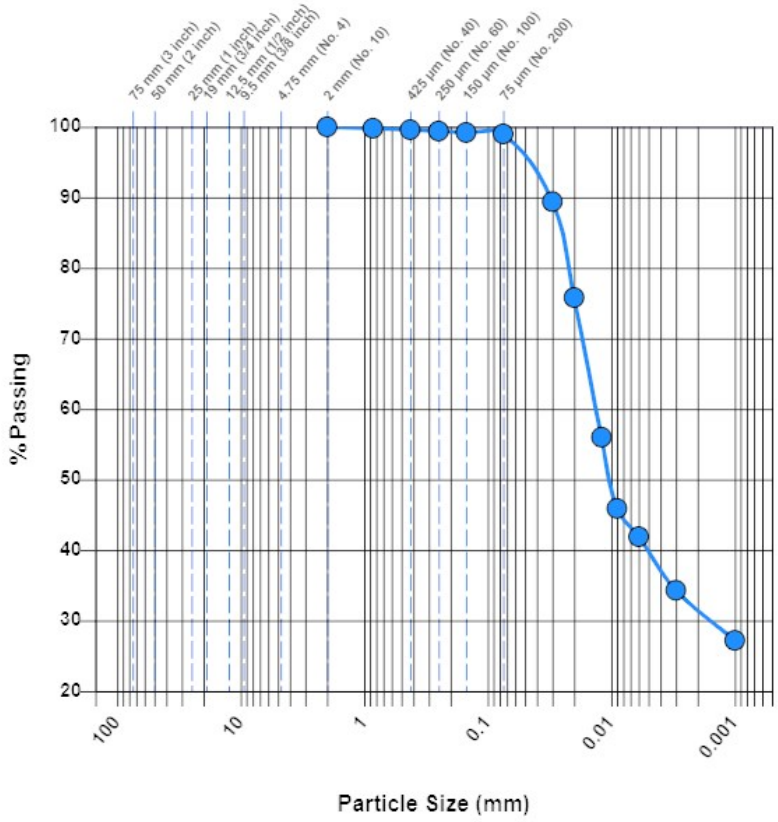
Sample Information

Sample Number:	359073	**Depth (ft):**	9.5-11
Boring Number:	CAA-148	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.2	-
75 µm (No. 200)	99.0	-
29.9 (µm)	89.4	-
19.7 (µm)	75.8	-
12.0 (µm)	56.0	-
8.5 (µm)	45.9	-
6.2 (µm)	41.9	-
3.1 (µm)	34.3	-
1.4 (µm)	27.2	-



Soil Classification: CL Lean clay, brown, A-7-6(26)

Gravel (%):	0	**Sand (%):**	1.0	**Silt (%):**	59.6	**Clay (%):**	39.4
D_{60} (µm):	13.6	**D_{30} (µm):**	1.8				

General

Remarks: LL=46, PL=23, PI=23

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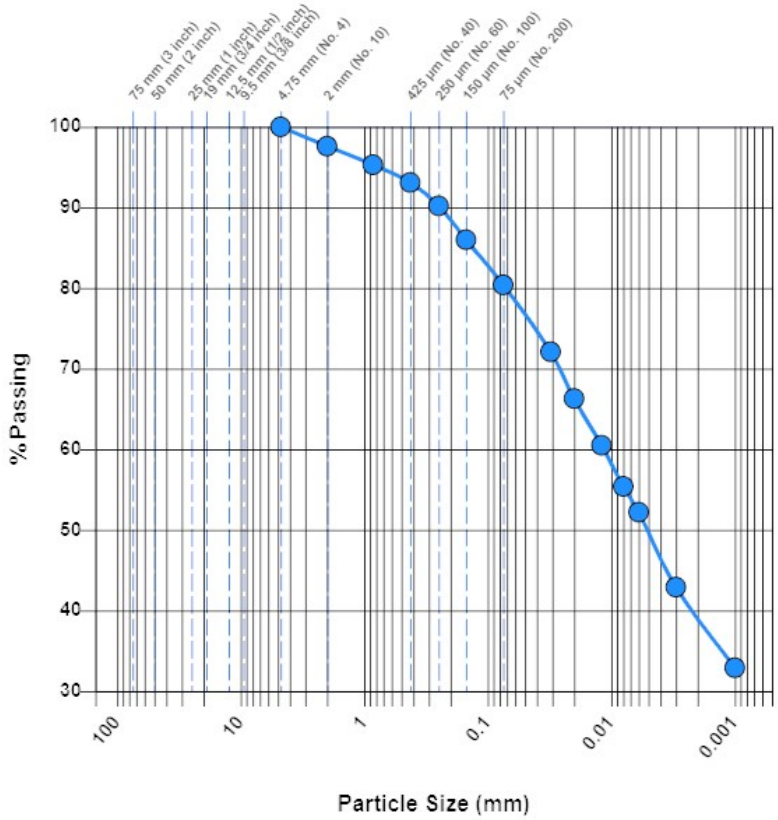
Sample Information

Sample Number:	359074	**Depth (ft):**	19.5-21
Boring Number:	CAA-148	**Sampled By:**	Drill Crew
Sample Date:	01/07/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	97.6	-
850 µm (No. 20)	95.3	-
425 µm (No. 40)	93.1	-
250 µm (No. 60)	90.2	-
150 µm (No. 100)	86.0	-
75 µm (No. 200)	80.4	-
31.0 (µm)	72.1	-
20.0 (µm)	66.3	-
11.7 (µm)	60.5	-
8.3 (µm)	55.4	-
6.0 (µm)	52.2	-
3.0 (µm)	42.9	-
1.4 (µm)	32.9	-



Soil Classification: CL Lean clay with sand, gray, A-6(19)

Gravel (%):	0.0	**Sand (%):**	19.6	**Silt (%):**	31.3	**Clay (%):**	49.1
D_{60} (µm):	11.6						

General

Remarks: LL=40, PL=15, PI=25

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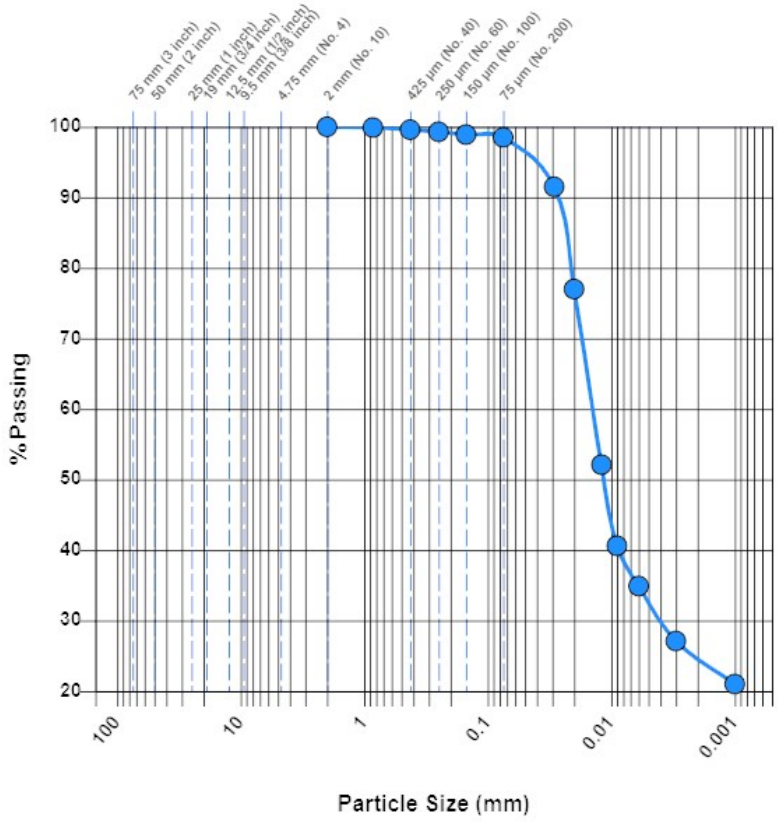
Sample Information

Sample Number:	359075	**Depth (ft):**	4.5-6
Boring Number:	GDRL-149	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	98.5	-
29.4 (µm)	91.5	-
19.5 (µm)	77.0	-
12.1 (µm)	52.1	-
8.6 (µm)	40.6	-
6.3 (µm)	34.9	-
3.1 (µm)	27.1	-
1.4 (µm)	21.0	-



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

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	66.2	**Clay (%):**	32.3
D_{60} (µm):	14.5	**D_{30} (µm):**	4.1				

General

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

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Client:

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3203 32nd Avenue South
Suite 201
Fargo, ND 58106

Project:

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

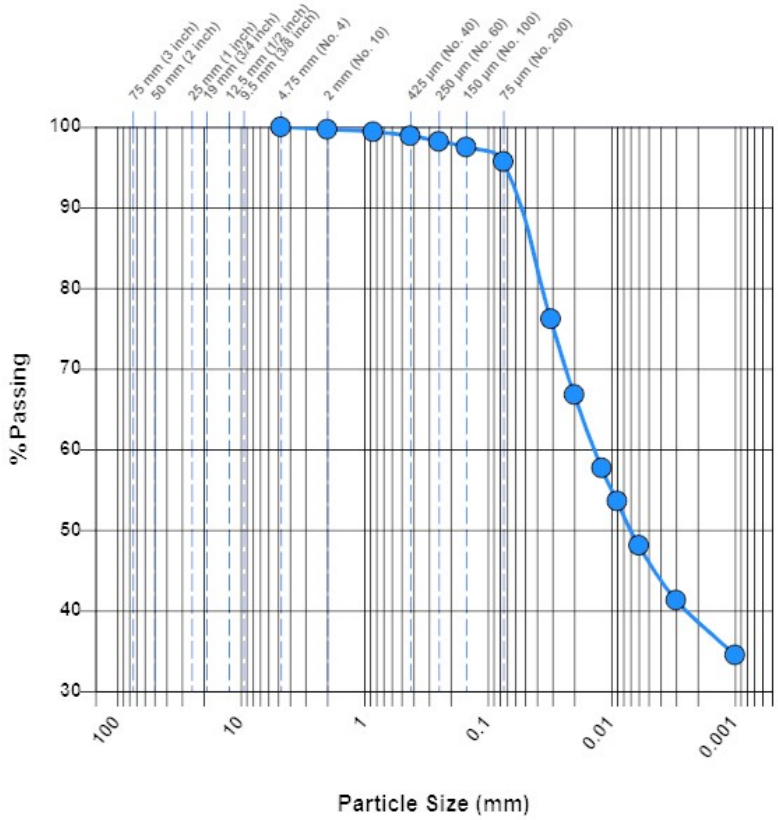
Sample Information

Sample Number:	359076	**Depth (ft):**	0.5-2
Boring Number:	GDRL-150	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.2	-
150 µm (No. 100)	97.5	-
75 µm (No. 200)	95.7	-
31.2 (µm)	76.2	-
20.3 (µm)	66.8	-
12.0 (µm)	57.7	-
8.5 (µm)	53.6	-
6.1 (µm)	48.1	-
3.0 (µm)	41.3	-
1.4 (µm)	34.5	-



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

Gravel (%):	0.0	**Sand (%):**	4.3	**Silt (%):**	49.9	**Clay (%):**	45.8
D_{60} (µm):	14.0						

General

Remarks: LL=49, PL=22, PI=27

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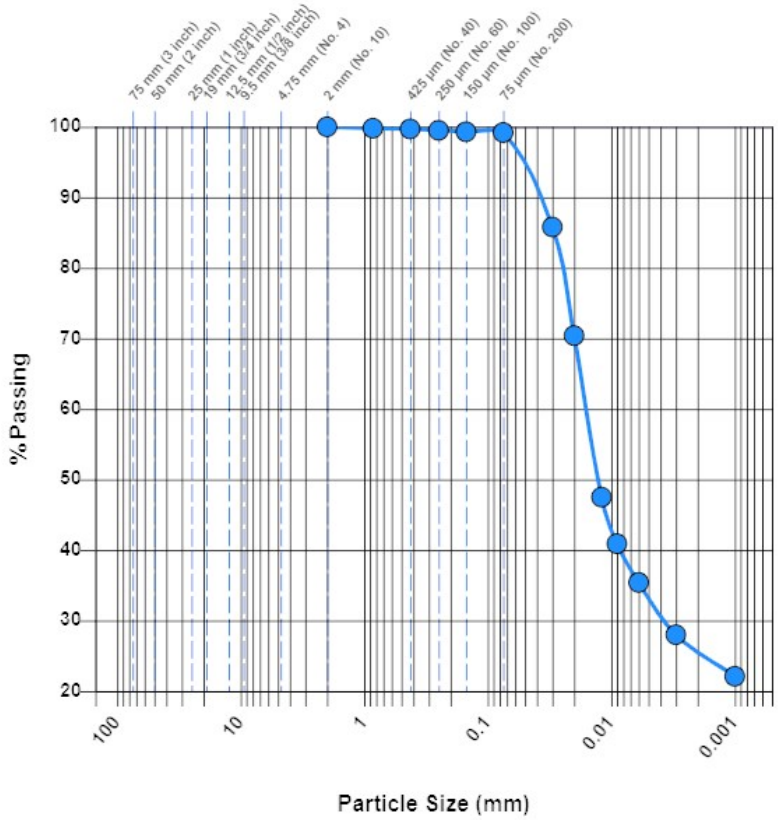
Sample Information

Sample Number:	359077	**Depth (ft):**	9.5-11
Boring Number:	GDRL-150	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	99.2	-
30.1 (µm)	85.8	-
19.9 (µm)	70.4	-
12.2 (µm)	47.5	-
8.8 (µm)	40.9	-
6.3 (µm)	35.4	-
3.1 (µm)	28.0	-
1.4 (µm)	22.1	-



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

Gravel (%):	0	**Sand (%):**	0.8	**Silt (%):**	66.3	**Clay (%):**	32.9
D_{60} (µm):	16.4	**D_{30} (µm):**	3.8				

General

Remarks: LL=43, PL=25, PI=18

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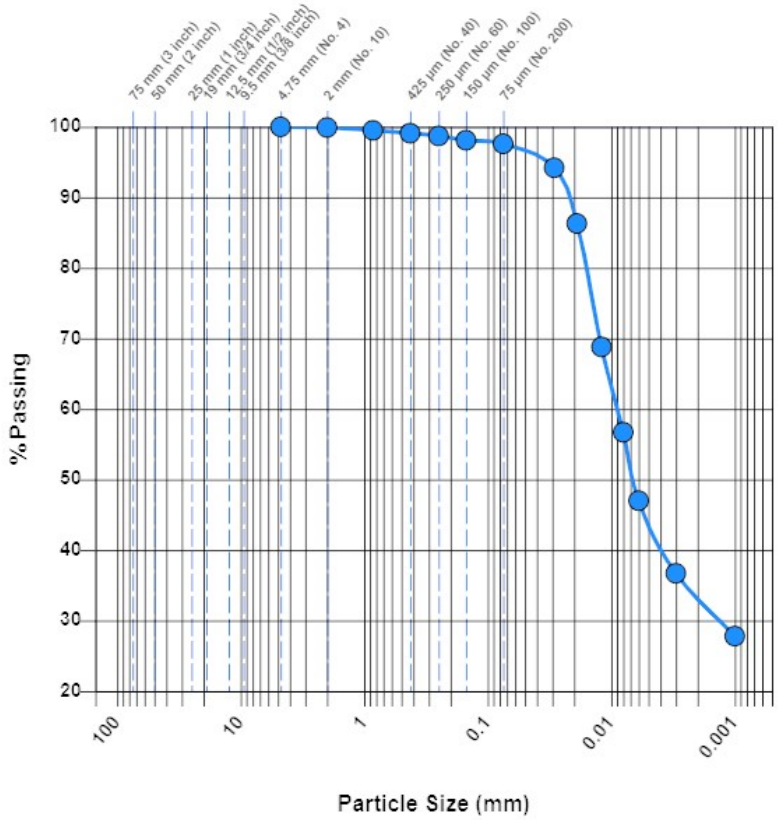
Sample Information

Sample Number:	359078	**Depth (ft):**	4.5-6
Boring Number:	GDRL-151	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
425 µm (No. 40)	99.1	-
250 µm (No. 60)	98.7	-
150 µm (No. 100)	98.1	-
75 µm (No. 200)	97.6	-
29.2 (µm)	94.2	-
18.9 (µm)	86.3	-
11.5 (µm)	68.8	-
8.4 (µm)	56.7	-
6.1 (µm)	47.0	-
3.1 (µm)	36.7	-
1.4 (µm)	27.8	-



Soil Classification: CH Fat clay, brown, A-7-6(29)

Gravel (%):	0.0	**Sand (%):**	2.4	**Silt (%):**	54.0	**Clay (%):**	43.6
D_{60} (µm):	9.1	**D_{30} (µm):**	1.5				

General

Remarks: LL=52, PL=27, PI=25

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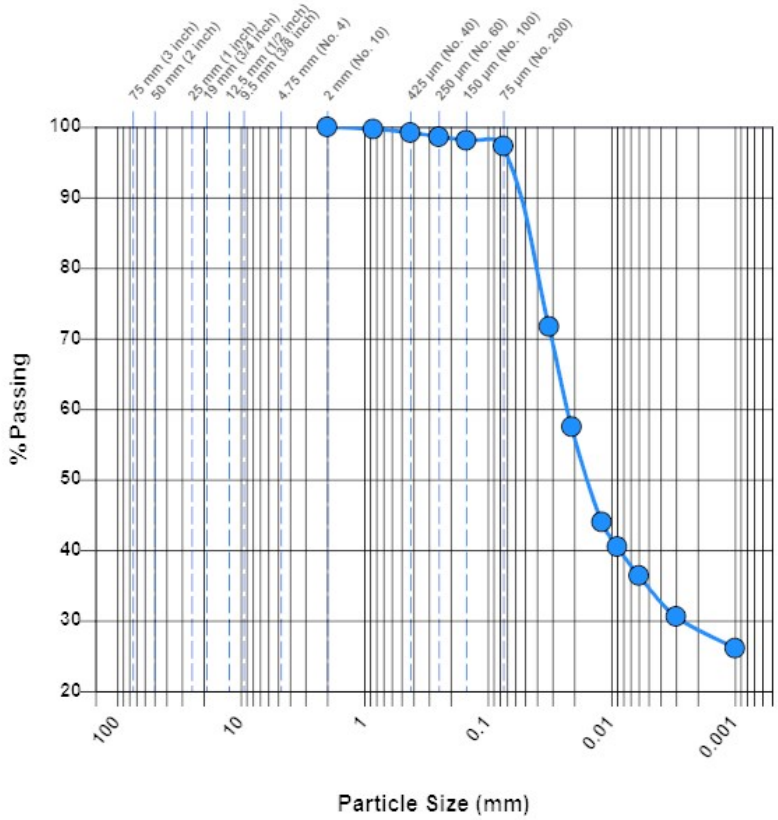
Sample Information

Sample Number:	359079	**Depth (ft):**	0.5-2
Boring Number:	GDRL-152	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
250 µm (No. 60)	98.6	-
150 µm (No. 100)	98.1	-
75 µm (No. 200)	97.3	-
31.5 (µm)	71.7	-
20.7 (µm)	57.5	-
12.4 (µm)	44.0	-
8.8 (µm)	40.5	-
6.3 (µm)	36.4	-
3.1 (µm)	30.6	-
1.4 (µm)	26.1	-



Soil Classification: CL Lean clay, black, A-7-6(23)

Gravel (%):	0	**Sand (%):**	2.7	**Silt (%):**	62.8	**Clay (%):**	34.5
D_{60} (µm):	22.9	**D_{30} (µm):**	2.7				

General

Remarks: LL=42, PL=20, PI=22

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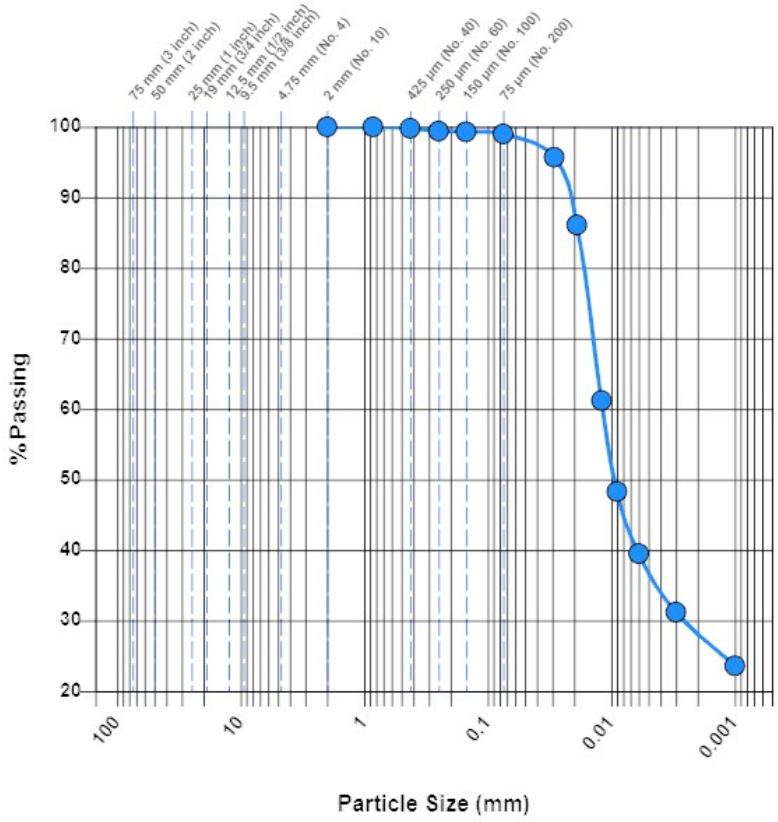
Sample Information

Sample Number:	359080	**Depth (ft):**	9.5-11
Boring Number:	GDRL-152	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	99.0	-
29.4 (µm)	95.7	-
19.2 (µm)	86.1	-
11.8 (µm)	61.2	-
8.6 (µm)	48.3	-
6.2 (µm)	39.5	-
3.1 (µm)	31.2	-
1.4 (µm)	23.6	-



Soil Classification: CH Fat clay, brown, A-7-6(28)

Gravel (%):	0	**Sand (%):**	1.0	**Silt (%):**	62.3	**Clay (%):**	36.7
D_{60} (µm):	11.7	**D_{30} (µm):**	2.7				

General

Remarks: LL=51, PL=27, PI=24

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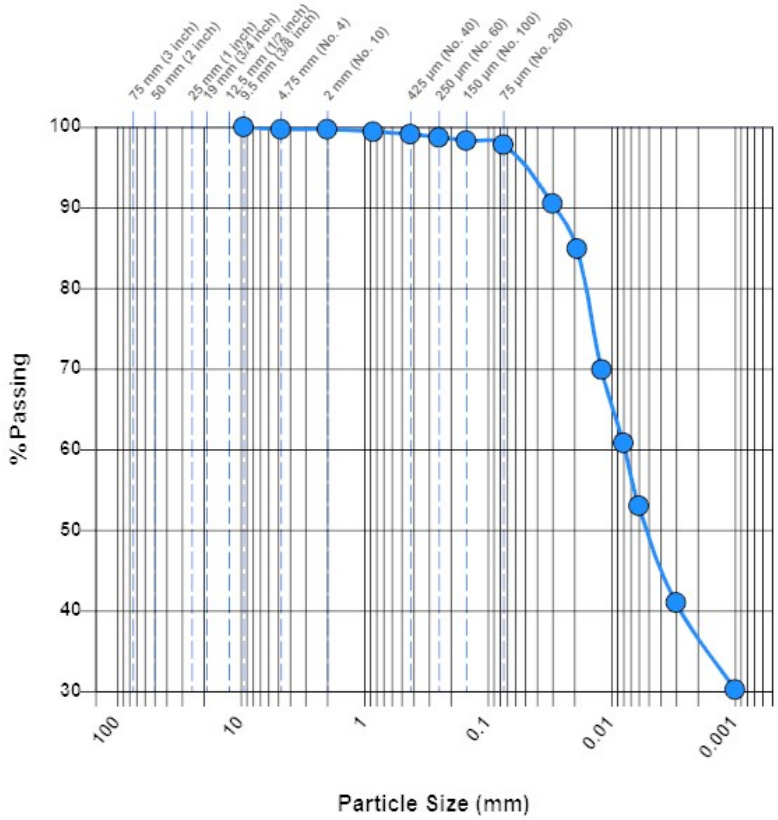
Sample Information

Sample Number:	359081	**Depth (ft):**	4.5-6
Boring Number:	GDRL-153	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.7	-
2 mm (No. 10)	99.7	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	99.1	-
250 µm (No. 60)	98.7	-
150 µm (No. 100)	98.3	-
75 µm (No. 200)	97.8	-
30.0 (µm)	90.5	-
19.3 (µm)	84.9	-
11.6 (µm)	69.9	-
8.4 (µm)	60.8	-
6.0 (µm)	53.0	-
3.0 (µm)	41.0	-
1.4 (µm)	30.2	-



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

Gravel (%):	0.3	**Sand (%):**	1.9	**Silt (%):**	48.8	**Clay (%):**	49.0

D_{60} (µm): 7.8

General

Remarks: LL=56, PL=22, PI=34

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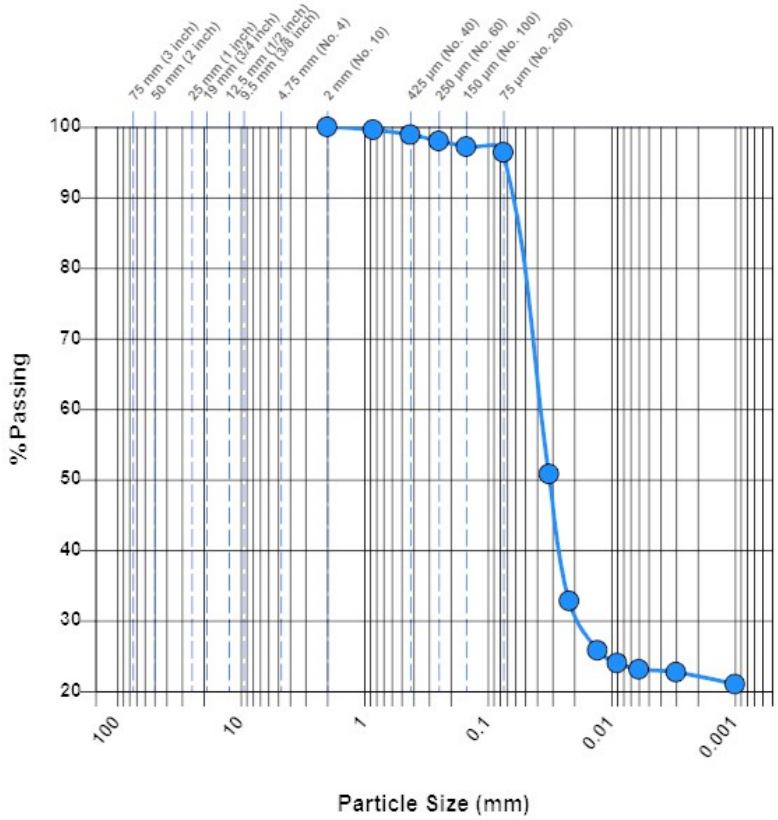
Sample Information

Sample Number:	359082	**Depth (ft):**	0.5-2
Boring Number:	CAA-154	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	98.9	-
250 µm (No. 60)	98.0	-
150 µm (No. 100)	97.2	-
75 µm (No. 200)	96.4	-
32.3 (µm)	50.8	-
21.5 (µm)	32.8	-
12.6 (µm)	25.8	-
9.0 (µm)	24.0	-
6.3 (µm)	23.1	-
3.1 (µm)	22.7	-
1.4 (µm)	21.0	-



Soil Classification: CL Lean clay, black to brown, A-4(13)

Gravel (%):	0	**Sand (%):**	3.6	**Silt (%):**	73.4	**Clay (%):**	23.0
D_{60} (µm):	40.7	**D_{30} (µm):**	18.4				

General

Remarks: LL=35, PL=22, PI=13

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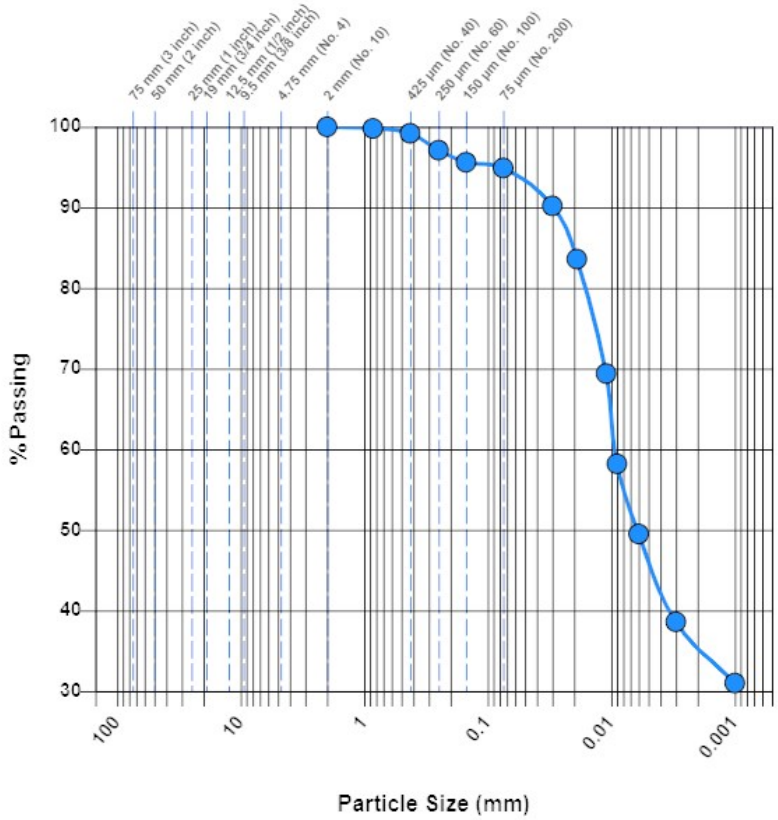
Sample Information

Sample Number:	359083	**Depth (ft):**	9.5-11
Boring Number:	CAA-154	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	97.1	-
150 µm (No. 100)	95.6	-
75 µm (No. 200)	94.9	-
30.2 (µm)	90.2	-
19.4 (µm)	83.6	-
11.2 (µm)	69.4	-
8.5 (µm)	58.2	-
6.1 (µm)	49.5	-
3.0 (µm)	38.6	-
1.4 (µm)	31.0	-



Soil Classification: CH Fat clay, brown, A-7-6(29)

Gravel (%):	0	**Sand (%):**	5.1	**Silt (%):**	49.0	**Clay (%):**	45.9

D_{60} (µm): 9.3

General

Remarks: LL=53, PL=27, PI=26

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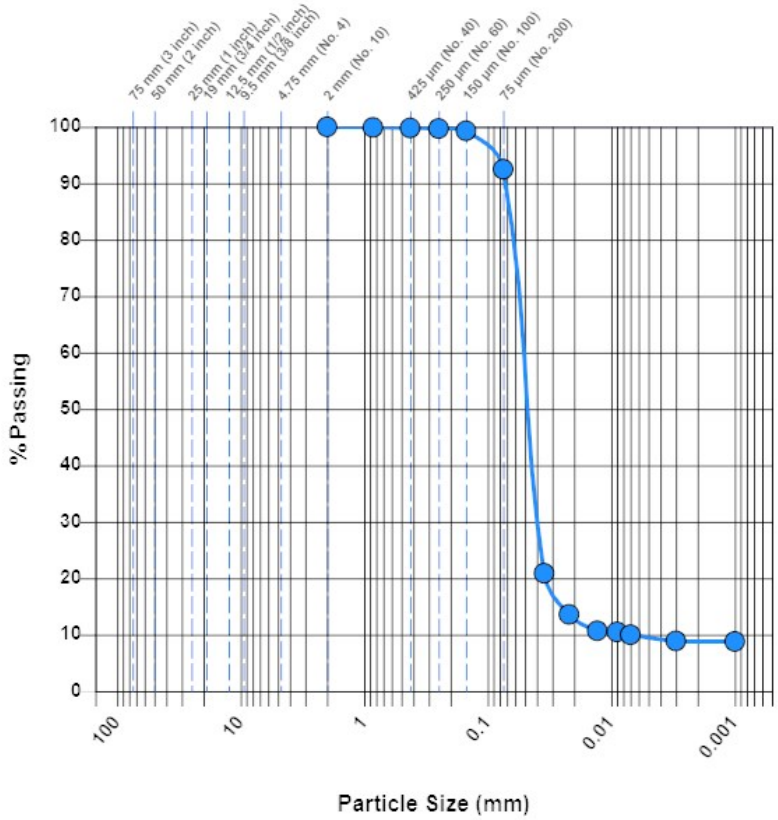
Sample Information

Sample Number:	359084	**Depth (ft):**	19.5-21
Boring Number:	CAA-154	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.3	-
75 µm (No. 200)	92.5	-
34.6 (µm)	20.9	-
22.4 (µm)	13.6	-
12.6 (µm)	10.7	-
9.2 (µm)	10.5	-
6.5 (µm)	10.0	-
3.2 (µm)	8.9	-
1.4 (µm)	8.8	-



Soil Classification: ML Silt, gray, A-4(0)

Gravel (%):	0	**Sand (%):**	7.5	**Silt (%):**	83.0	**Clay (%):**	9.5		
D_{60} (µm):	56.8	**D_{30} (µm):**	40.1	**D_{10} (µm):**	7.0	**C_u:**	8.11	**C_c:**	4.04

General

Remarks: Non Plastic.

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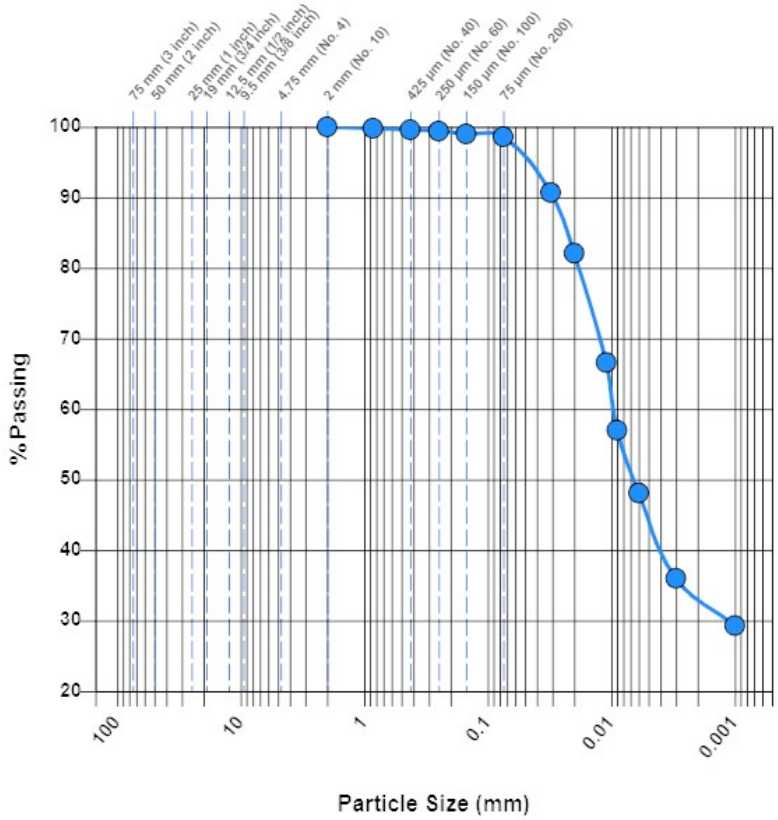
Sample Information

Sample Number:	359085	**Depth (ft):**	4.5-6
Boring Number:	GDRL-155	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	98.6	-
30.5 (µm)	90.7	-
19.7 (µm)	82.1	-
11.4 (µm)	66.6	-
8.5 (µm)	57.0	-
6.1 (µm)	48.1	-
3.1 (µm)	36.0	-
1.4 (µm)	29.3	-



Soil Classification: CH Fat clay, gray, A-7-6(35)

Gravel (%):	0	**Sand (%):**	1.4	**Silt (%):**	54.5	**Clay (%):**	44.1
D_{60} (µm):	9.6	**D_{30} (µm):**	1.2				

General

Remarks: LL=54, PL=23, PI=31

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

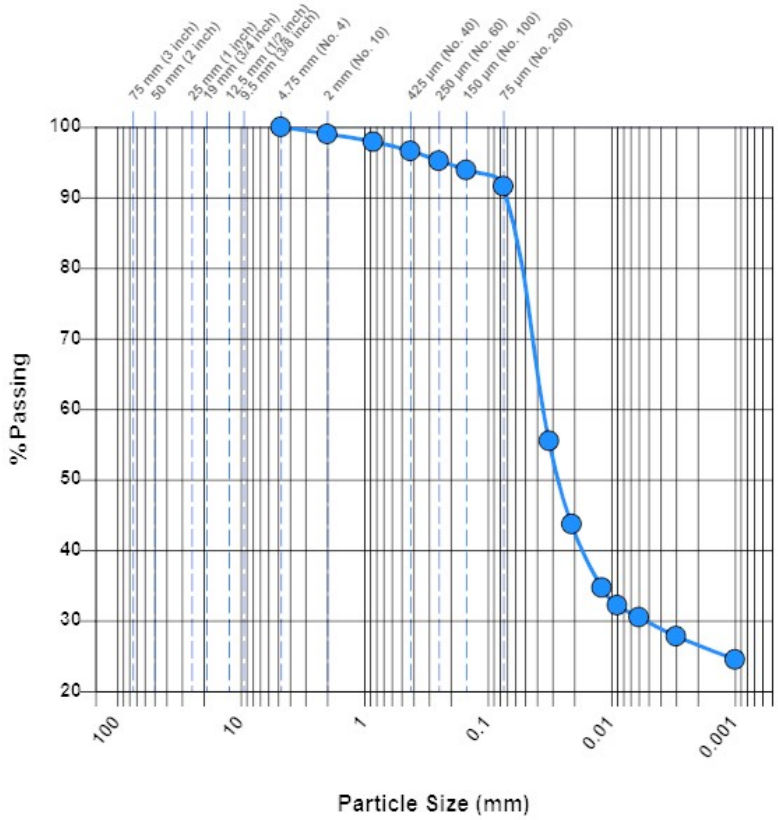
Sample Information

Sample Number:	359086	**Depth (ft):**	0.5-2
Boring Number:	GDRL-156	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.0	-
850 µm (No. 20)	97.9	-
425 µm (No. 40)	96.6	-
250 µm (No. 60)	95.2	-
150 µm (No. 100)	93.9	-
75 µm (No. 200)	91.6	-
32.3 (µm)	55.5	-
21.1 (µm)	43.7	-
12.4 (µm)	34.7	-
8.8 (µm)	32.2	-
6.3 (µm)	30.5	-
3.1 (µm)	27.8	-
1.3 (µm)	24.5	-



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

Gravel (%):	0.0	**Sand (%):**	8.4	**Silt (%):**	62.0	**Clay (%):**	29.6
D_{60} (µm):	37.4	**D_{30} (µm):**	5.4				

General

Remarks: LL=41, PL=19, PI=22

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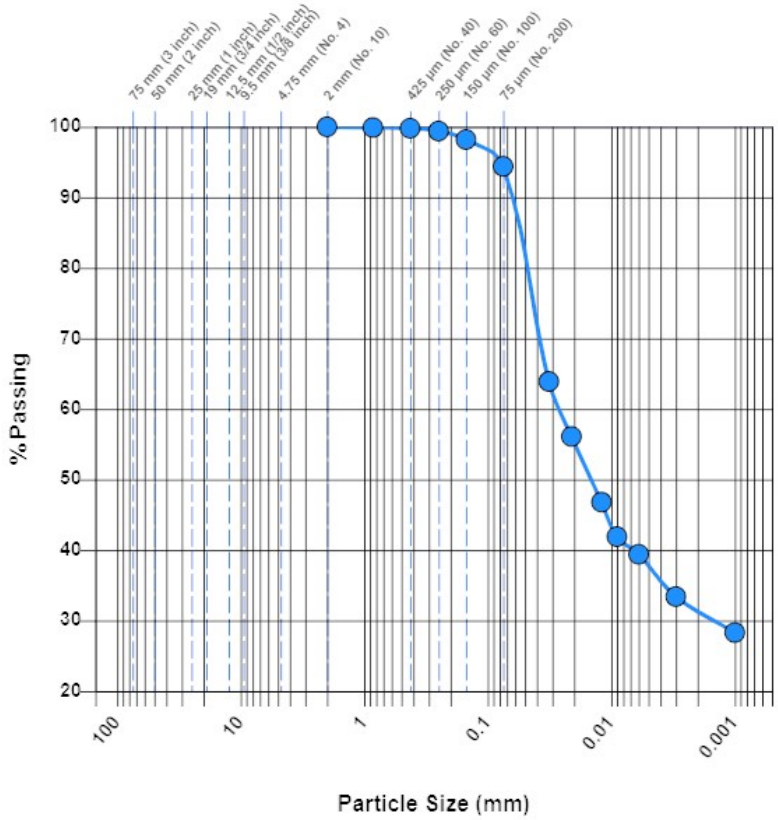
Sample Information

Sample Number:	359087	**Depth (ft):**	9.5-11
Boring Number:	GDRL-156	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.4	-
150 µm (No. 100)	98.2	-
75 µm (No. 200)	94.4	-
32.2 (µm)	63.9	-
20.7 (µm)	56.1	-
12.2 (µm)	46.8	-
8.7 (µm)	41.9	-
6.2 (µm)	39.4	-
3.1 (µm)	33.4	-
1.4 (µm)	28.3	-



Soil Classification: CH Fat clay, gray, A-7-6(30)

Gravel (%):	0	**Sand (%):**	5.6	**Silt (%):**	57.0	**Clay (%):**	37.4
D_{60} (µm):	26.5	**D_{30} (µm):**	1.7				

General

Remarks: LL=53, PL=25, PI=28

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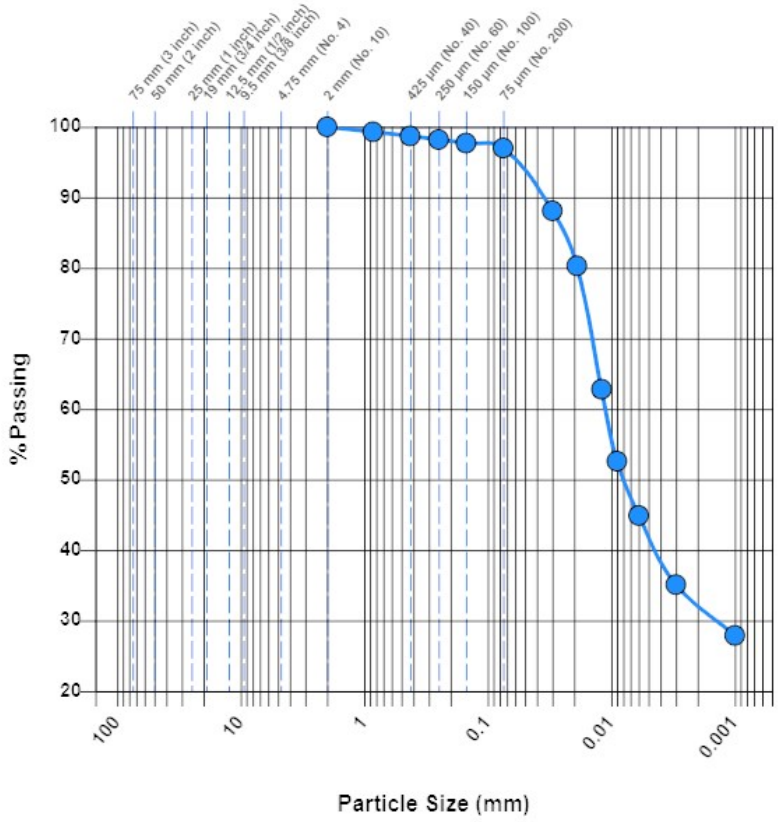
Sample Information

Sample Number:	359088	**Depth (ft):**	4.5-6
Boring Number:	GDRL-157	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	98.7	-
250 µm (No. 60)	98.2	-
150 µm (No. 100)	97.7	-
75 µm (No. 200)	97.0	-
29.9 (µm)	88.1	-
19.4 (µm)	80.3	-
11.7 (µm)	62.8	-
8.5 (µm)	52.6	-
6.1 (µm)	44.9	-
3.0 (µm)	35.1	-
1.4 (µm)	27.9	-



Soil Classification: CH Fat clay, gray to brown, A-7-6(33)

Gravel (%):	0	**Sand (%):**	3.0	**Silt (%):**	55.4	**Clay (%):**	41.6
D_{60} (µm):	11.2	**D_{30} (µm):**	1.6				

General

Remarks: LL=53, PL=23, PI=30

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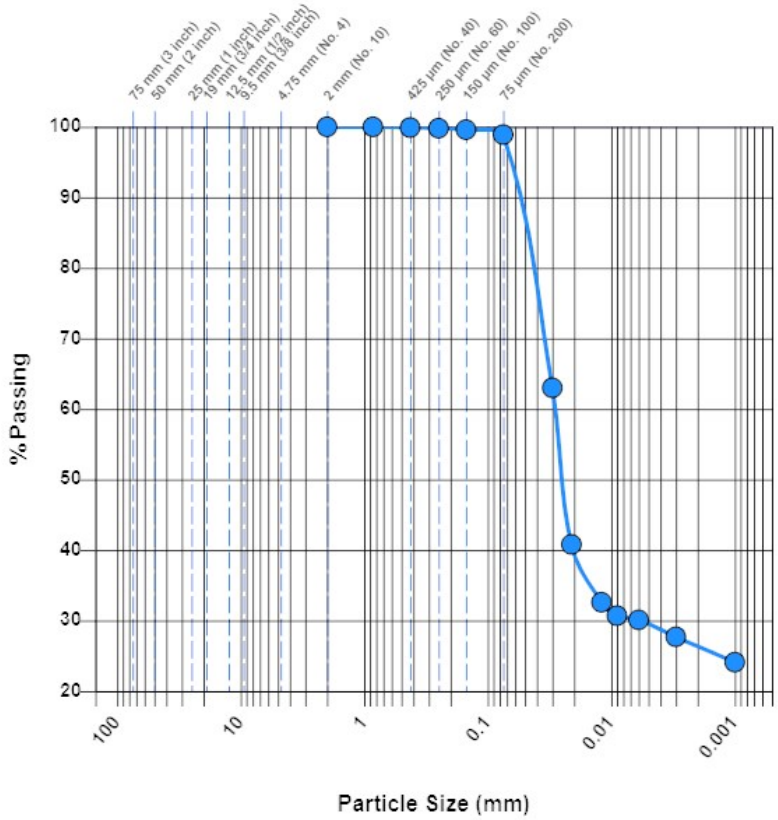
Sample Information

Sample Number:	359089	**Depth (ft):**	0.5-2
Boring Number:	CAA-158	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.9	-
30.3 (µm)	63.0	-
20.7 (µm)	40.8	-
12.2 (µm)	32.6	-
8.7 (µm)	30.7	-
6.2 (µm)	30.1	-
3.0 (µm)	27.7	-
1.4 (µm)	24.1	-



Soil Classification: CL Lean clay, black, A-6(18)

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	69.6	**Clay (%):**	29.3
D_{60} (µm):	28.8	**D_{30} (µm):**	5.9				

General

Remarks: LL=38, PL=21, PI=17

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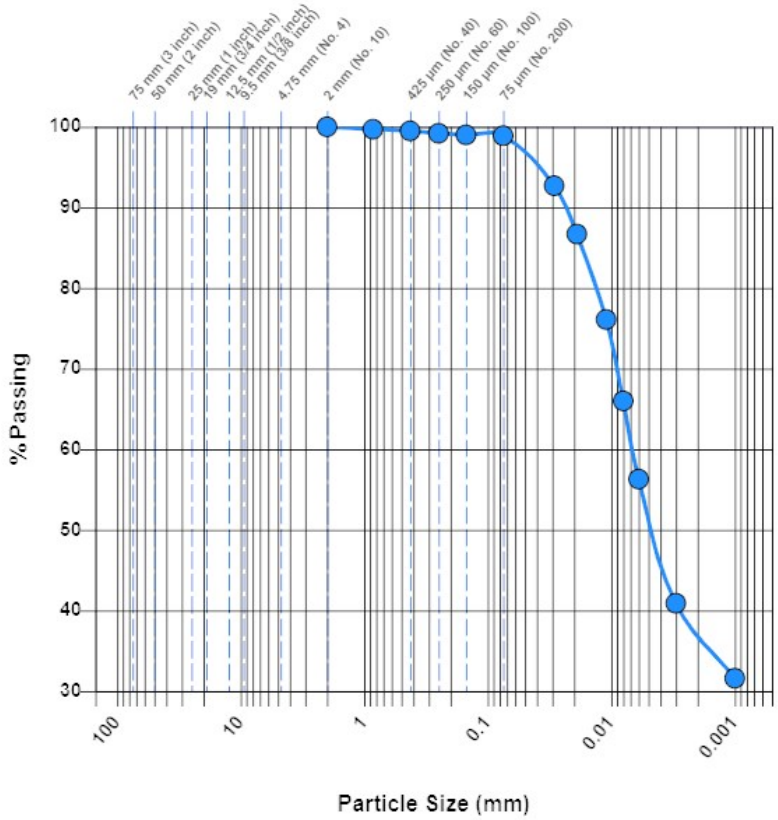
Sample Information

Sample Number:	359090	**Depth (ft):**	9.5-11
Boring Number:	CAA-158	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.5	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	98.9	-
29.2 (µm)	92.7	-
18.8 (µm)	86.7	-
11.2 (µm)	76.1	-
8.2 (µm)	66.0	-
5.9 (µm)	56.3	-
3.0 (µm)	40.9	-
1.4 (µm)	31.6	-



Soil Classification: CH Fat clay, brown to gray, A-7-6(37)

Gravel (%):	0	**Sand (%):**	1.1	**Silt (%):**	47.7	**Clay (%):**	51.2

D_{60} (µm): 6.8

General

Remarks: LL=58, PL=26, PI=32

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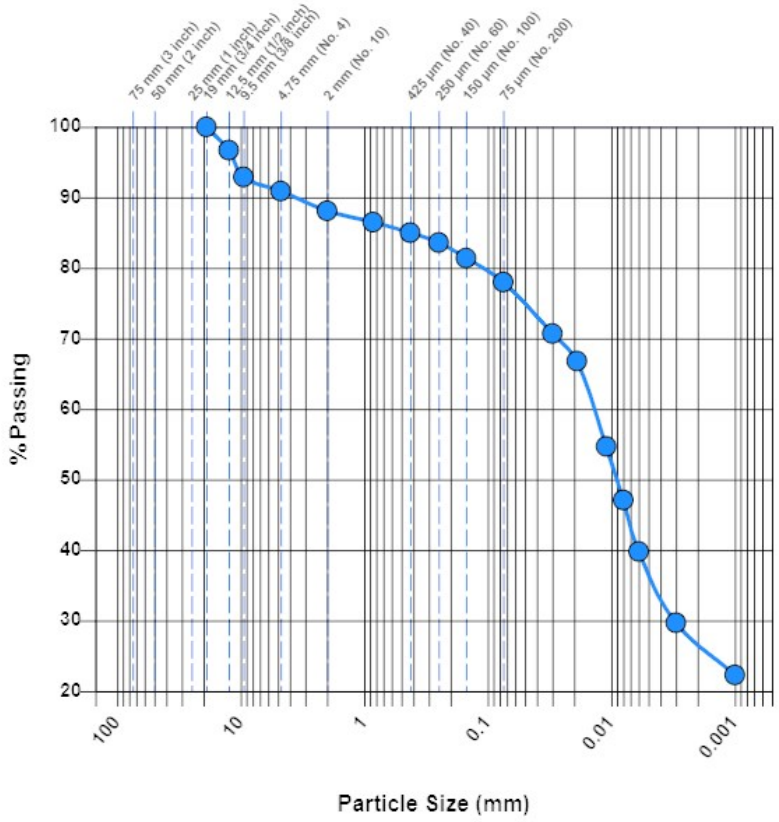
Sample Information

Sample Number:	359091	**Depth (ft):**	19.5-21
Boring Number:	CAA-158	**Sampled By:**	Drill Crew
Sample Date:	01/06/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	96.7	-
9.5 mm (3/8 inch)	92.9	-
4.75 mm (No. 4)	90.9	-
2 mm (No. 10)	88.1	-
850 µm (No. 20)	86.5	-
425 µm (No. 40)	85.0	-
250 µm (No. 60)	83.6	-
150 µm (No. 100)	81.4	-
75 µm (No. 200)	78.0	-
30.2 (µm)	70.7	-
19.4 (µm)	66.8	-
11.3 (µm)	54.7	-
8.4 (µm)	47.1	-
6.1 (µm)	39.8	-
3.0 (µm)	29.7	-
1.4 (µm)	22.3	-



Soil Classification: CL Lean clay with sand, gray, A-6(14)

Gravel (%):	9.1	**Sand (%):**	12.9	**Silt (%):**	41.6	**Clay (%):**	36.4
D_{60} (µm):	14.5	**D_{30} (µm):**	3.1				

General

Remarks: LL=38, PL=18, PI=20

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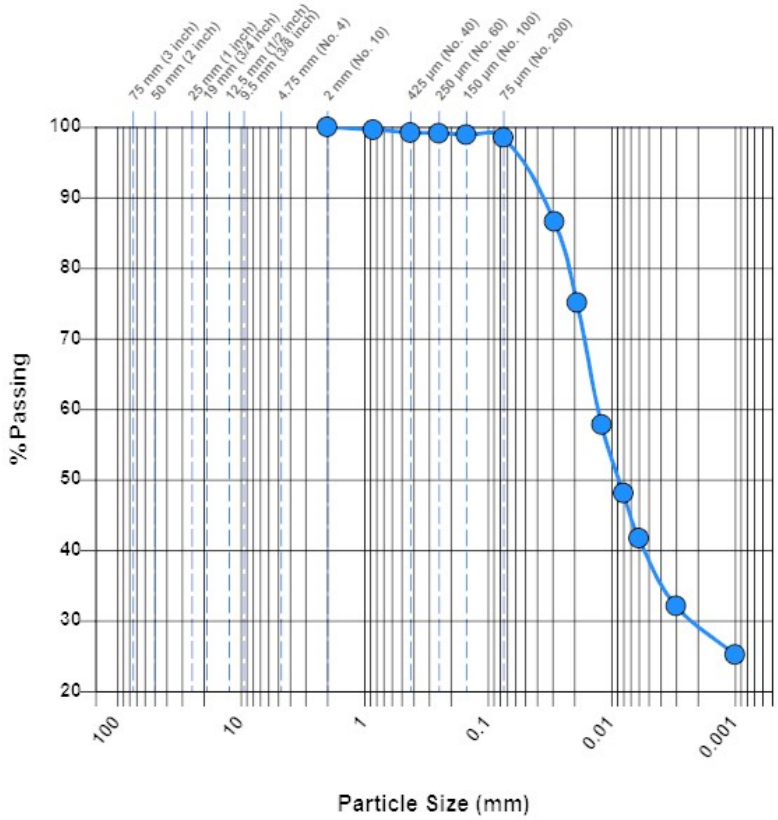
Sample Information

Sample Number:	359092	**Depth (ft):**	4.5-6
Boring Number:	GDRL-159	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	99.2	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	98.5	-
28.5 (µm)	86.6	-
18.8 (µm)	75.1	-
11.5 (µm)	57.8	-
8.4 (µm)	48.1	-
6.0 (µm)	41.7	-
3.0 (µm)	32.1	-
1.4 (µm)	25.2	-



Soil Classification: CL Lean clay, brown, A-7-6(28)

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	60.0	**Clay (%):**	38.5
D_{60} (µm):	12.9	**D_{30} (µm):**	2.4				

General

Remarks: LL=48, PL=23, PI=25

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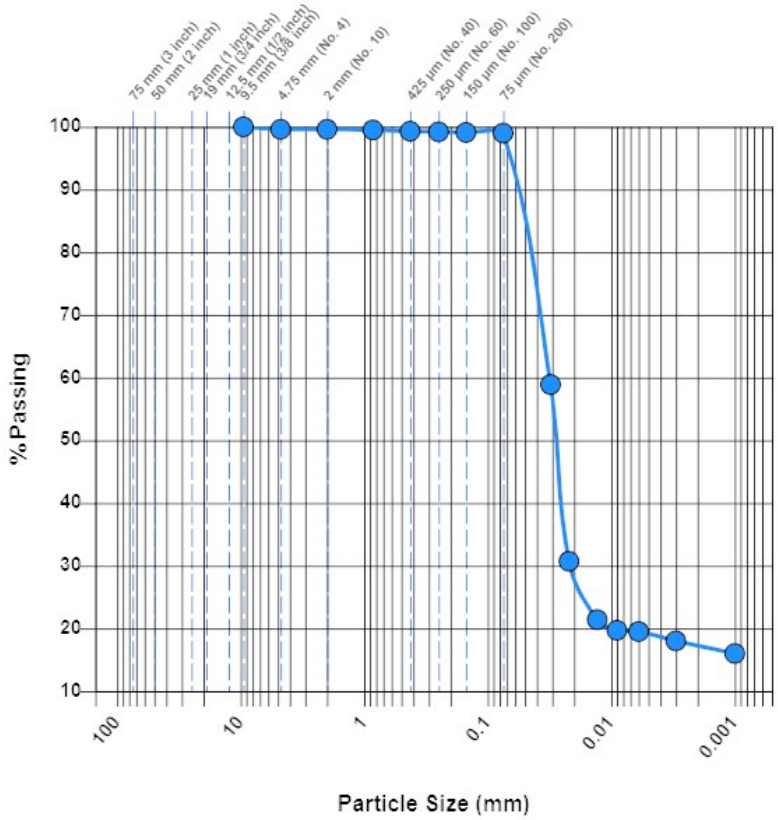
Sample Information

Sample Number:	359093	**Depth (ft):**	0.5-2
Boring Number:	GDRL-160	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.6	-
2 mm (No. 10)	99.6	-
850 µm (No. 20)	99.5	-
425 µm (No. 40)	99.3	-
250 µm (No. 60)	99.2	-
150 µm (No. 100)	99.1	-
75 µm (No. 200)	99.0	-
31.1 (µm)	58.9	-
21.5 (µm)	30.7	-
12.7 (µm)	21.4	-
9.0 (µm)	19.7	-
6.4 (µm)	19.5	-
3.1 (µm)	18.0	-
1.4 (µm)	16.0	-



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

Gravel (%):	0.4	**Sand (%):**	0.6	**Silt (%):**	80.0	**Clay (%):**	19.0
D_{60} (µm):	32.2	**D_{30} (µm):**	21.3				

General

Remarks: LL=37, PL=26, PI=11

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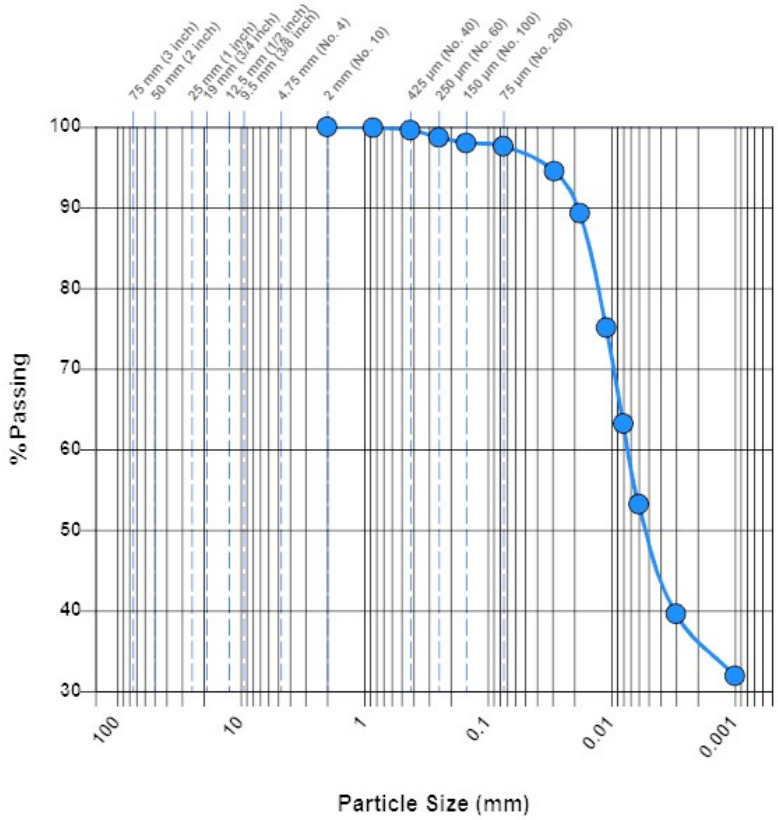
Sample Information

Sample Number:	359094	**Depth (ft):**	9.5-11
Boring Number:	GDRL-160	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	98.7	-
150 µm (No. 100)	98.0	-
75 µm (No. 200)	97.6	-
28.6 (µm)	94.5	-
18.4 (µm)	89.3	-
11.1 (µm)	75.1	-
8.2 (µm)	63.2	-
5.9 (µm)	53.2	-
3.0 (µm)	39.6	-
1.4 (µm)	31.9	-



Soil Classification: CH Fat clay, gray, A-7-6(34)

Gravel (%):	0	**Sand (%):**	2.4	**Silt (%):**	48.9	**Clay (%):**	48.7

D_{60} (µm): 7.4

General

Remarks: LL=55, PL=25, PI=30

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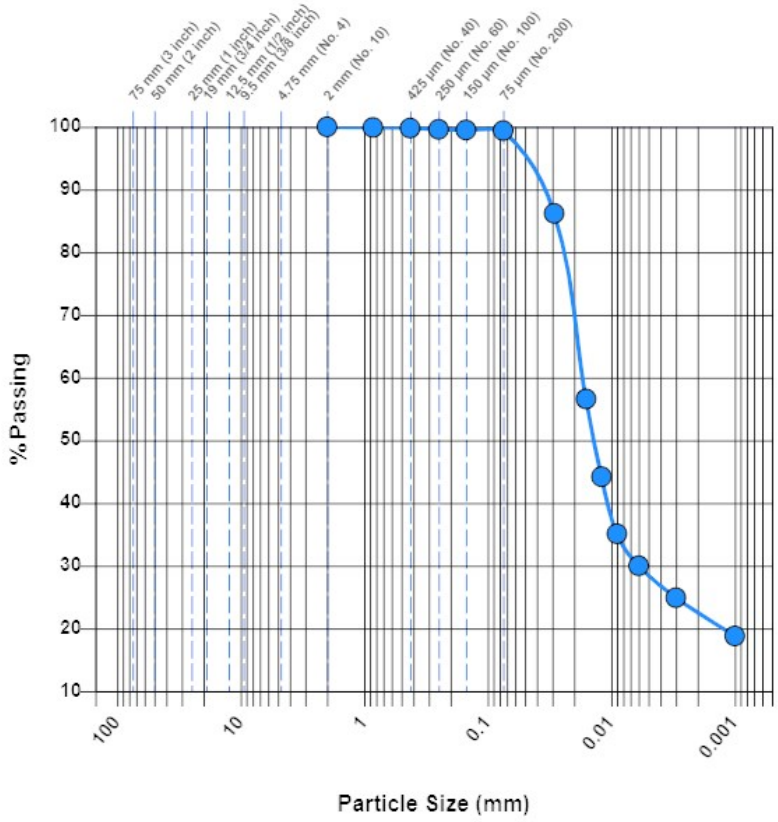
Sample Information

Sample Number:	359095	**Depth (ft):**	4.5-6
Boring Number:	CAA-161	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.4	-
29.2 (µm)	86.2	-
16.0 (µm)	56.6	-
12.1 (µm)	44.2	-
8.7 (µm)	35.1	-
6.3 (µm)	30.0	-
3.1 (µm)	24.9	-
1.4 (µm)	18.8	-



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

Gravel (%):	0	**Sand (%):**	0.6	**Silt (%):**	71.1	**Clay (%):**	28.3
D_{60} (µm):	17.5	**D_{30} (µm):**	6.0				

General

Remarks: LL=43, PL=24, PI=19

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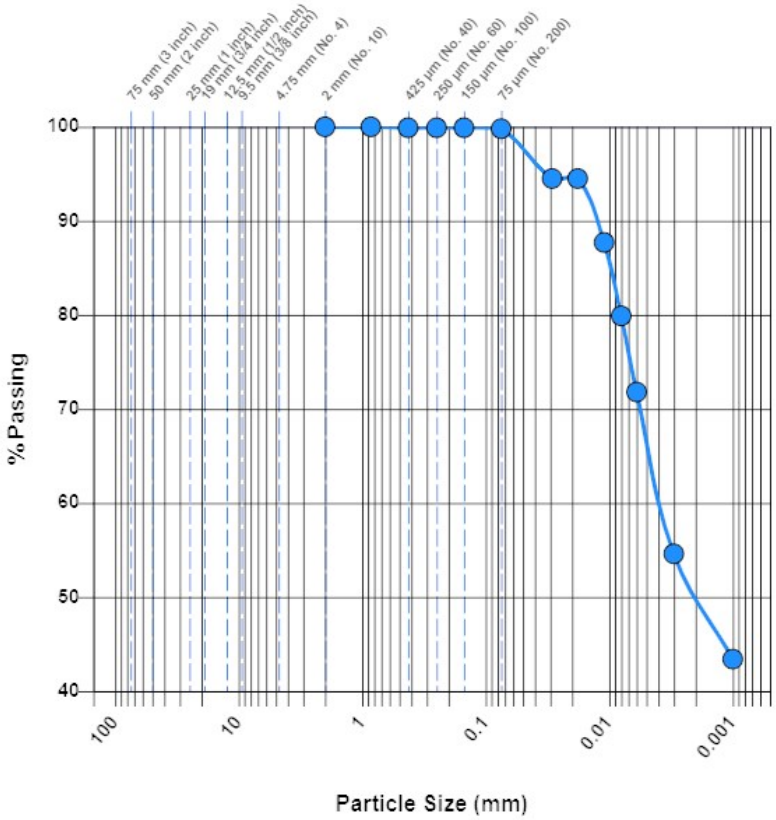
Sample Information

Sample Number:	359096	**Depth (ft):**	14.5-16
Boring Number:	CAA-161	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
75 µm (No. 200)	99.8	-
28.7 (µm)	94.5	-
18.2 (µm)	94.5	-
10.7 (µm)	87.7	-
7.8 (µm)	79.9	-
5.6 (µm)	71.8	-
2.9 (µm)	54.6	-
1.3 (µm)	43.4	-



Soil Classification: CH Fat clay, gray, A-7-6(51)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	33.7	**Clay (%):**	66.1

D_{60} (µm): 3.9

General

Remarks: LL=68, PL=24, PI=44

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Phone: 701-255-7180

Client:

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

Project:

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8-029(200)069; PCN 22888
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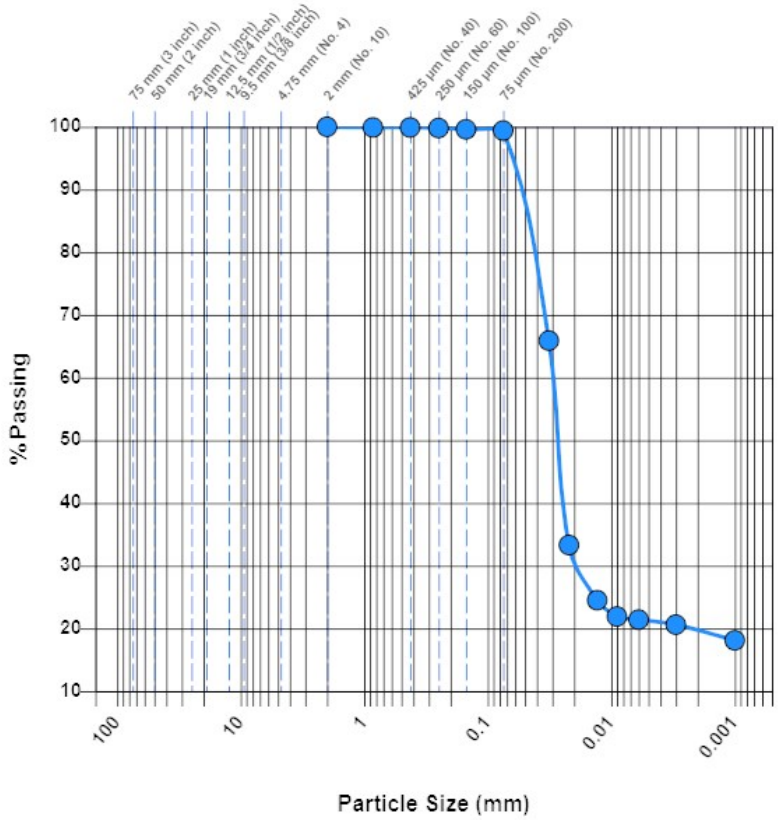
Sample Information

Sample Number:	359097	**Depth (ft):**	0.5-2
Boring Number:	GDRL-162	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
250 µm (No. 60)	99.8	-
150 µm (No. 100)	99.6	-
75 µm (No. 200)	99.4	-
31.9 (µm)	65.9	-
21.7 (µm)	33.3	-
12.8 (µm)	24.5	-
9.1 (µm)	21.9	-
6.4 (µm)	21.4	-
3.1 (µm)	20.6	-
1.4 (µm)	18.1	-



Soil Classification: CL Lean clay, brown to gray, A-4(11)

Gravel (%):	0	**Sand (%):**	0.6	**Silt (%):**	78.3	**Clay (%):**	21.1
D_{60} (µm):	30.2	**D_{30} (µm):**	18.6				

General

Remarks: LL=36, PL=27, PI=9

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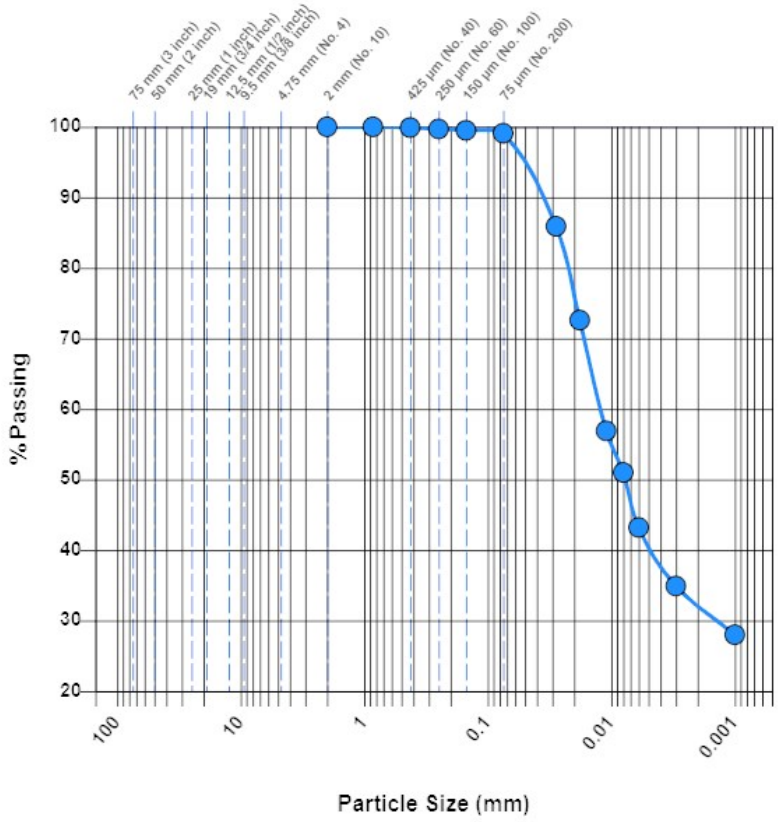
Sample Information

Sample Number:	359098	**Depth (ft):**	9.5-11
Boring Number:	GDRL-162	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.1	-
27.5 (µm)	85.9	-
18.4 (µm)	72.6	-
10.9 (µm)	56.9	-
8.2 (µm)	51.0	-
5.9 (µm)	43.2	-
3.0 (µm)	34.9	-
1.4 (µm)	28.0	-



Soil Classification: CL Lean clay, brown to gray, A-7-6(29)

Gravel (%):	0	**Sand (%):**	0.9	**Silt (%):**	58.7	**Clay (%):**	40.4
D_{60} (µm):	12.4	**D_{30} (µm):**	1.6				

General

Remarks: LL=49, PL=23, PI=26

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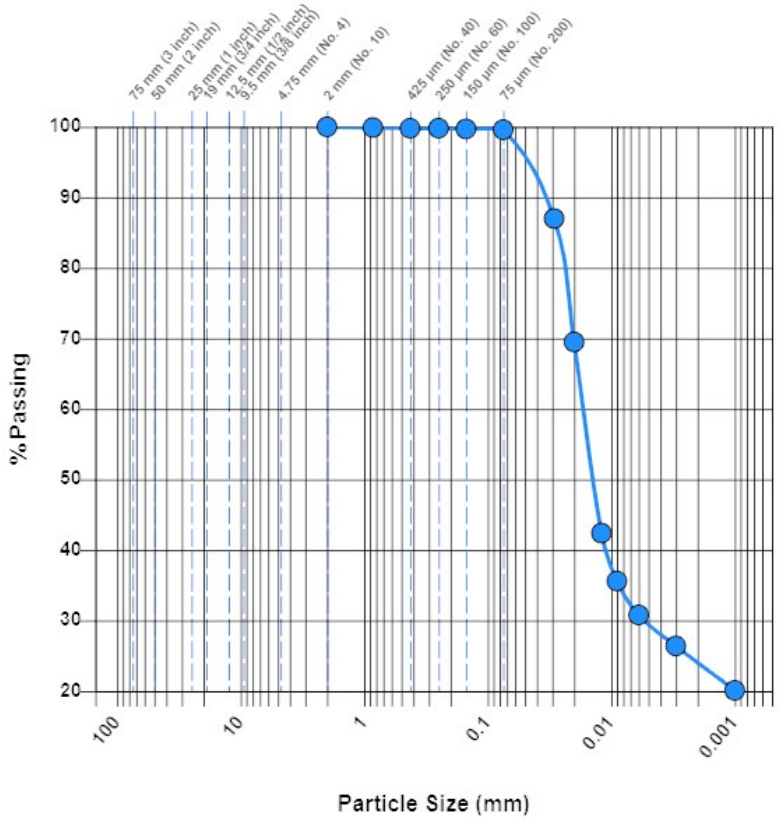
Sample Information

Sample Number:	359099	**Depth (ft):**	4.5-6
Boring Number:	GDRL-163	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.6	-
29.2 (µm)	87.0	-
19.5 (µm)	69.5	-
12.1 (µm)	42.4	-
8.7 (µm)	35.6	-
6.2 (µm)	30.8	-
3.1 (µm)	26.4	-
1.4 (µm)	20.1	-



Soil Classification: CL Lean clay, brown and gray, A-7-6(22)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	70.3	**Clay (%):**	29.3
D_{60} (µm):	17.2	**D_{30} (µm):**	5.5				

General

Remarks: LL=45, PL=26, PI=19

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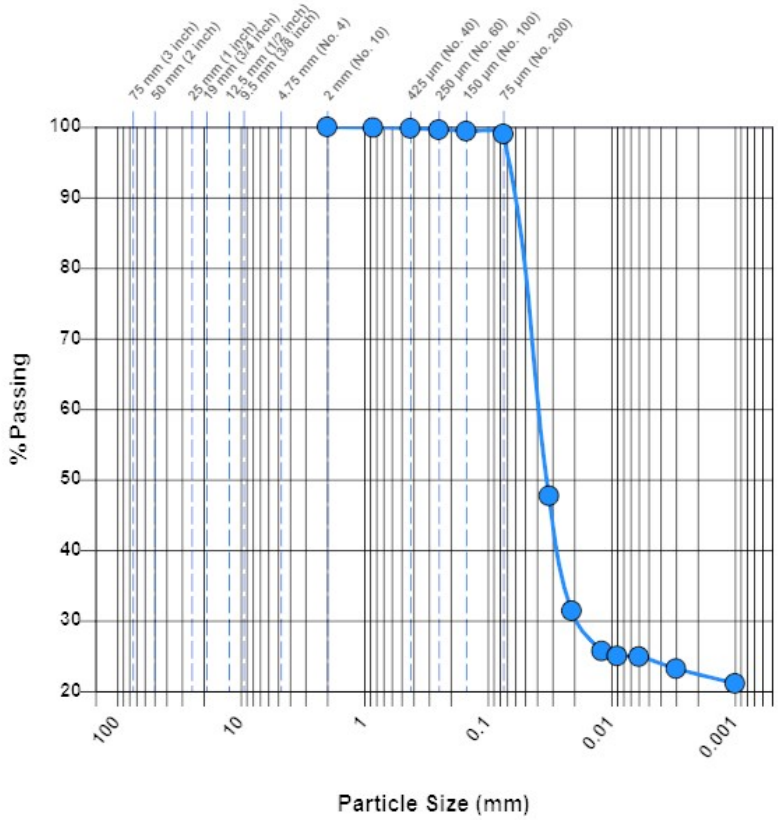
Sample Information

Sample Number:	359100	**Depth (ft):**	0.5-2
Boring Number:	CAA-164	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.0	-
32.1 (µm)	47.7	-
21.4 (µm)	31.4	-
11.8 (µm)	25.7	-
8.9 (µm)	25.0	-
6.3 (µm)	24.9	-
3.1 (µm)	23.2	-
1.4 (µm)	21.1	-



Soil Classification: CL Lean clay, brown, A-6-(12)

Gravel (%):	0	**Sand (%):**	1.0	**Silt (%):**	74.7	**Clay (%):**	24.3
D_{60} (µm):	42.3	**D_{30} (µm):**	18.8				

General

Remarks: LL=33, PL=21, PI=12

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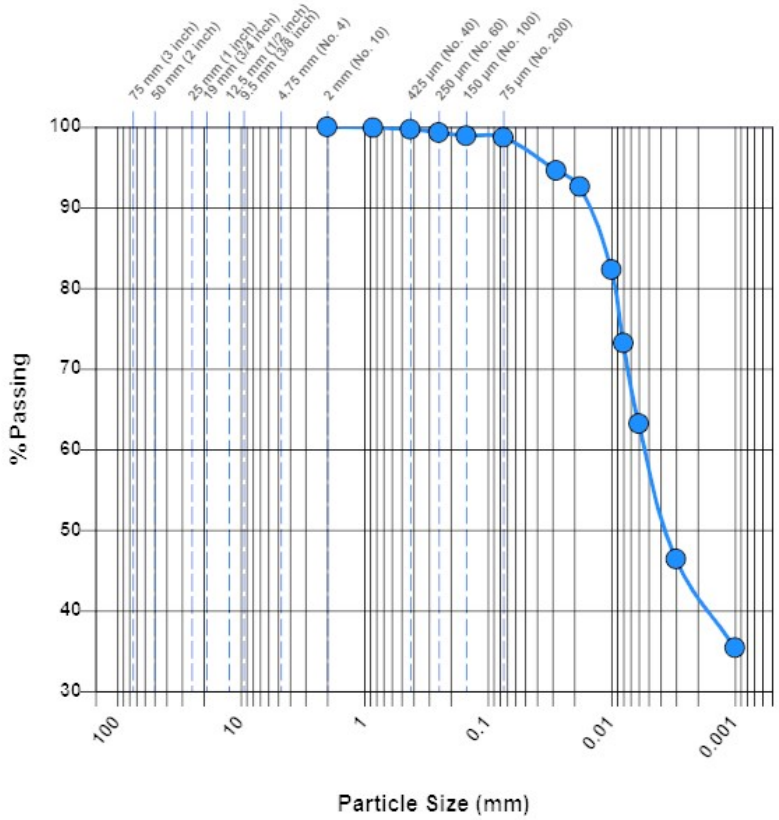
Sample Information

Sample Number:	359101	**Depth (ft):**	9.5-11
Boring Number:	CAA-164	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.3	-
150 µm (No. 100)	98.9	-
75 µm (No. 200)	98.7	-
28.1 (µm)	94.6	-
17.9 (µm)	92.6	-
10.1 (µm)	82.3	-
7.8 (µm)	73.2	-
5.7 (µm)	63.2	-
2.9 (µm)	46.4	-
1.3 (µm)	35.4	-



Soil Classification: CH Fat clay, gray, A-7-6(42)

Gravel (%):	0	**Sand (%):**	1.3	**Silt (%):**	41.1	**Clay (%):**	57.6

D_{60} (µm): 5.4

General

Remarks: LL=61, PL=24, PI=37

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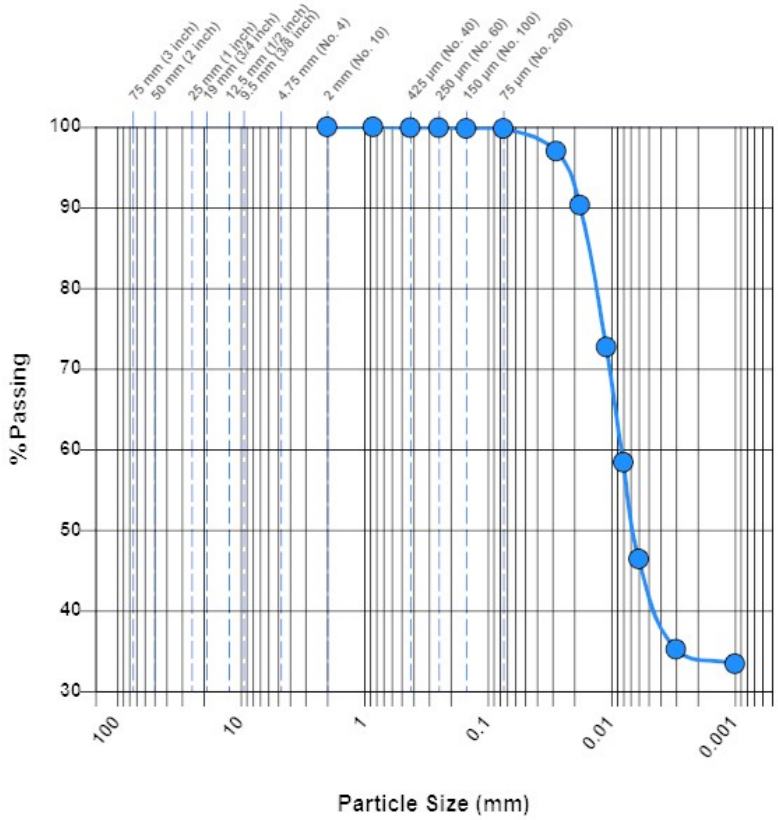
Sample Information

Sample Number:	359102	**Depth (ft):**	19.5-21
Boring Number:	CAA-164	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
27.9 (µm)	97.0	-
18.1 (µm)	90.3	-
11.1 (µm)	72.7	-
8.2 (µm)	58.4	-
6.0 (µm)	46.4	-
3.0 (µm)	35.2	-
1.4 (µm)	33.4	-



Soil Classification: CH Fat clay, gray, A-7-5(34)

Gravel (%):	0	**Sand (%):**	0.2	**Silt (%):**	57.1	**Clay (%):**	42.7

D_{60} (µm): 8.3

General

Remarks: LL=58, PL=30, PI=28

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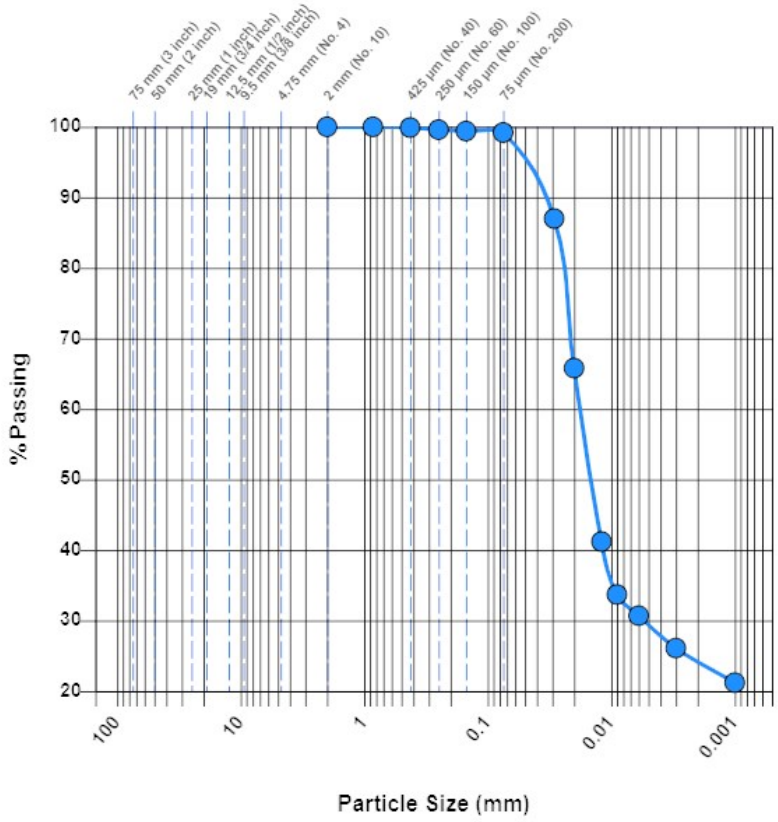
Sample Information

Sample Number:	359103	**Depth (ft):**	4.5-6
Boring Number:	GDRL-165	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
29.3 (µm)	87.0	-
19.9 (µm)	65.8	-
12.3 (µm)	41.2	-
8.7 (µm)	33.7	-
6.3 (µm)	30.7	-
3.1 (µm)	26.1	-
1.4 (µm)	21.2	-



Soil Classification: CL Lean clay, brown to gray, A-7-6(19)

Gravel (%):	0	**Sand (%):**	0.8	**Silt (%):**	70.0	**Clay (%):**	29.2
D_{60} (µm):	18.1	**D_{30} (µm):**	5.5				

General

Remarks: LL=42, PL=26, PI=16

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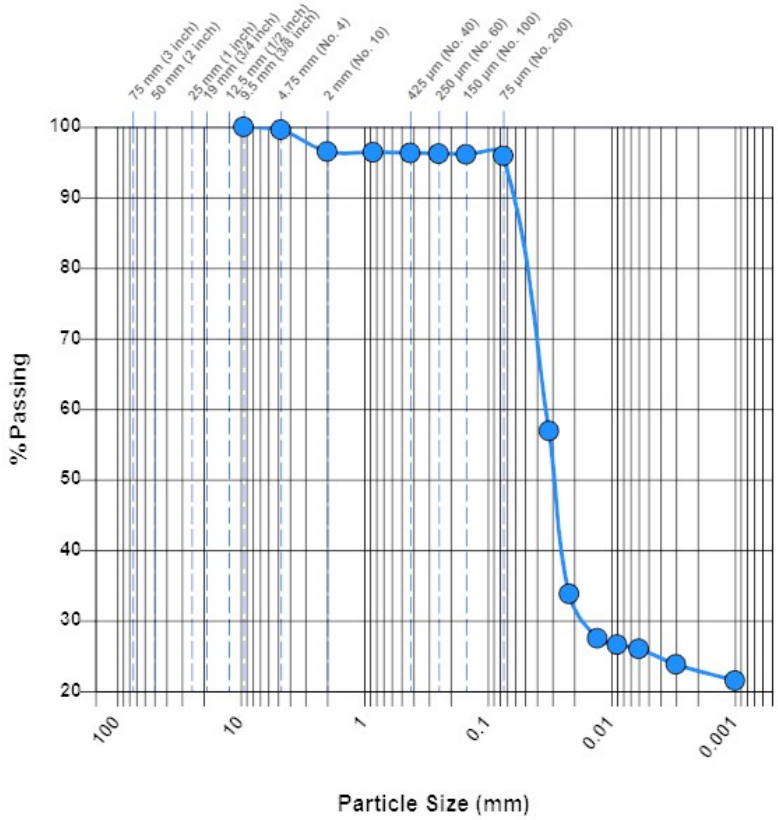
Sample Information

Sample Number:	359104	**Depth (ft):**	0.5-2
Boring Number:	GDRL-166	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
9.5 mm (3/8 inch)	100.0	-
4.75 mm (No. 4)	99.6	-
2 mm (No. 10)	96.5	-
850 µm (No. 20)	96.4	-
425 µm (No. 40)	96.3	-
250 µm (No. 60)	96.2	-
150 µm (No. 100)	96.1	-
75 µm (No. 200)	95.9	-
31.8 (µm)	56.9	-
21.6 (µm)	33.8	-
12.7 (µm)	27.5	-
9.0 (µm)	26.6	-
6.3 (µm)	26.0	-
3.1 (µm)	23.8	-
1.4 (µm)	21.5	-



Soil Classification: CL Lean clay, brown, A-6(11)

Gravel (%):	0.4	**Sand (%):**	3.7	**Silt (%):**	70.6	**Clay (%):**	25.3
D_{60} (µm):	35.4	**D_{30} (µm):**	16.6				

General

Remarks: LL=35, PL=24, PI=11

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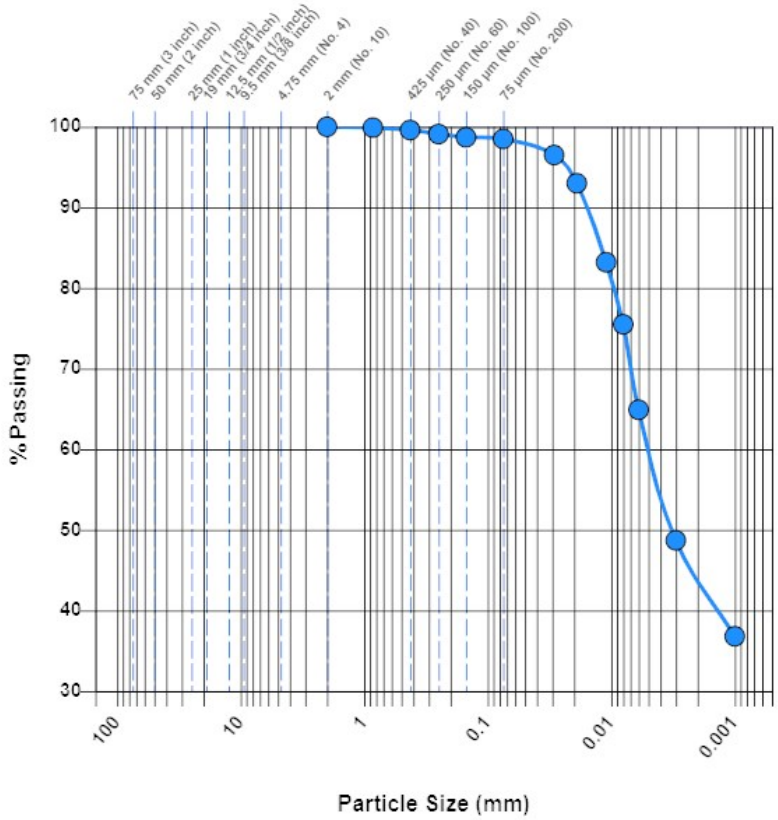
Sample Information

Sample Number:	359105	**Depth (ft):**	9.5-11
Boring Number:	GDRL-166	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.1	-
150 µm (No. 100)	98.7	-
75 µm (No. 200)	98.5	-
29.0 (µm)	96.5	-
18.6 (µm)	93.0	-
11.0 (µm)	83.2	-
8.0 (µm)	75.5	-
5.8 (µm)	64.9	-
3.0 (µm)	48.7	-
1.4 (µm)	36.8	-



Soil Classification: CH Fat clay, gray, A-7-6(44)

Gravel (%):	0	**Sand (%):**	1.5	**Silt (%):**	39.0	**Clay (%):**	59.5

D_{60} (µm): 5.1

General

Remarks: LL=63, PL=24, PI=39

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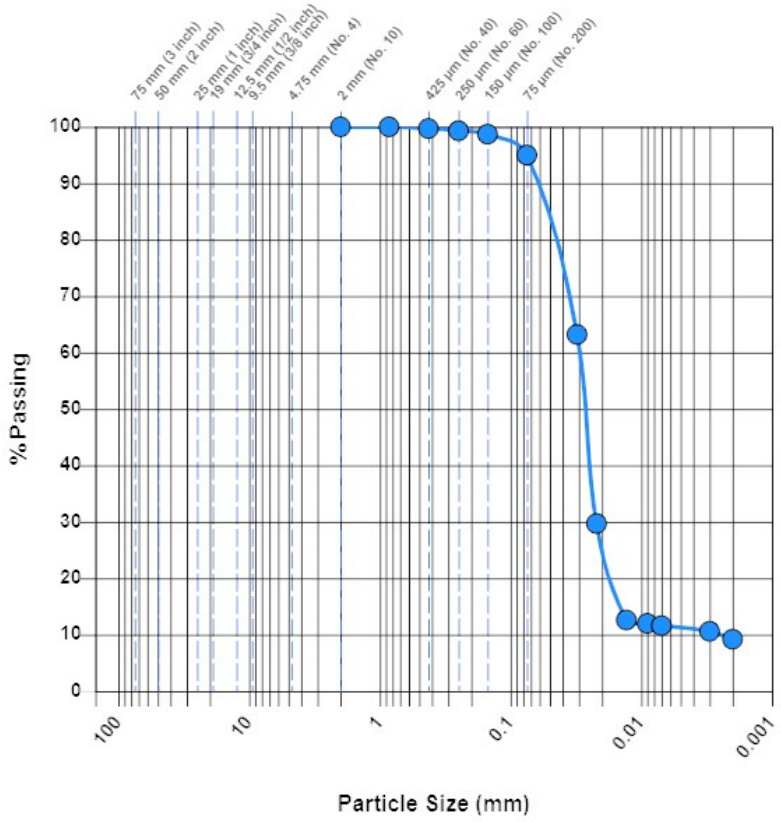
Sample Information

Sample Number:	359106	**Depth (ft):**	4.5-6
Boring Number:	CAA-167	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.7	-
75 µm (No. 200)	95.0	-
30.6 (µm)	63.2	-
21.6 (µm)	29.7	-
13.1 (µm)	12.6	-
9.3 (µm)	12.0	-
6.6 (µm)	11.6	-
3.2 (µm)	10.6	-
1.5 (µm)	9.2	-



Soil Classification: ML Silt, gray, A-4(0)

Gravel (%):	0	**Sand (%):**	5.0	**Silt (%):**	83.9	**Clay (%):**	11.1		
D_{60} (µm):	30.1	**D_{30} (µm):**	22.1	**D_{10} (µm):**	2.6	**C_u:**	11.58	**C_c:**	6.24

General

Remarks: Non Plastic.

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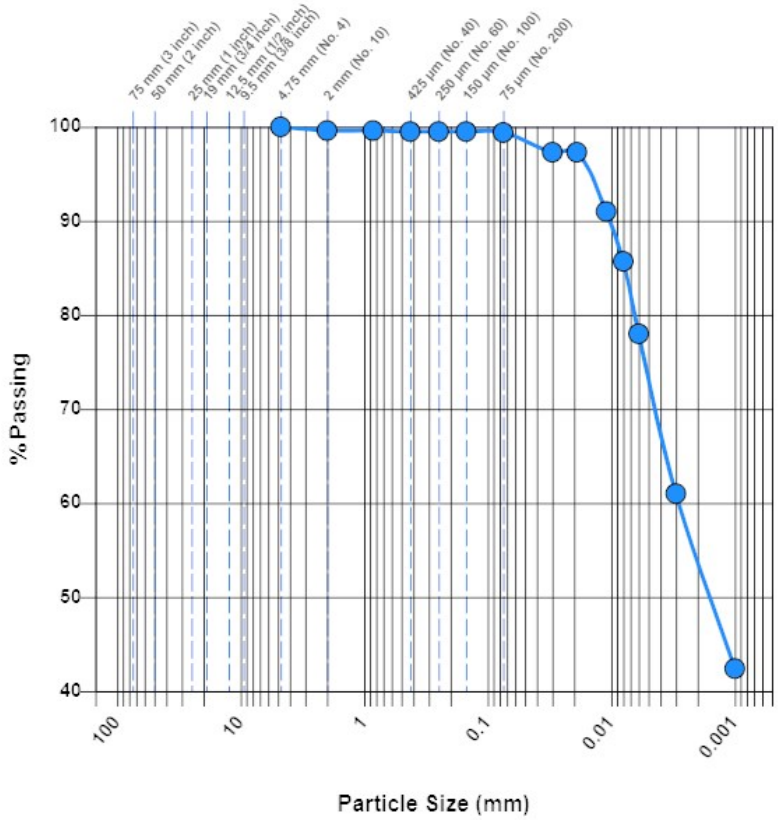
Sample Information

Sample Number:	359107	**Depth (ft):**	14.5-16
Boring Number:	CAA-167	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.6	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	99.5	-
250 µm (No. 60)	99.5	-
150 µm (No. 100)	99.5	-
75 µm (No. 200)	99.4	-
29.8 (µm)	97.3	-
18.8 (µm)	97.3	-
11.1 (µm)	91.0	-
7.9 (µm)	85.7	-
5.7 (µm)	78.0	-
2.9 (µm)	61.0	-
0.7 (µm)	42.4	-



Soil Classification: CH Fat clay, gray, A-7-6(49)

Gravel (%):	0.0	**Sand (%):**	0.6	**Silt (%):**	27.1	**Clay (%):**	72.3
D_{60} (µm):	2.9						

General

Remarks: LL=69, PL=27, PI=42

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Phone: 701-255-7180

Client:

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

Project:

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

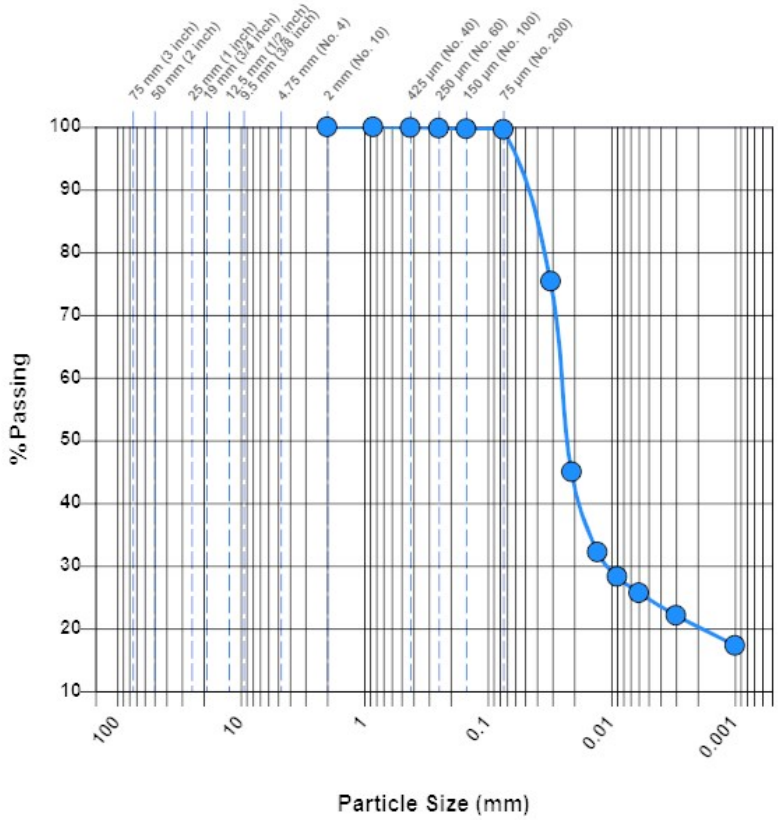
Sample Information

Sample Number:	359108	**Depth (ft):**	0.5-2
Boring Number:	GDRL-168	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
75 µm (No. 200)	99.6	-
31.0 (µm)	75.4	-
21.2 (µm)	45.0	-
12.6 (µm)	32.2	-
9.0 (µm)	28.3	-
6.4 (µm)	25.7	-
3.1 (µm)	22.1	-
0.8 (µm)	17.3	-



Soil Classification: CL Lean clay, brown, A-6(14)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	75.1	**Clay (%):**	24.5
D_{60} (µm):	25.9	**D_{30} (µm):**	10.7				

General

Remarks: LL=37, PL=24, PI=13

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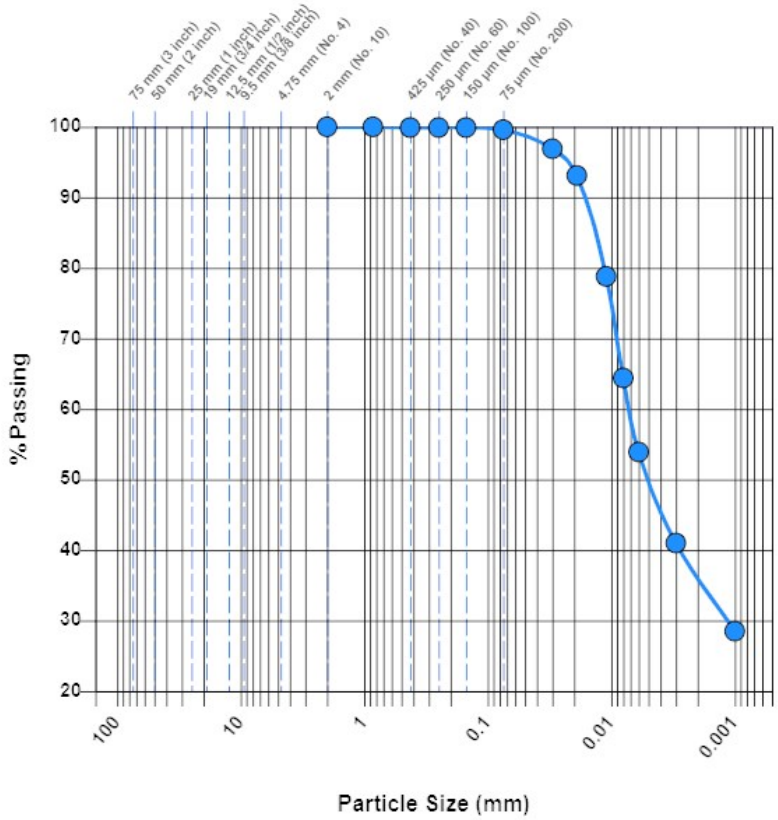
Sample Information

Sample Number:	359109	**Depth (ft):**	9.5-11
Boring Number:	GDRL-168	**Sampled By:**	Drill Crew
Sample Date:	01/05/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
75 µm (No. 200)	99.6	-
29.5 (µm)	96.9	-
18.9 (µm)	93.1	-
11.3 (µm)	78.8	-
8.3 (µm)	64.4	-
6.0 (µm)	53.9	-
3.0 (µm)	41.0	-
0.8 (µm)	28.5	-



Soil Classification: CH Fat clay, gray, A-7-6(33)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	50.0	**Clay (%):**	49.6
D_{60} (µm):	7.2	**D_{30} (µm):**	1.2				

General

Remarks: LL=56, PL=28, PI=28

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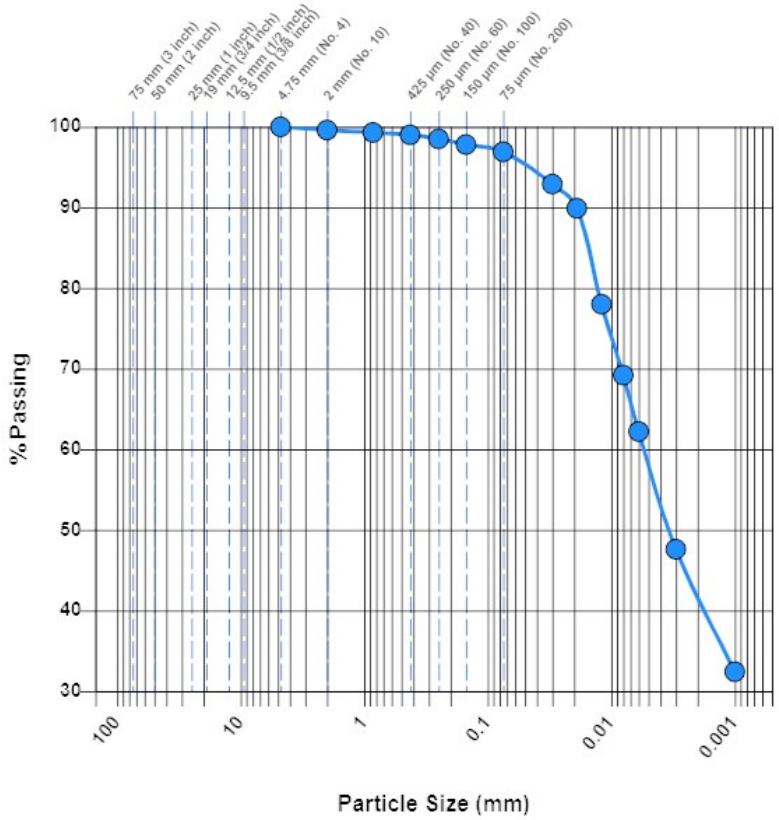
Sample Information

Sample Number:	359110	**Depth (ft):**	4.5-6
Boring Number:	GDRL-169	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.6	-
850 µm (No. 20)	99.3	-
425 µm (No. 40)	99.0	-
250 µm (No. 60)	98.5	-
150 µm (No. 100)	97.8	-
75 µm (No. 200)	96.9	-
30.3 (µm)	92.9	-
19.3 (µm)	89.9	-
11.5 (µm)	78.0	-
8.3 (µm)	69.2	-
6.0 (µm)	62.2	-
3.0 (µm)	47.6	-
0.8 (µm)	32.4	-



Soil Classification: CH Fat clay, gray, A-7-6(38)

Gravel (%):	0.0	**Sand (%):**	3.1	**Silt (%):**	39.6	**Clay (%):**	57.3
D_{60} (µm):	5.5						

General

Remarks: LL=60, PL=26, PI=34

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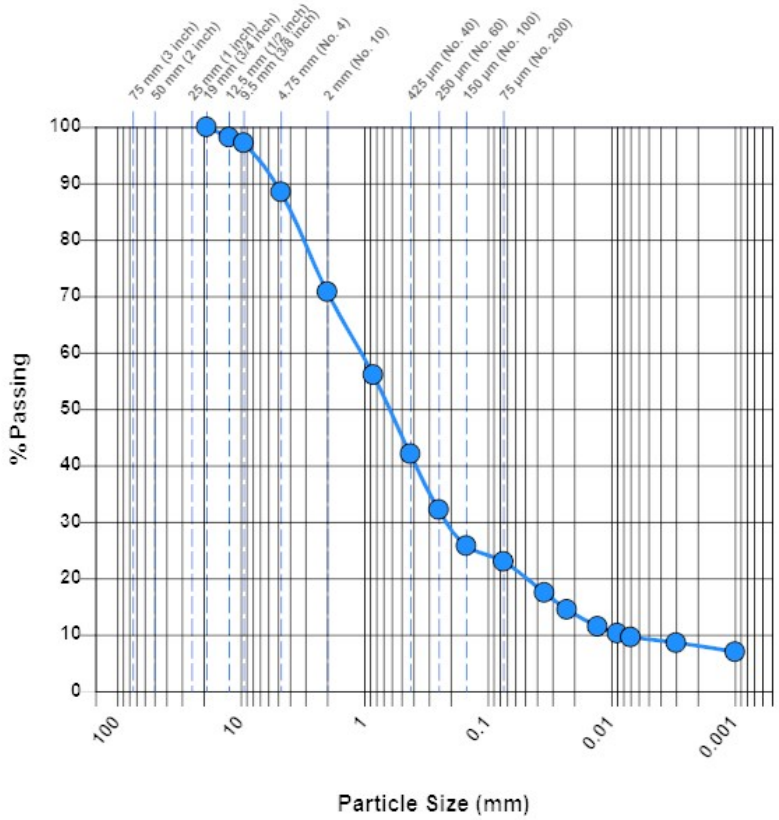
Sample Information

Sample Number:	359111	**Depth (ft):**	0.5-2
Boring Number:	CAA-170	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	98.2	-
9.5 mm (3/8 inch)	97.2	-
4.75 mm (No. 4)	88.5	-
2 mm (No. 10)	70.8	-
850 µm (No. 20)	56.1	-
425 µm (No. 40)	42.1	-
250 µm (No. 60)	32.2	-
150 µm (No. 100)	25.8	-
75 µm (No. 200)	23.0	-
35.2 (µm)	17.5	-
22.5 (µm)	14.5	-
13.1 (µm)	11.5	-
9.3 (µm)	10.3	-
6.6 (µm)	9.6	-
3.2 (µm)	8.6	-
0.8 (µm)	7.0	-



Soil Classification: SM Silty sand, brown, A-1-b(0)

Gravel (%):	11.5	**Sand (%):**	65.5	**Silt (%):**	13.9	**Clay (%):**	9.1		
D_{60} (µm):	1155.1	**D_{30} (µm):**	215.6	**D_{10} (µm):**	8.1	**C_u:**	142.60	**C_c:**	4.97

General

Remarks: Non Plastic.

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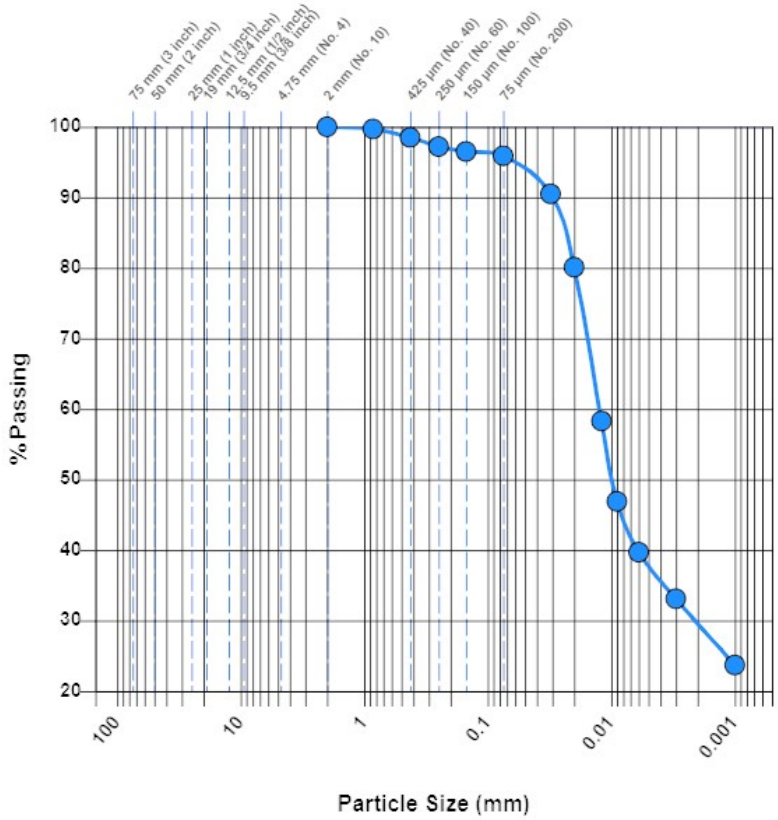
Sample Information

Sample Number:	359112	**Depth (ft):**	9.5-11
Boring Number:	CAA-170	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	98.5	-
250 µm (No. 60)	97.2	-
150 µm (No. 100)	96.5	-
75 µm (No. 200)	95.9	-
30.8 (µm)	90.5	-
20.0 (µm)	80.1	-
12.1 (µm)	58.3	-
8.8 (µm)	46.9	-
6.3 (µm)	39.7	-
3.1 (µm)	33.1	-
0.8 (µm)	23.7	-



Soil Classification: CL Lean clay, brown, A-7-6(28)

Gravel (%):	0	**Sand (%):**	4.1	**Silt (%):**	58.4	**Clay (%):**	37.5
D_{60} (µm):	12.6	**D_{30} (µm):**	2.3				

General

Remarks: LL=49, PL=23, PI=26

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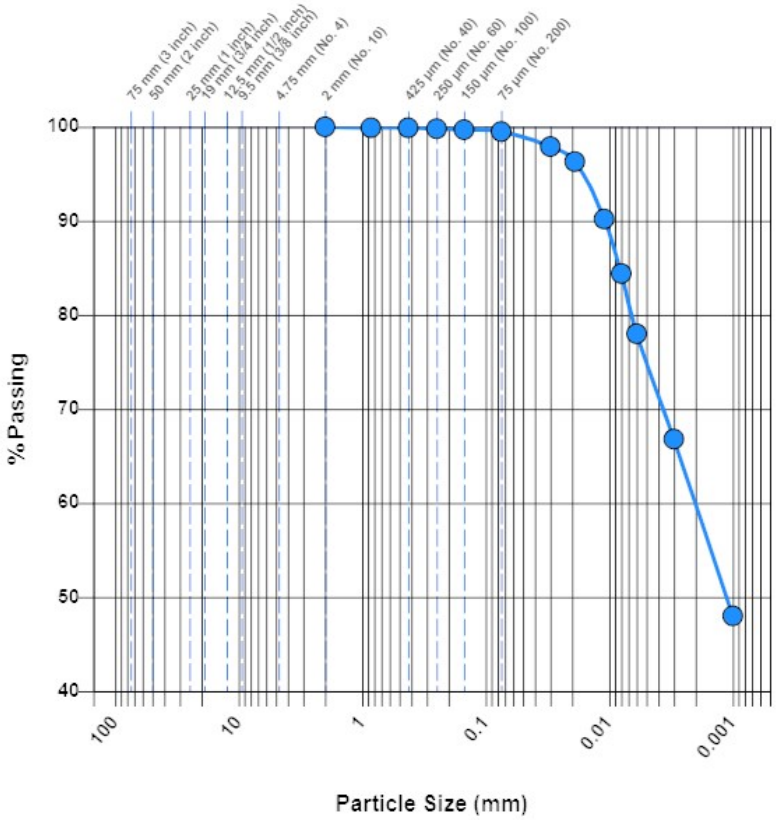
Sample Information

Sample Number:	359113	**Depth (ft):**	19.5-21
Boring Number:	CAA-170	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.9	-
250 µm (No. 60)	99.8	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.5	-
30.3 (µm)	97.9	-
19.3 (µm)	96.3	-
11.3 (µm)	90.2	-
8.1 (µm)	84.4	-
5.8 (µm)	78.0	-
2.9 (µm)	66.8	-
0.7 (µm)	48.0	-



Soil Classification: CH Fat clay, gray, A-7-6(73)

Gravel (%):	0	**Sand (%):**	0.5	**Silt (%):**	25.2	**Clay (%):**	74.3

D_{60} (µm): 2.3

General

Remarks: LL=91, PL=29, PI=62

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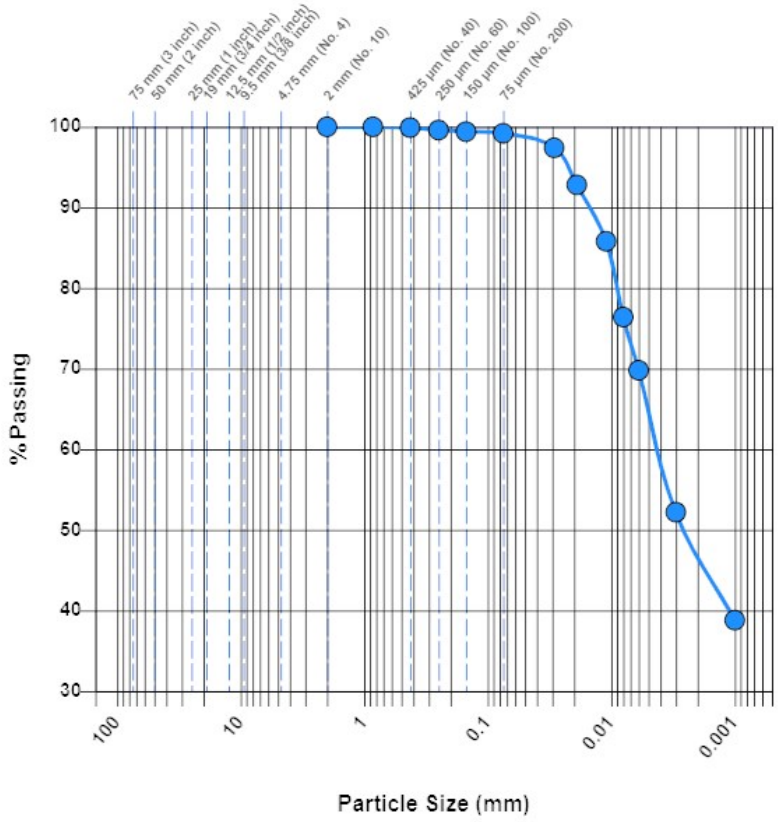
Sample Information

Sample Number:	359114	**Depth (ft):**	4.5-6
Boring Number:	GDRL-171	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/16/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.2	-
28.9 (µm)	97.4	-
18.5 (µm)	92.8	-
10.9 (µm)	85.8	-
7.8 (µm)	76.4	-
5.7 (µm)	69.8	-
2.9 (µm)	52.2	-
1.3 (µm)	38.8	-



Soil Classification: CH Fat clay, brown, A-7-6(45)

Gravel (%):	0	**Sand (%):**	0.8	**Silt (%):**	35.3	**Clay (%):**	63.9

D_{60} (µm): 4.3

General

Remarks: LL=65, PL=26, PI=39

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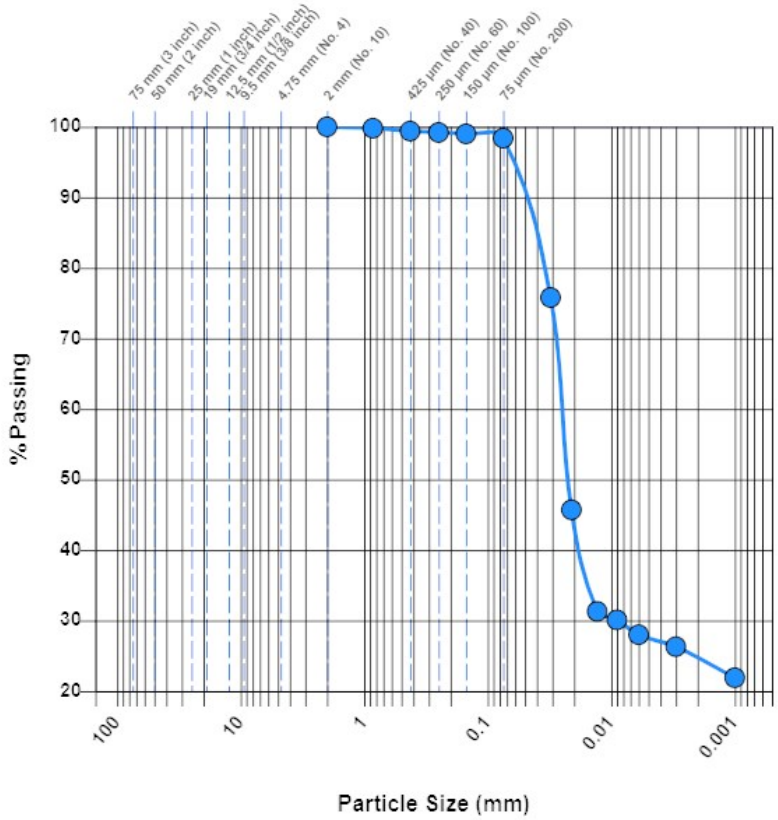
Sample Information

Sample Number:	359116	**Depth (ft):**	0.5-2
Boring Number:	GDRL-172	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.2	-
150 µm (No. 100)	99.0	-
75 µm (No. 200)	98.4	-
30.7 (µm)	75.8	-
21.1 (µm)	45.7	-
12.6 (µm)	31.3	-
8.8 (µm)	30.1	-
6.3 (µm)	28.0	-
3.1 (µm)	26.3	-
1.4 (µm)	21.9	-



Soil Classification: CL Lean clay, brown, A-6(15)

Gravel (%):	0	**Sand (%):**	1.6	**Silt (%):**	71.0	**Clay (%):**	27.4
D_{60} (µm):	25.8	**D_{30} (µm):**	8.9				

General

Remarks: LL=38, PL=24, PI=14

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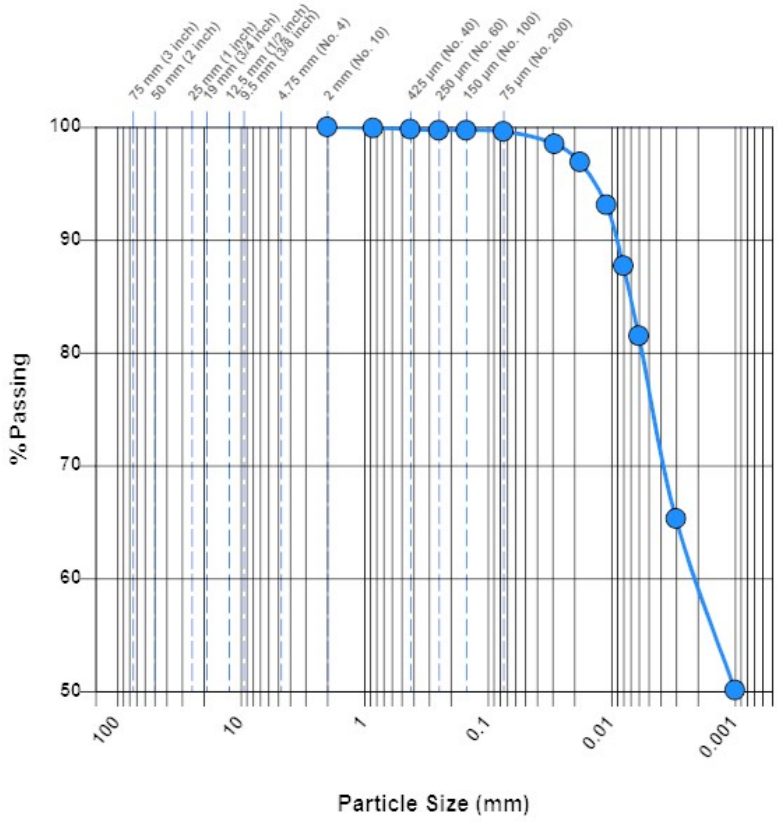
Sample Information

Sample Number:	359117	**Depth (ft):**	9.5-11
Boring Number:	GDRL-172	**Sampled By:**	Drill Crew
Sample Date:	01/08/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
28.7 (µm)	98.5	-
18.2 (µm)	96.9	-
10.7 (µm)	93.1	-
7.7 (µm)	87.7	-
5.5 (µm)	81.5	-
2.8 (µm)	65.3	-
1.3 (µm)	50.1	-



Soil Classification: CH Fat clay, brown, A-7-6(69)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	23.5	**Clay (%):**	76.1

D_{60} (µm): 2.3

General

Remarks: LL=87, PL=29, PI=58

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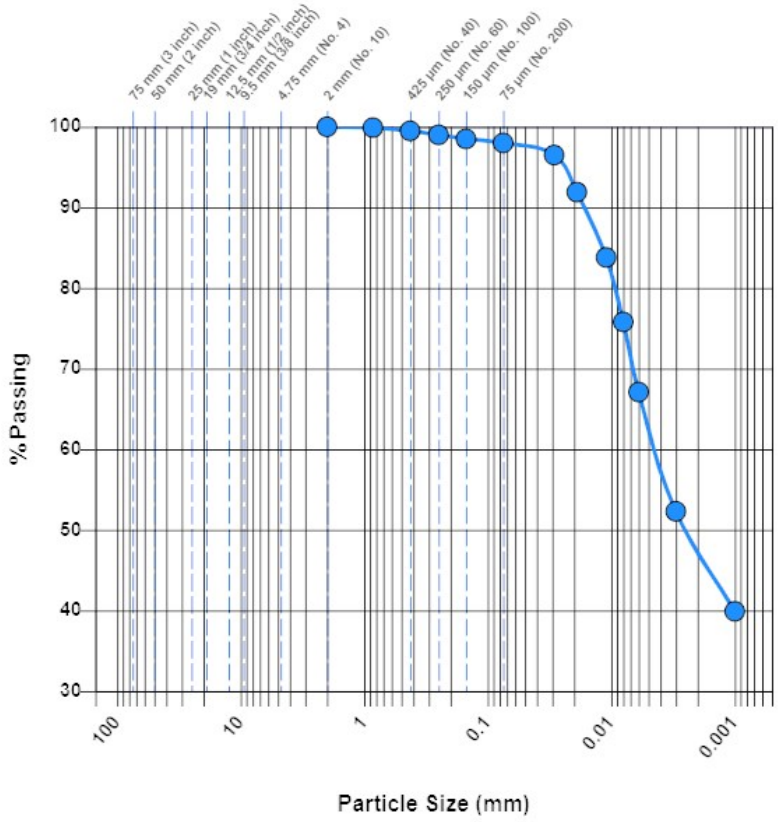
Sample Information

Sample Number:	359118	**Depth (ft):**	4.5-6
Boring Number:	CAA-173	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.0	-
150 µm (No. 100)	98.5	-
75 µm (No. 200)	98.0	-
29.2 (µm)	96.5	-
18.7 (µm)	91.9	-
11.1 (µm)	83.8	-
8.0 (µm)	75.8	-
5.8 (µm)	67.1	-
2.9 (µm)	52.3	-
1.3 (µm)	39.9	-



Soil Classification: CH Fat clay, brown to gray, A-7-6(42)

Gravel (%):	0	**Sand (%):**	2.0	**Silt (%):**	35.8	**Clay (%):**	62.2

D_{60} (µm): 4.6

General

Remarks: LL=65, PL=29, PI=36

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BRAUN INTERTEC
The Science You Build On.

Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

1502 Grumman Lane
Bismarck, ND 58504
Phone: 701-255-7180

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

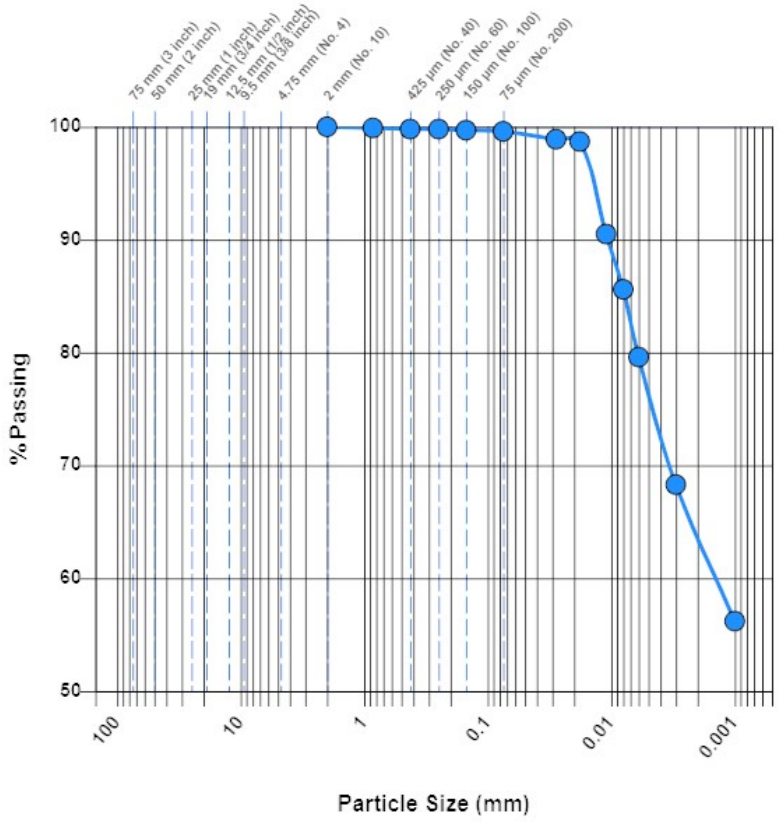
Sample Information

Sample Number:	359119	**Depth (ft):**	14.5-16
Boring Number:	CAA-173	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.6	-
28.3 (µm)	98.9	-
17.9 (µm)	98.7	-
10.6 (µm)	90.5	-
7.6 (µm)	85.6	-
5.5 (µm)	79.6	-
2.8 (µm)	68.3	-
1.3 (µm)	56.2	-



Soil Classification: CH Fat clay, brown to gray, A-7-6(65)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	23.8	**Clay (%):**	75.8

D_{60} (µm): 1.6

General

Remarks: LL=82, PL=26, PI=56

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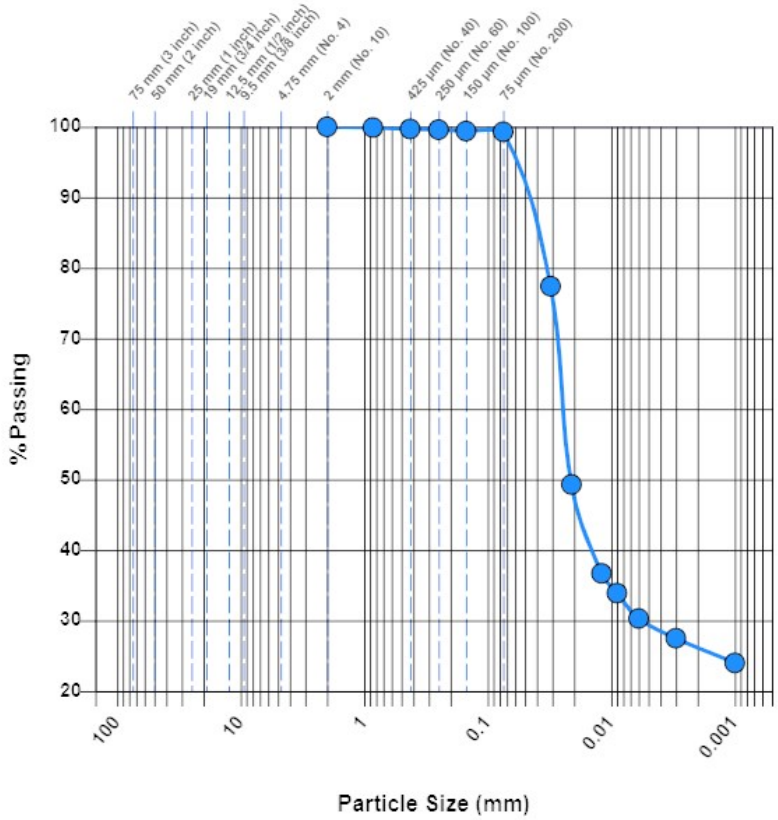
Sample Information

Sample Number:	359120	**Depth (ft):**	0.5-2
Boring Number:	GDRL-174	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.7	-
250 µm (No. 60)	99.6	-
150 µm (No. 100)	99.4	-
75 µm (No. 200)	99.3	-
30.8 (µm)	77.4	-
20.9 (µm)	49.3	-
12.4 (µm)	36.7	-
8.8 (µm)	33.9	-
6.3 (µm)	30.3	-
3.1 (µm)	27.5	-
1.4 (µm)	24.0	-



Soil Classification: CL Lean clay, brown, A-6(16)

Gravel (%):	0	**Sand (%):**	0.7	**Silt (%):**	69.9	**Clay (%):**	29.4
D_{60} (µm):	24.8	**D_{30} (µm):**	5.7				

General

Remarks: LL=36, PL=21, PI=15

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Hydrometer And Sieve Analysis

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8-029(200)069; PCN 22888
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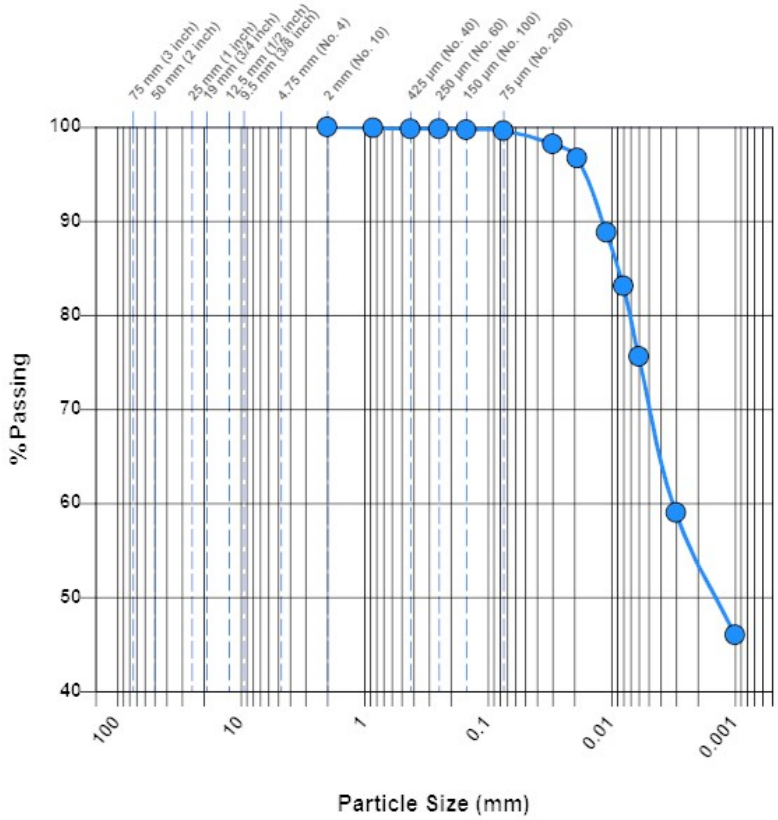
Sample Information

Sample Number:	359121	**Depth (ft):**	9.5-11
Boring Number:	GDRL-174	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.8	-
150 µm (No. 100)	99.7	-
75 µm (No. 200)	99.6	-
29.6 (µm)	98.2	-
18.8 (µm)	96.7	-
11.1 (µm)	88.8	-
8.0 (µm)	83.1	-
5.7 (µm)	75.6	-
2.9 (µm)	59.0	-
1.3 (µm)	46.0	-



Soil Classification: CH Fat clay, gray, A-7-6(44)

Gravel (%):	0	**Sand (%):**	0.4	**Silt (%):**	29.5	**Clay (%):**	70.1

D_{60} (µm): 3.2

General

Remarks: LL=63, PL=25, PI=38

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Fargo, ND

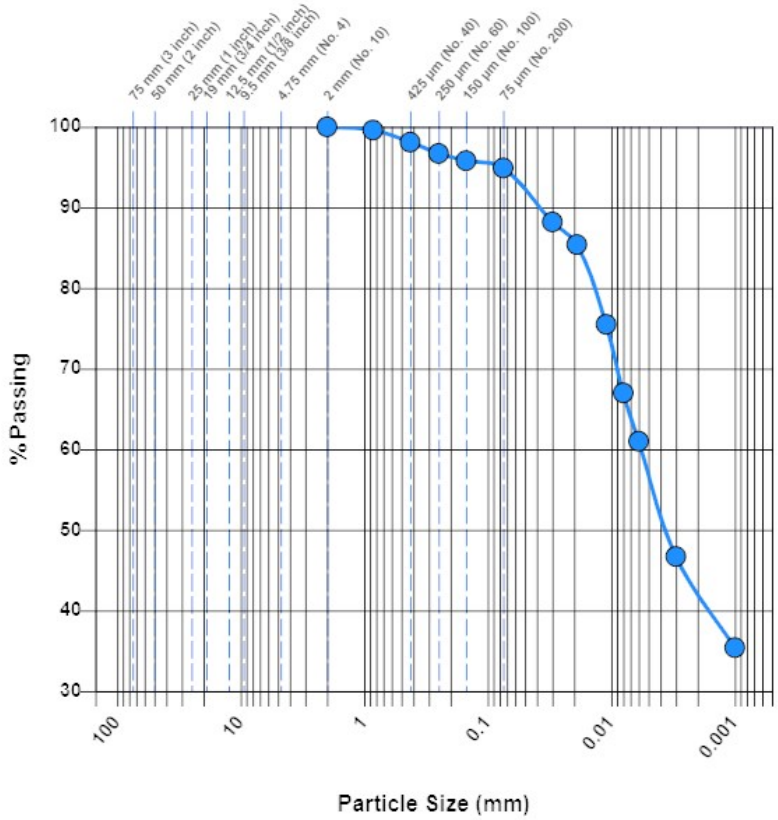
Sample Information

Sample Number:	359122	**Depth (ft):**	4.5-6
Boring Number:	GDRL-175	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.6	-
425 µm (No. 40)	98.1	-
250 µm (No. 60)	96.7	-
150 µm (No. 100)	95.8	-
75 µm (No. 200)	94.9	-
29.9 (µm)	88.2	-
19.1 (µm)	85.4	-
11.3 (µm)	75.5	-
8.0 (µm)	67.0	-
5.9 (µm)	61.0	-
3.0 (µm)	46.7	-
1.3 (µm)	35.4	-



Soil Classification: CH Fat clay, brown, A-7-6(39)

Gravel (%):	0	**Sand (%):**	5.1	**Silt (%):**	38.7	**Clay (%):**	56.2

D_{60} (µm): 5.8

General

Remarks: LL=60, PL=24, PI=36

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Project:

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Interstate 29
Fargo, ND

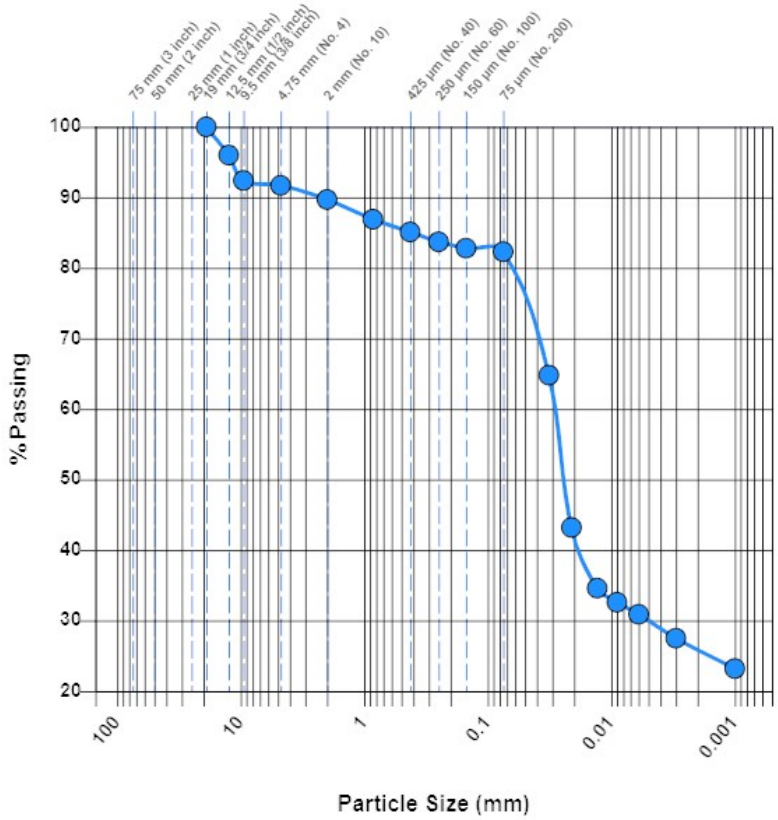
Sample Information

Sample Number:	359123	**Depth (ft):**	0.5-2
Boring Number:	CAA-176	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

Laboratory Data

Sieve-Hydrometer Analysis

Particle Size	% Passing	Specification
19 mm (3/4 inch)	100.0	-
12.5 mm (1/2 inch)	96.0	-
9.5 mm (3/8 inch)	92.4	-
4.75 mm (No. 4)	91.7	-
2 mm (No. 10)	89.7	-
850 µm (No. 20)	86.9	-
425 µm (No. 40)	85.1	-
250 µm (No. 60)	83.7	-
150 µm (No. 100)	82.8	-
75 µm (No. 200)	82.3	-
32.0 (µm)	64.8	-
21.3 (µm)	43.2	-
12.5 (µm)	34.6	-
8.9 (µm)	32.6	-
6.3 (µm)	30.9	-
3.1 (µm)	27.5	-
1.4 (µm)	23.2	-



Soil Classification: CL Lean clay with sand, black to gray, A-6(16)

Gravel (%):	8.3	**Sand (%):**	9.4	**Silt (%):**	52.5	**Clay (%):**	29.8
D_{60} (µm):	29.6	**D_{30} (µm):**	5.2				

General

Remarks: LL=40, PL=21, PI=19

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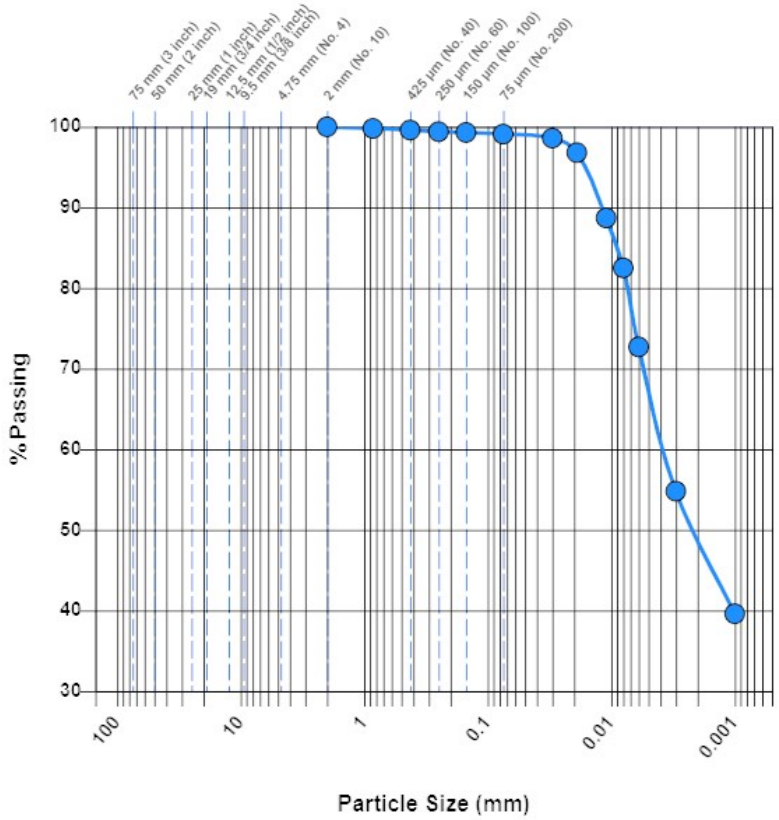
Sample Information

Sample Number:	359124	**Depth (ft):**	9.5-11
Boring Number:	CAA-176	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	99.6	-
250 µm (No. 60)	99.4	-
150 µm (No. 100)	99.3	-
75 µm (No. 200)	99.1	-
29.5 (µm)	98.6	-
18.8 (µm)	96.8	-
11.1 (µm)	88.7	-
7.9 (µm)	82.5	-
5.8 (µm)	72.7	-
2.9 (µm)	54.8	-
1.3 (µm)	39.6	-



Soil Classification: CH Fat clay, gray, A-7-6(45)

Gravel (%):	0	**Sand (%):**	0.9	**Silt (%):**	32.4	**Clay (%):**	66.7

D_{60} (µm): 3.9

General

Remarks: LL=65, PL=26, PI=39

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Hydrometer And Sieve Analysis

ASTM D422

2/26/2021

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Project:

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

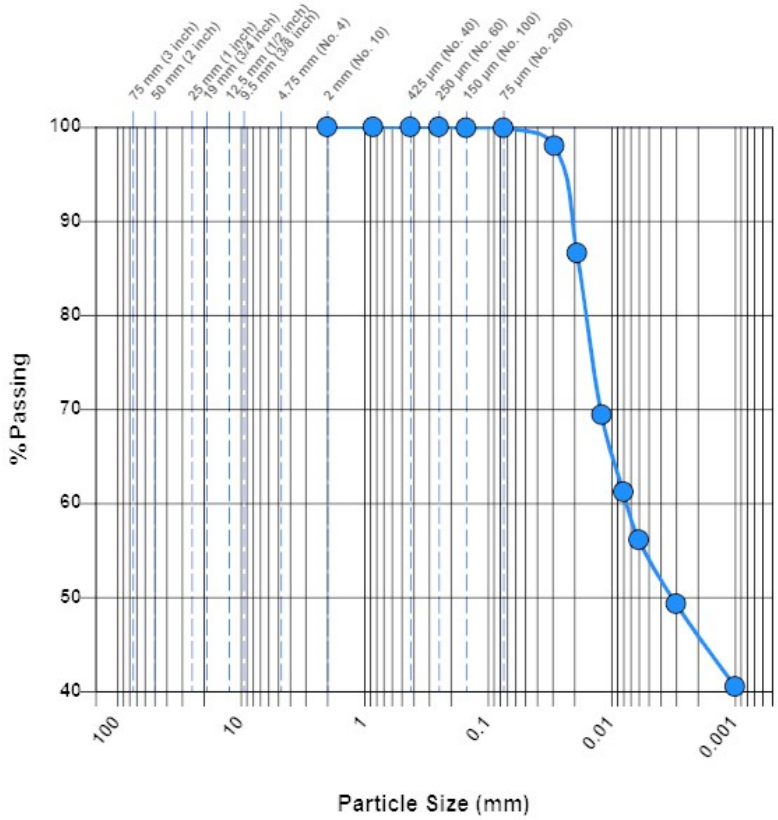
Sample Information

Sample Number:	359125	**Depth (ft):**	19.5-21
Boring Number:	CAA-176	**Sampled By:**	Drill Crew
Sample Date:	01/04/2021		
Received Date:	01/26/2021	**Lab:**	11001 Hampshire Ave S, Bloomington, MN
Tested Date:	02/17/2021	**Tested By:**	Tschida, Simone T.

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)	100.0	-
150 µm (No. 100)	99.9	-
75 µm (No. 200)	99.9	-
29.1 (µm)	98.0	-
19.1 (µm)	86.6	-
11.5 (µm)	69.4	-
8.3 (µm)	61.2	-
6.0 (µm)	56.1	-
3.0 (µm)	49.3	-
1.3 (µm)	40.5	-



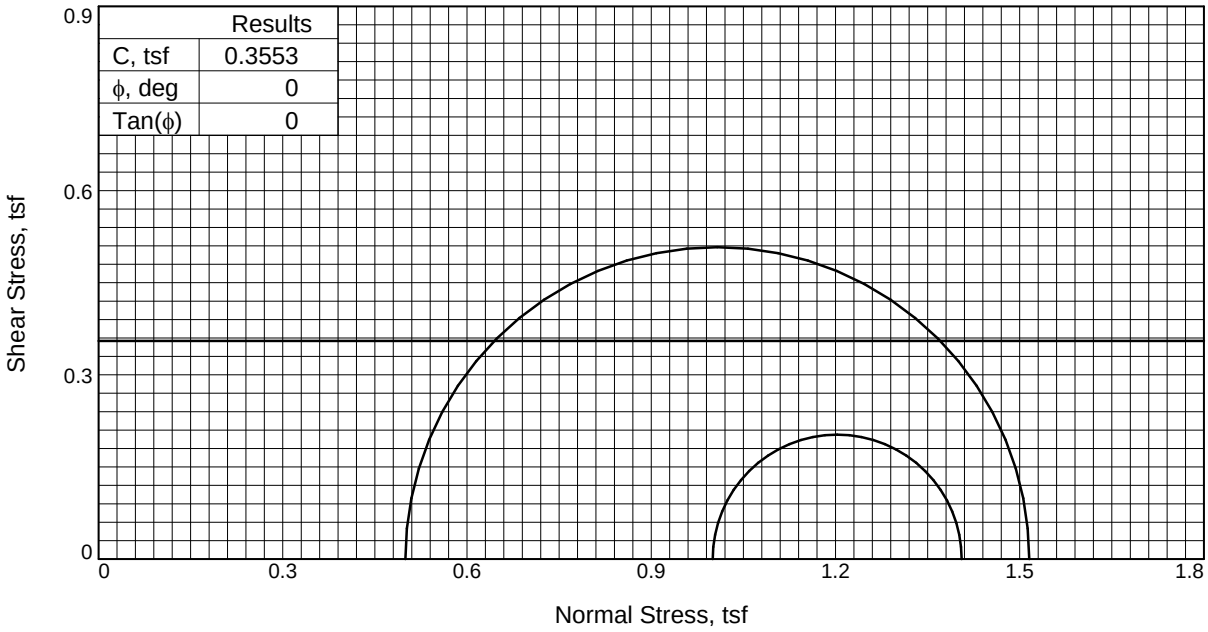
Soil Classification: CH Fat clay, gray, A-7-6(41)

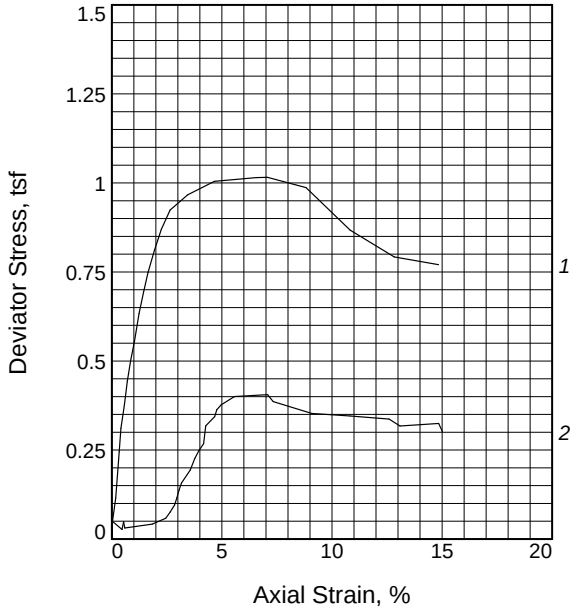
Gravel (%):	0	**Sand (%):**	0.1	**Silt (%):**	46.1	**Clay (%):**	53.8
D_{60} (µm):	7.5						

General

Remarks: LL=57, PL=21, PI=36

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Sample No.		1	2
Initial	Water Content, %	46.4	42.4
	Dry Density, pcf	74.0	78.0
	Saturation, %	98.1	98.7
	Void Ratio	1.2764	1.1605
	Diameter, in.	1.39	1.38
	Height, in.	2.84	2.88
At Test	Water Content, %	46.4	42.4
	Dry Density, pcf	74.0	78.0
	Saturation, %	98.1	98.7
	Void Ratio	1.2764	1.1605
	Diameter, in.	1.39	1.38
	Height, in.	2.84	2.88
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	1.000
Fail. Stress, tsf		1.016	0.405
Ult. Stress, tsf		0.770	0.302
σ_1 Failure, tsf		1.515	1.405
σ_3 Failure, tsf		0.500	1.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

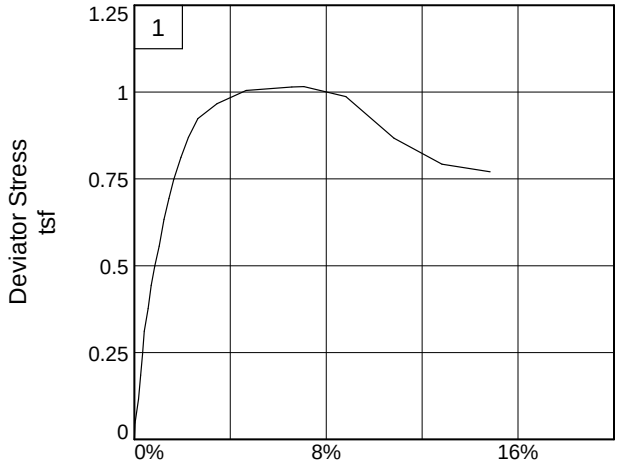
Location: CAA-001

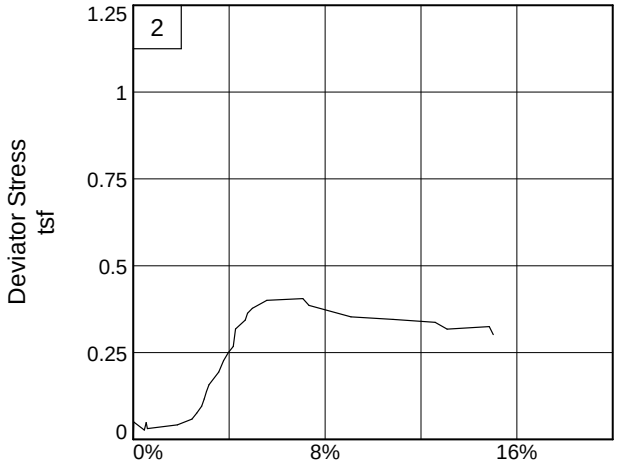
Sample Number: TW-3 **Depth:** 7-9'

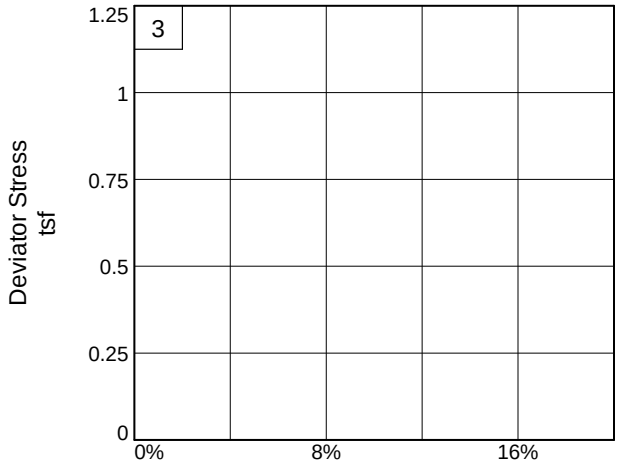
Proj. No.: B2009724 **Date Sampled:** 12/15/2020

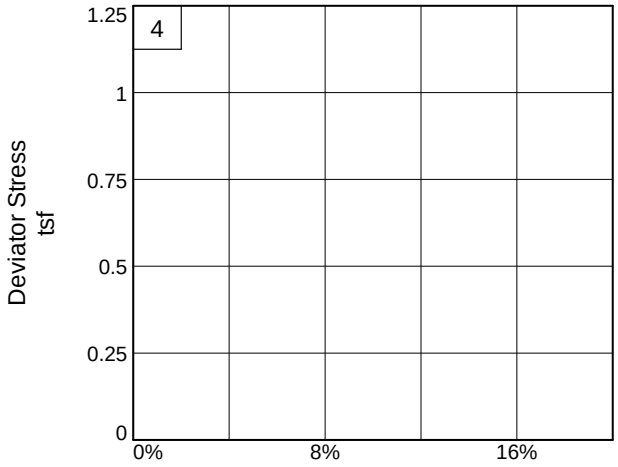
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

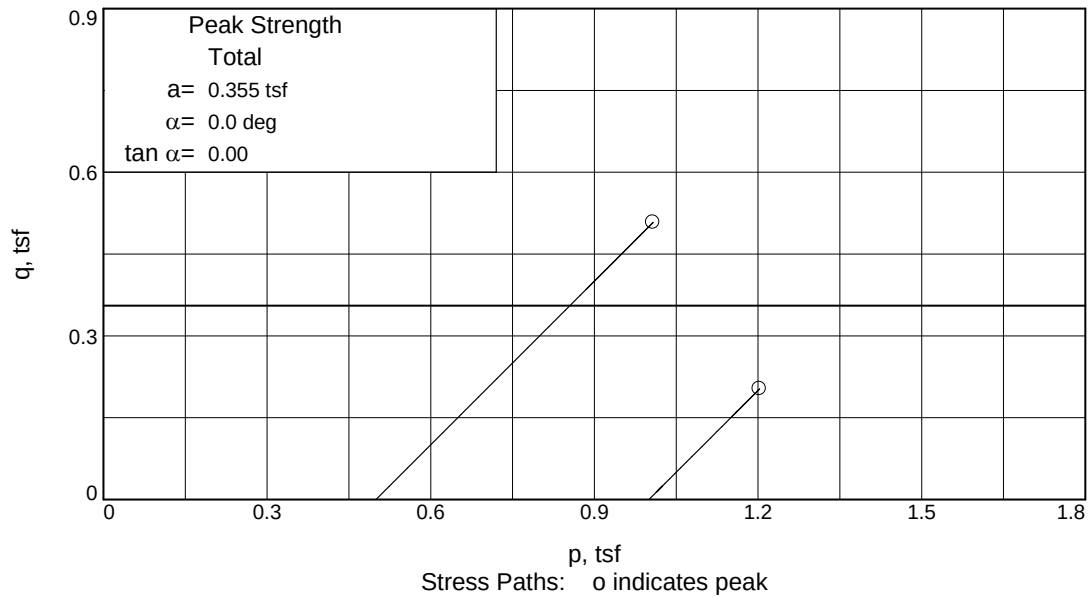
Tested By: ST









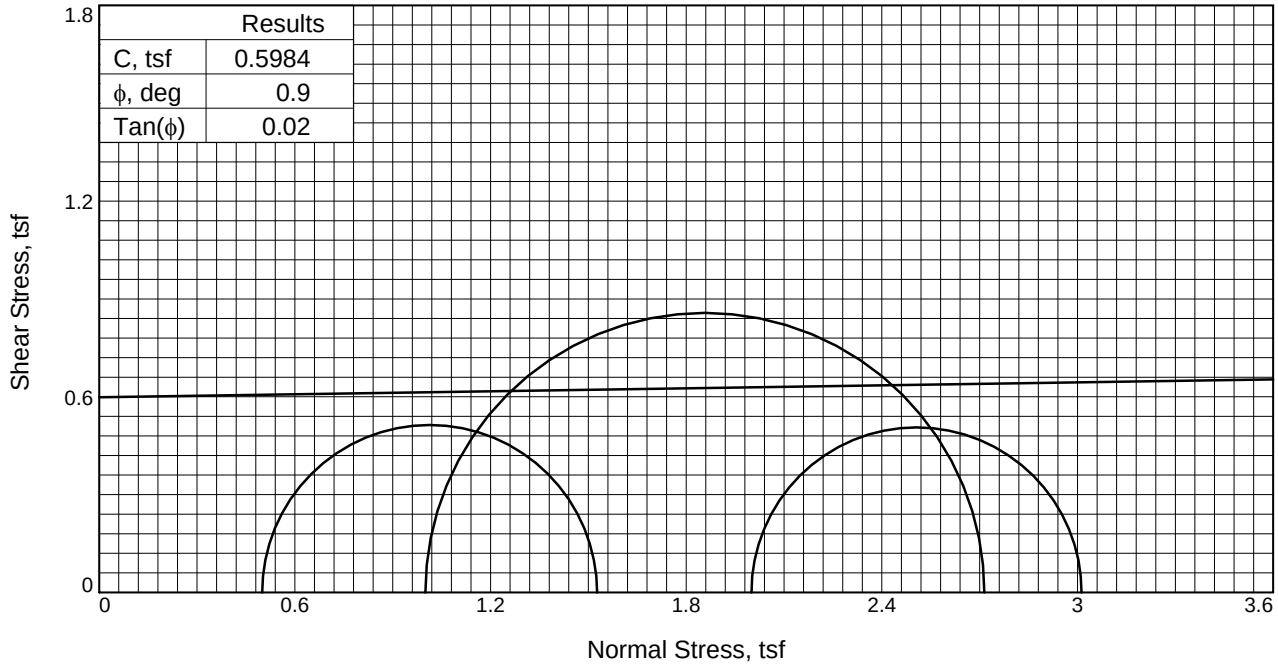


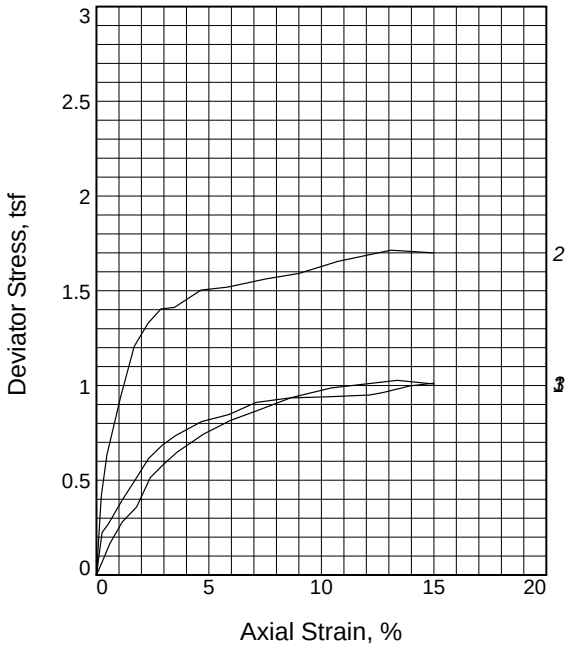
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-001 **Depth:** 7-9' **Sample Number:** TW-3
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	34.6	34.2	35.3
	Dry Density, pcf	87.2	87.5	86.3
	Saturation, %	100.0	99.7	99.9
	Void Ratio	0.9326	0.9264	0.9537
	Diameter, in.	1.411	1.420	1.418
	Height, in.	2.796	2.796	2.806
At Test	Water Content, %	34.6	34.2	35.3
	Dry Density, pcf	87.2	87.5	86.3
	Saturation, %	100.0	99.7	99.9
	Void Ratio	0.9326	0.9264	0.9537
	Diameter, in.	1.411	1.420	1.418
	Height, in.	2.796	2.796	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	1.000	2.000
Fail. Stress, tsf		1.027	1.714	1.012
Ult. Stress, tsf		1.008	1.700	1.012
σ_1 Failure, tsf		1.527	2.714	3.012
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray , A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

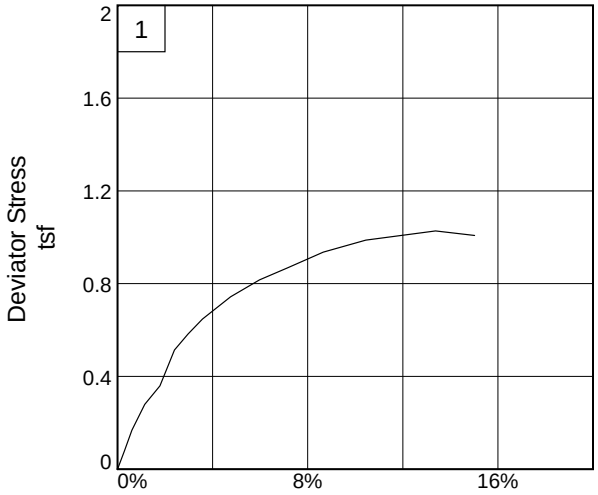
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

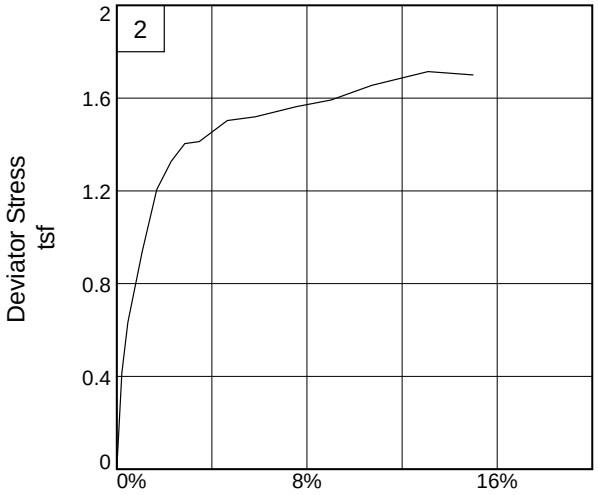
Source of Sample: CAA-01 **Depth:** 17-19'

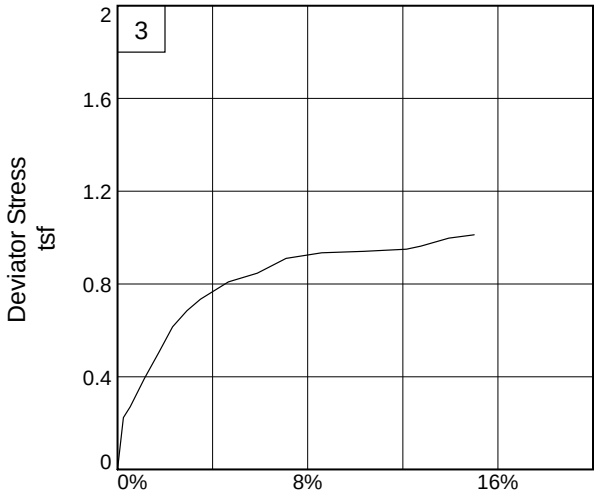
Sample Number: TW-6

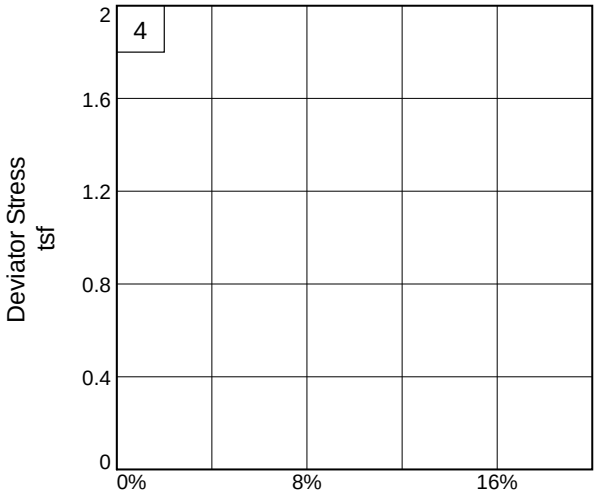
Proj. No.: B2009724 **Date Sampled:** 12/15/2020

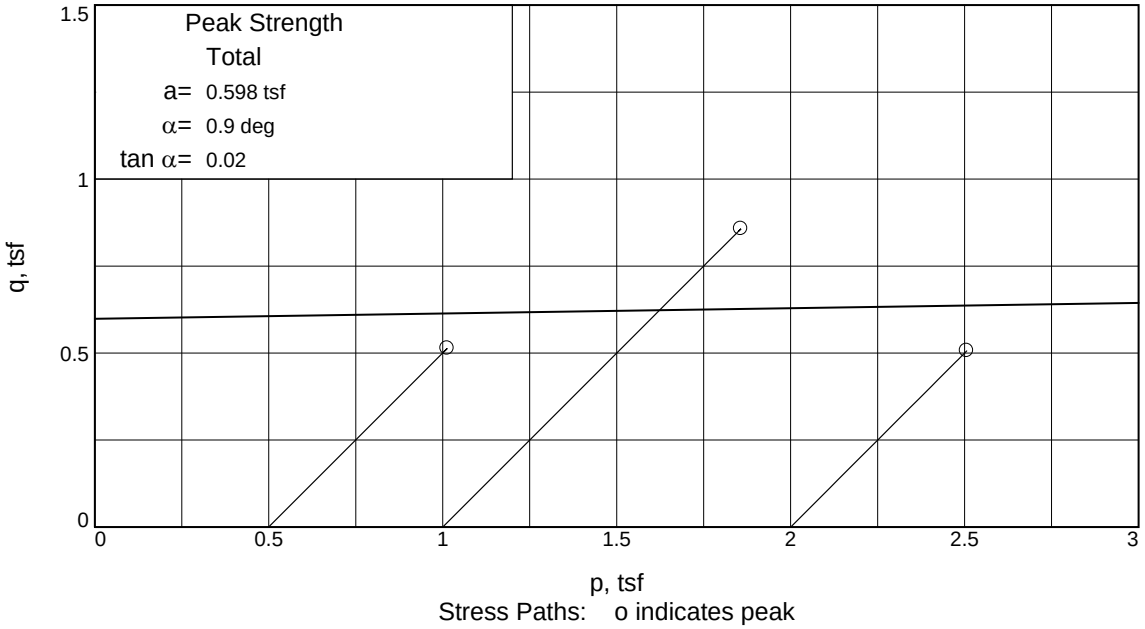
BRAUN INTERTEC











Stress Paths: o indicates peak

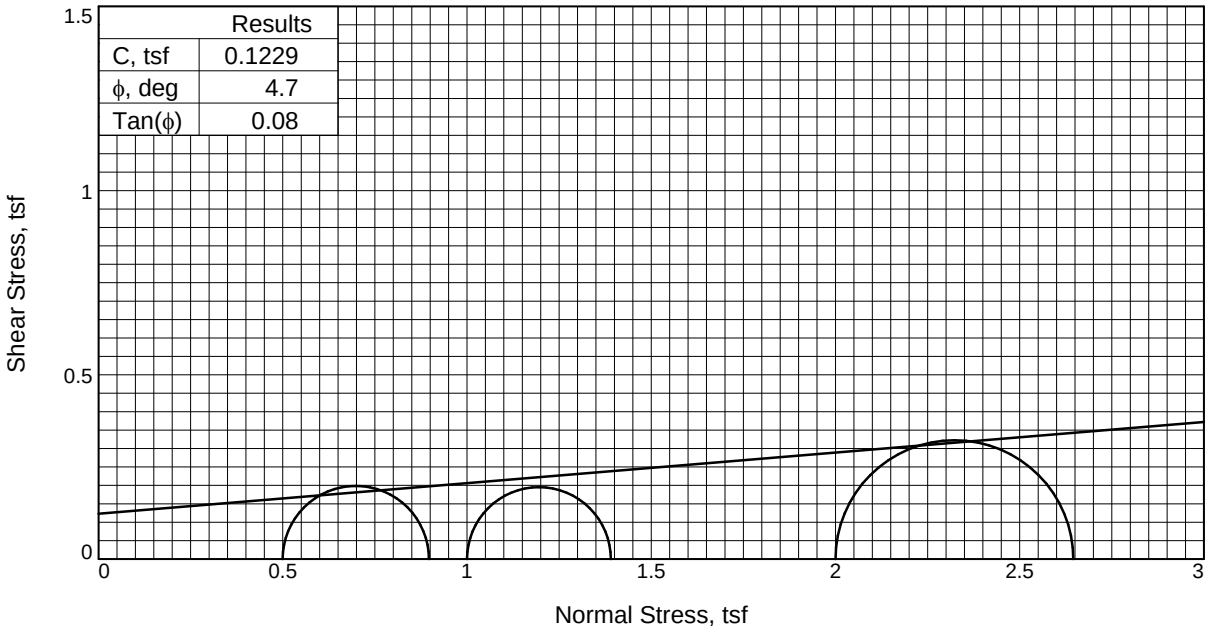
Client: KLJ Engineering LLC

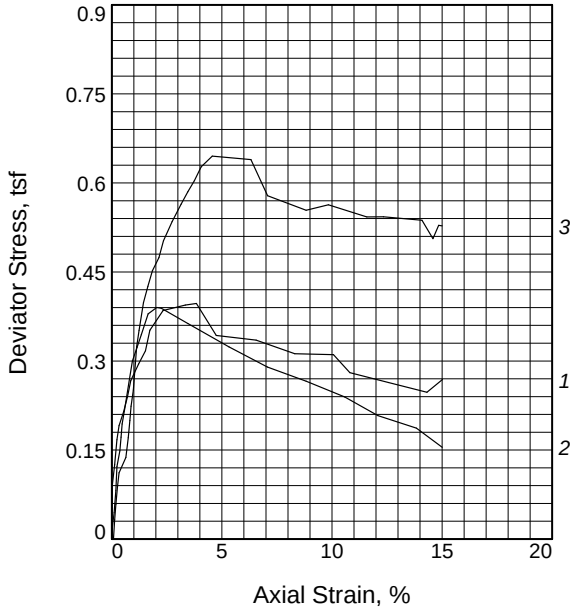
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-01 **Depth:** 17-19' **Sample Number:** TW-6

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	48.5	43.4	48.1
	Dry Density, pcf	72.4	75.5	70.7
	Saturation, %	98.7	94.9	93.8
	Void Ratio	1.3268	1.2333	1.3850
	Diameter, in.	1.39	1.42	1.39
	Height, in.	2.90	2.96	2.97
At Test	Water Content, %	48.5	43.4	48.1
	Dry Density, pcf	72.4	75.5	70.7
	Saturation, %	98.7	94.9	93.8
	Void Ratio	1.3268	1.2333	1.3850
	Diameter, in.	1.39	1.42	1.39
	Height, in.	2.90	2.96	2.97
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.397	0.390	0.645
Ult. Stress, tsf		0.247	0.155	0.506
σ_1 Failure, tsf		0.897	1.390	2.645
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained
Sample Type: Shelby Tube
Description: FAT CLAY(CH), gray and brown

Assumed Specific Gravity= 2.7
Remarks: UU Triaxial: ASTM D2850.

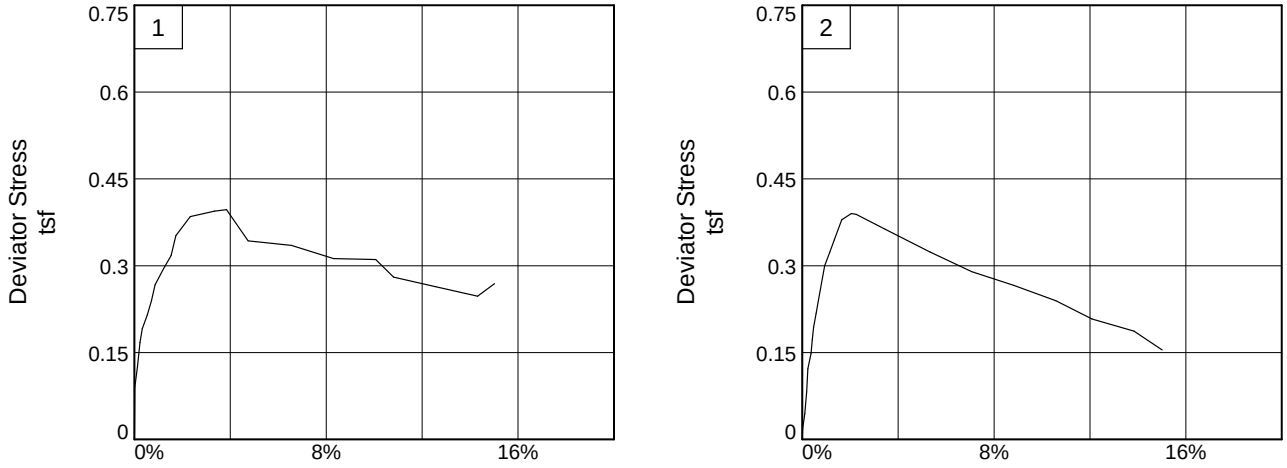
Figure _____

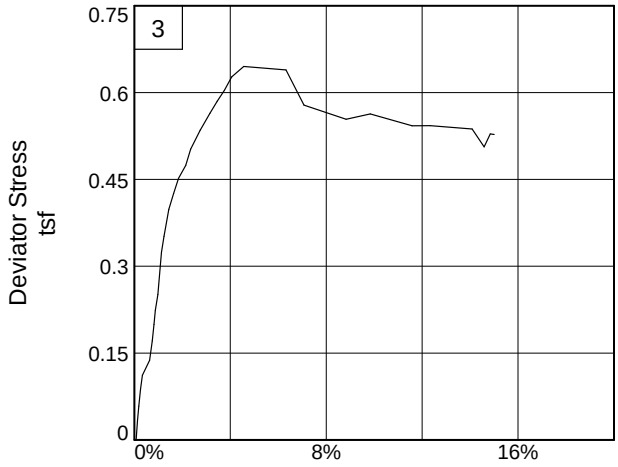
Client: KLJ Engineering, LLC

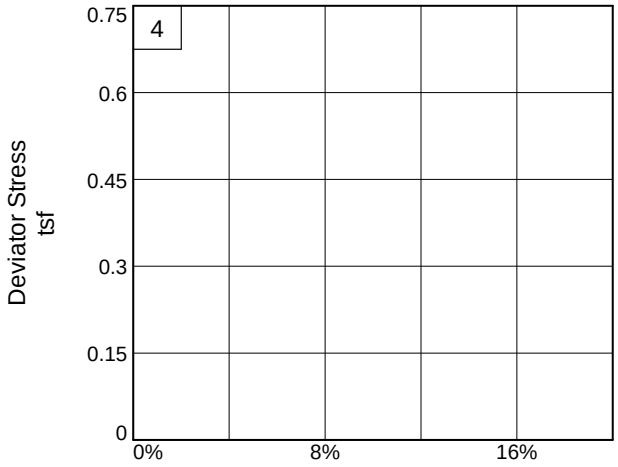
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota
Location: GRDL-003
Sample Number: TW-14 **Depth:** 7-9'
Proj. No.: B2009724 **Date Sampled:** 12/15/2020

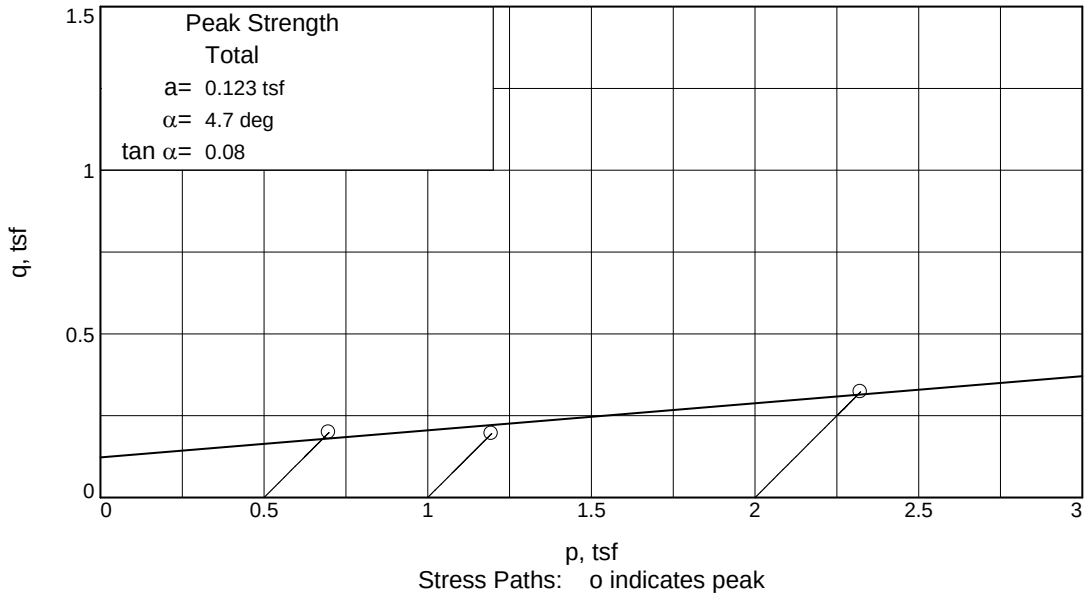
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: MG





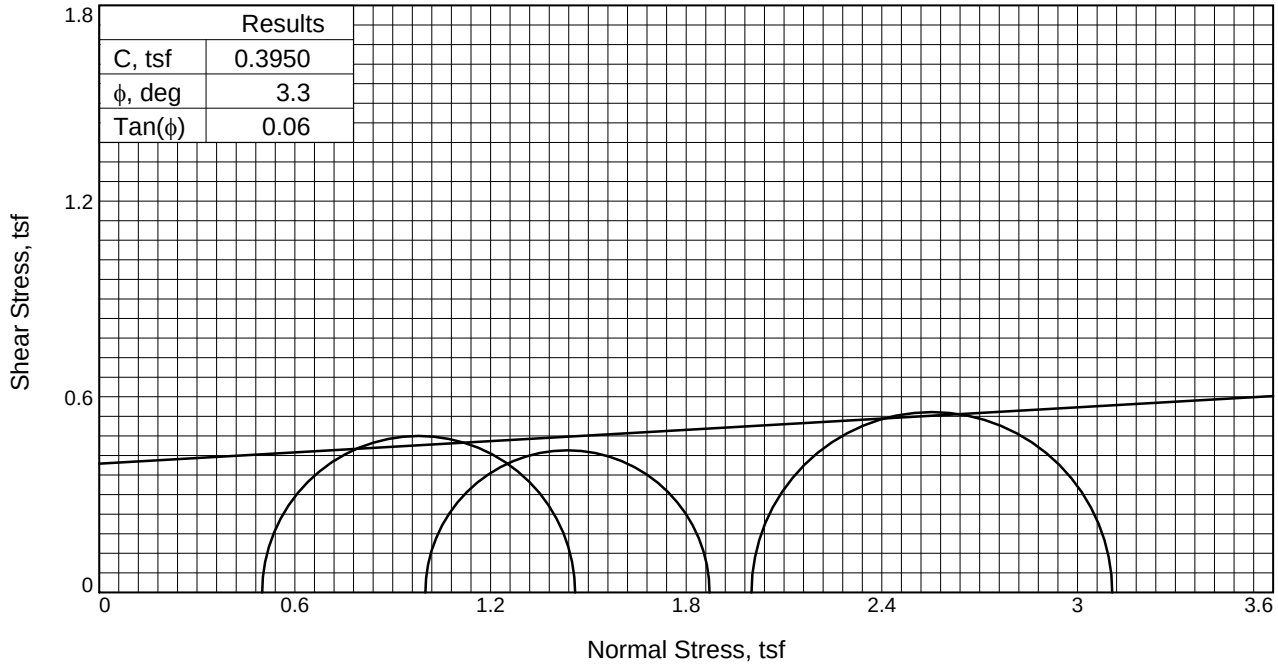


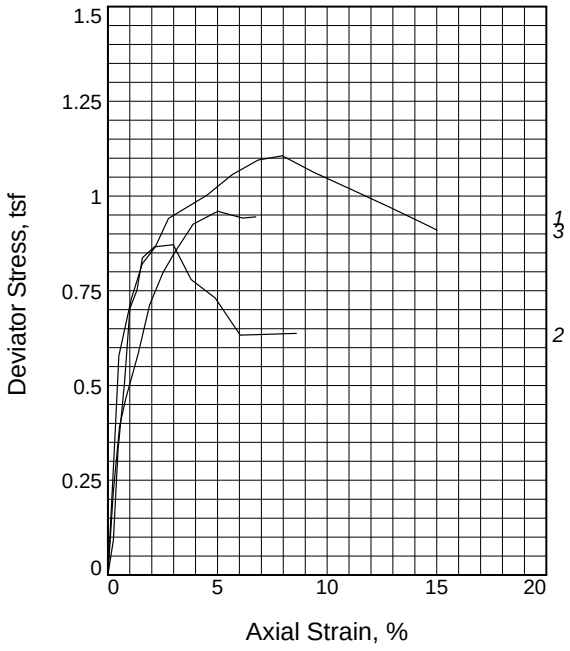


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GRDL-003 **Depth:** 7-9' **Sample Number:** TW-14
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: MG





Sample No.		1	2	3
Initial	Water Content, %	41.2	49.8	46.0
	Dry Density, pcf	79.7	73.3	76.4
	Saturation, %	99.7	99.3	98.7
	Void Ratio	1.1162	1.4285	1.3301
	Diameter, in.	1.400	1.400	1.400
	Height, in.	2.832	2.817	2.789
At Test	Water Content, %	41.2	49.8	46.0
	Dry Density, pcf	79.7	73.3	76.4
	Saturation, %	99.7	99.3	98.7
	Void Ratio	1.1162	1.4285	1.3301
	Diameter, in.	1.400	1.400	1.400
	Height, in.	2.832	2.817	2.789
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.960	0.872	1.106
Ult. Stress, tsf		0.945	0.633	0.910
σ_1 Failure, tsf		1.459	1.872	3.106
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

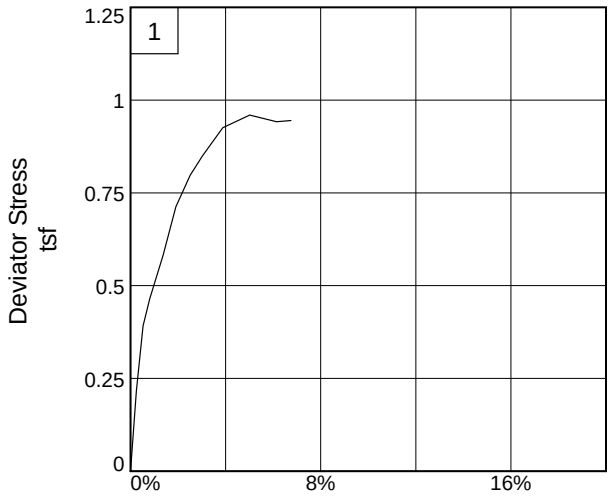
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

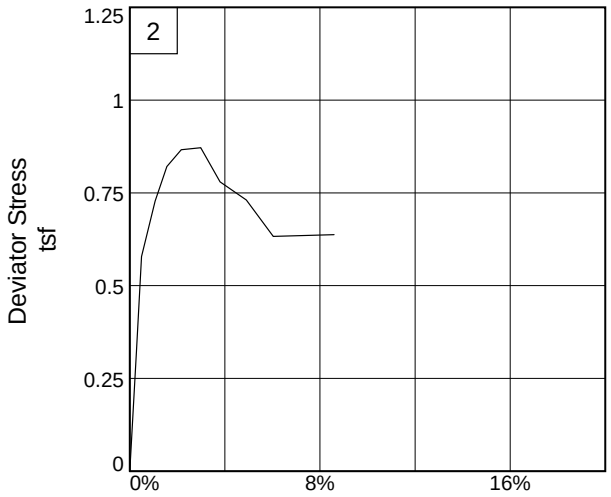
Source of Sample: GDRL-005 **Depth:** 7-9'

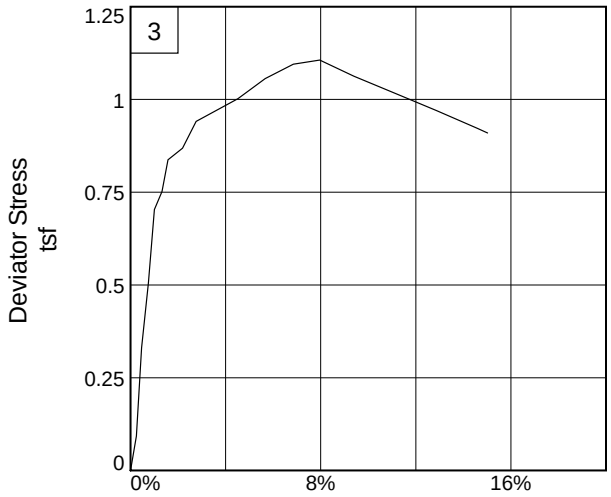
Sample Number: TW-22

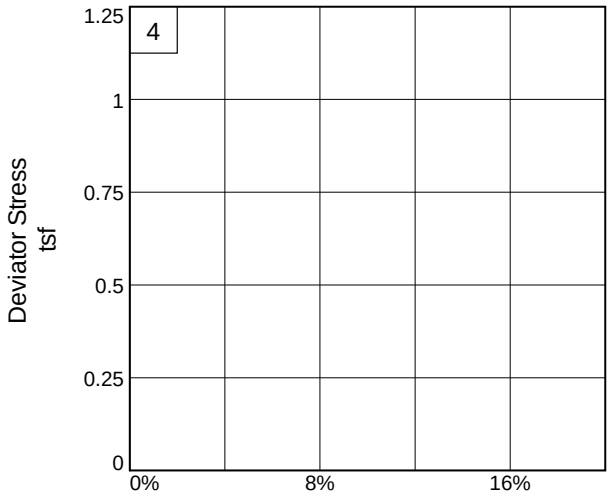
Proj. No.: B2009724 **Date Sampled:** 12/15/2020

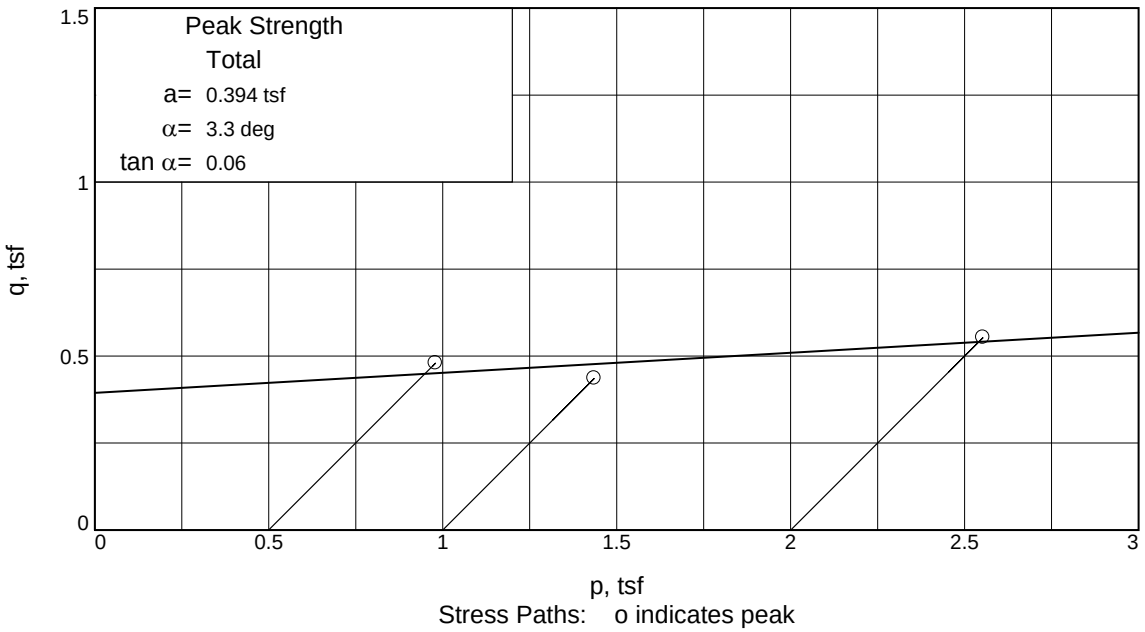
BRAUN INTERTEC











Stress Paths: o indicates peak

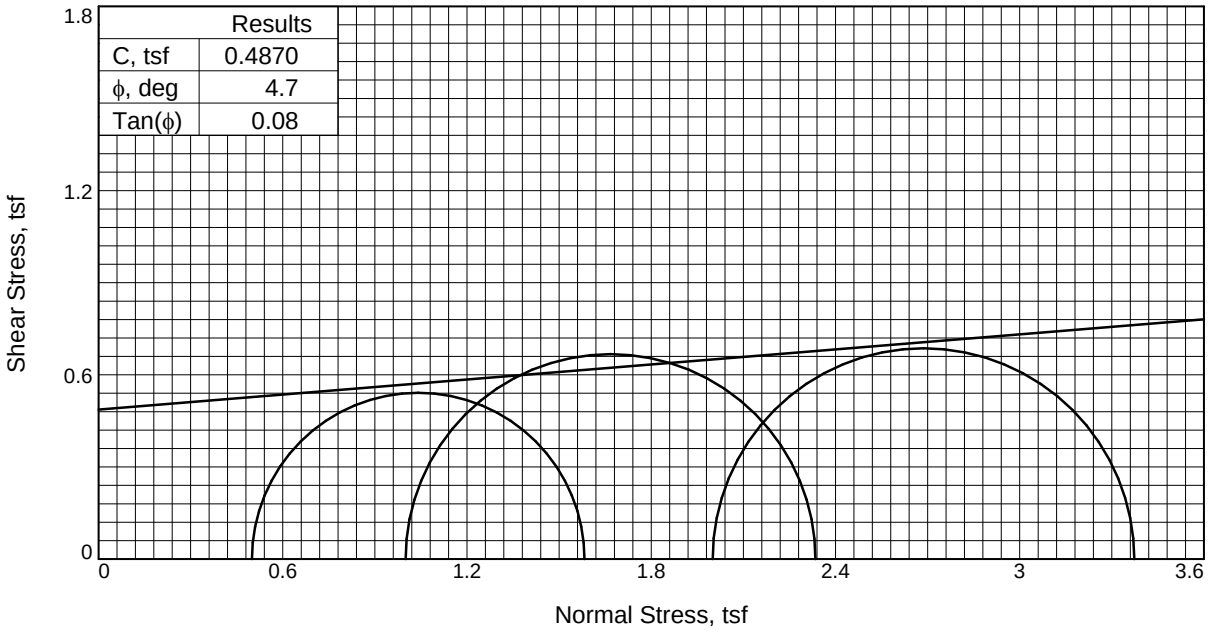
Client: KLJ Engineering LLC

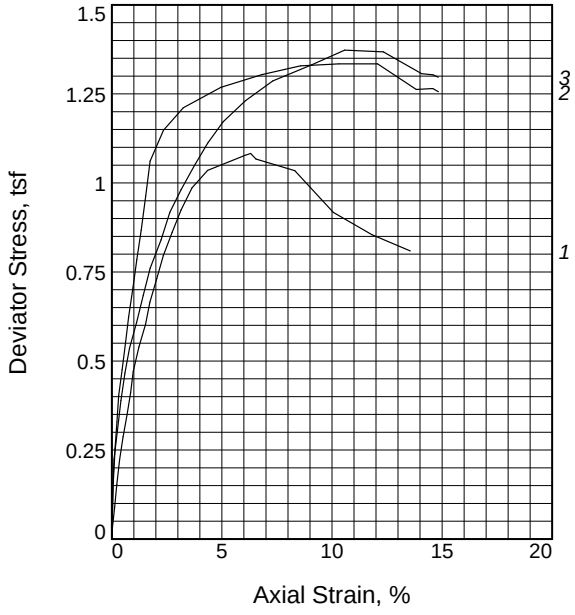
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-005 **Depth:** 7-9' **Sample Number:** TW-22

Project No.: B2009724 **Figure**_____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	34.5	33.4	33.9
	Dry Density, pcf	87.5	87.8	88.0
	Saturation, %	100.5	98.2	100.0
	Void Ratio	0.9262	0.9189	0.9159
	Diameter, in.	1.41	1.42	1.39
	Height, in.	2.96	2.90	2.89
At Test	Water Content, %	34.5	33.4	33.9
	Dry Density, pcf	87.5	87.8	88.0
	Saturation, %	100.5	98.2	100.0
	Void Ratio	0.9262	0.9189	0.9159
	Diameter, in.	1.41	1.42	1.39
	Height, in.	2.96	2.90	2.89
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.083	1.335	1.373
Ult. Stress, tsf		0.809	1.256	1.297
σ_1 Failure, tsf		1.583	2.335	3.373
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

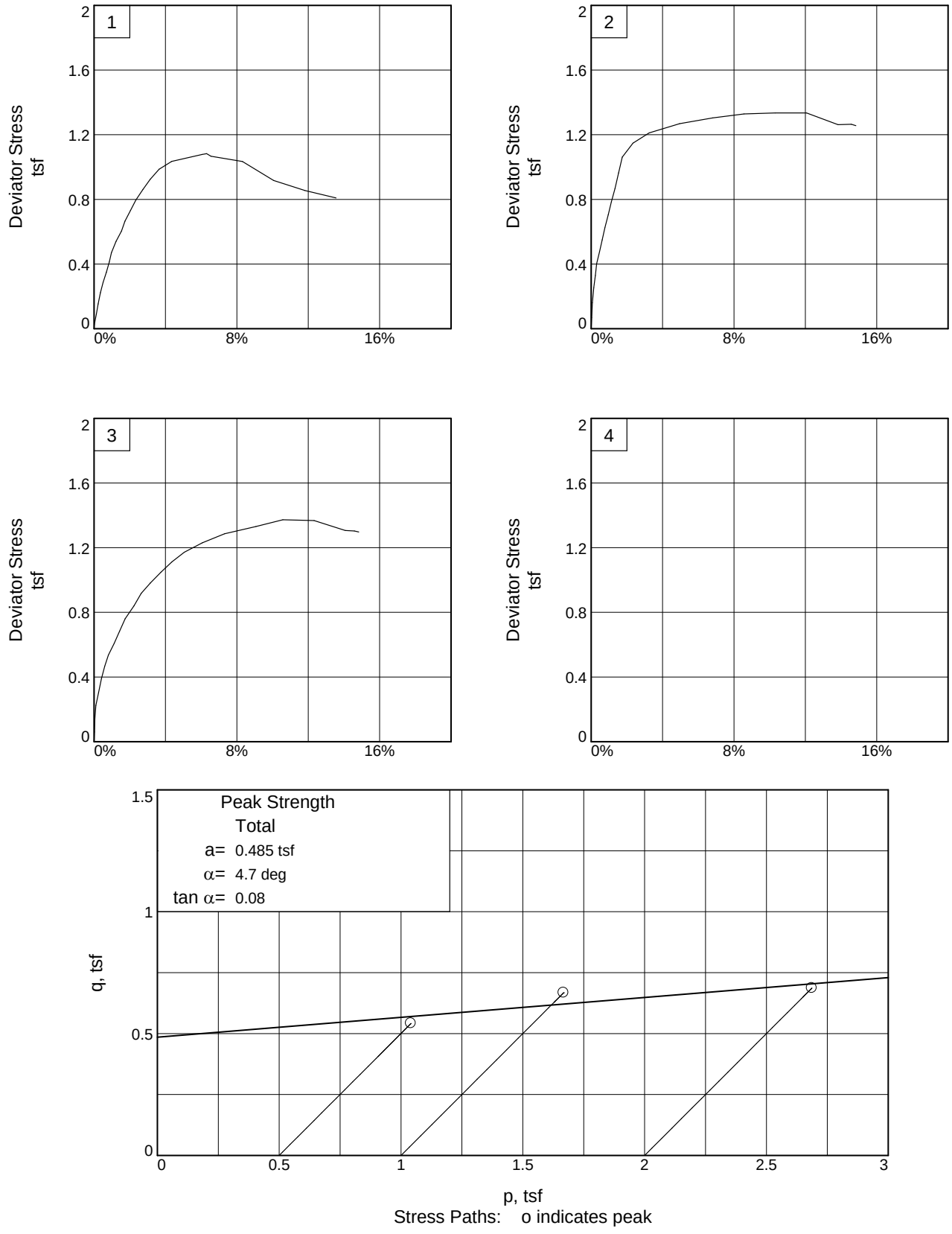
Location: CAA-006

Sample Number: TW-26 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/15/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

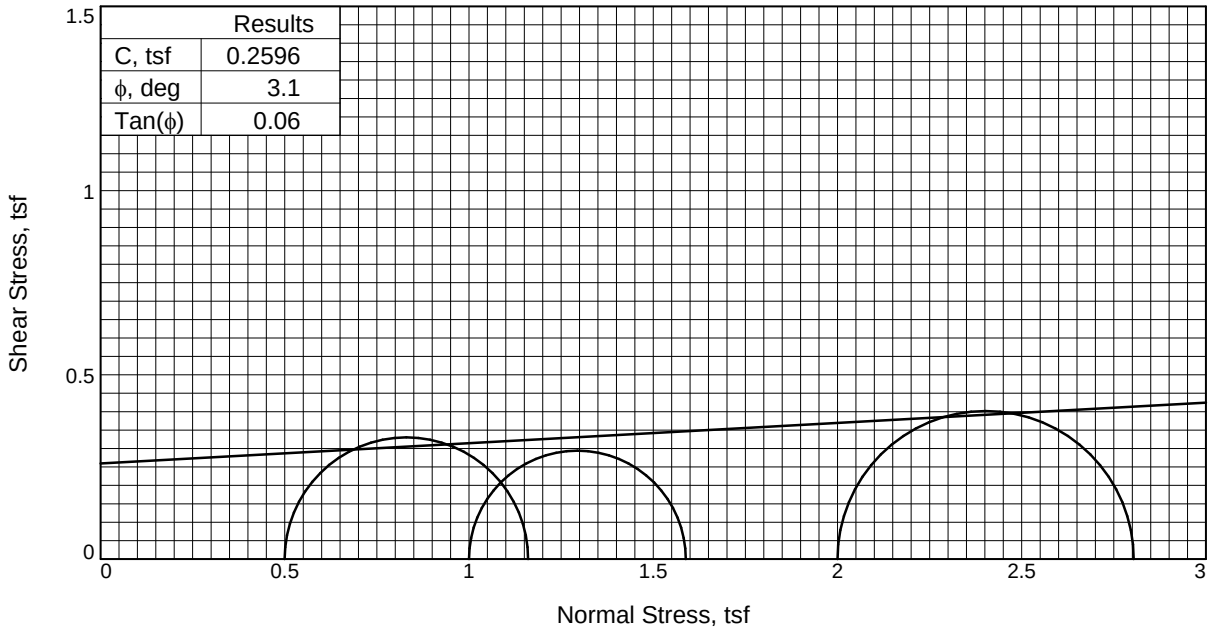
Tested By: MG

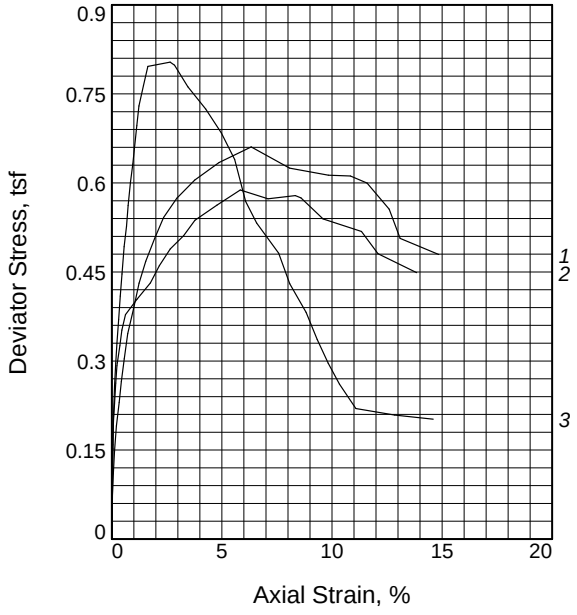


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-006 **Depth:** 7-9' **Sample Number:** TW-26
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: MG





Sample No.		1	2	3
Initial	Water Content, %	49.3	39.5	44.1
	Dry Density, pcf	71.3	80.7	75.6
	Saturation, %	97.8	97.9	96.8
	Void Ratio	1.3626	1.0888	1.2301
	Diameter, in.	1.40	1.39	1.38
	Height, in.	3.01	3.03	3.23
At Test	Water Content, %	49.3	39.5	44.1
	Dry Density, pcf	71.3	80.7	75.6
	Saturation, %	97.8	97.9	96.8
	Void Ratio	1.3626	1.0888	1.2301
	Diameter, in.	1.40	1.39	1.38
	Height, in.	3.01	3.03	3.23
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.661	0.588	0.804
Ult. Stress, tsf		0.479	0.449	0.202
σ_1 Failure, tsf		1.160	1.588	2.804
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

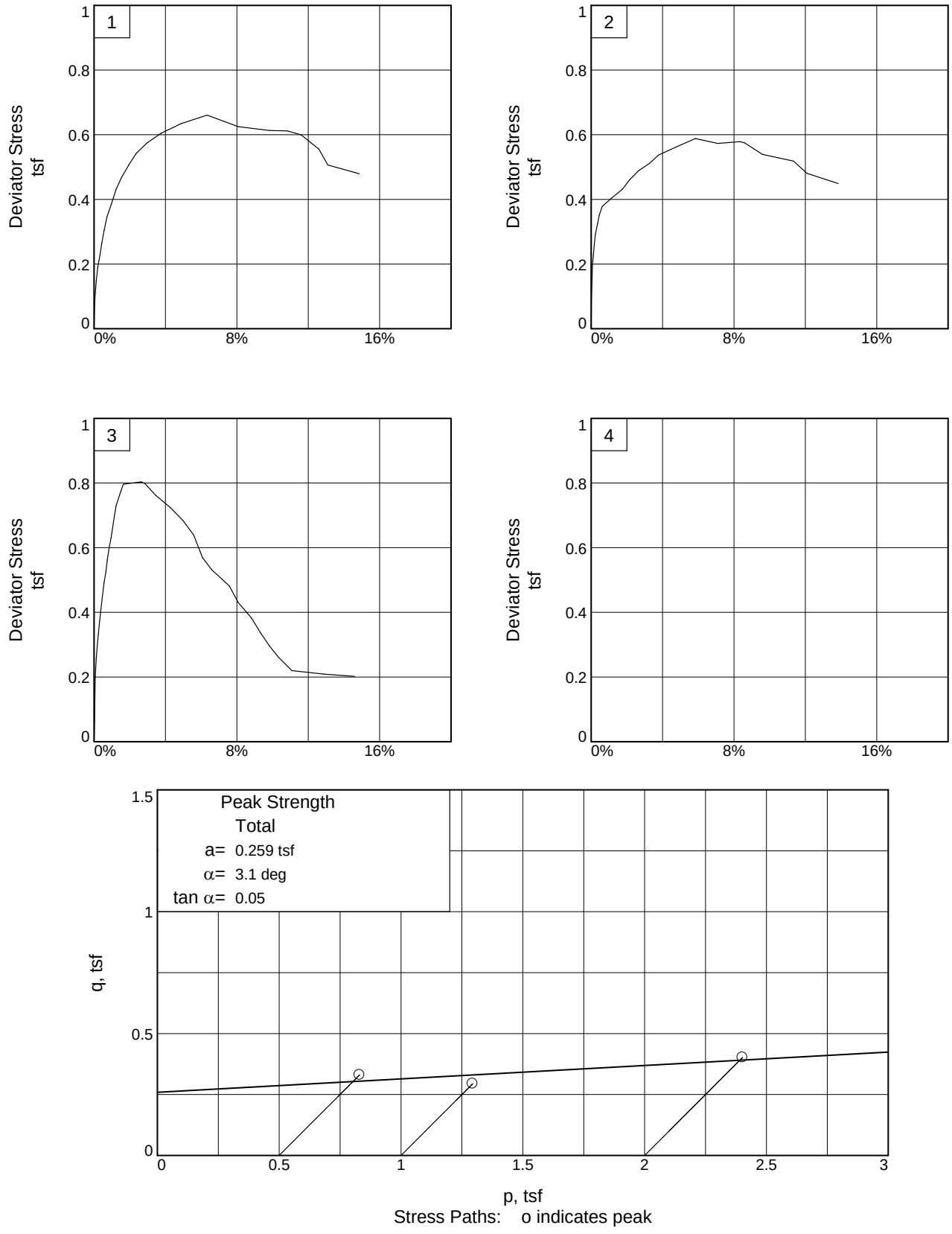
Location: CAA-006

Sample Number: TW-29 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/15/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

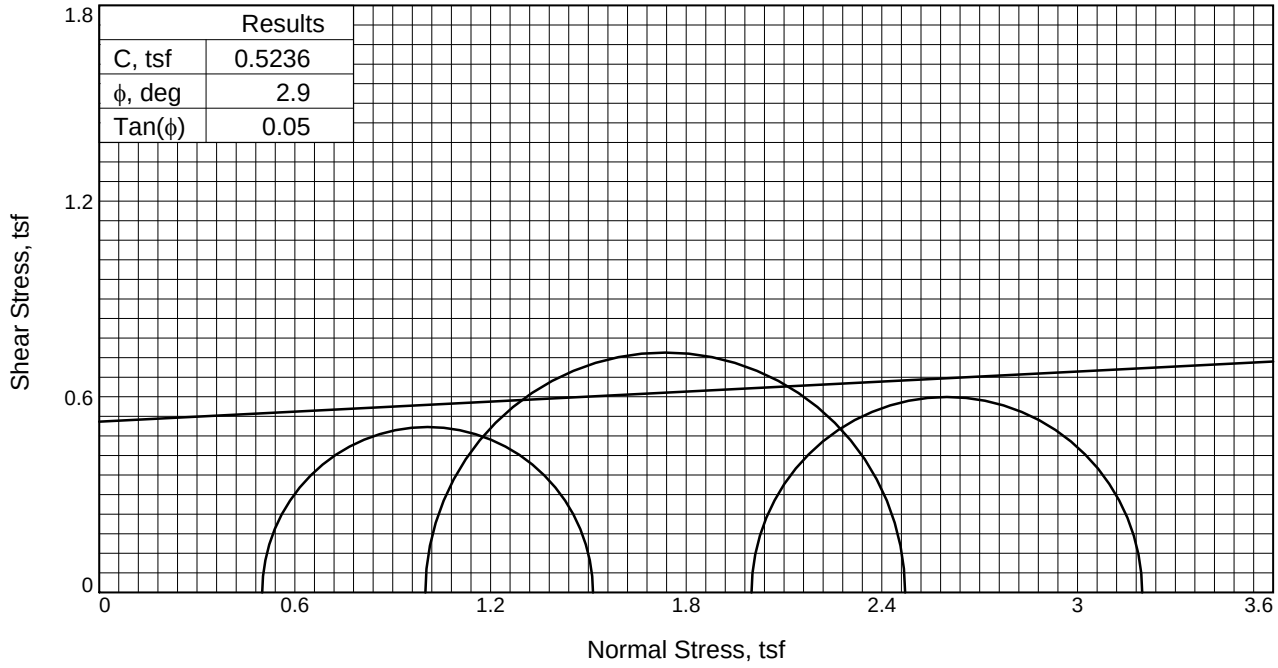
Tested By: ST

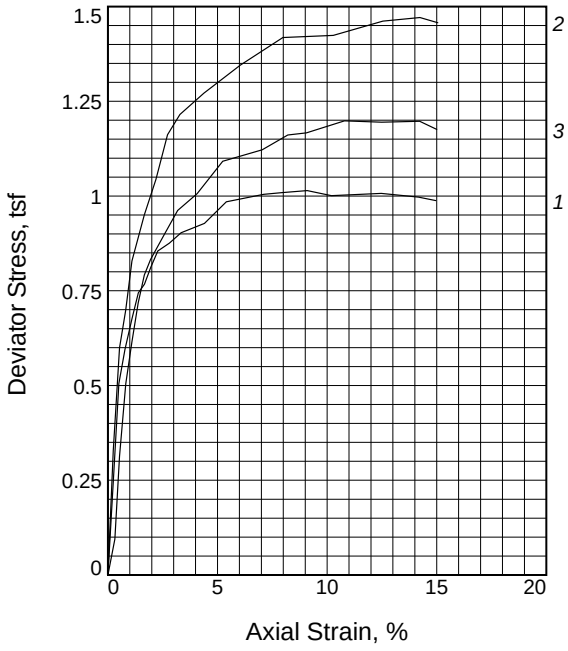


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-006 **Depth:** 17-19' **Sample Number:** TW-29
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	46.9	46.4	44.7
	Dry Density, pcf	74.3	74.7	76.3
	Saturation, %	99.9	99.8	99.8
	Void Ratio	1.2685	1.2561	1.2094
	Diameter, in.	1.400	1.402	1.405
	Height, in.	2.815	2.831	2.826
At Test	Water Content, %	46.9	46.4	44.7
	Dry Density, pcf	74.3	74.7	76.3
	Saturation, %	99.9	99.8	99.8
	Void Ratio	1.2685	1.2561	1.2094
	Diameter, in.	1.400	1.402	1.405
	Height, in.	2.815	2.831	2.826
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.014	1.471	1.198
Ult. Stress, tsf			1.457	1.176
σ_1 Failure, tsf		1.514	2.471	3.199
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

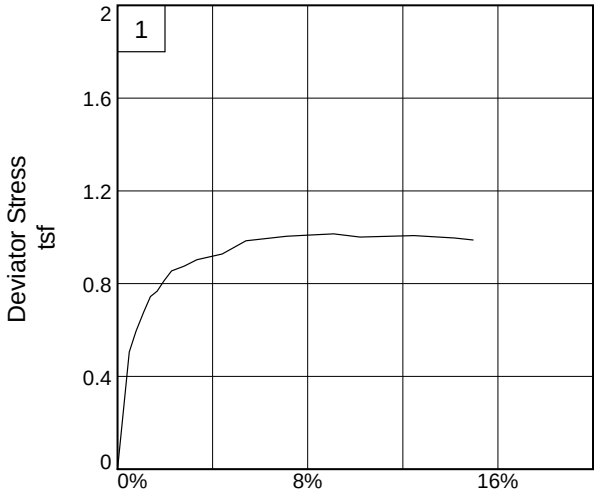
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

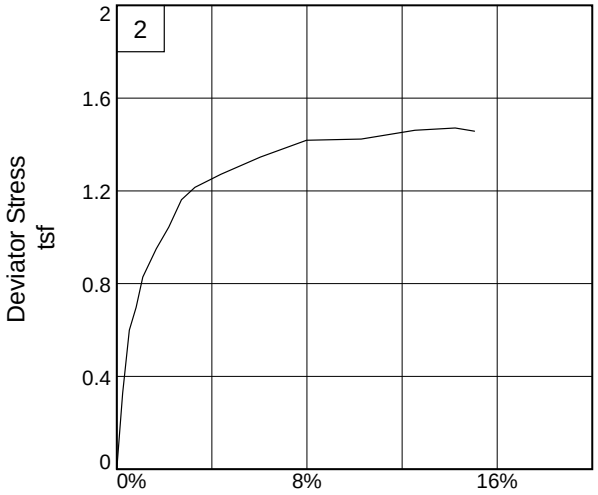
Source of Sample: CAA-008 **Depth:** 7-9'

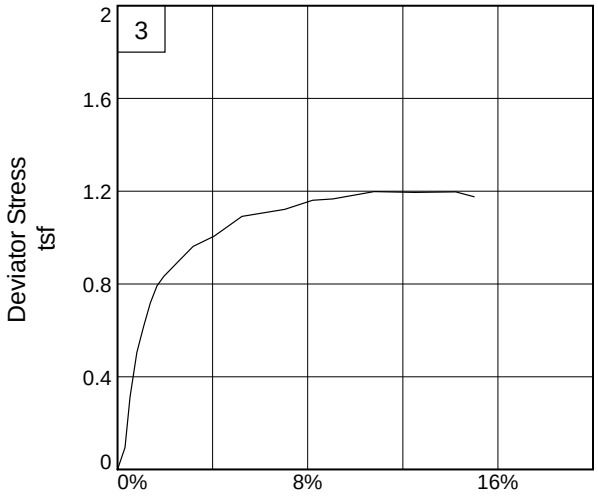
Sample Number: TW-40

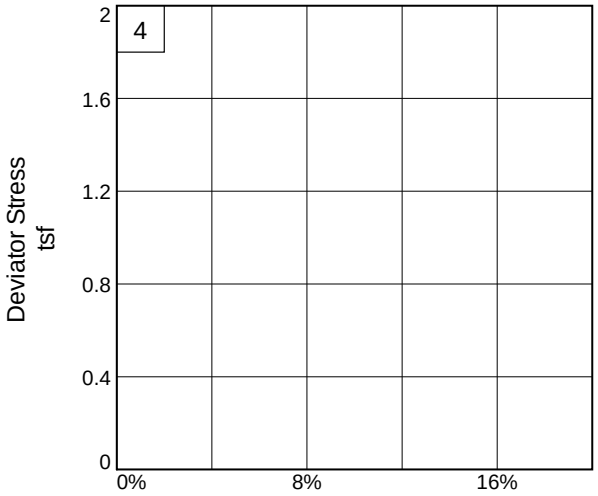
Proj. No.: B2009724 **Date Sampled:** 12/16/2020

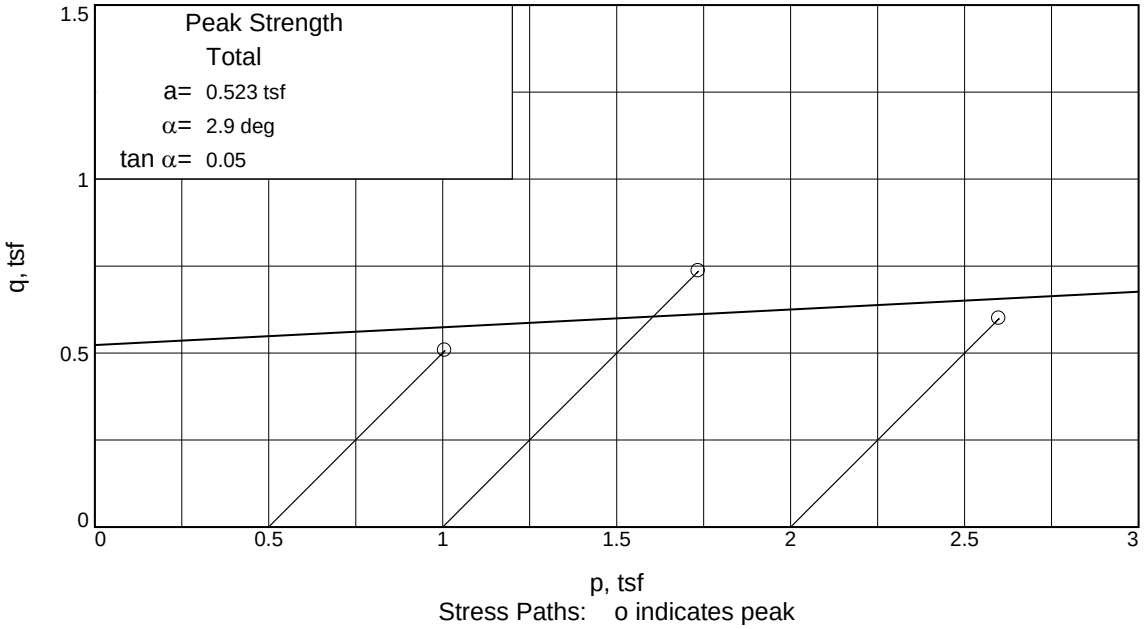
BRAUN INTERTEC











Stress Paths: o indicates peak

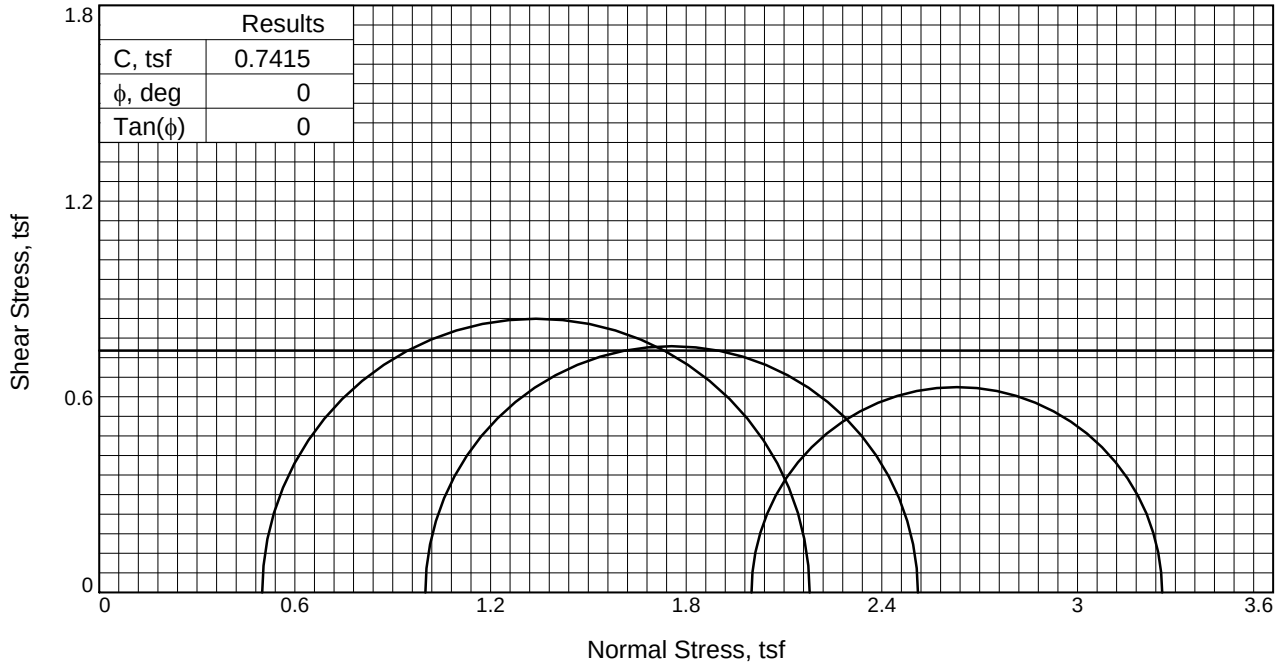
Client: KLJ Engineering LLC

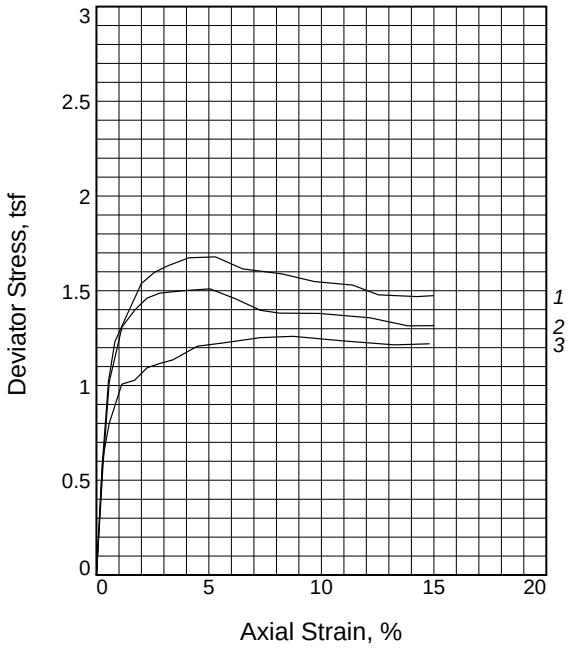
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-008 **Depth:** 7-9' **Sample Number:** TW-40

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	41.9	43.4	41.9
	Dry Density, pcf	78.6	77.5	79.0
	Saturation, %	98.8	99.8	99.9
	Void Ratio	1.1458	1.1739	1.1328
	Diameter, in.	1.417	1.407	1.420
	Height, in.	2.800	2.813	2.832
At Test	Water Content, %	41.9	43.4	41.9
	Dry Density, pcf	78.6	77.5	79.0
	Saturation, %	98.8	99.8	99.9
	Void Ratio	1.1458	1.1739	1.1328
	Diameter, in.	1.417	1.407	1.420
	Height, in.	2.800	2.813	2.832
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.679	1.510	1.259
Ult. Stress, tsf		1.469	1.315	1.215
σ_1 Failure, tsf		2.179	2.510	3.260
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

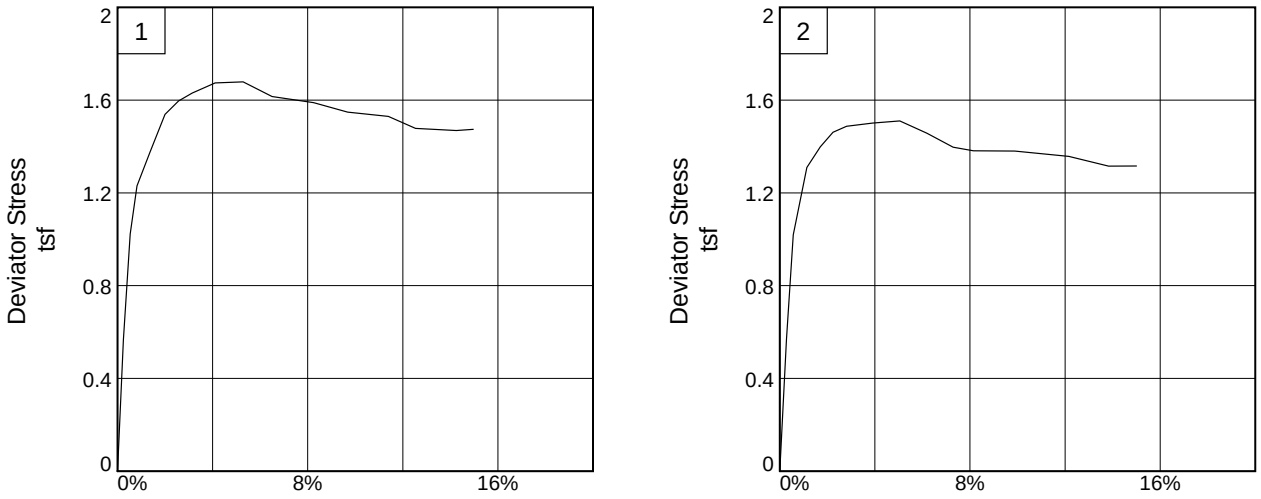
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

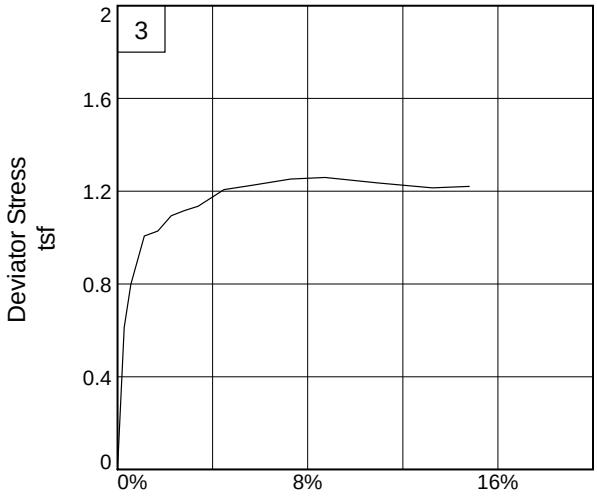
Source of Sample: CAA-008 **Depth:** 17-19'

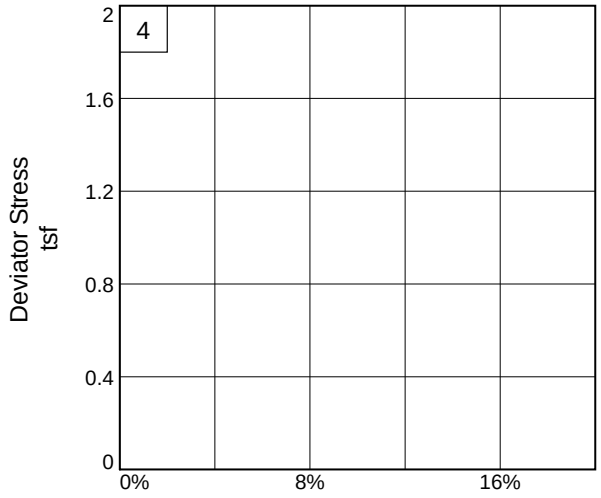
Sample Number: TW-43

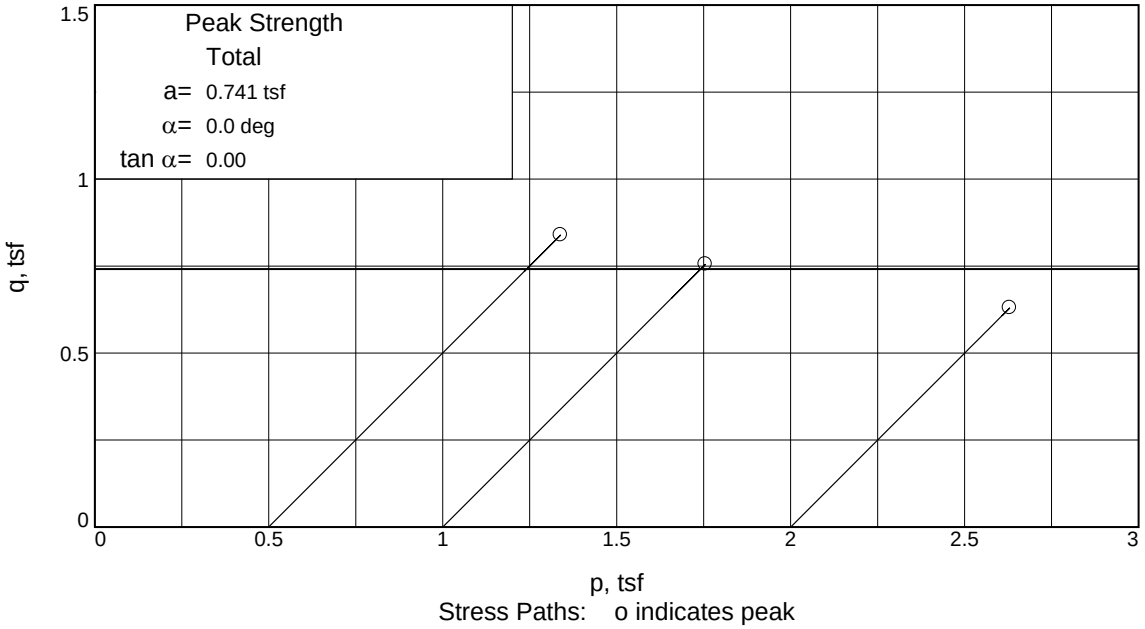
Proj. No.: B2009724 **Date Sampled:** 12/16/2020

BRAUN INTERTEC









Stress Paths: o indicates peak

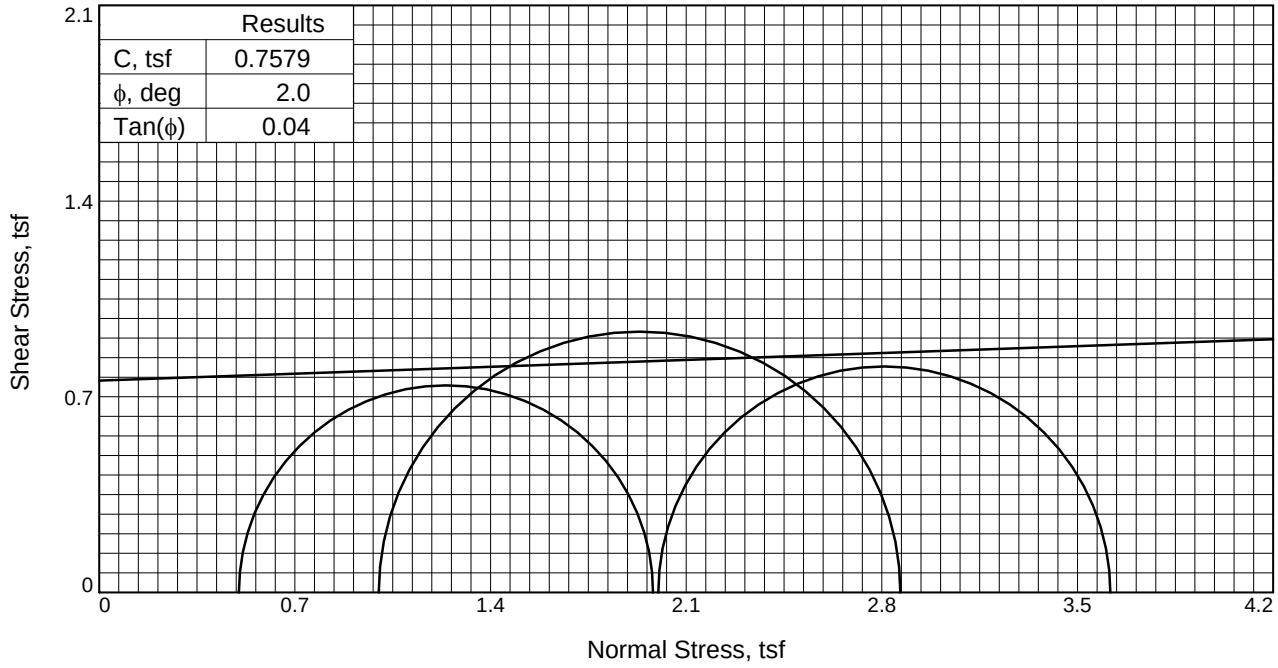
Client: KLJ Engineering LLC

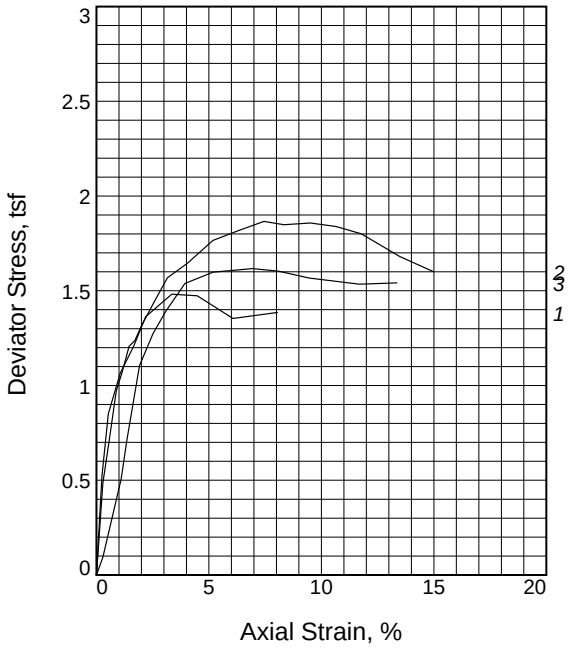
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-008 **Depth:** 17-19' **Sample Number:** TW-43

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	35.7	37.2	38.3
	Dry Density, pcf	84.9	84.0	82.8
	Saturation, %	98.0	99.6	100.0
	Void Ratio	0.9844	1.0075	1.0346
	Diameter, in.	1.400	1.417	1.424
	Height, in.	2.834	2.820	2.822
At Test	Water Content, %	35.7	37.2	38.3
	Dry Density, pcf	84.9	84.0	82.8
	Saturation, %	98.0	99.6	100.0
	Void Ratio	0.9844	1.0075	1.0346
	Diameter, in.	1.400	1.416	1.424
	Height, in.	2.834	2.820	2.822
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.482	1.866	1.617
Ult. Stress, tsf		1.354	1.602	1.535
σ_1 Failure, tsf		1.981	2.866	3.617
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

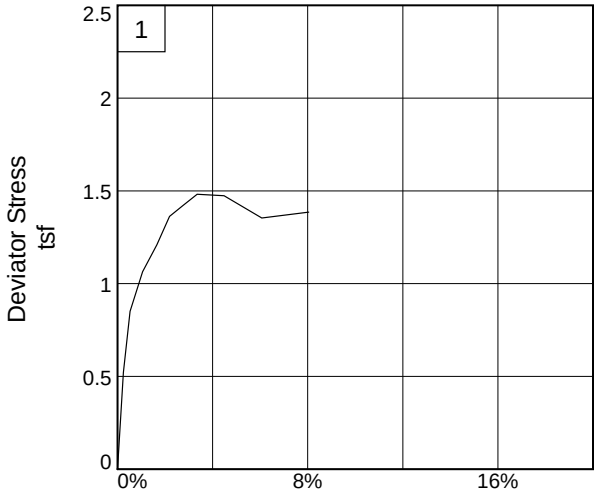
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

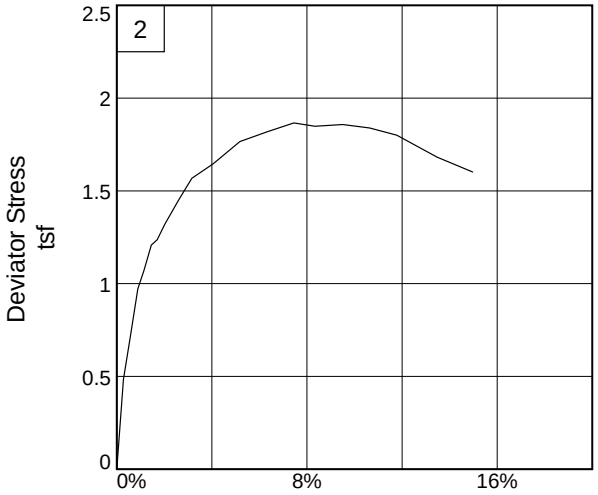
Source of Sample: CAA-010 **Depth:** 7-9'

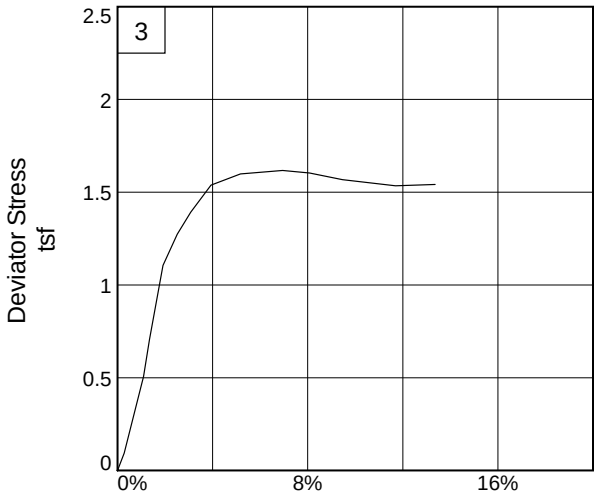
Sample Number: TW-51

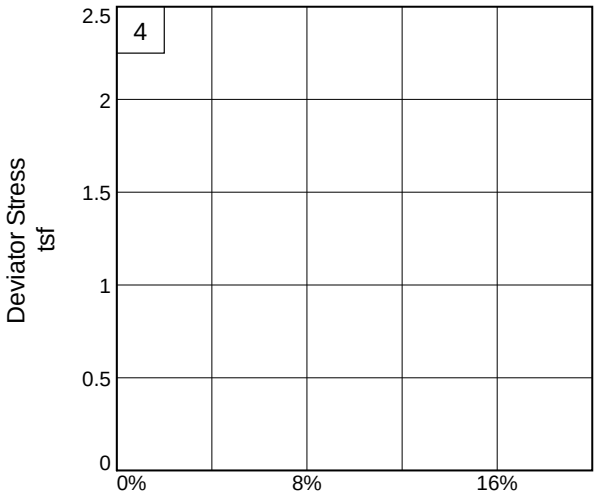
Proj. No.: B2009724 **Date Sampled:** 12/16/2020

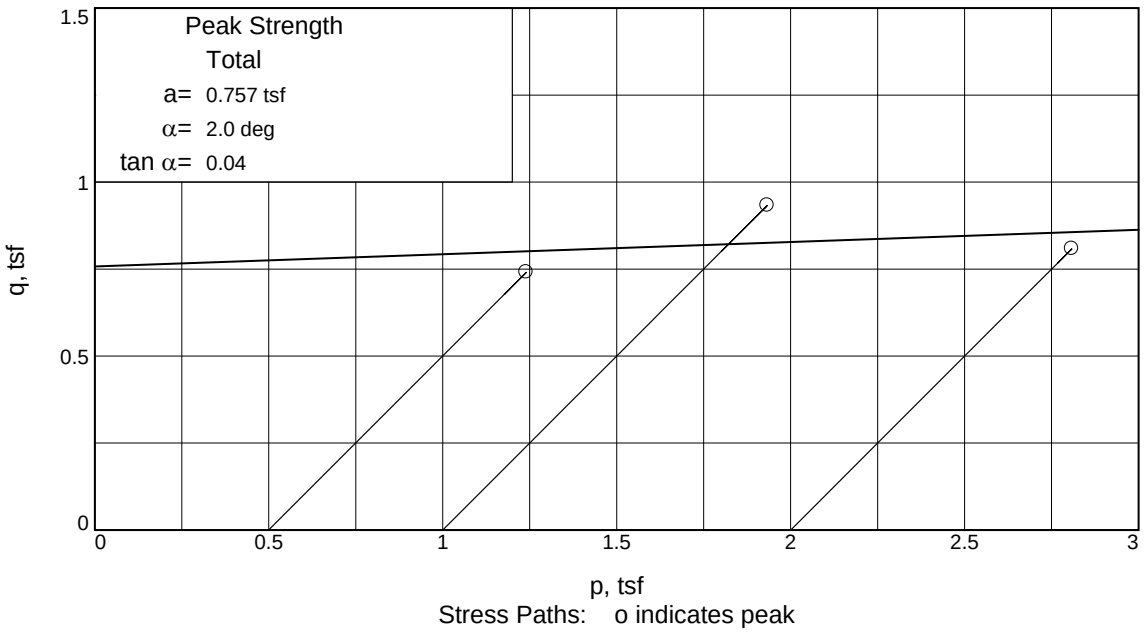
BRAUN INTERTEC











Stress Paths: o indicates peak

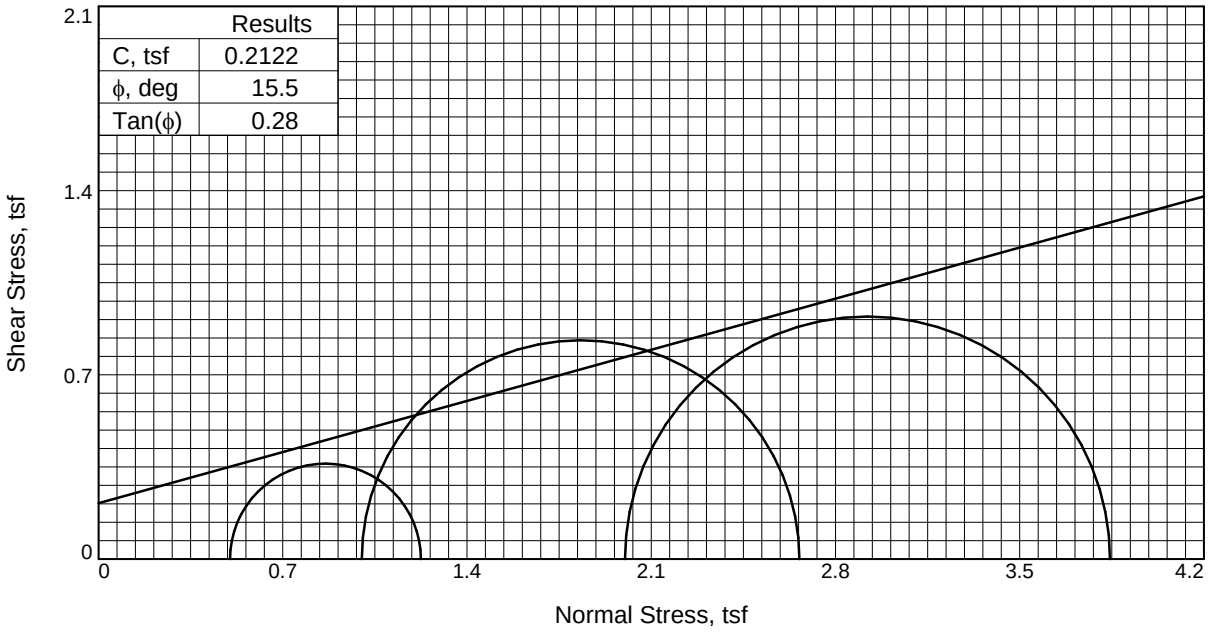
Client: KLJ Engineering LLC

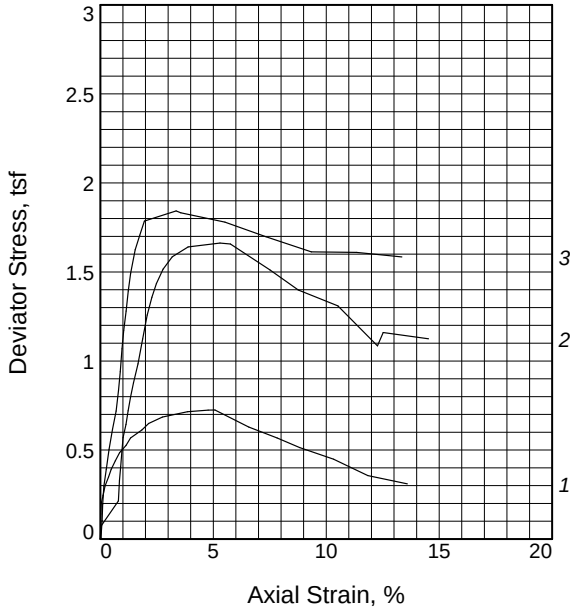
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-010 **Depth:** 7-9' **Sample Number:** TW-51

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	52.4	49.7	46.2
	Dry Density, pcf	71.7	69.8	72.8
	Saturation, %	104.8	94.8	94.7
	Void Ratio	1.3504	1.4145	1.3155
	Diameter, in.	1.36	1.32	1.34
	Height, in.	3.02	2.75	2.78
At Test	Water Content, %	52.4	49.7	46.2
	Dry Density, pcf	71.7	69.8	72.8
	Saturation, %	104.8	94.8	94.7
	Void Ratio	1.3504	1.4145	1.3155
	Diameter, in.	1.36	1.32	1.34
	Height, in.	3.02	2.75	2.78
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.725	1.663	1.843
Ult. Stress, tsf		0.310	1.085	1.584
σ_1 Failure, tsf		1.225	2.663	3.843
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

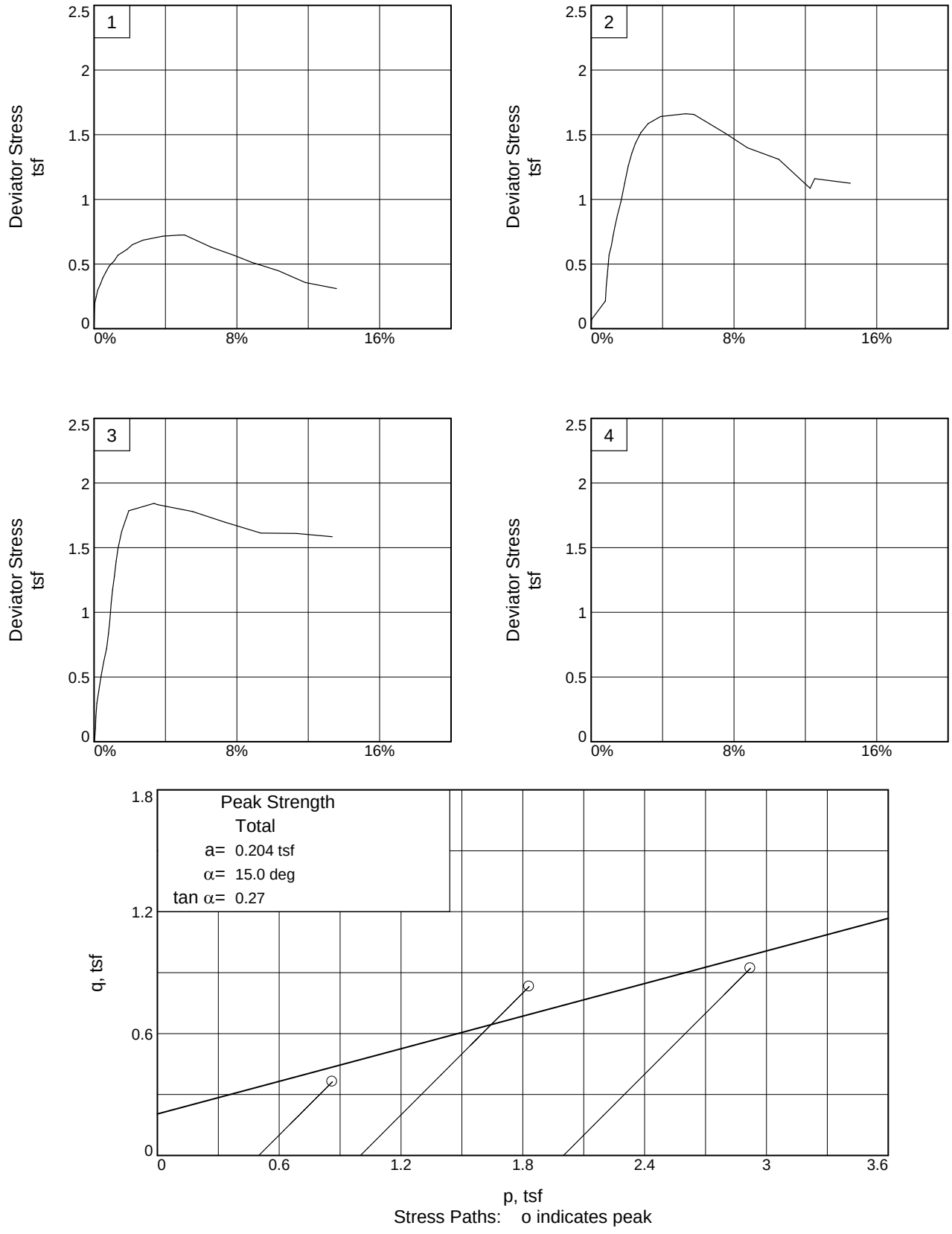
Location: CAA-010

Sample Number: TW-54 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/16/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

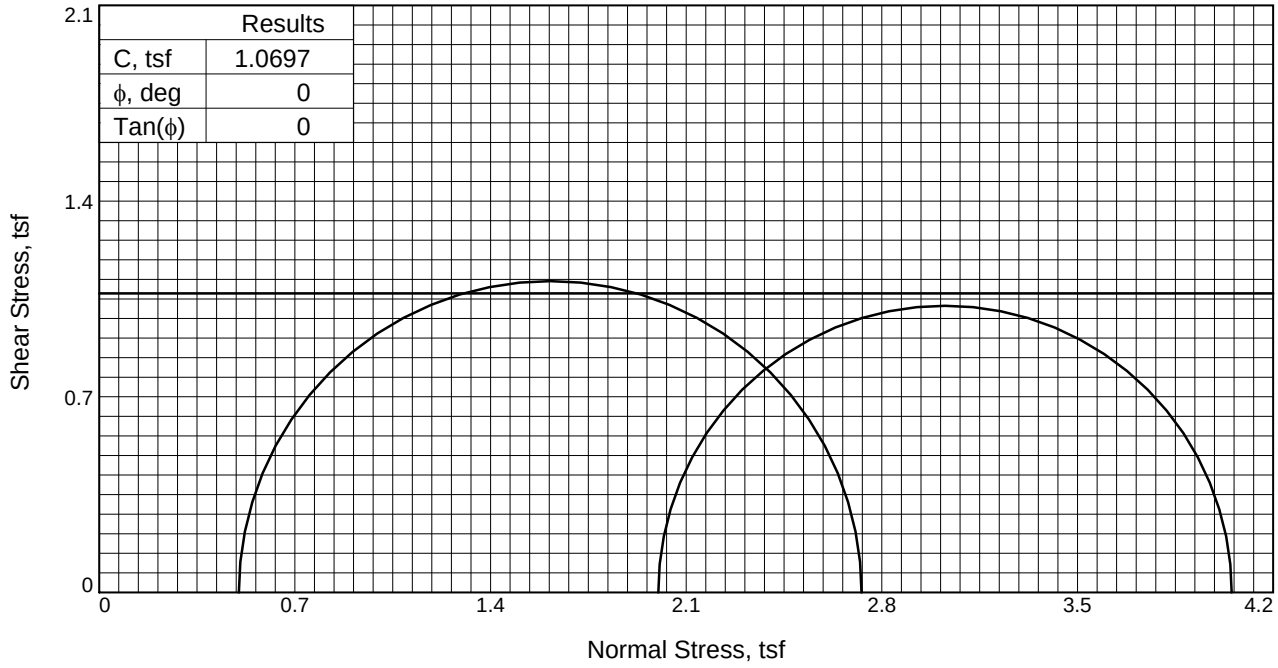
Tested By: ST

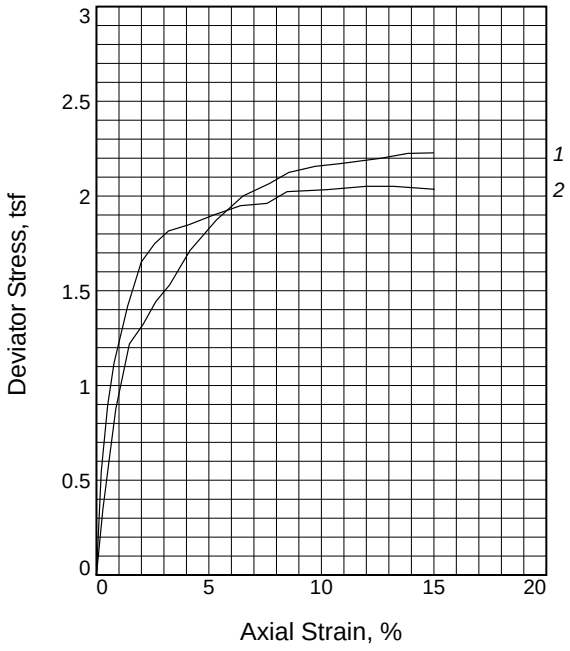


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-010 **Depth:** 17-19' **Sample Number:** TW-54
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2
Initial	Water Content, %	32.3	31.1
	Dry Density, pcf	89.7	89.9
	Saturation, %	99.4	96.1
	Void Ratio	0.8789	0.8744
	Diameter, in.	1.394	1.405
	Height, in.	2.796	2.810
At Test	Water Content, %	32.3	31.1
	Dry Density, pcf	89.7	89.9
	Saturation, %	99.4	96.1
	Void Ratio	0.8789	0.8744
	Diameter, in.	1.394	1.405
	Height, in.	2.796	2.810
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		2.228	2.051
Ult. Stress, tsf		2.228	2.036
σ_1 Failure, tsf		2.727	4.051
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

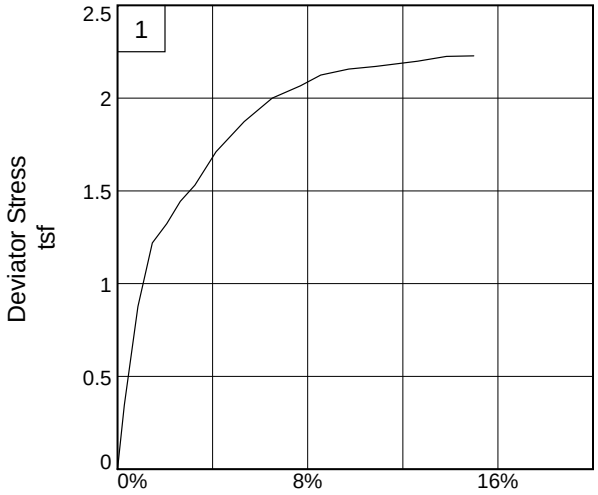
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

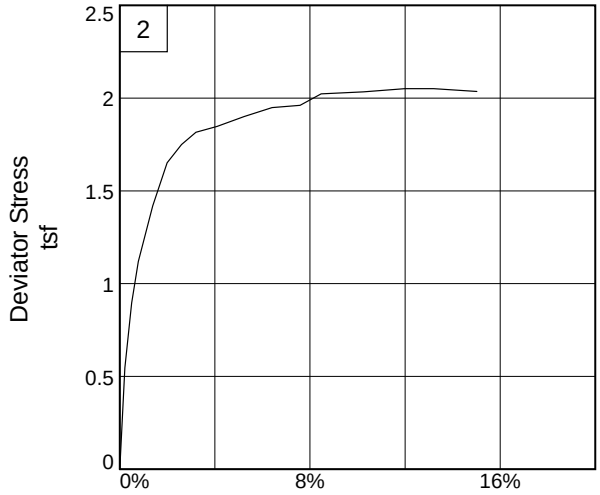
Source of Sample: CAA-012 **Depth:** 7-9'

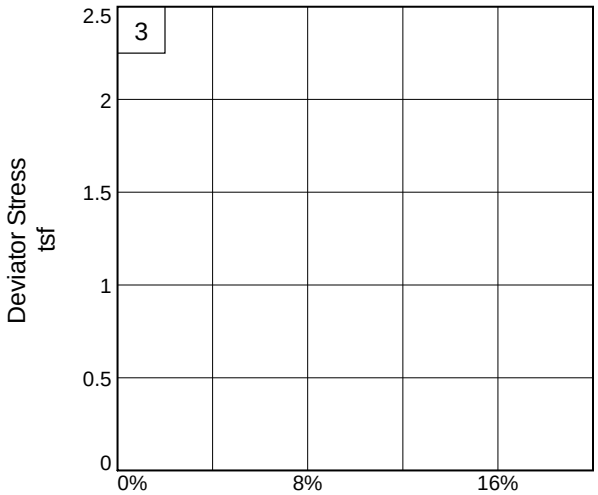
Sample Number: TW-62

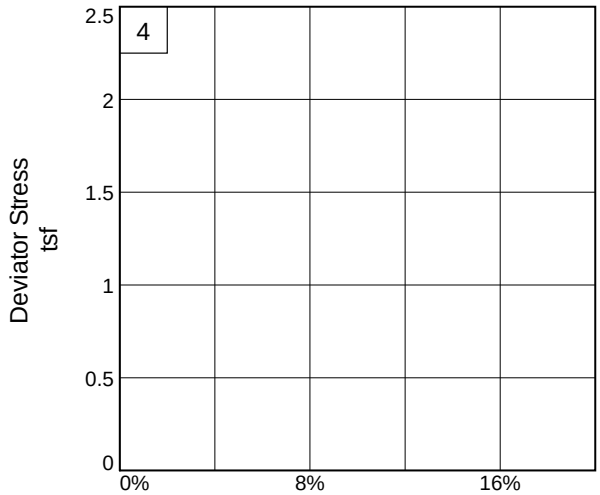
Proj. No.: B2009724 **Date Sampled:** 12/16/2021

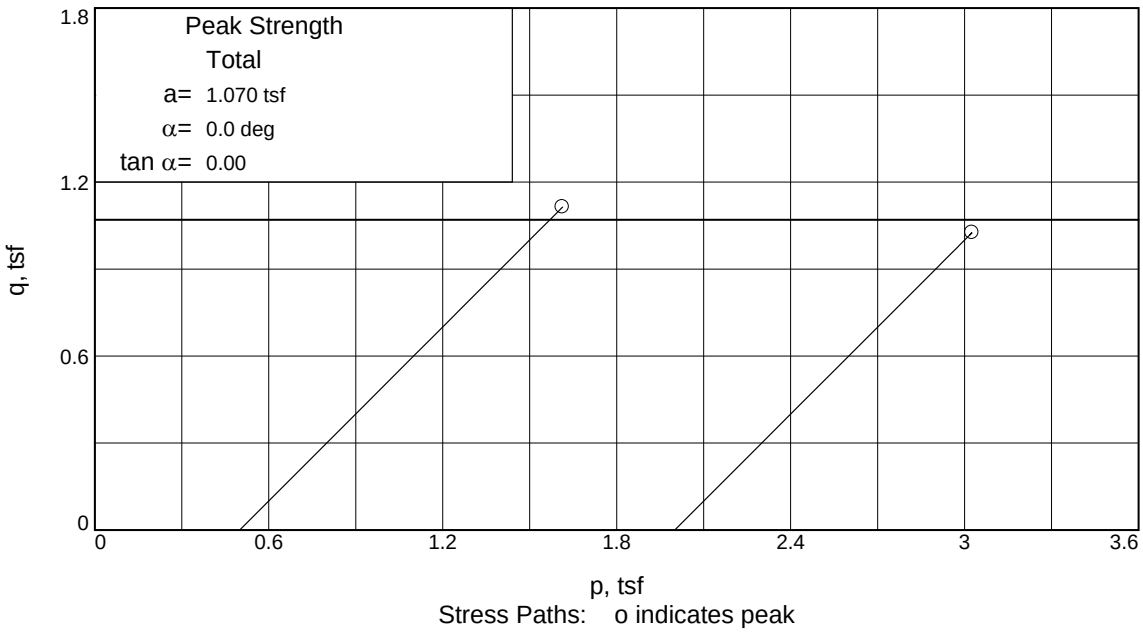
BRAUN INTERTEC











Stress Paths: o indicates peak

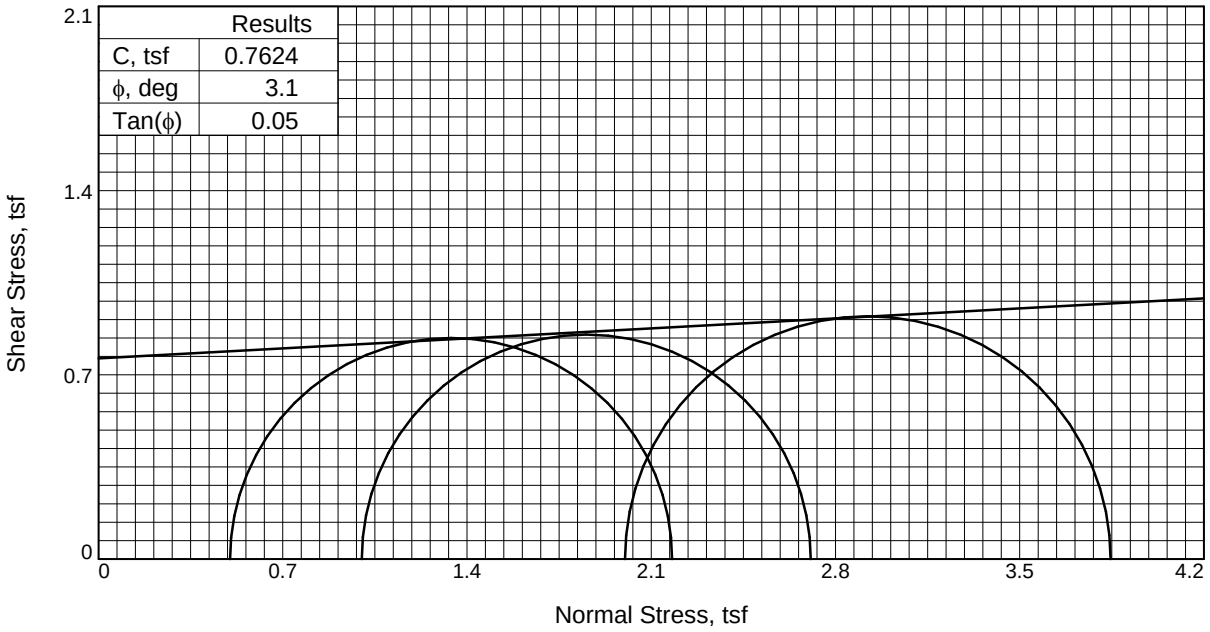
Client: KLJ Engineering LLC

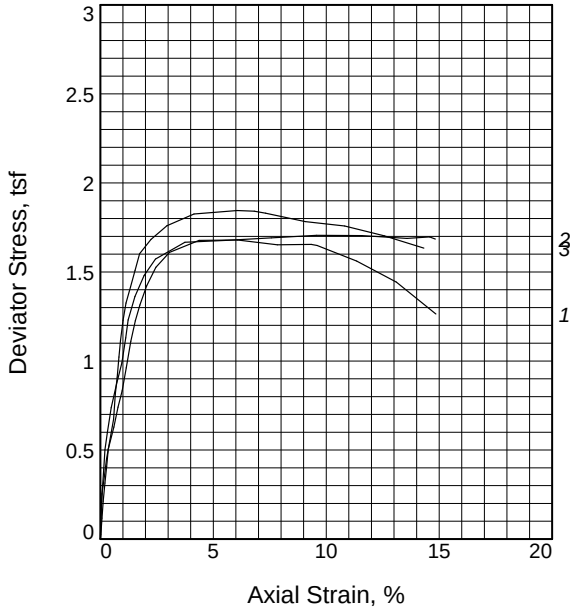
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-012 **Depth:** 7-9' **Sample Number:** TW-62

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	44.5	41.3	40.0
	Dry Density, pcf	78.8	82.1	81.6
	Saturation, %	105.5	105.8	101.3
	Void Ratio	1.1399	1.0536	1.0668
	Diameter, in.	1.34	1.31	1.41
	Height, in.	3.11	2.80	2.91
At Test	Water Content, %	44.5	41.3	40.0
	Dry Density, pcf	78.8	82.1	81.6
	Saturation, %	105.5	105.8	101.3
	Void Ratio	1.1399	1.0536	1.0668
	Diameter, in.	1.34	1.31	1.41
	Height, in.	3.11	2.80	2.91
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.680	1.706	1.845
Ult. Stress, tsf		1.264	1.685	1.634
σ_1 Failure, tsf		2.179	2.706	3.845
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

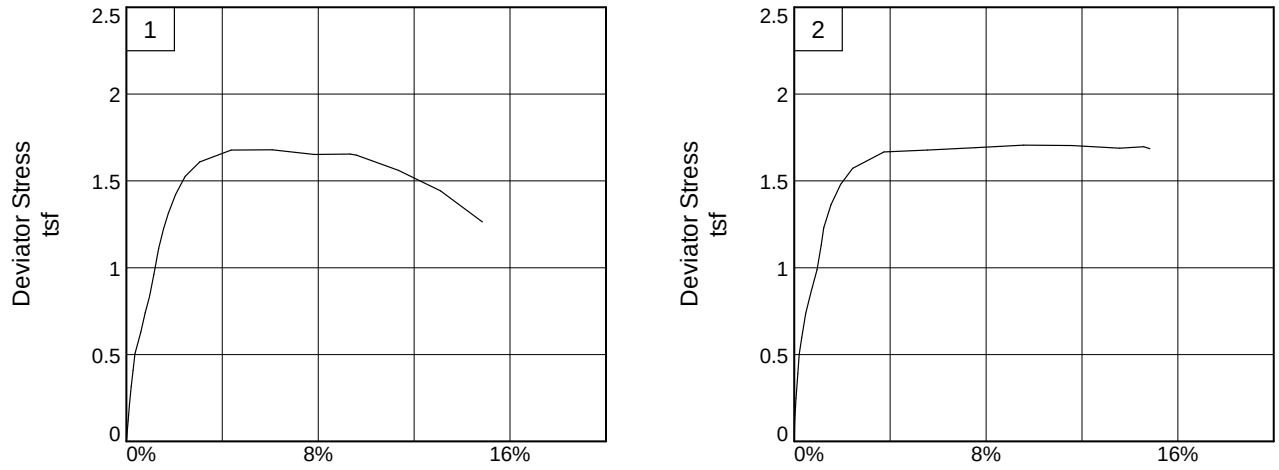
Location: CAA-012

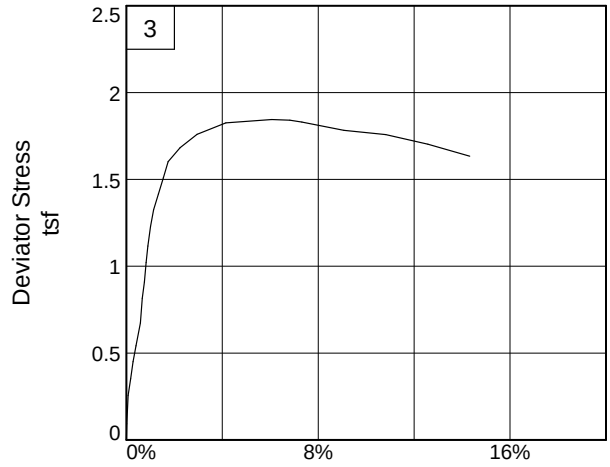
Sample Number: TW-65 **Depth:** 17-19'

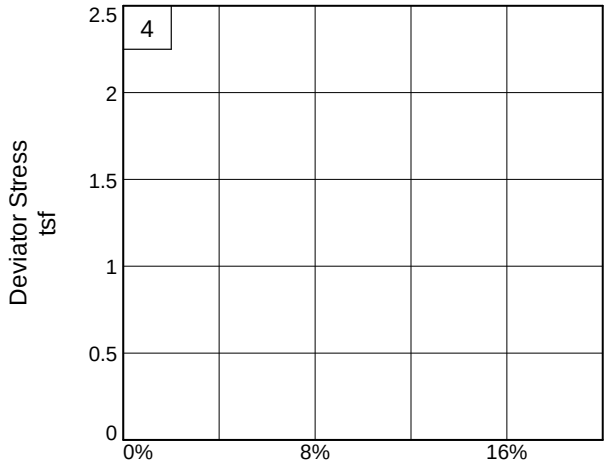
Proj. No.: B2009724 **Date Sampled:** 12/16/2020

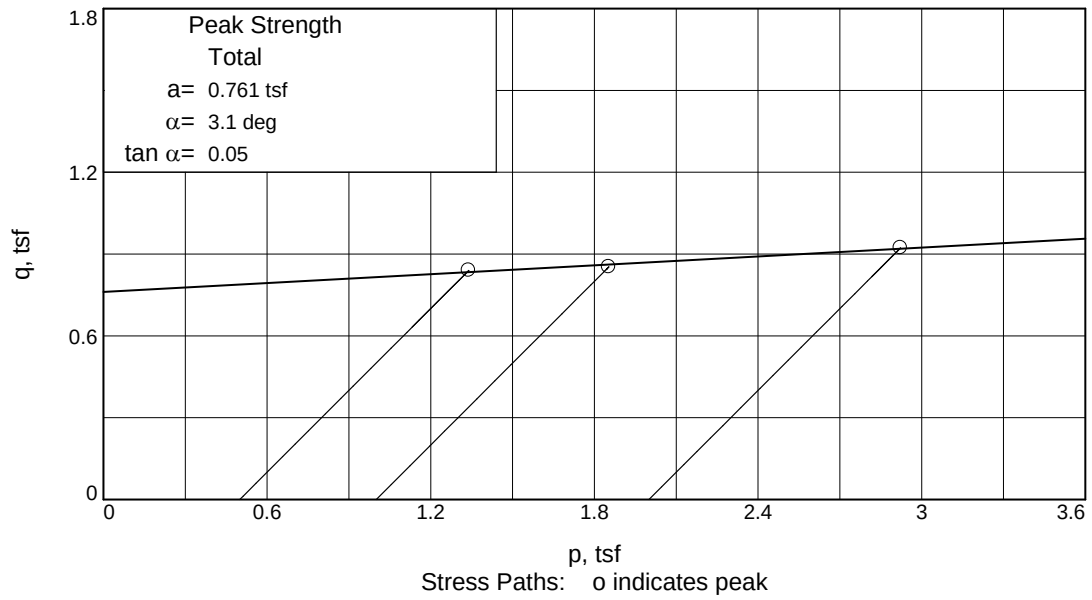
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST





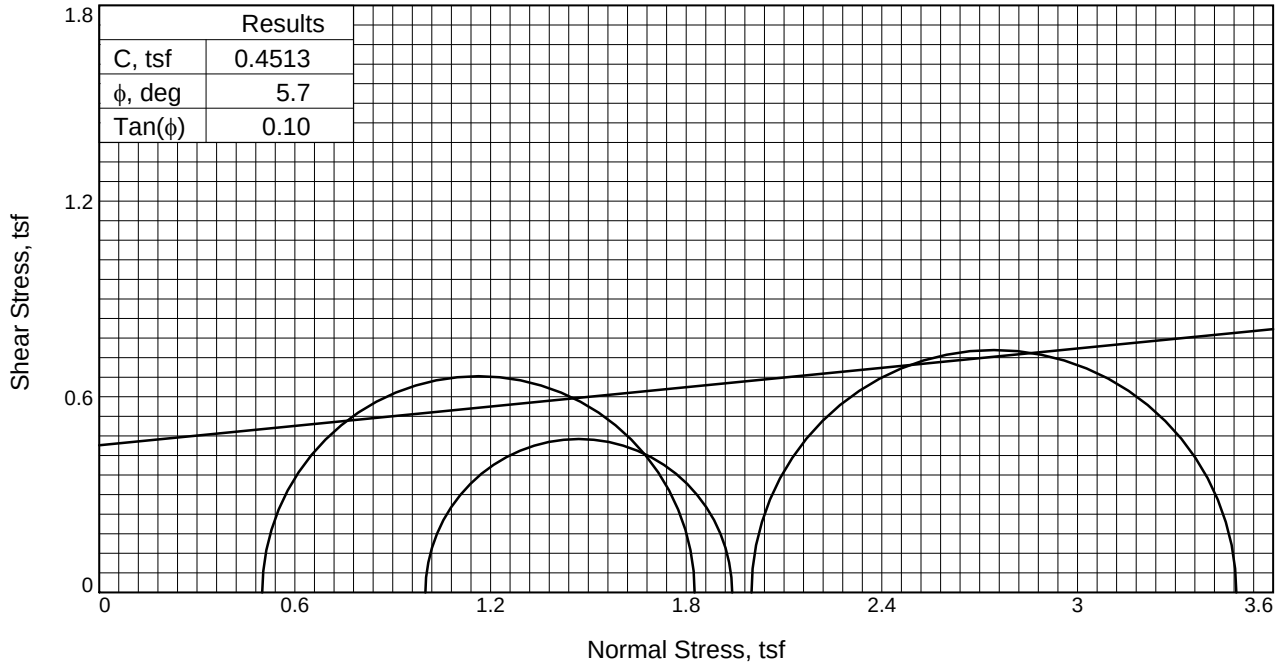


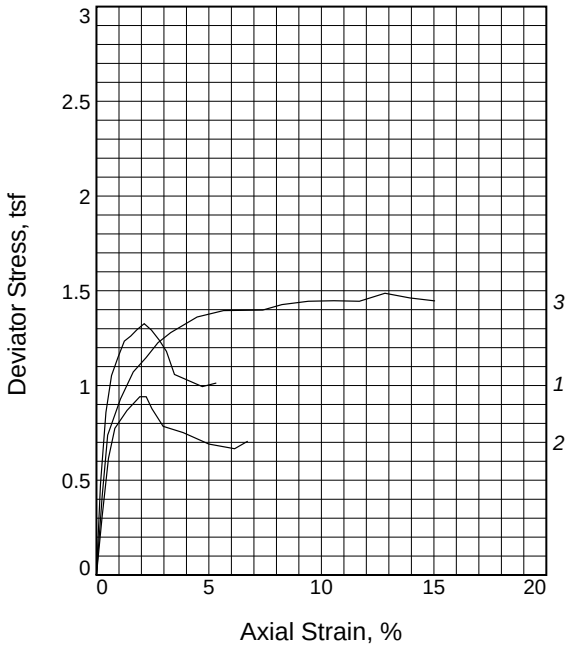


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-012 **Depth:** 17-19' **Sample Number:** TW-65
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	35.0	37.1	37.6
	Dry Density, pcf	85.4	84.1	83.5
	Saturation, %	97.0	99.7	99.8
	Void Ratio	0.9740	1.0038	1.0176
	Diameter, in.	1.416	1.427	1.410
	Height, in.	2.825	2.800	2.814
At Test	Water Content, %	35.0	37.1	37.6
	Dry Density, pcf	85.4	84.1	83.5
	Saturation, %	97.0	99.7	99.8
	Void Ratio	0.9740	1.0038	1.0176
	Diameter, in.	1.416	1.427	1.410
	Height, in.	2.825	2.800	2.814
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.326	0.941	1.487
Ult. Stress, tsf		0.994	0.666	1.447
σ_1 Failure, tsf		1.826	1.941	3.487
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

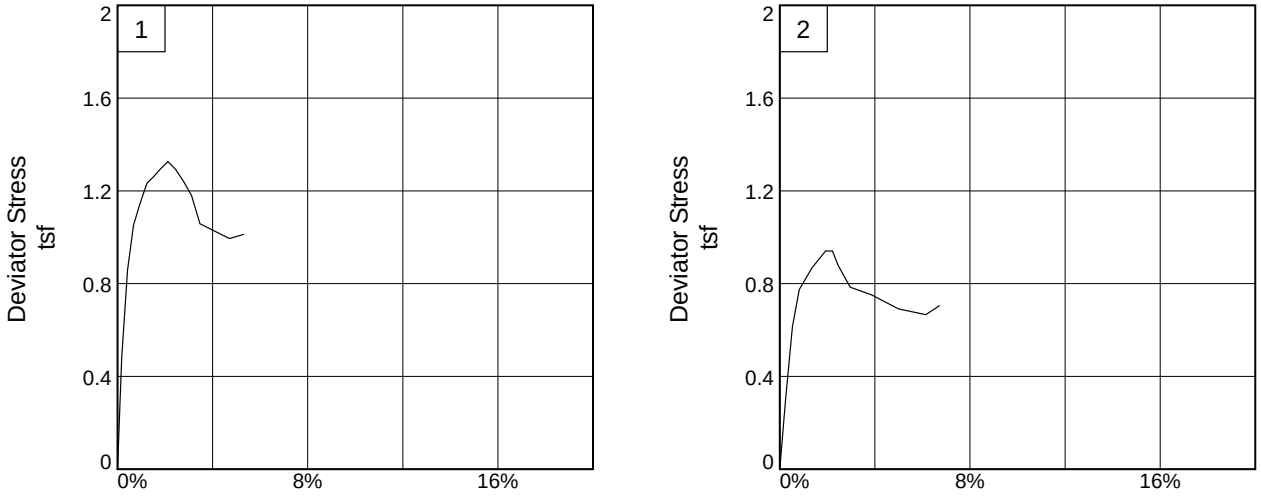
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

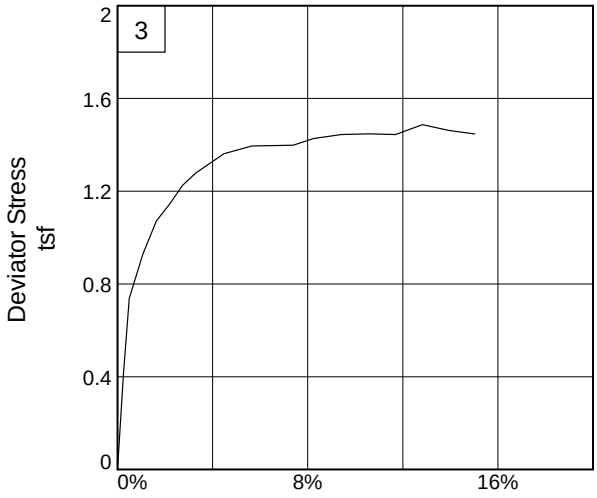
Source of Sample: CAA-014 **Depth:** 7-9'

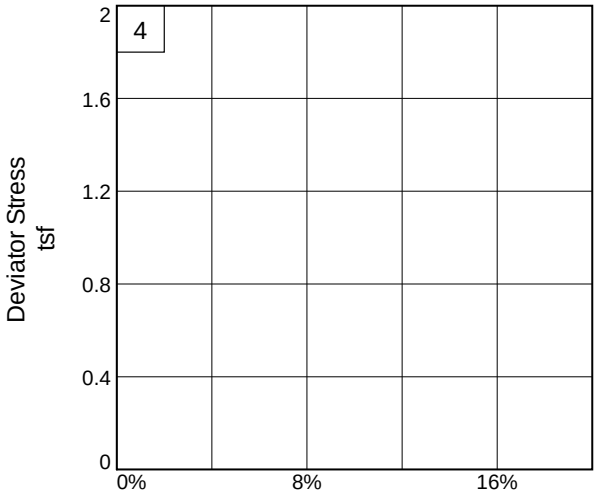
Sample Number: TW-76

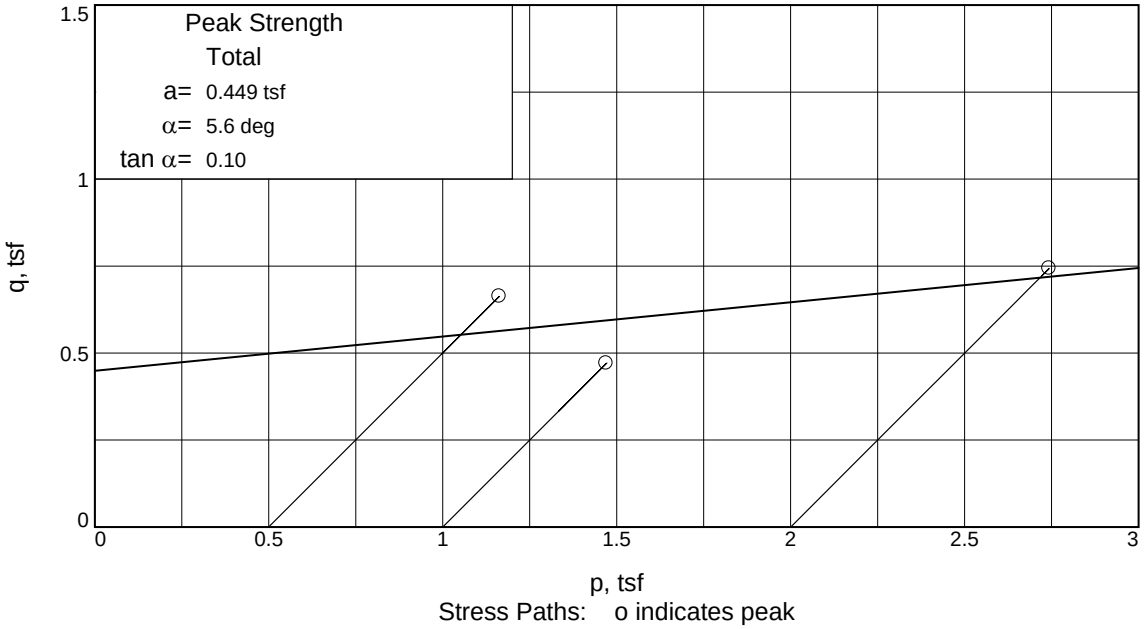
Proj. No.: B2009724 **Date Sampled:** 12/16/2020

BRAUN INTERTEC









Stress Paths: o indicates peak

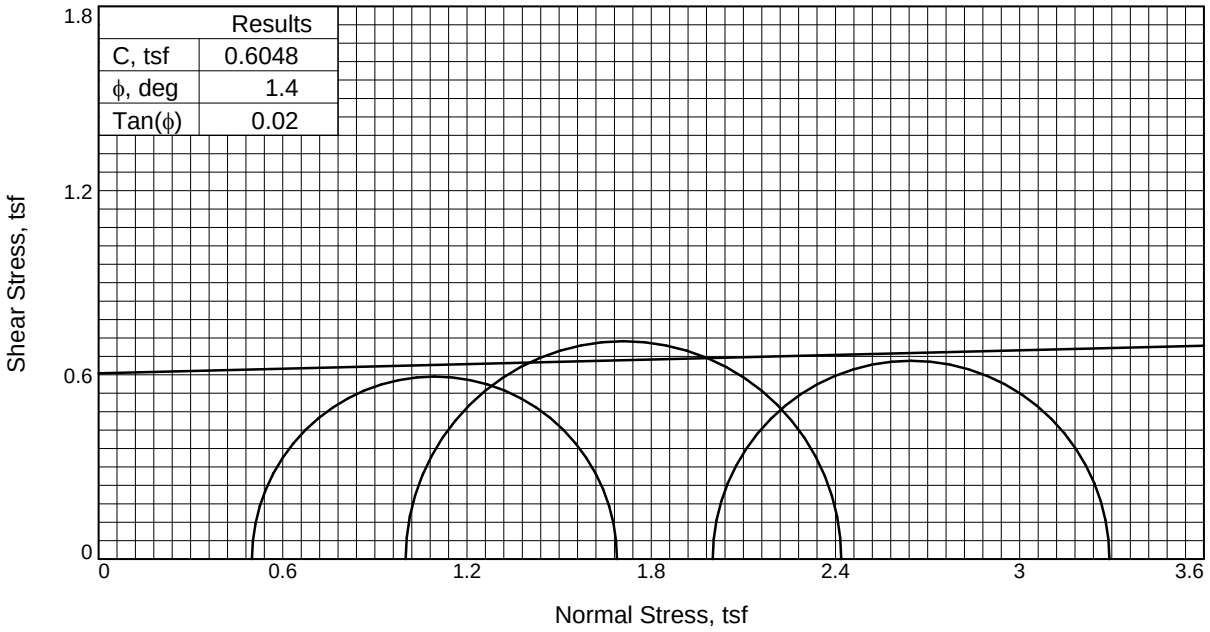
Client: KLJ Engineering LLC

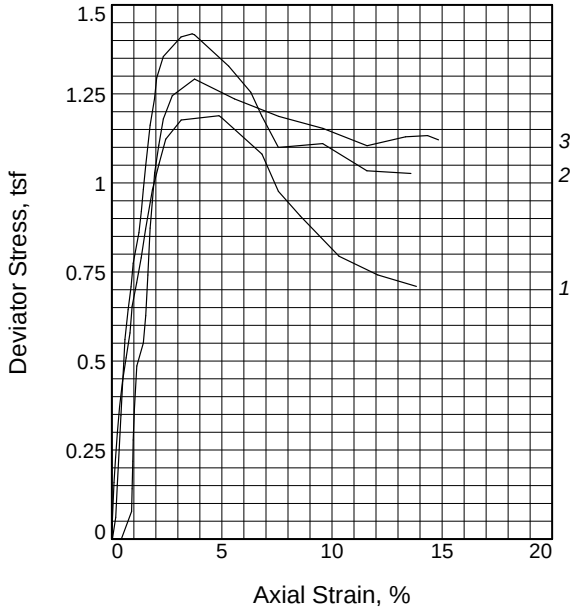
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-014 **Depth:** 7-9' **Sample Number:** TW-76

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	55.0	55.0	56.6
	Dry Density, pcf	69.1	67.5	66.1
	Saturation, %	103.1	99.1	98.6
	Void Ratio	1.4394	1.4978	1.5494
	Diameter, in.	1.36	1.38	1.38
	Height, in.	2.86	2.80	2.82
At Test	Water Content, %	55.0	55.0	56.6
	Dry Density, pcf	69.1	67.5	66.1
	Saturation, %	103.1	99.1	98.6
	Void Ratio	1.4394	1.4978	1.5494
	Diameter, in.	1.36	1.38	1.38
	Height, in.	2.86	2.80	2.82
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.189	1.419	1.292
Ult. Stress, tsf		0.710	1.027	1.105
σ_1 Failure, tsf		1.688	2.419	3.292
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

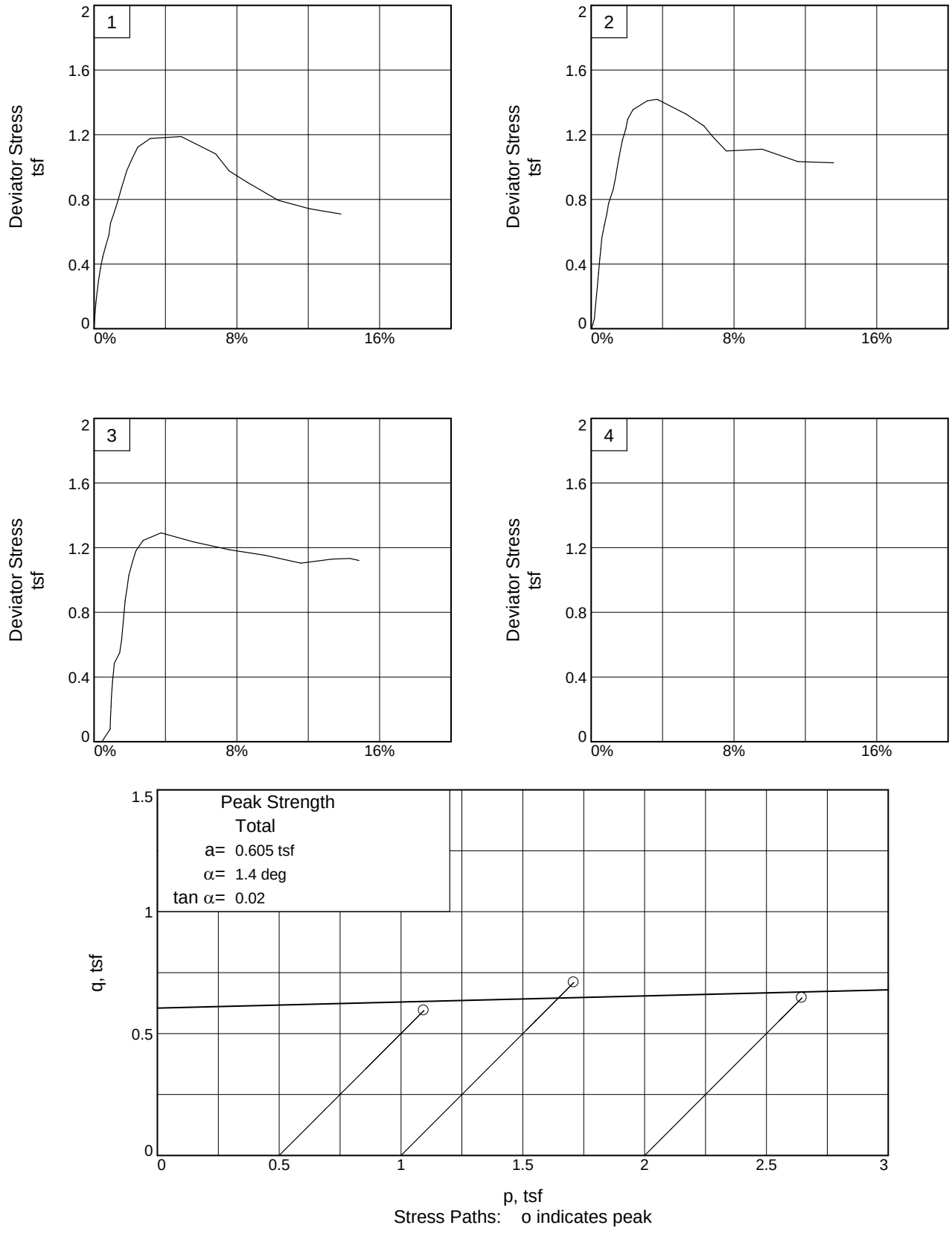
Location: CAA-014

Sample Number: TW-79 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/16/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

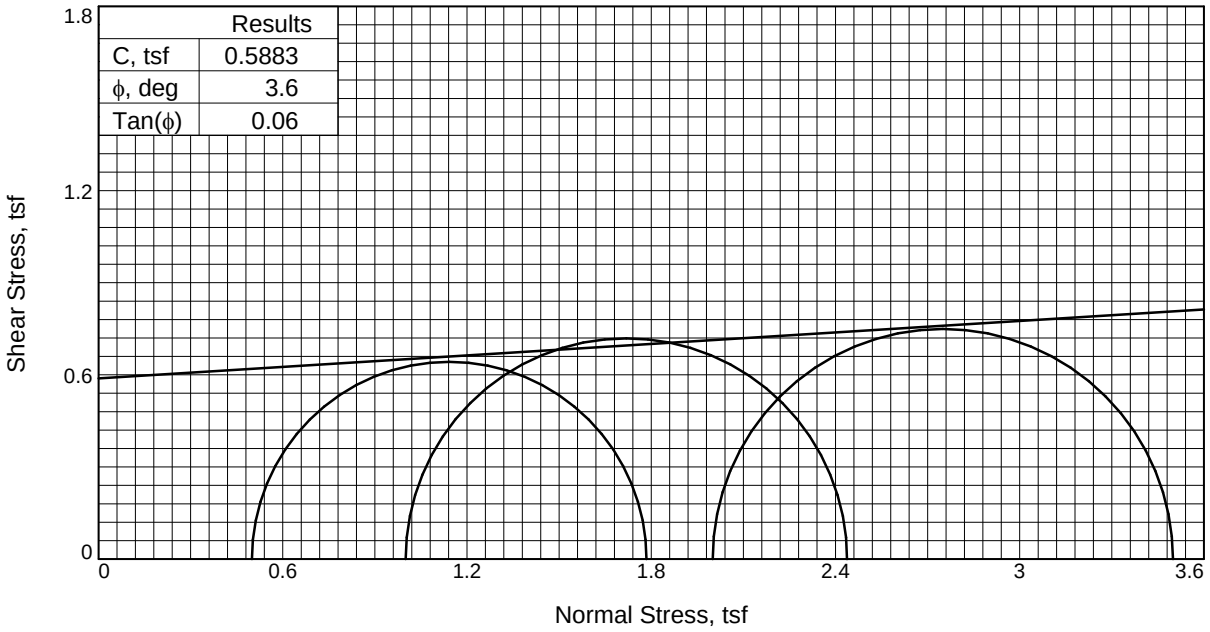
Tested By: ST

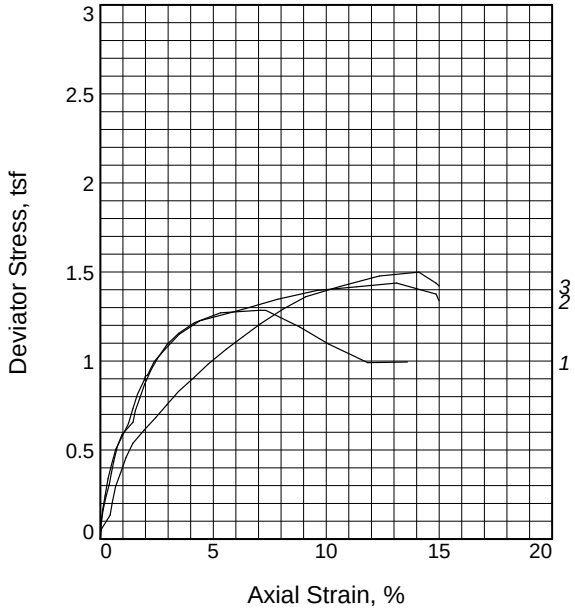


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-014 **Depth:** 17-19' **Sample Number:** TW-79
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	35.8	33.2	32.3
	Dry Density, pcf	86.1	88.7	88.4
	Saturation, %	101.0	99.4	96.2
	Void Ratio	0.9579	0.9011	0.9059
	Diameter, in.	1.30	1.33	1.30
	Height, in.	2.97	3.03	2.94
At Test	Water Content, %	35.8	33.2	32.3
	Dry Density, pcf	86.1	88.7	88.4
	Saturation, %	101.0	99.4	96.2
	Void Ratio	0.9579	0.9011	0.9059
	Diameter, in.	1.30	1.33	1.30
	Height, in.	2.97	3.03	2.94
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.285	1.438	1.499
Ult. Stress, tsf		0.991	1.339	1.422
σ_1 Failure, tsf		1.784	2.438	3.499
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

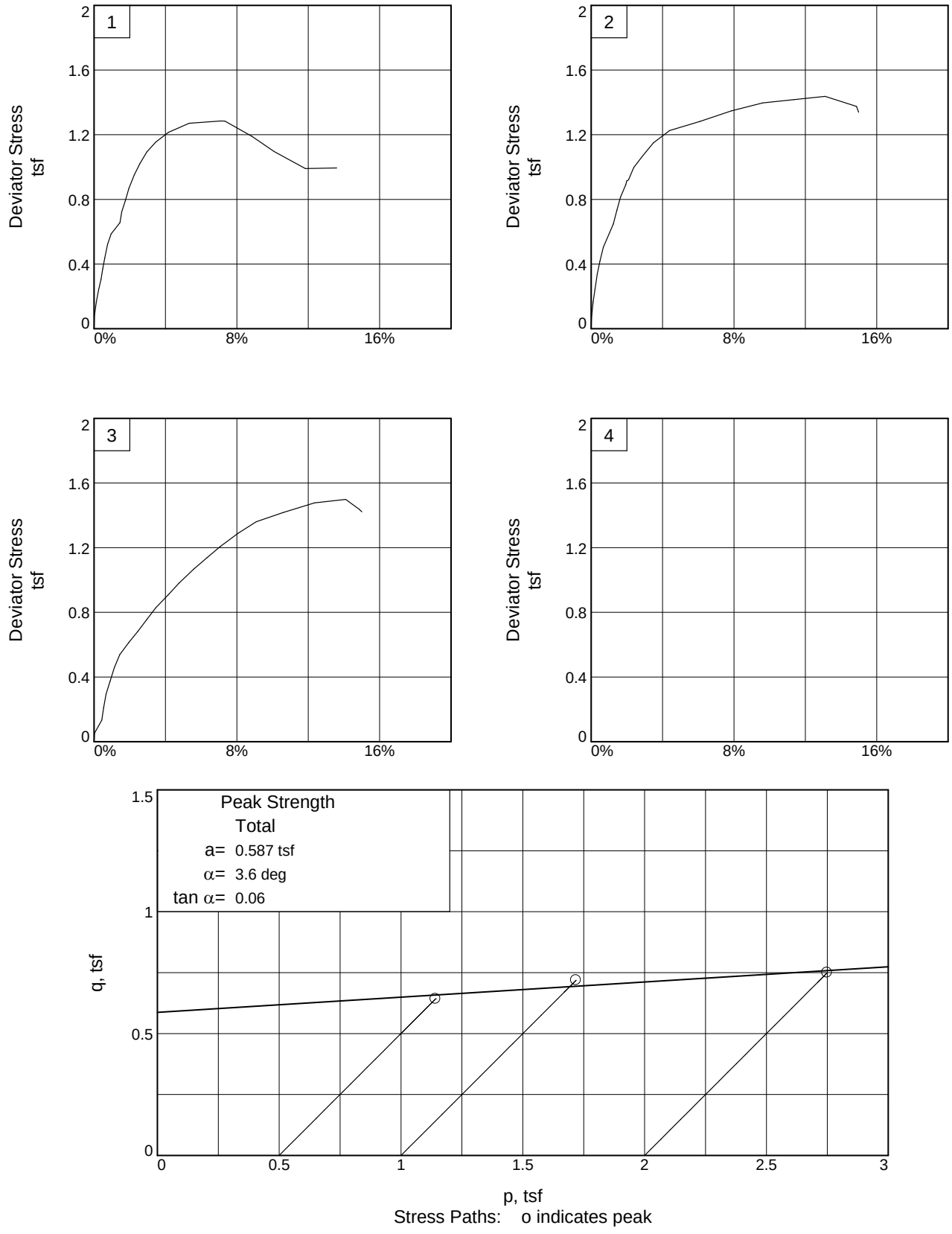
Location: CAA-016

Sample Number: TW-87 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

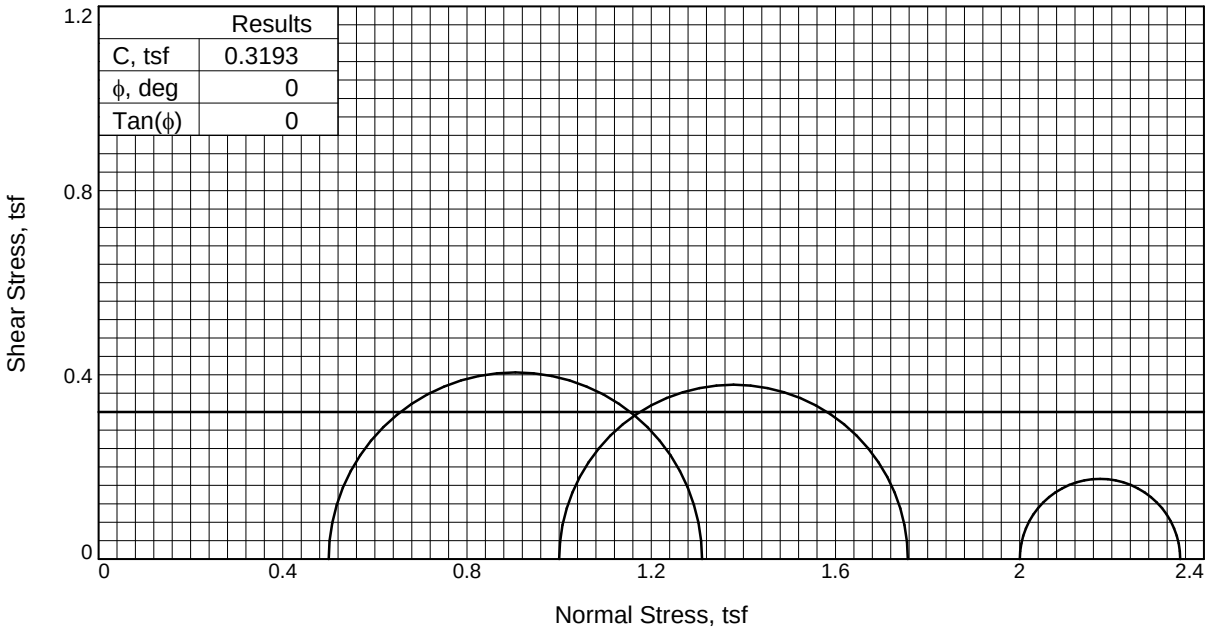
Tested By: ST

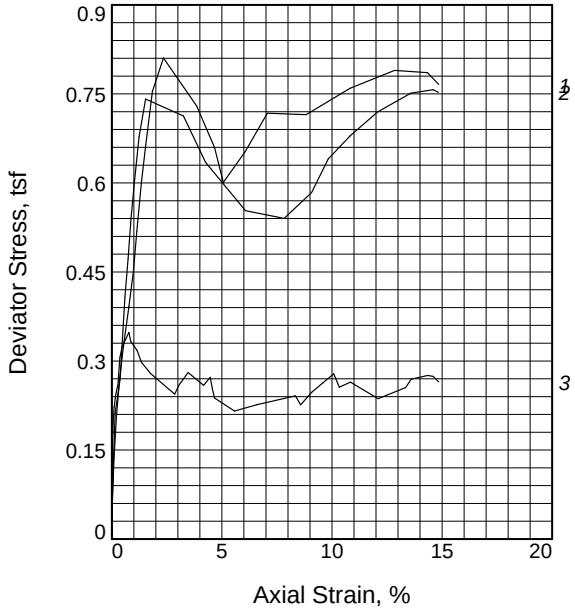


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-016 **Depth:** 7-9' **Sample Number:** TW-87
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	52.4	53.8	56.5
	Dry Density, pcf	68.2	70.7	66.5
	Saturation, %	96.1	105.1	99.5
	Void Ratio	1.4717	1.3837	1.5332
	Diameter, in.	1.39	1.36	1.41
	Height, in.	2.79	2.95	2.97
At Test	Water Content, %	52.4	53.8	56.5
	Dry Density, pcf	68.2	70.7	66.5
	Saturation, %	96.1	105.1	99.5
	Void Ratio	1.4717	1.3837	1.5332
	Diameter, in.	1.39	1.36	1.41
	Height, in.	2.79	2.95	2.97
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.811	0.757	0.348
Ult. Stress, tsf		0.601	0.540	0.216
σ_1 Failure, tsf		1.310	1.757	2.348
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

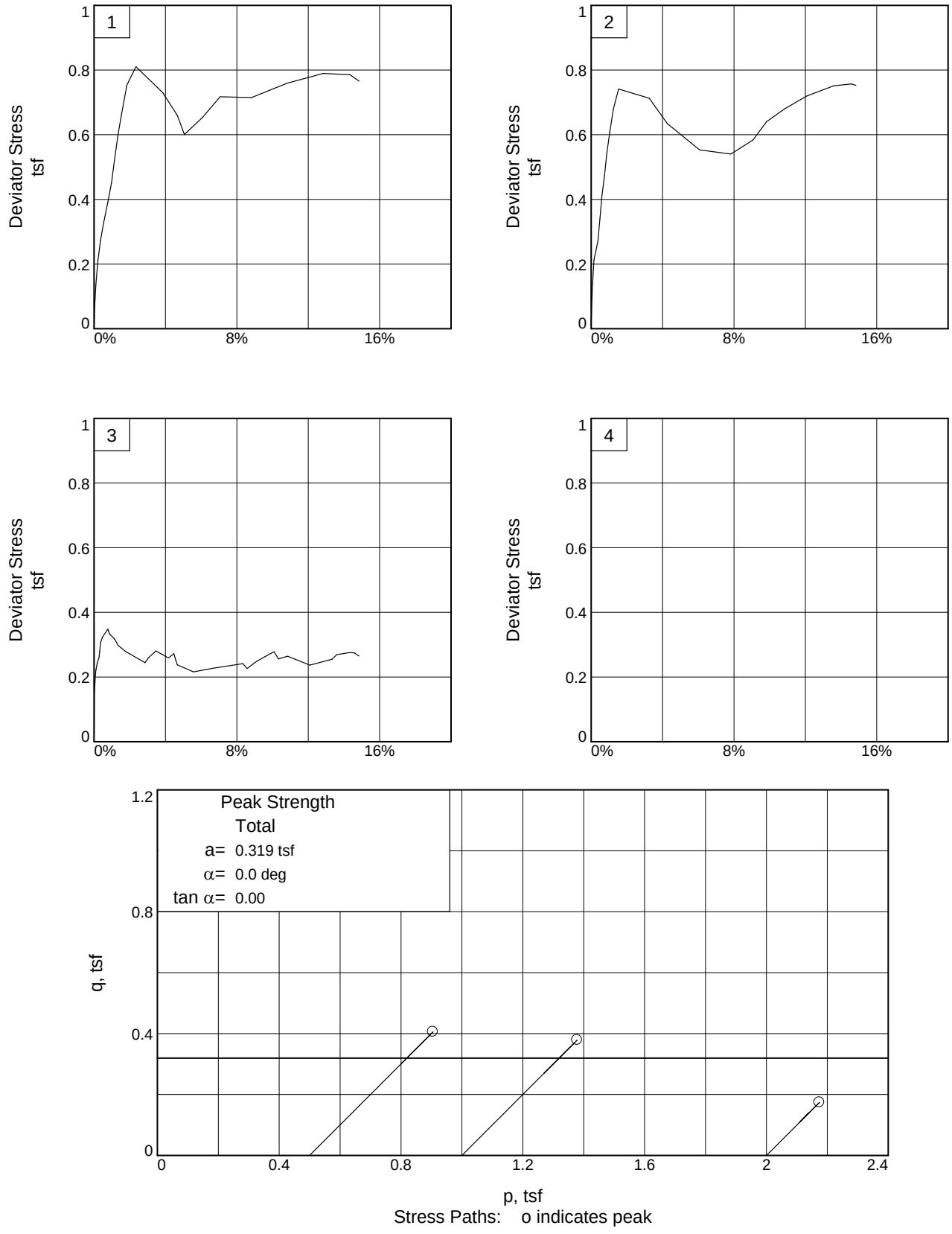
Location: CAA-016

Sample Number: TW-90 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

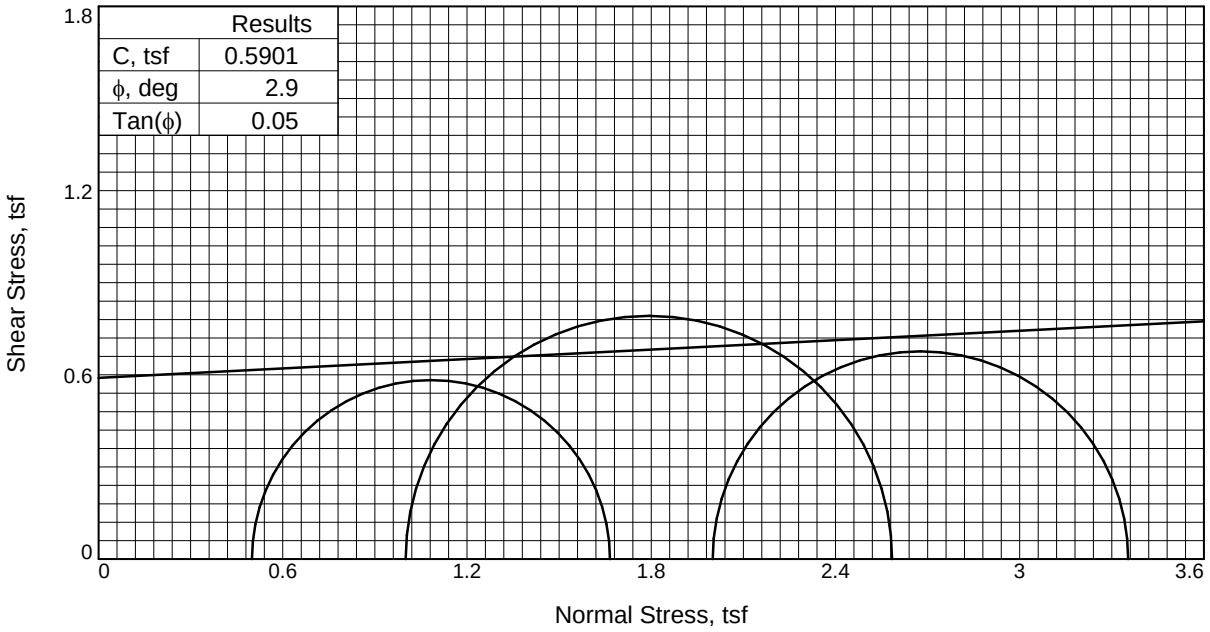
Tested By: ST

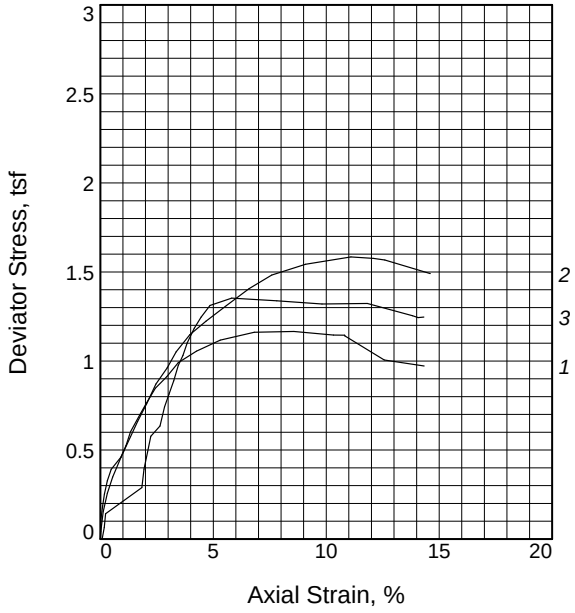


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-016 **Depth:** 17-19' **Sample Number:** TW-90
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	37.3	35.3	38.0
	Dry Density, pcf	85.7	85.0	81.3
	Saturation, %	104.3	97.0	95.6
	Void Ratio	0.9662	0.9823	1.0745
	Diameter, in.	1.36	1.39	1.39
	Height, in.	3.09	2.72	2.84
At Test	Water Content, %	37.3	35.3	38.0
	Dry Density, pcf	85.7	85.0	81.3
	Saturation, %	104.3	97.0	95.6
	Void Ratio	0.9662	0.9823	1.0745
	Diameter, in.	1.36	1.39	1.39
	Height, in.	3.09	2.72	2.84
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.166	1.584	1.353
Ult. Stress, tsf		0.972	1.491	1.244
σ_1 Failure, tsf		1.665	2.584	3.353
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

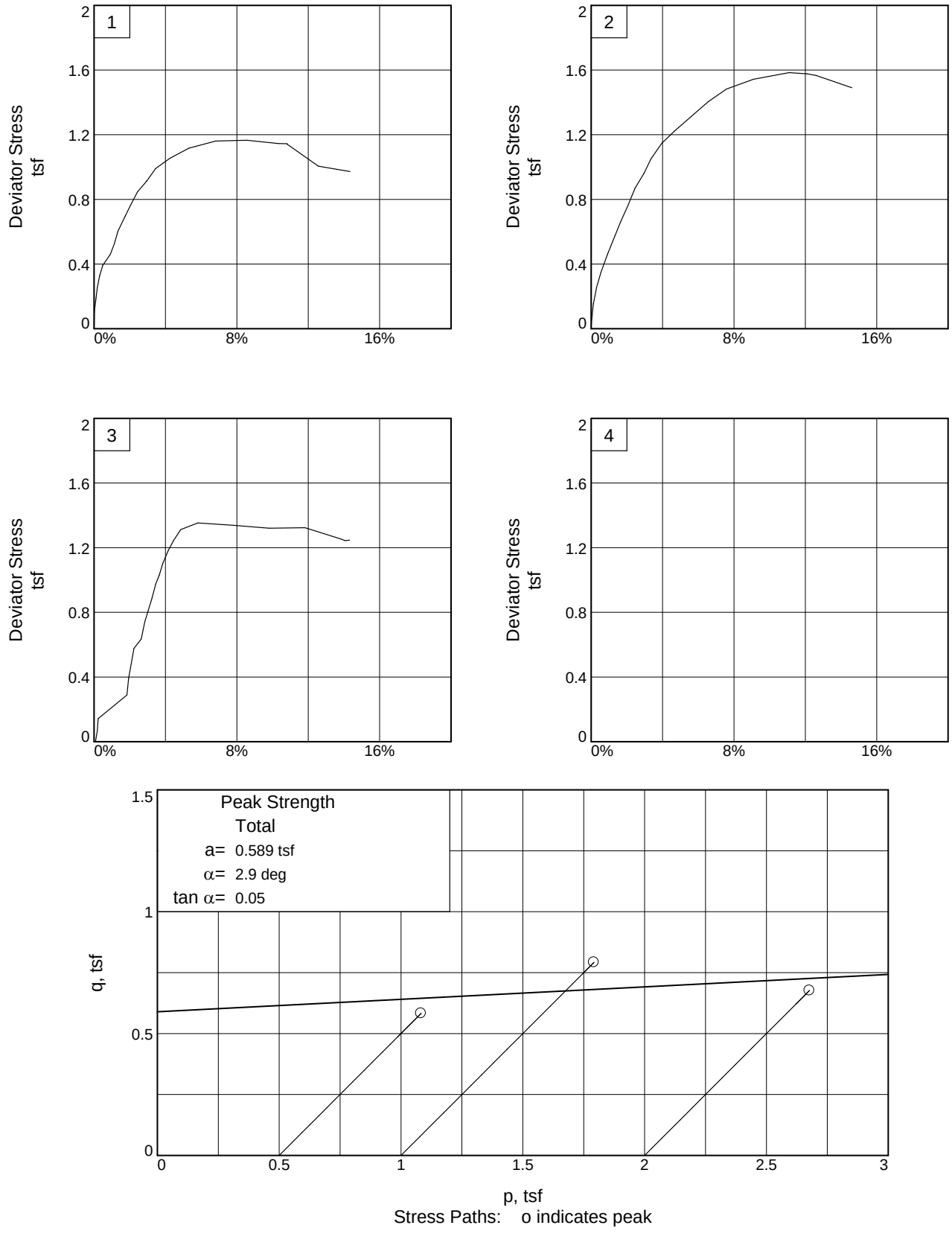
Location: GDRL-018

Sample Number: TW-101 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

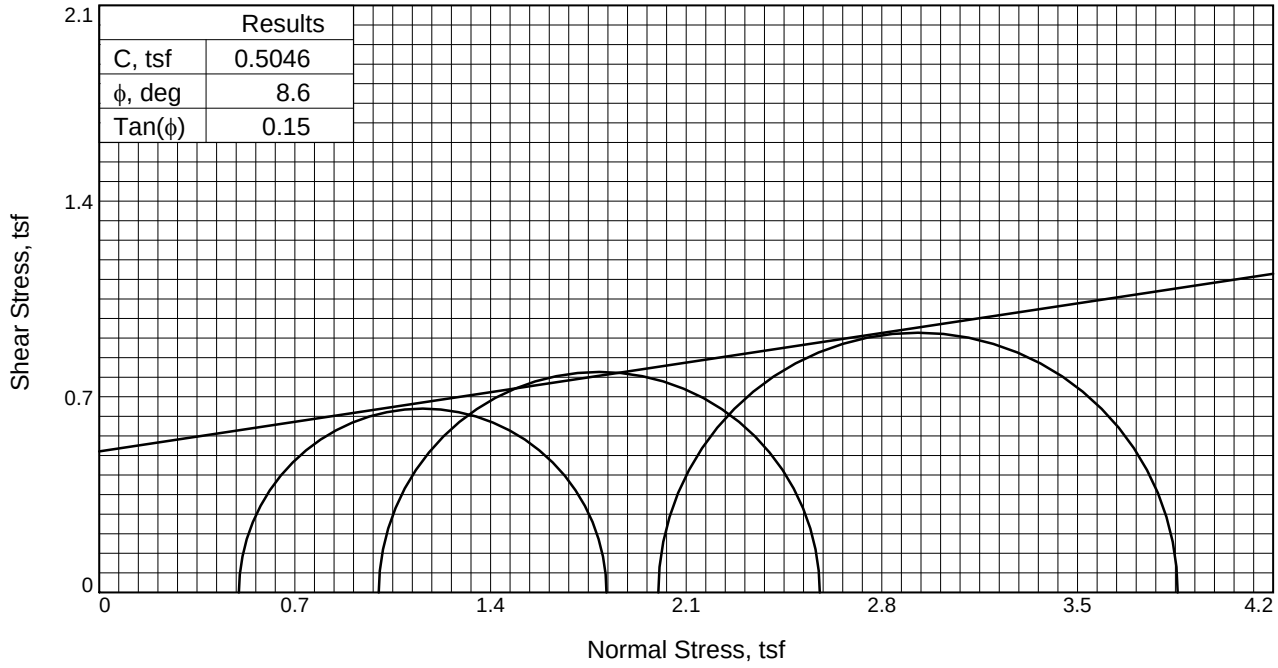
Tested By: ST

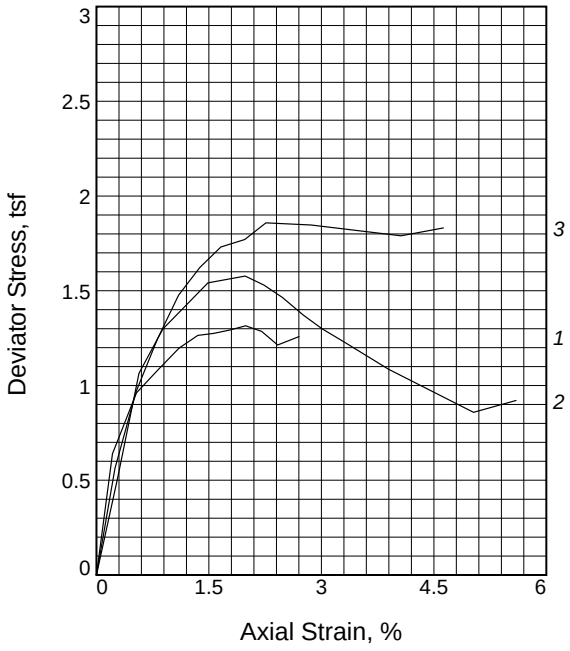


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-018 **Depth:** 7-9' **Sample Number:** TW-101
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	48.0	47.0	45.8
	Dry Density, pcf	73.0	74.2	74.7
	Saturation, %	99.0	99.8	98.5
	Void Ratio	1.3104	1.2712	1.2569
	Diameter, in.	1.410	1.422	1.416
	Height, in.	2.813	2.824	2.831
At Test	Water Content, %	48.0	47.0	45.8
	Dry Density, pcf	73.0	74.2	74.7
	Saturation, %	99.0	99.8	98.5
	Void Ratio	1.3104	1.2712	1.2569
	Diameter, in.	1.410	1.422	1.416
	Height, in.	2.813	2.824	2.831
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.315	1.578	1.858
Ult. Stress, tsf		1.214	0.859	1.790
σ_1 Failure, tsf		1.815	2.578	3.858
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

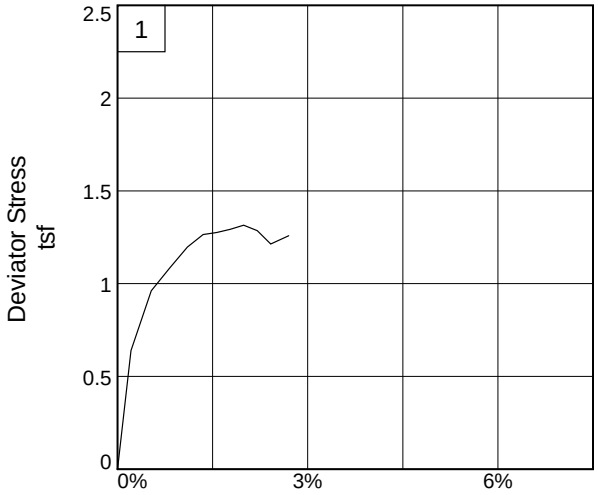
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

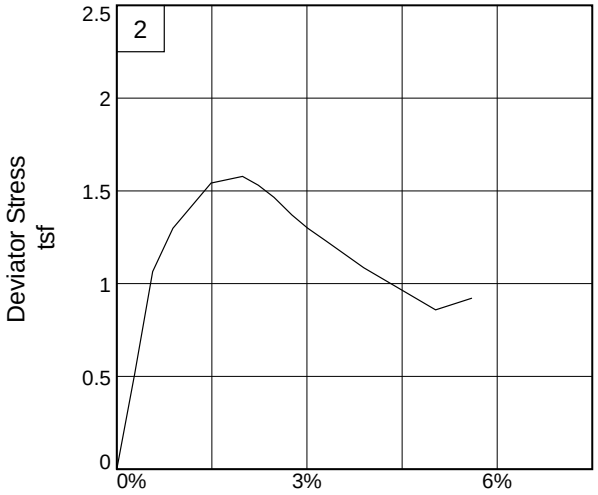
Source of Sample: GDRL-020 **Depth:** 7-9'

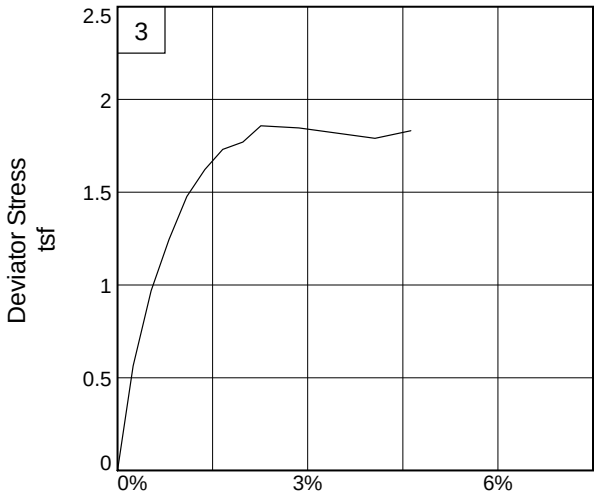
Sample Number: TW-109

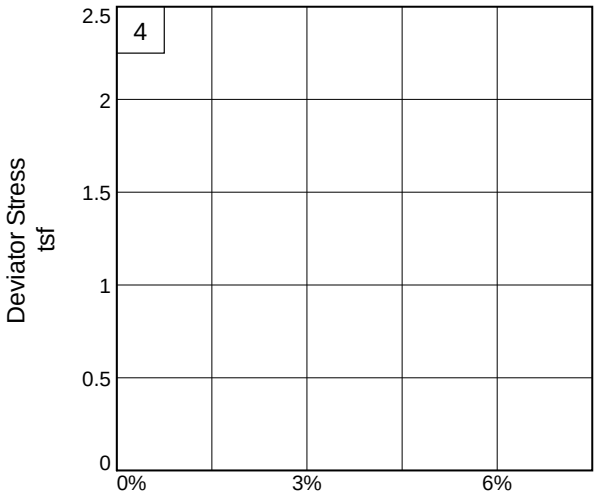
Proj. No.: B2009724 **Date Sampled:** 12/17/2020

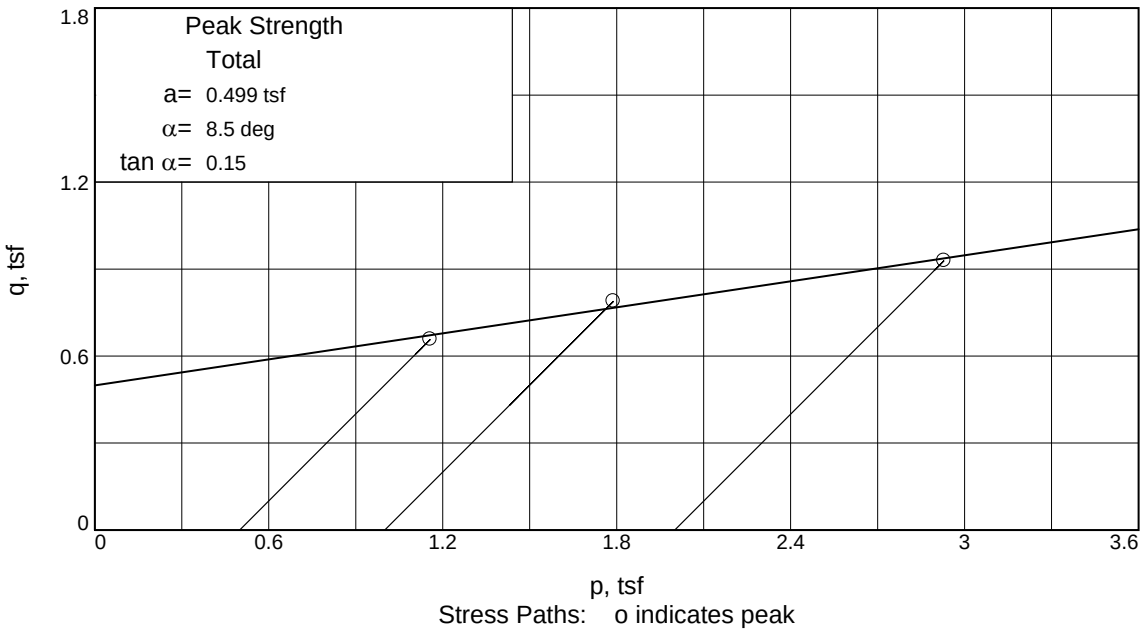
BRAUN INTERTEC











Stress Paths: o indicates peak

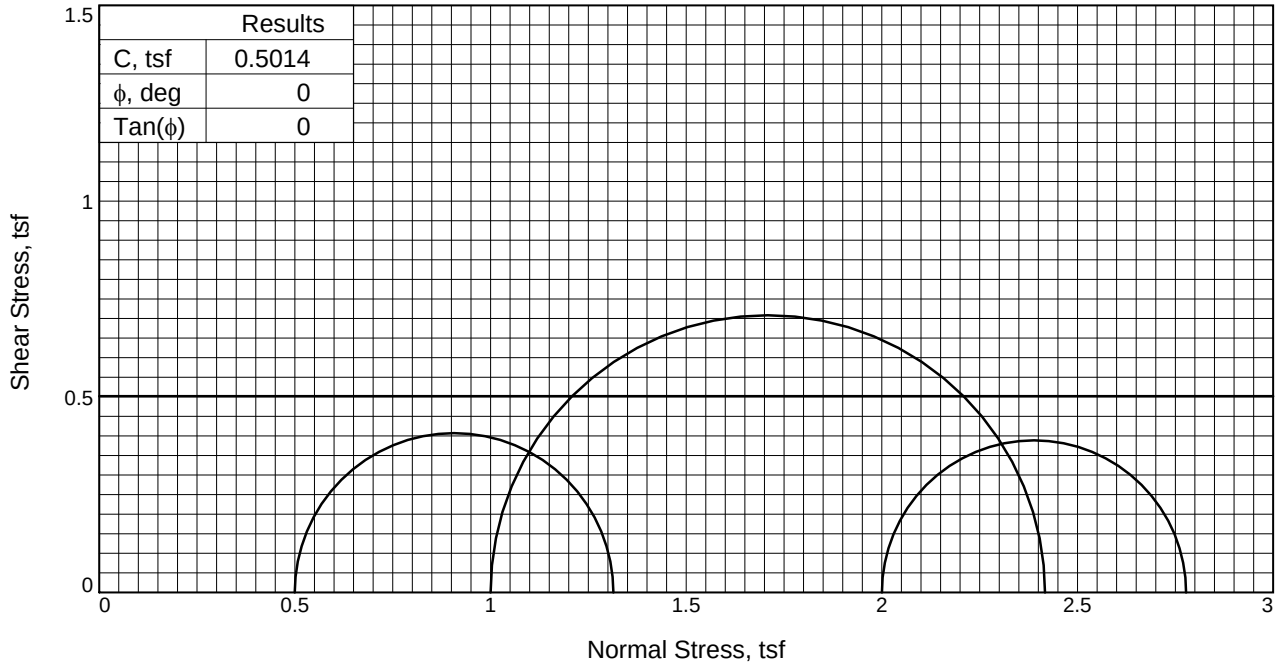
Client: KLJ Engineering LLC

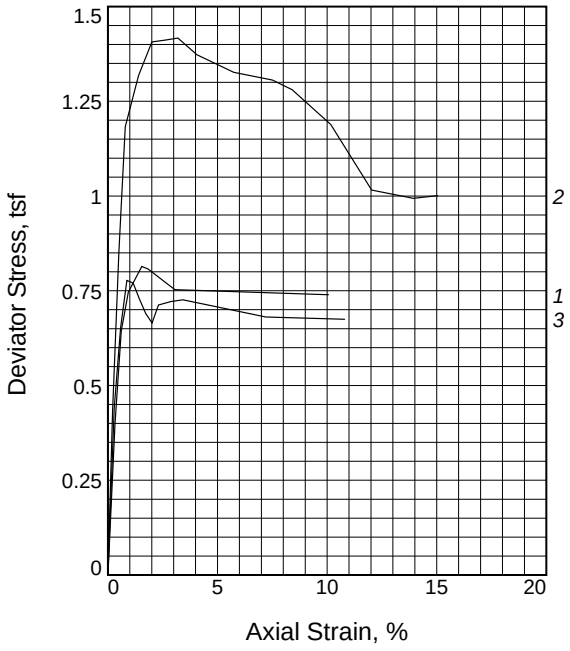
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-020 **Depth:** 7-9' **Sample Number:** TW-109

Project No.: B2009724 **Figure**_____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	59.5	48.4	56.2
	Dry Density, pcf	64.7	72.9	66.9
	Saturation, %	99.9	99.4	99.8
	Void Ratio	1.6063	1.3133	1.5203
	Diameter, in.	1.413	1.400	1.415
	Height, in.	2.783	2.785	2.778
At Test	Water Content, %	59.5	48.4	56.2
	Dry Density, pcf	64.7	72.9	66.9
	Saturation, %	99.9	99.4	99.8
	Void Ratio	1.6063	1.3133	1.5203
	Diameter, in.	1.413	1.400	1.415
	Height, in.	2.783	2.785	2.778
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.814	1.417	0.777
Ult. Stress, tsf		0.753	0.994	0.665
σ_1 Failure, tsf		1.314	2.417	2.778
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

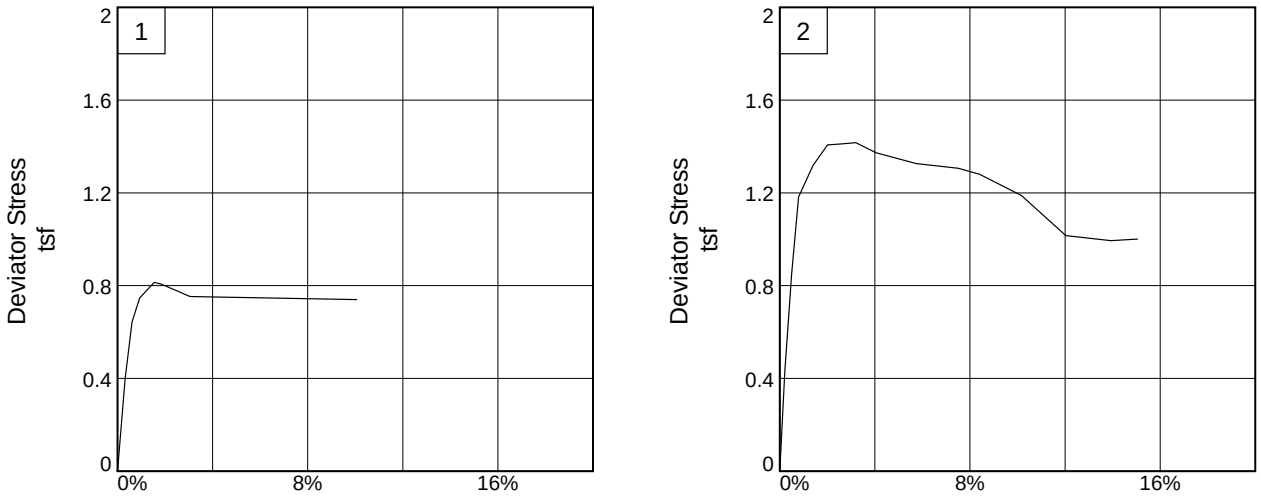
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

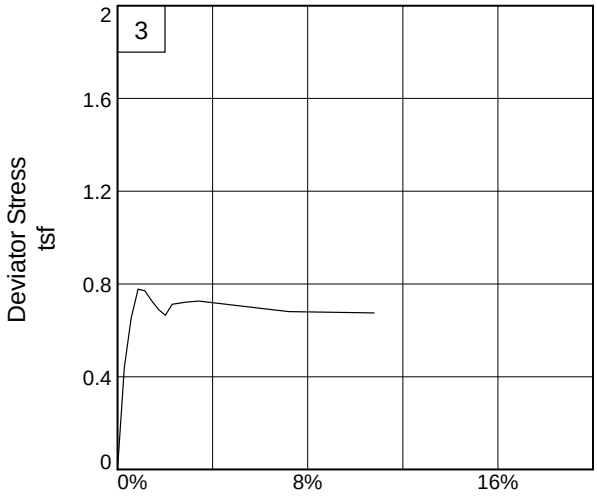
Source of Sample: CAA-022 **Depth:** 17-19'

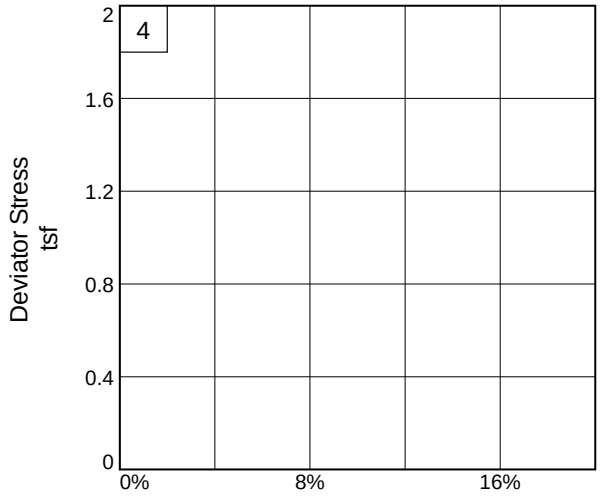
Sample Number: TW-120

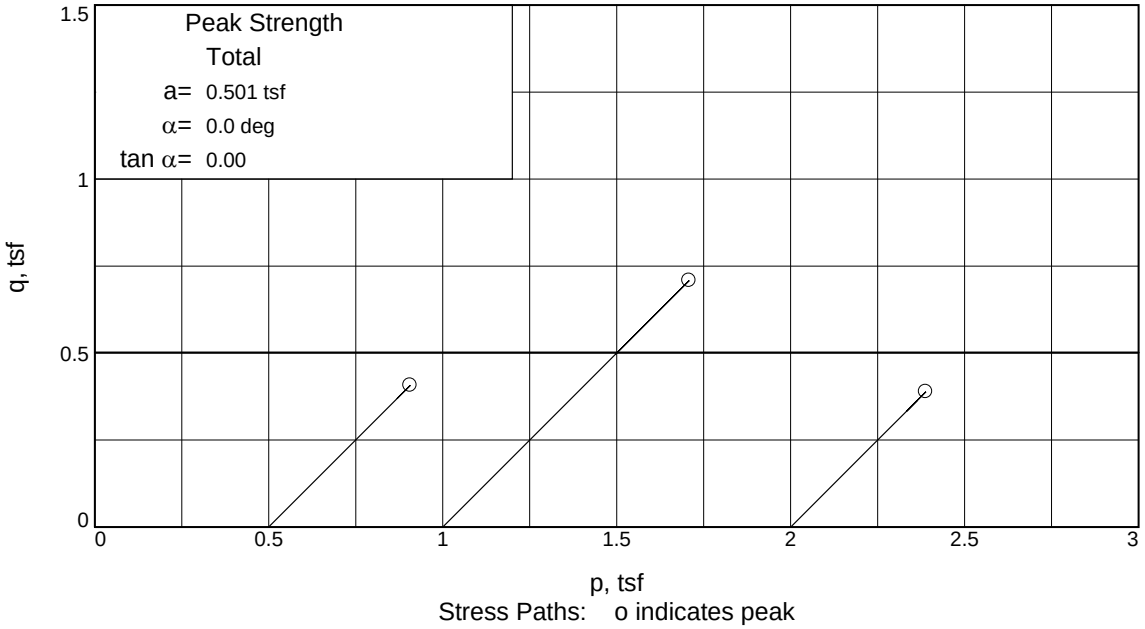
Proj. No.: B2009724 **Date Sampled:** 12/17/2020

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Stress Paths: o indicates peak

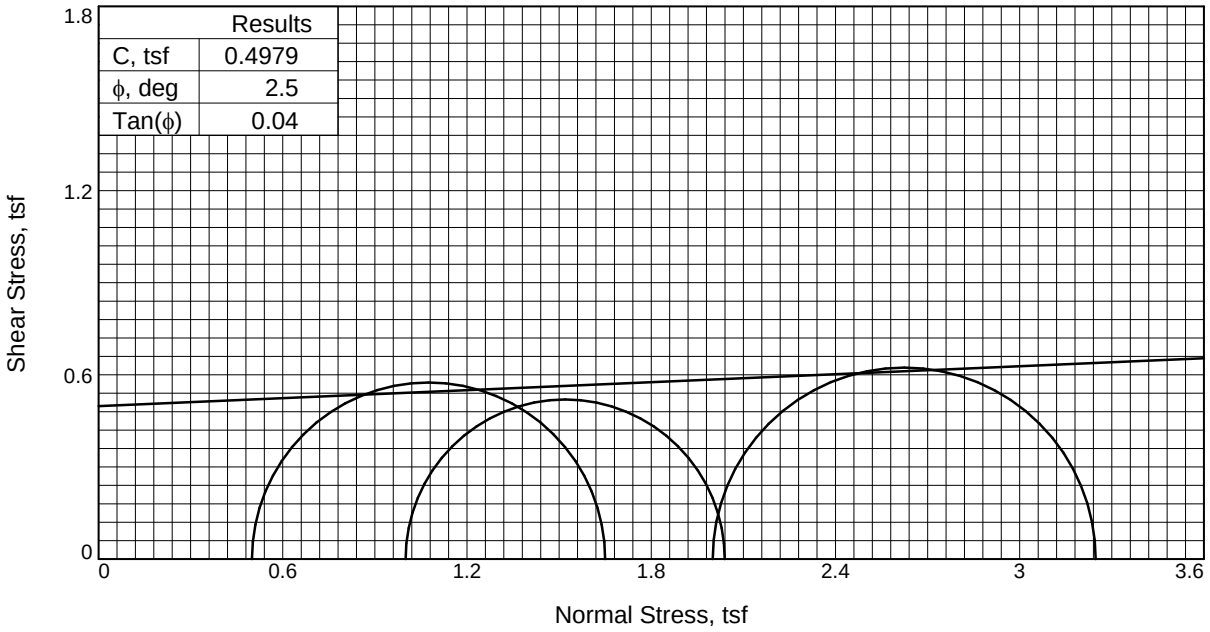
Client: KLJ Engineering LLC

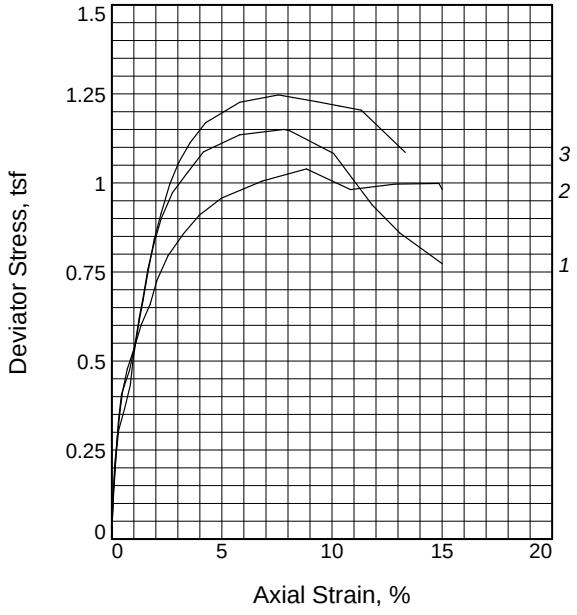
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-022 **Depth:** 17-19' **Sample Number:** TW-120

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.0	42.7	35.9
	Dry Density, pcf	80.2	74.8	83.5
	Saturation, %	102.9	91.9	95.3
	Void Ratio	1.1017	1.2536	1.0178
	Diameter, in.	1.37	1.41	1.35
	Height, in.	2.81	2.74	2.86
At Test	Water Content, %	42.0	42.7	35.9
	Dry Density, pcf	80.2	74.8	83.5
	Saturation, %	102.9	91.9	95.3
	Void Ratio	1.1017	1.2536	1.0178
	Diameter, in.	1.37	1.41	1.35
	Height, in.	2.81	2.74	2.86
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.150	1.039	1.247
Ult. Stress, tsf		0.773	0.981	1.086
σ_1 Failure, tsf		1.650	2.039	3.247
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), dark brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

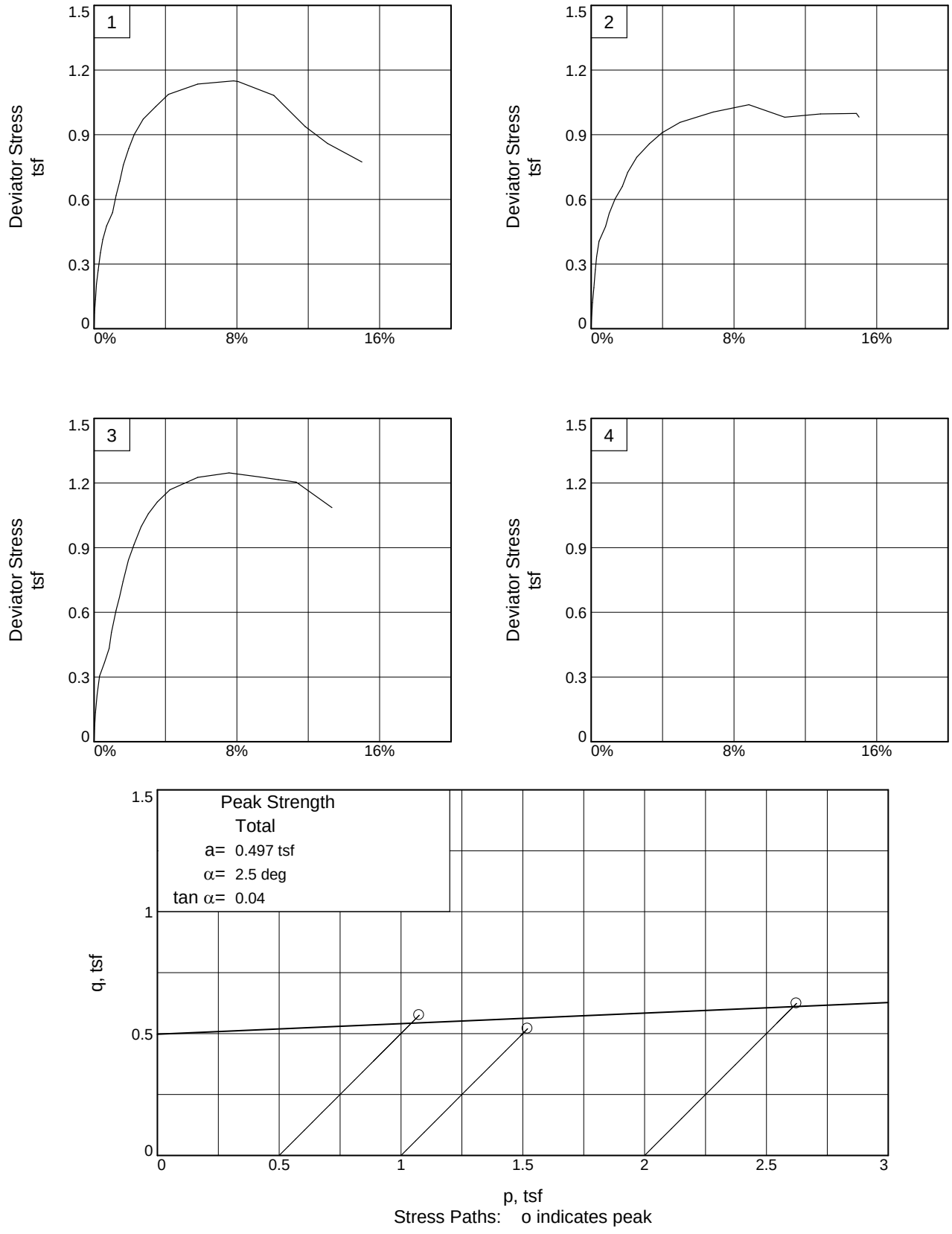
Location: CAA-022

Sample Number: TW-117 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

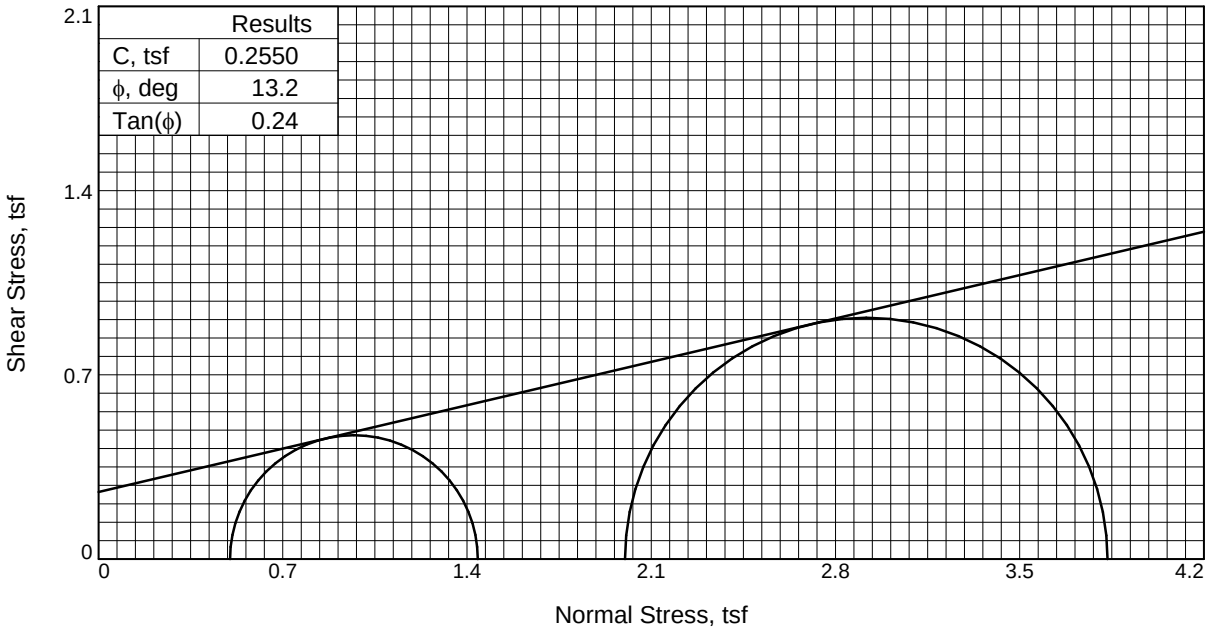
Tested By: ST

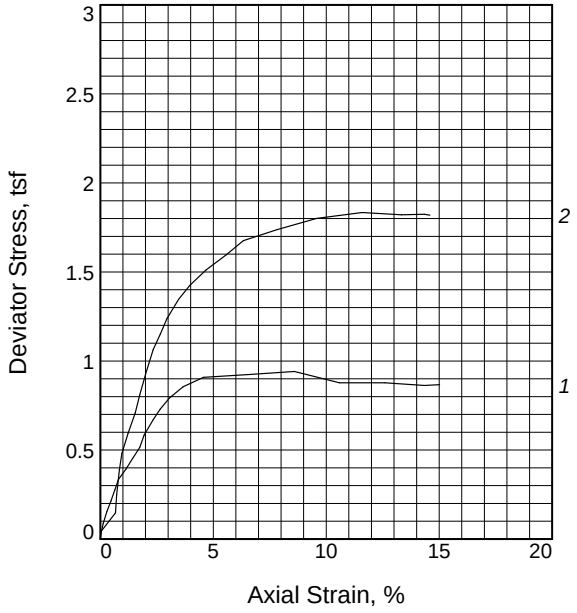


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-022 **Depth:** 7-9' **Sample Number:** TW-117
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2
Initial	Water Content, %	37.4	37.5
	Dry Density, pcf	84.0	84.5
	Saturation, %	100.2	101.9
	Void Ratio	1.0076	0.9944
	Diameter, in.	1.38	1.35
	Height, in.	2.83	2.84
At Test	Water Content, %	37.4	37.5
	Dry Density, pcf	84.0	84.5
	Saturation, %	100.2	101.9
	Void Ratio	1.0076	0.9944
	Diameter, in.	1.38	1.35
	Height, in.	2.83	2.84
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		0.941	1.833
Ult. Stress, tsf		0.863	1.819
σ_1 Failure, tsf		1.441	3.834
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.
Insufficient material for 3 points.

Figure _____

Client: KLJ Engineering, LLC

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

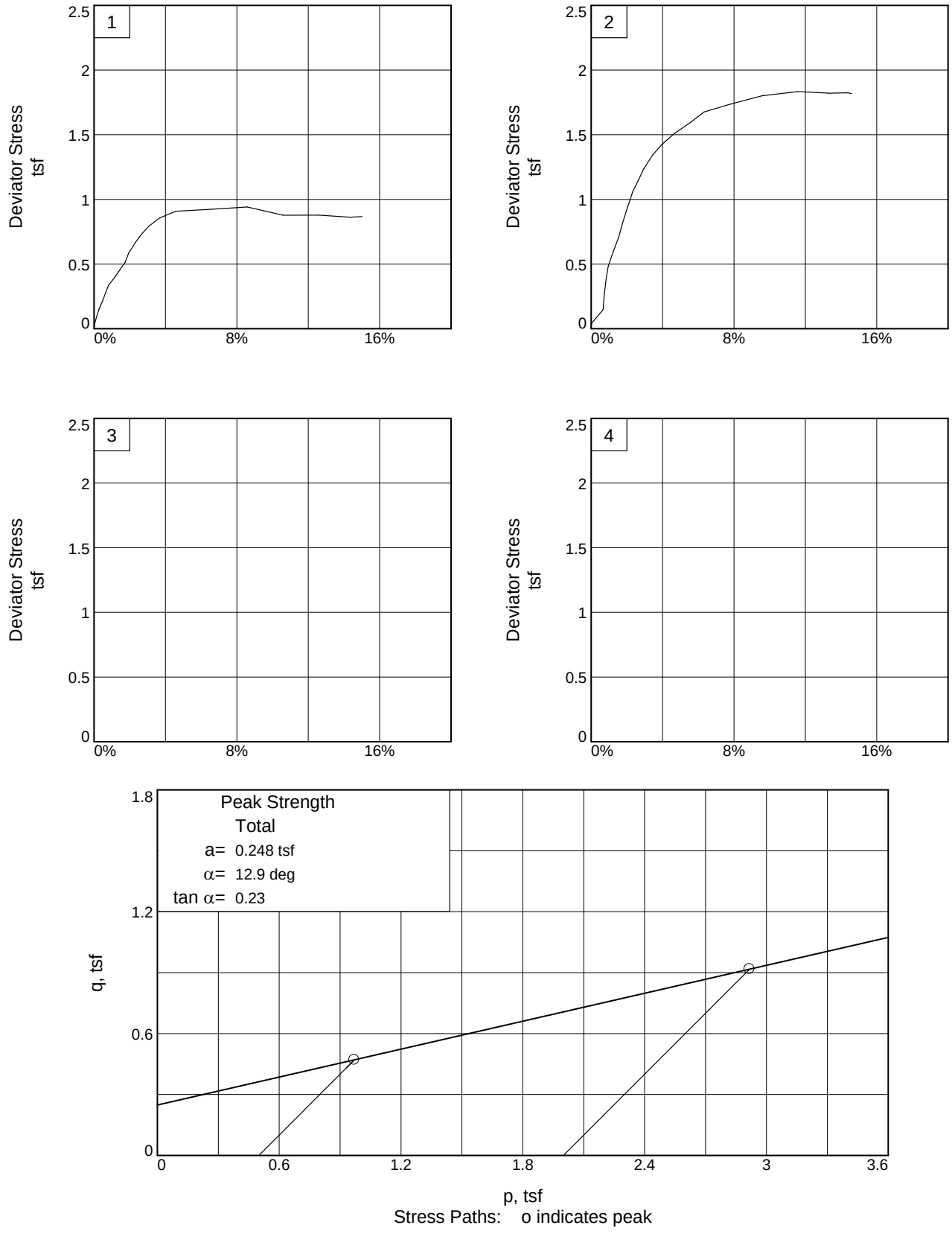
Location: GDRL-024

Sample Number: TW-128 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

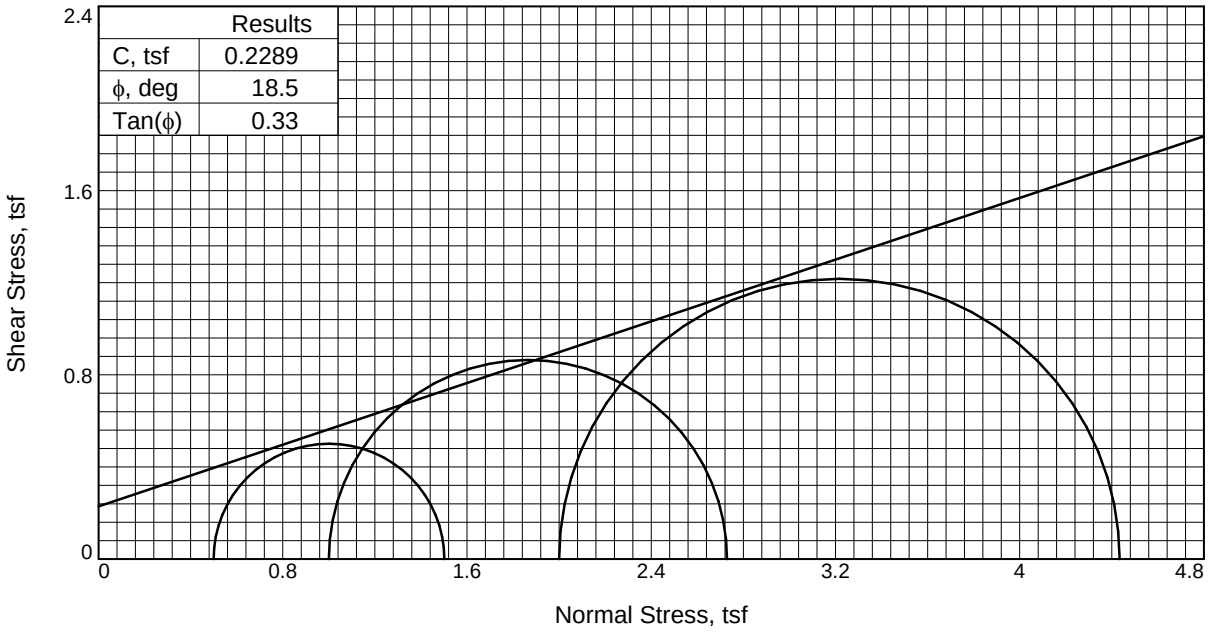
Tested By: ST

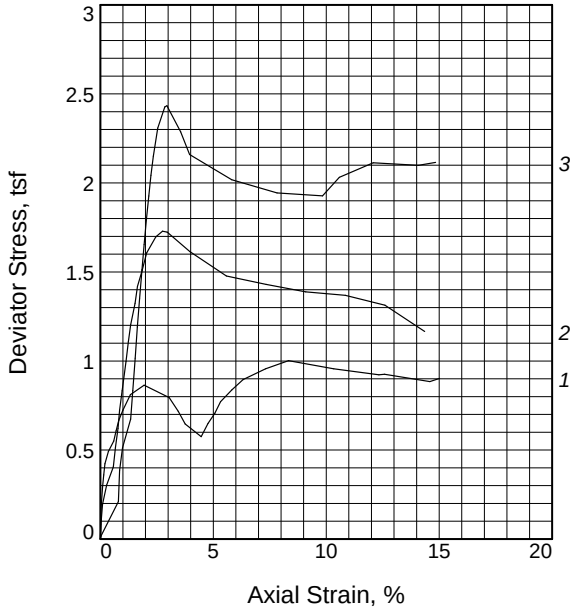


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-024 **Depth:** 7-9' **Sample Number:** TW-128
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	48.1	46.1	46.9
	Dry Density, pcf	74.4	75.2	75.5
	Saturation, %	102.7	100.1	102.9
	Void Ratio	1.2651	1.2419	1.2311
	Diameter, in.	1.35	1.38	1.36
	Height, in.	2.83	2.86	2.77
At Test	Water Content, %	48.1	46.1	46.9
	Dry Density, pcf	74.4	75.2	75.5
	Saturation, %	102.7	100.1	102.9
	Void Ratio	1.2651	1.2419	1.2311
	Diameter, in.	1.35	1.38	1.36
	Height, in.	2.83	2.86	2.77
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.002	1.729	2.434
Ult. Stress, tsf		0.885	1.166	1.927
σ_1 Failure, tsf		1.501	2.729	4.434
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

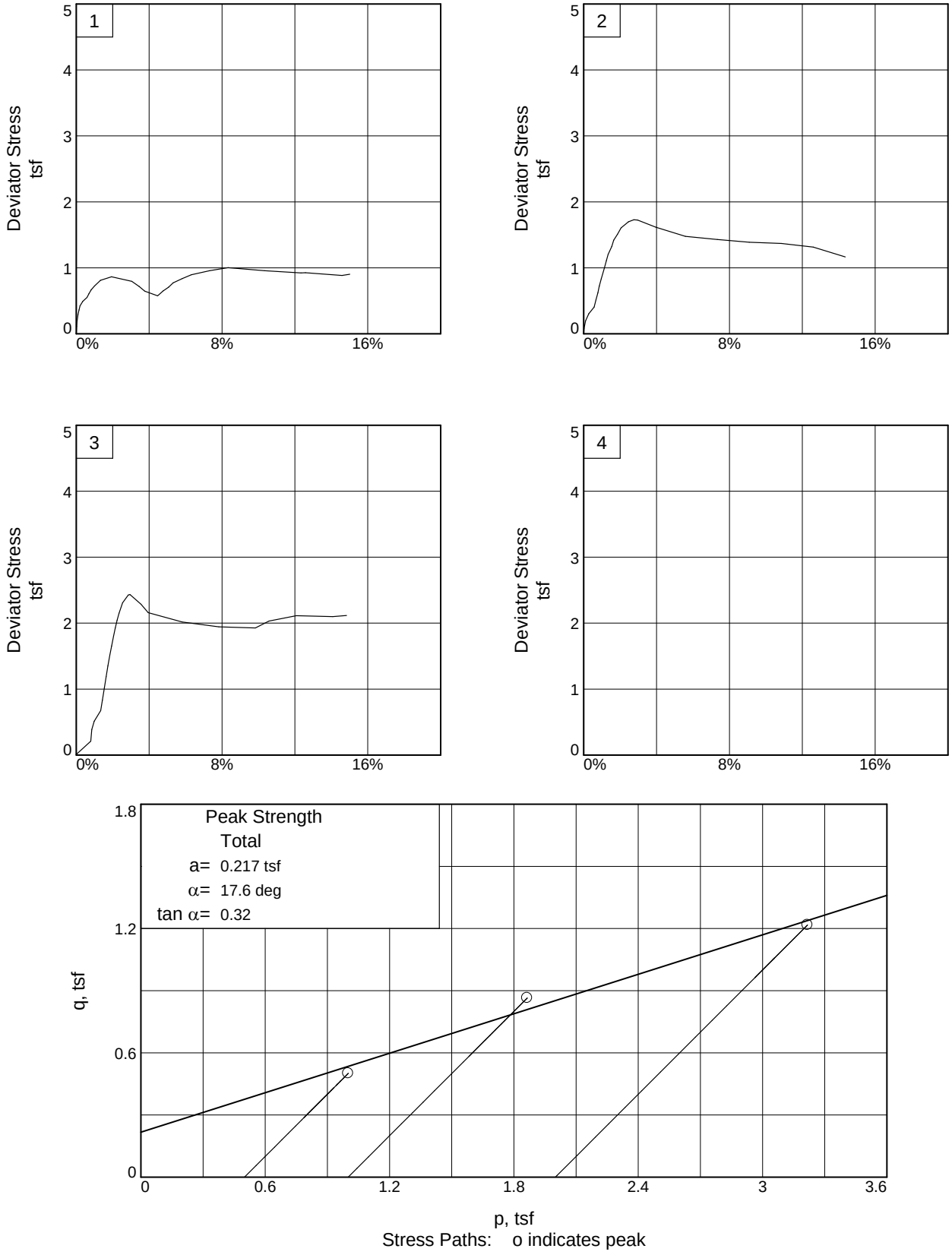
Location: CAA-025

Sample Number: TW-135 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

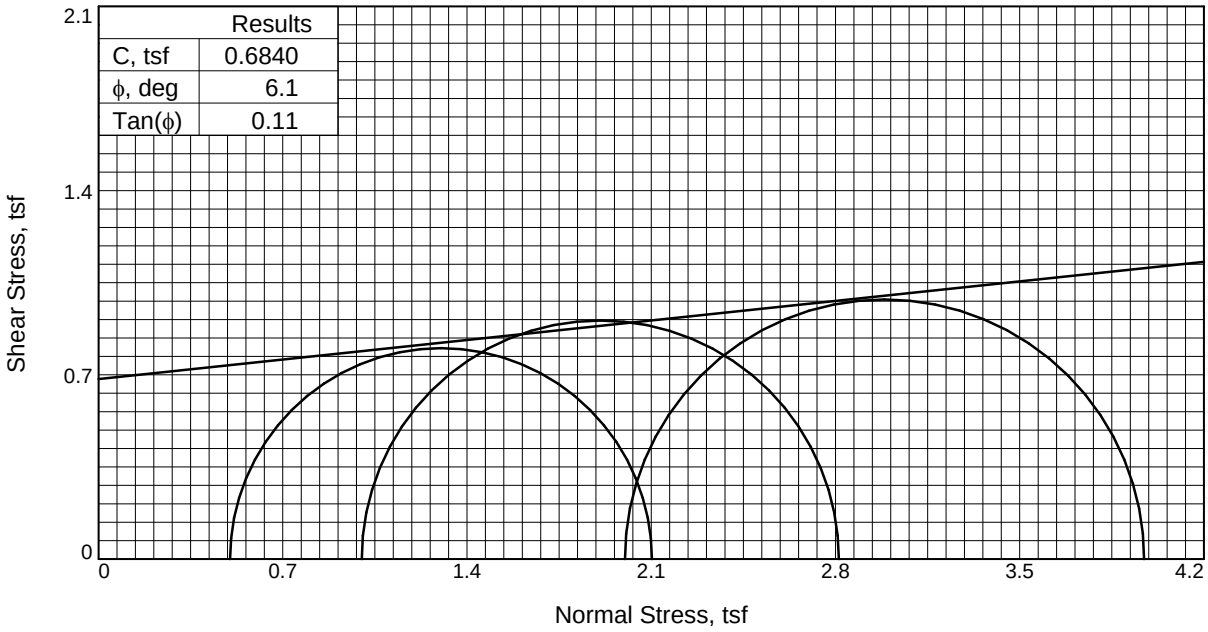
Tested By: ST

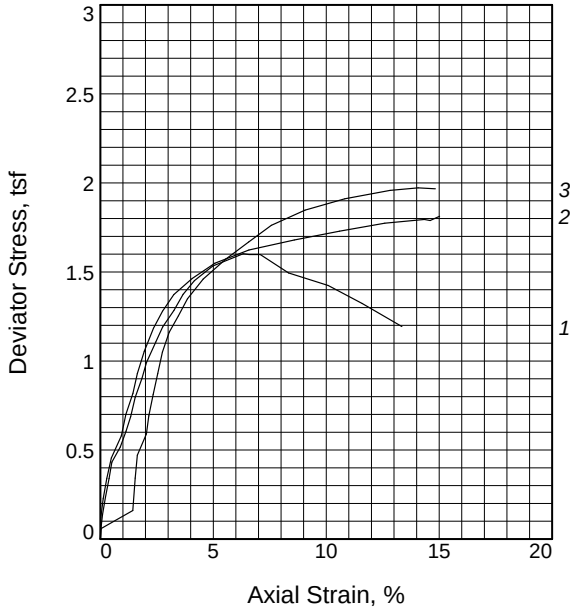


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-025 **Depth:** 17-19' **Sample Number:** TW-135
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	33.4	35.0	35.1
	Dry Density, pcf	86.7	86.9	87.0
	Saturation, %	95.6	100.8	100.9
	Void Ratio	0.9440	0.9386	0.9379
	Diameter, in.	1.36	1.36	1.38
	Height, in.	2.87	2.85	2.83
At Test	Water Content, %	33.4	35.0	35.1
	Dry Density, pcf	86.7	86.9	87.0
	Saturation, %	95.6	100.8	100.9
	Void Ratio	0.9440	0.9386	0.9379
	Diameter, in.	1.36	1.36	1.38
	Height, in.	2.87	2.85	2.83
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.603	1.813	1.972
Ult. Stress, tsf		1.194	1.813	1.967
σ_1 Failure, tsf		2.102	2.813	3.972
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray brown

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

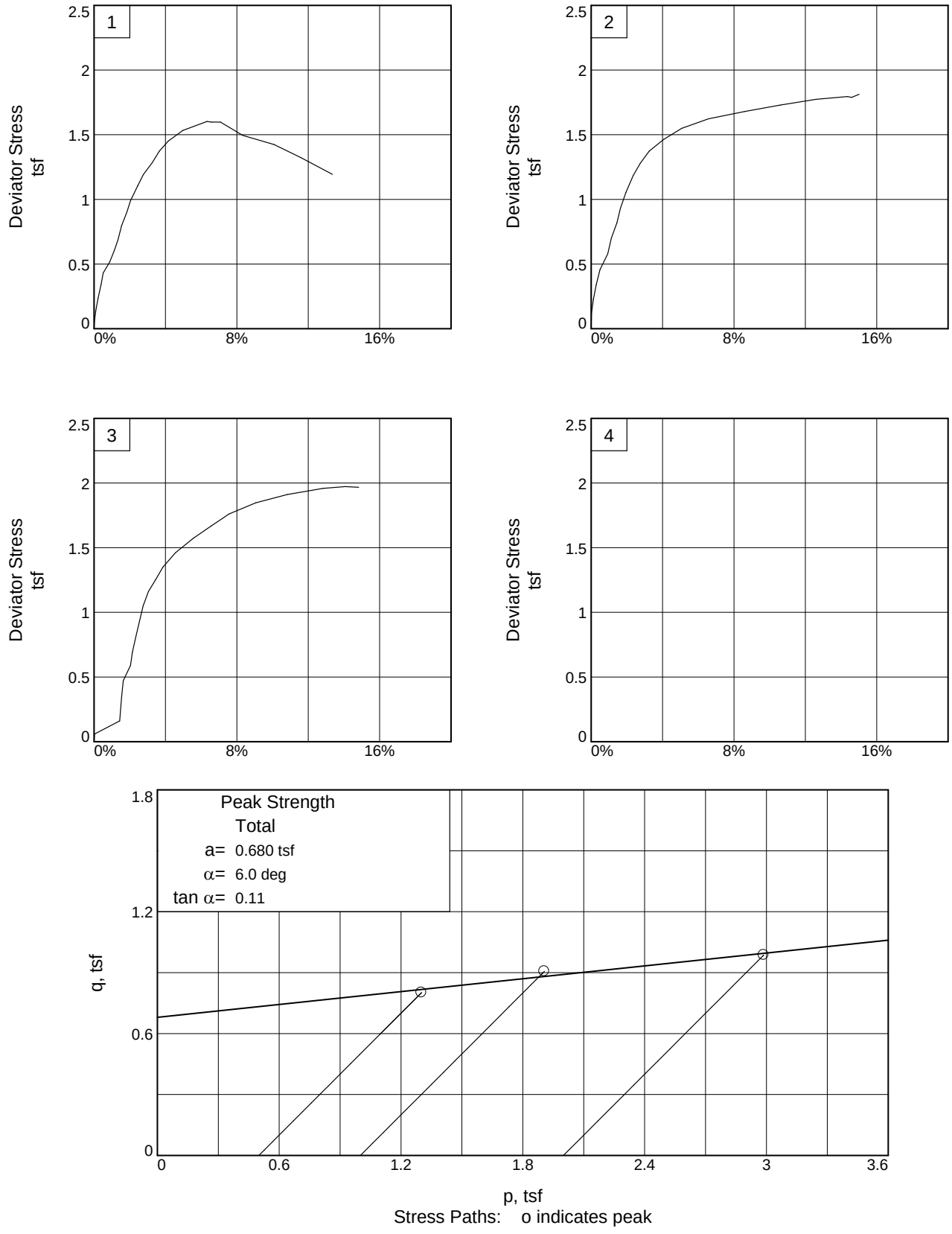
Location: GDRL-026

Sample Number: \TW-139 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/17/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

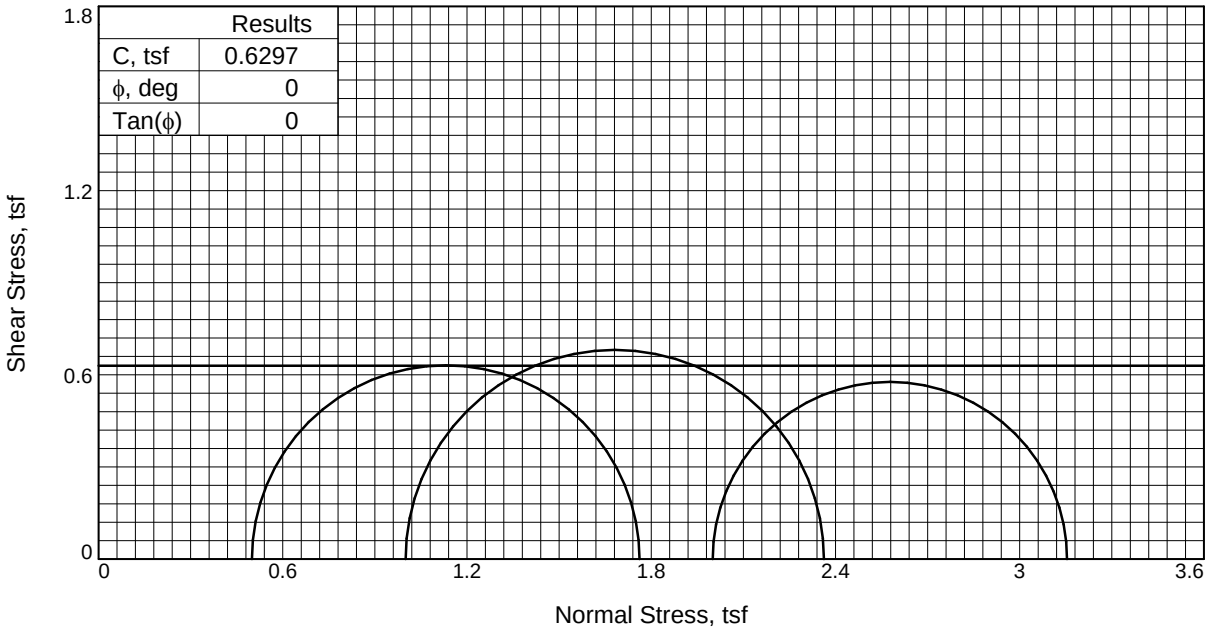
Tested By: ST

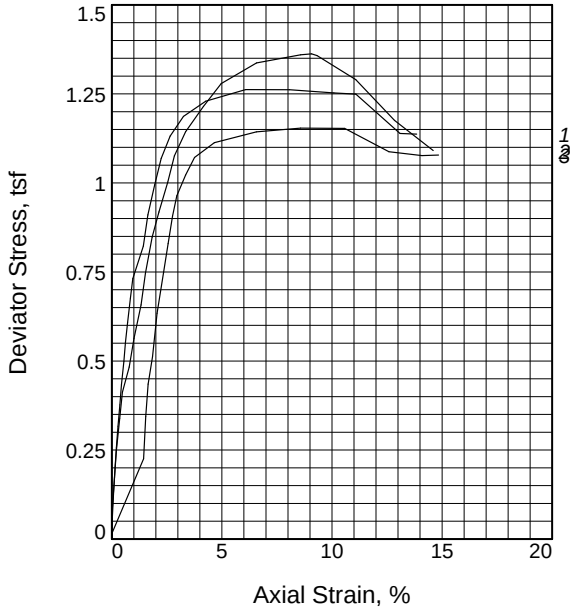


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-026 **Depth:** 7-9' **Sample Number:** \TW-139
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	45.2	36.0	42.5
	Dry Density, pcf	76.9	84.0	75.8
	Saturation, %	102.4	96.6	93.8
	Void Ratio	1.1910	1.0064	1.2236
	Diameter, in.	1.36	1.35	1.40
	Height, in.	2.81	2.86	2.84
At Test	Water Content, %	45.2	36.0	42.5
	Dry Density, pcf	76.9	84.0	75.8
	Saturation, %	102.4	96.6	93.8
	Void Ratio	1.1910	1.0064	1.2236
	Diameter, in.	1.36	1.35	1.40
	Height, in.	2.81	2.86	2.84
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.262	1.362	1.154
Ult. Stress, tsf		1.137	1.091	1.077
σ_1 Failure, tsf		1.762	2.362	3.154
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

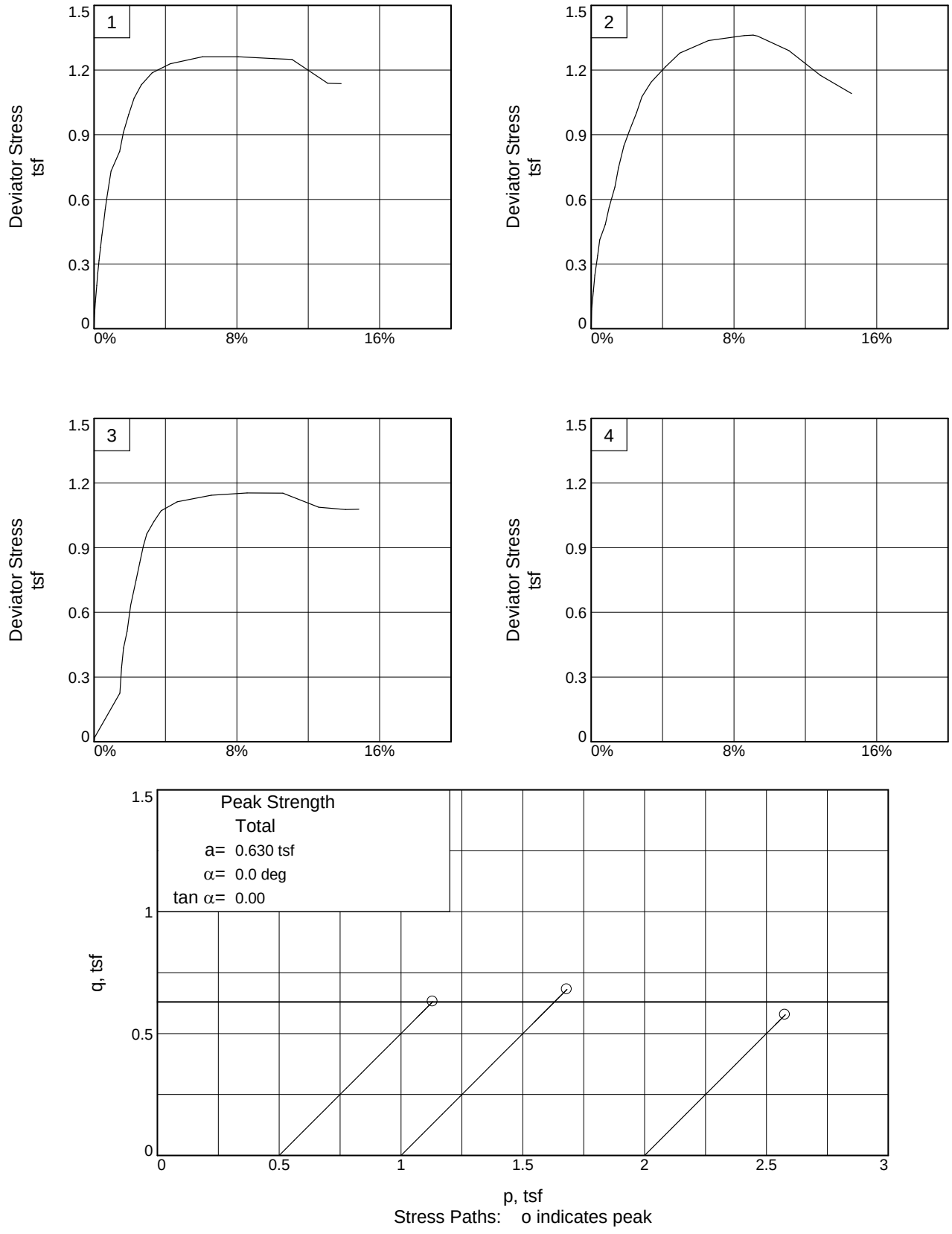
Location: GDRL-028

Sample Number: TW-147 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/18/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

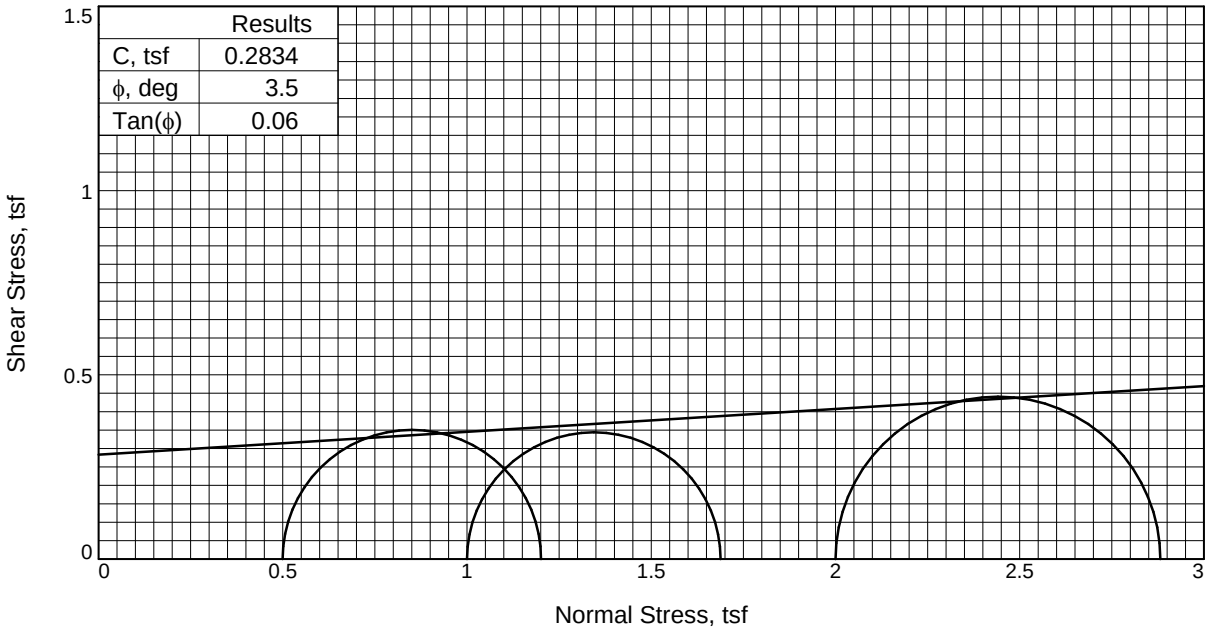
Tested By: ST

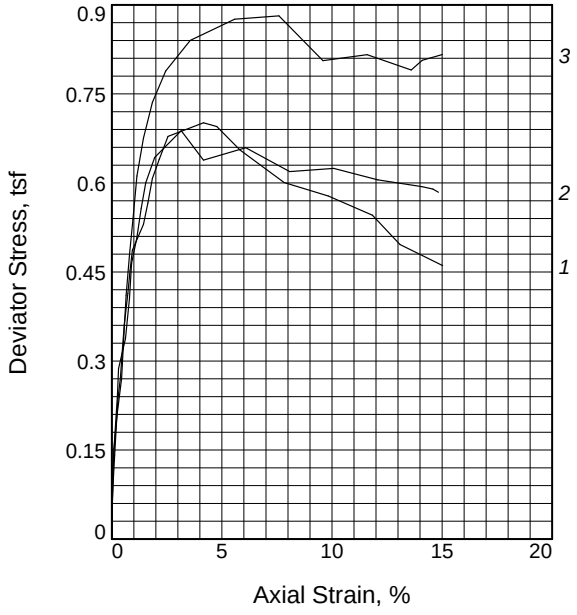


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-028 **Depth:** 7-9' **Sample Number:** TW-147
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	54.4	51.8	48.1
	Dry Density, pcf	68.0	69.7	72.2
	Saturation, %	99.3	98.7	97.4
	Void Ratio	1.4788	1.4180	1.3334
	Diameter, in.	1.37	1.37	1.38
	Height, in.	2.81	2.82	2.79
At Test	Water Content, %	54.4	51.8	48.1
	Dry Density, pcf	68.0	69.7	72.2
	Saturation, %	99.3	98.7	97.4
	Void Ratio	1.4788	1.4180	1.3334
	Diameter, in.	1.37	1.37	1.38
	Height, in.	2.81	2.82	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.701	0.688	0.881
Ult. Stress, tsf		0.461	0.584	0.790
σ_1 Failure, tsf		1.201	1.688	2.882
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

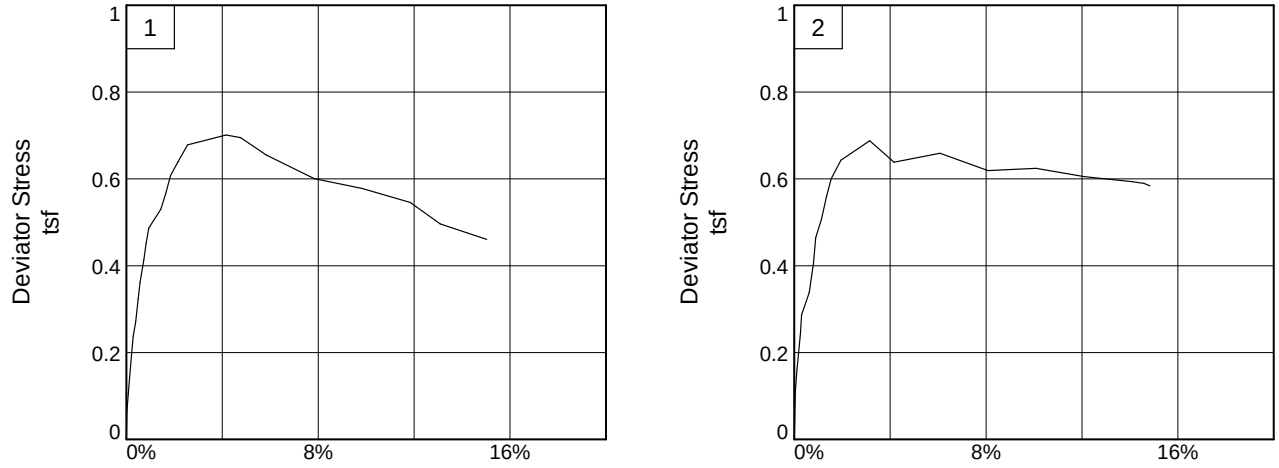
Location: CAA-029

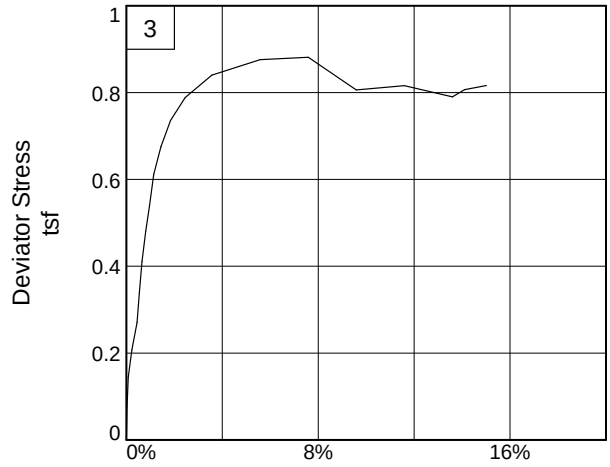
Sample Number: TW-151 **Depth:** 7-9'

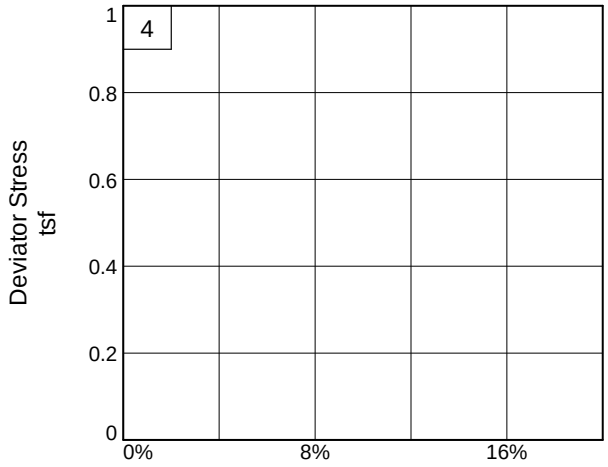
Proj. No.: B2009724 **Date Sampled:** 12/18/2020

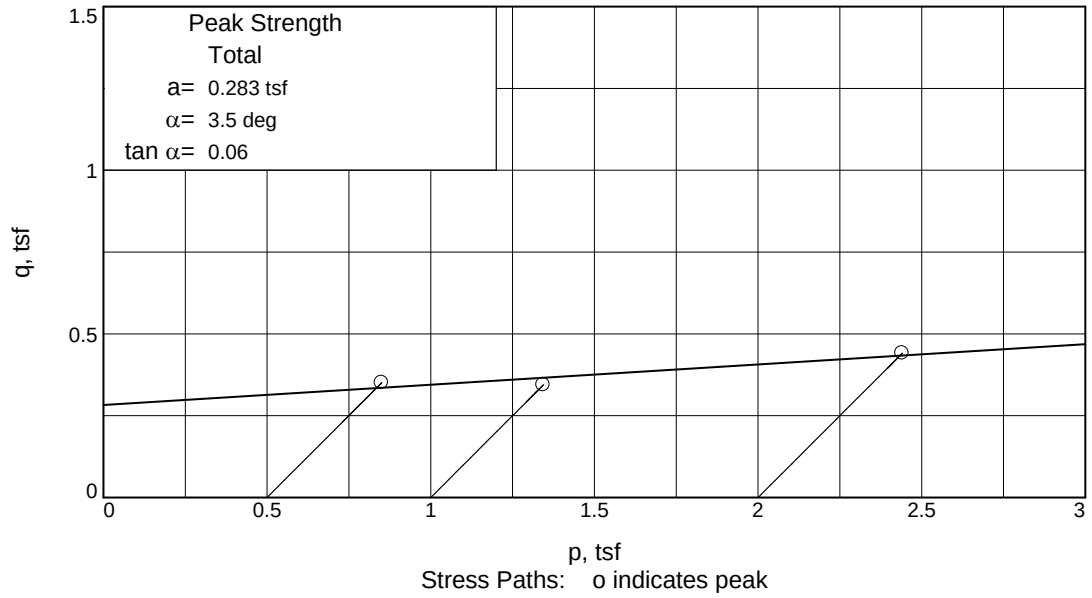
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST







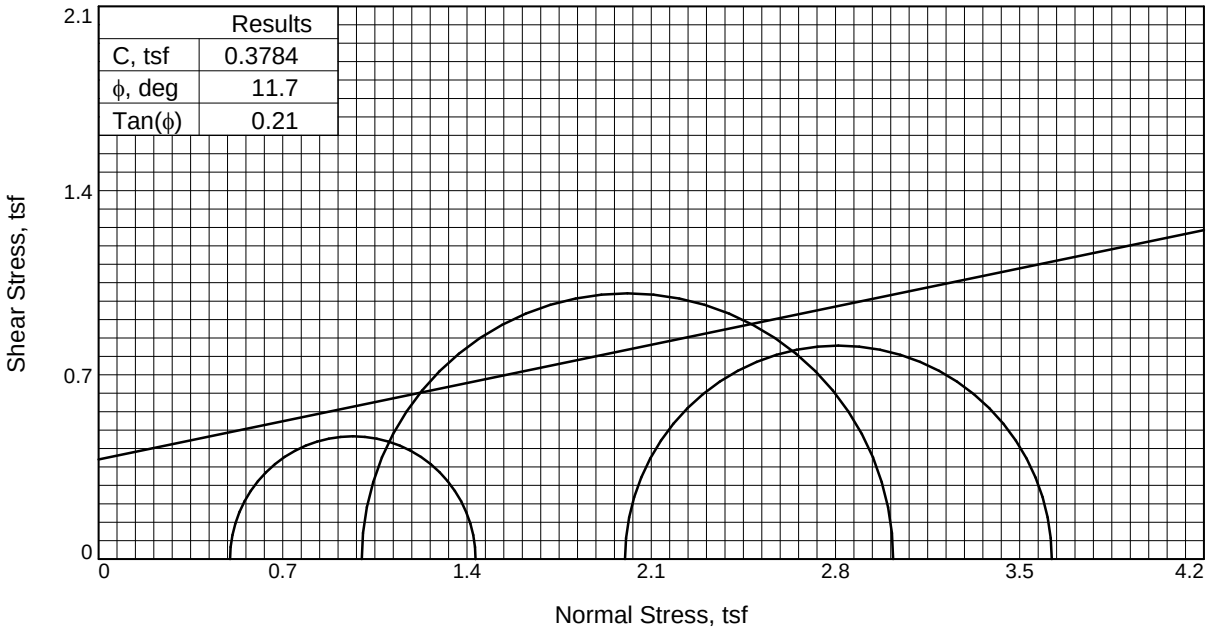


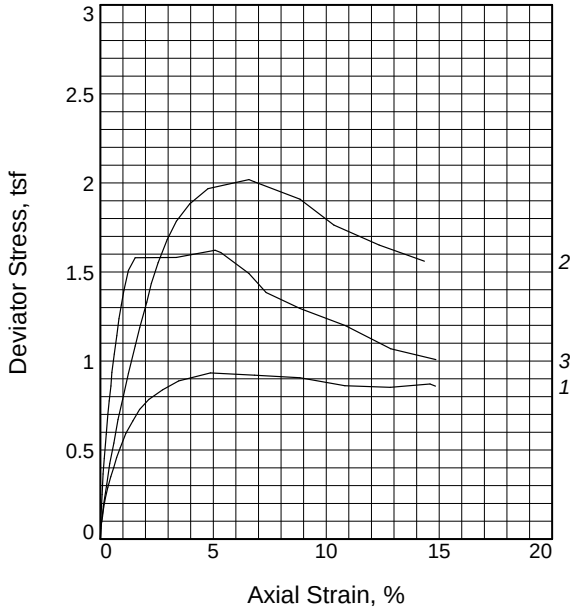
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-029 **Depth:** 7-9' **Sample Number:** TW-151
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	49.6	47.7	47.8
	Dry Density, pcf	71.7	73.3	70.2
	Saturation, %	99.2	99.1	92.1
	Void Ratio	1.3499	1.2986	1.4026
	Diameter, in.	1.37	1.35	1.36
	Height, in.	2.79	2.82	2.81
At Test	Water Content, %	49.6	47.7	47.8
	Dry Density, pcf	71.7	73.3	70.2
	Saturation, %	99.2	99.1	92.1
	Void Ratio	1.3499	1.2986	1.4026
	Diameter, in.	1.37	1.35	1.36
	Height, in.	2.79	2.82	2.81
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.933	2.019	1.622
Ult. Stress, tsf		0.852	1.560	1.008
σ_1 Failure, tsf		1.433	3.019	3.622
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained
Sample Type: Shelby Tube
Description: FAT CLAY(CH), brown

Assumed Specific Gravity= 2.7
Remarks: UU Triaxial: ASTM D2850.

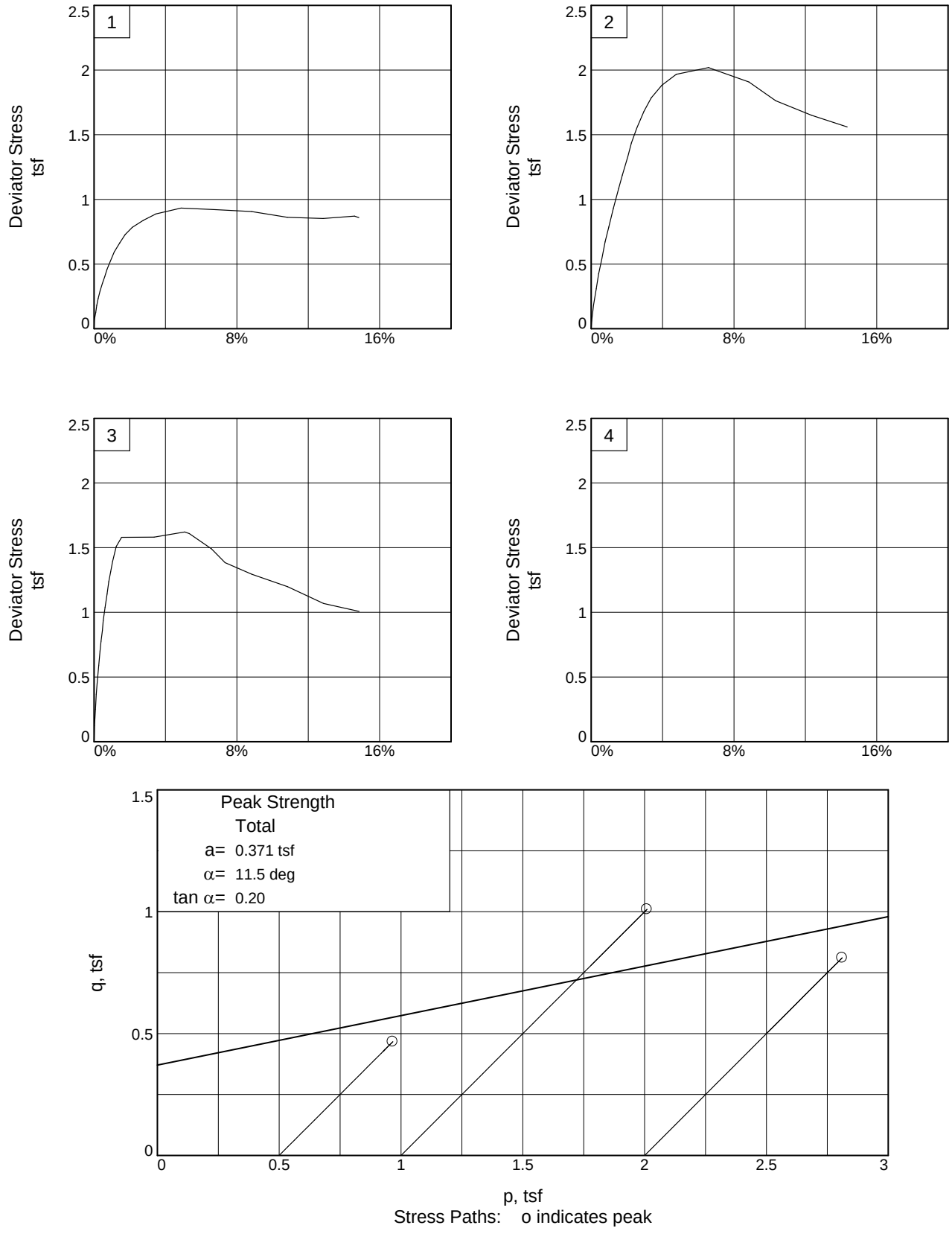
Figure _____

Client: KLJ Engineering, LLC

Project: 8-029(200)069; PCN 22888
Fargo, North Dakota
Location: CAA-029
Sample Number: TW-154 **Depth:** 17-19'
Proj. No.: B2009724 **Date Sampled:** 12/18/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

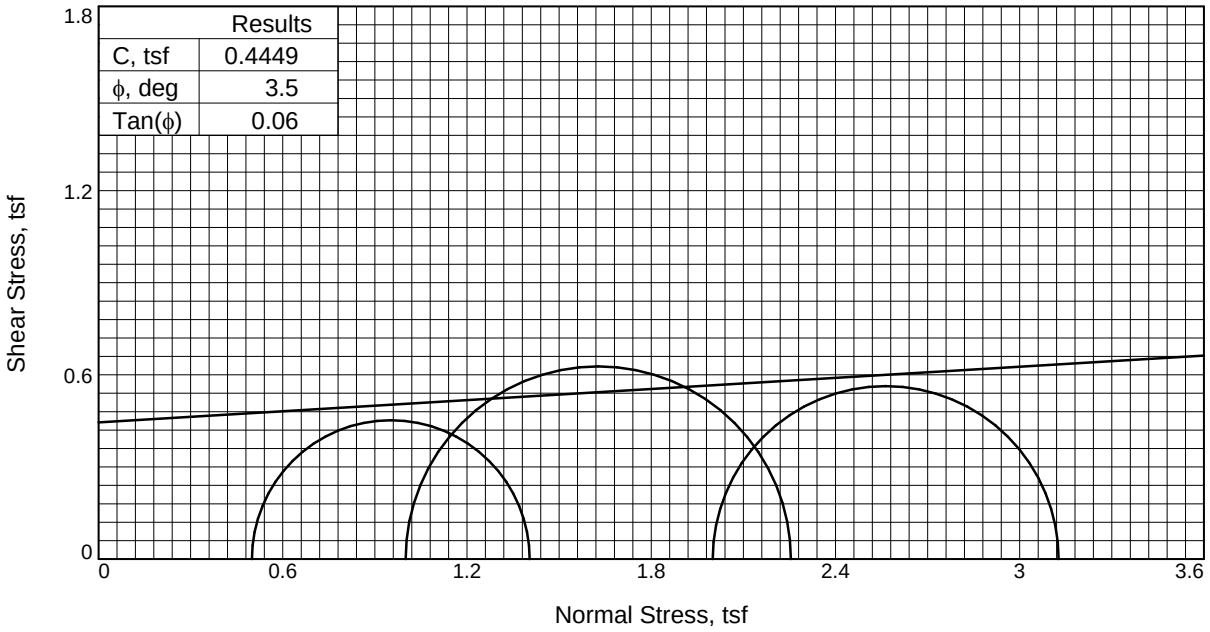
Tested By: ST

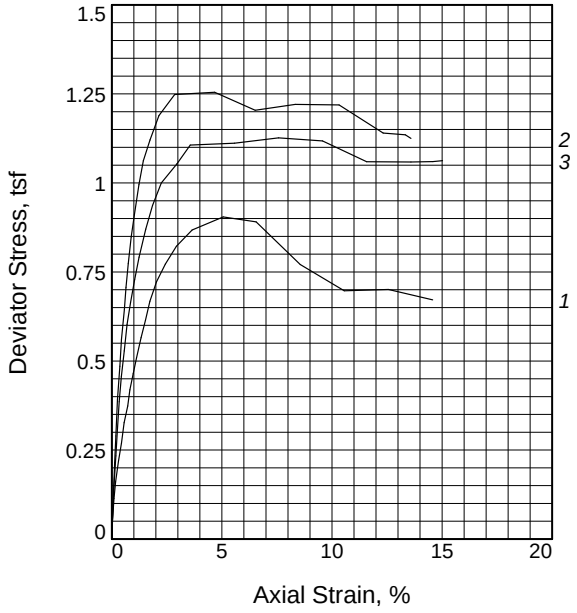


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-029 **Depth:** 17-19' **Sample Number:** TW-154
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	51.7	48.2	48.9
	Dry Density, pcf	71.6	71.1	72.2
	Saturation, %	103.1	95.0	98.9
	Void Ratio	1.3539	1.3696	1.3346
	Diameter, in.	1.34	1.33	1.37
	Height, in.	2.79	2.82	2.81
At Test	Water Content, %	51.7	48.2	48.9
	Dry Density, pcf	71.6	71.1	72.2
	Saturation, %	103.1	95.0	98.9
	Void Ratio	1.3539	1.3696	1.3346
	Diameter, in.	1.34	1.33	1.37
	Height, in.	2.79	2.82	2.81
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.904	1.255	1.126
Ult. Stress, tsf		0.672	1.125	1.059
σ_1 Failure, tsf		1.404	2.255	3.127
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

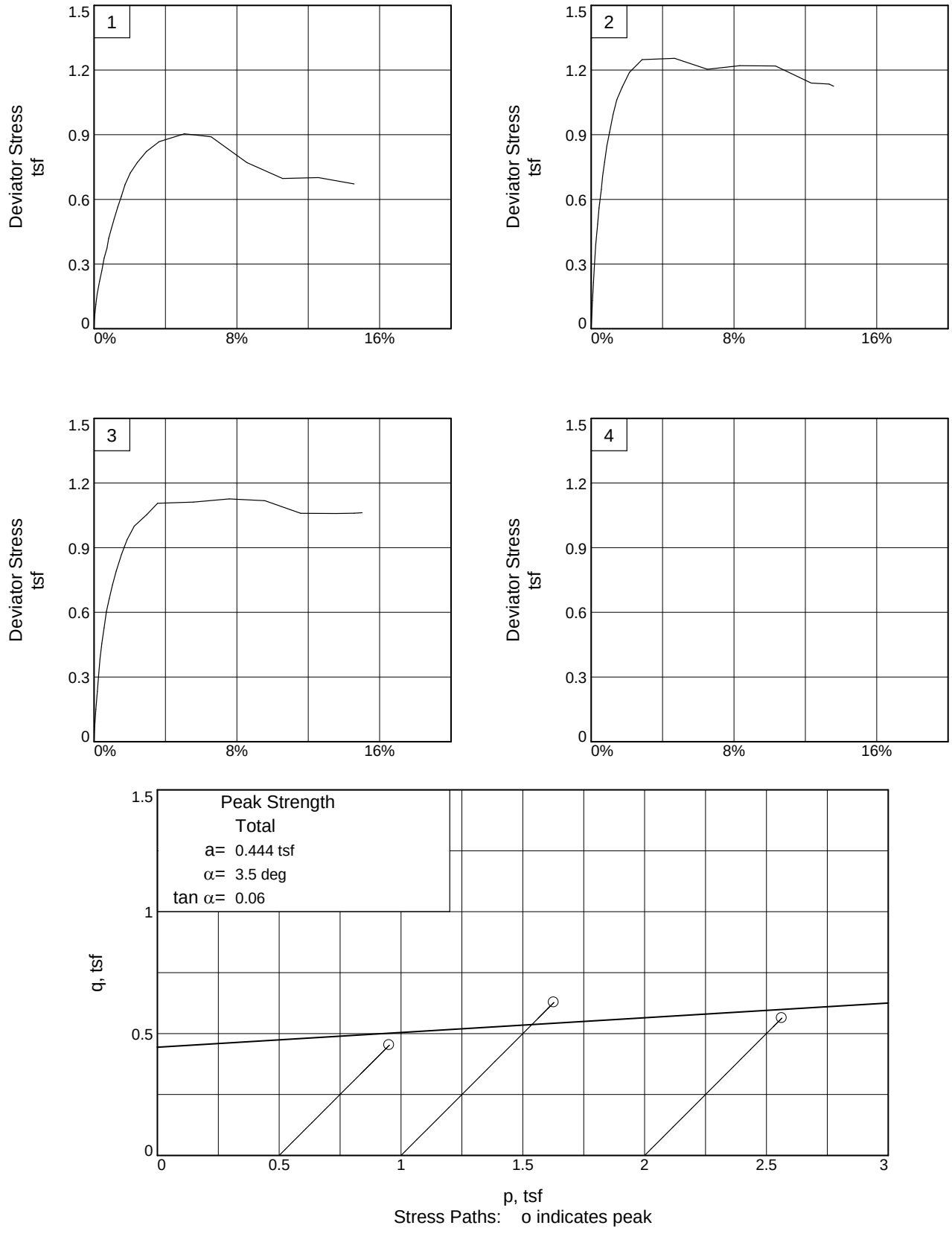
Location: CAA-031

Sample Number: TW-162 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/18/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

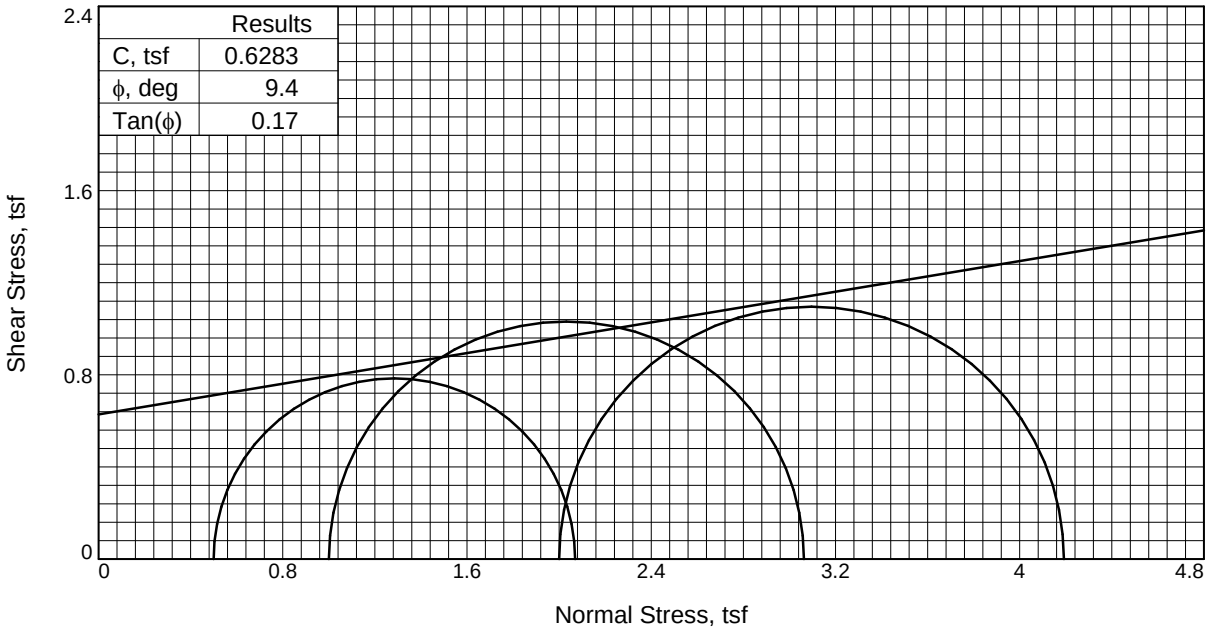
Tested By: ST

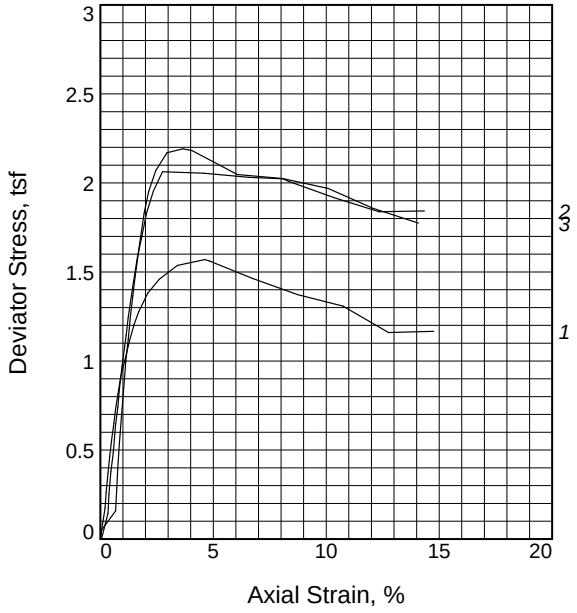


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-031 **Depth:** 7-9' **Sample Number:** TW-162
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	46.4	43.7	44.1
	Dry Density, pcf	72.9	78.2	75.3
	Saturation, %	95.5	102.0	96.1
	Void Ratio	1.3127	1.1565	1.2379
	Diameter, in.	1.38	1.37	1.38
	Height, in.	2.80	2.82	2.79
At Test	Water Content, %	46.4	43.7	44.1
	Dry Density, pcf	72.9	78.2	75.3
	Saturation, %	95.5	102.0	96.1
	Void Ratio	1.3127	1.1565	1.2379
	Diameter, in.	1.38	1.37	1.38
	Height, in.	2.80	2.82	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.570	2.063	2.192
Ult. Stress, tsf		1.160	1.839	1.774
σ_1 Failure, tsf		2.069	3.063	4.192
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

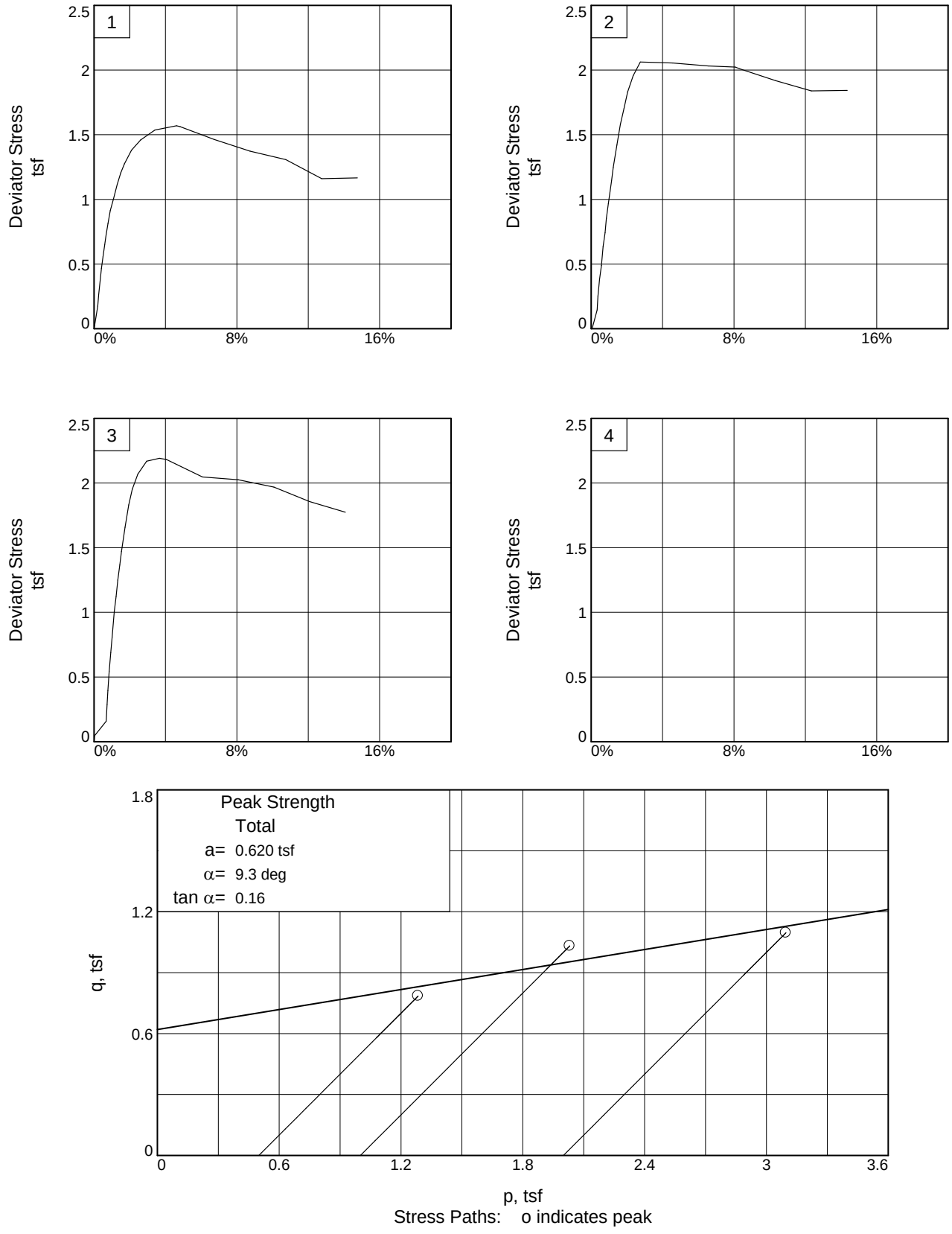
Location: CAA-031

Sample Number: TW-165 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/18/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

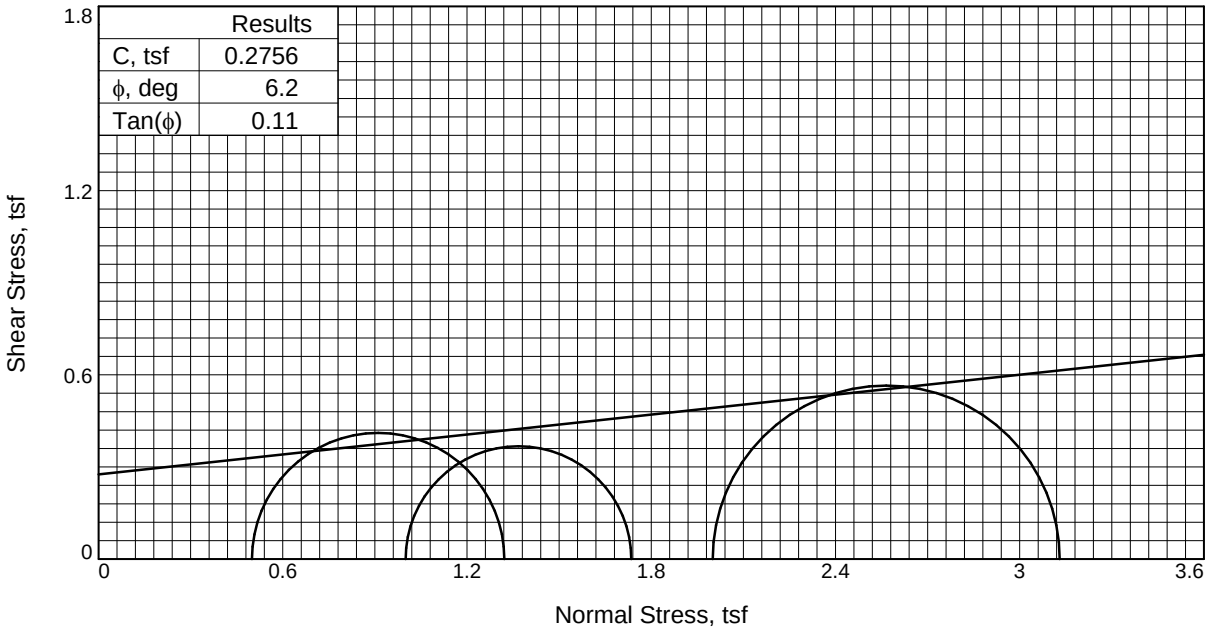
Tested By: ST

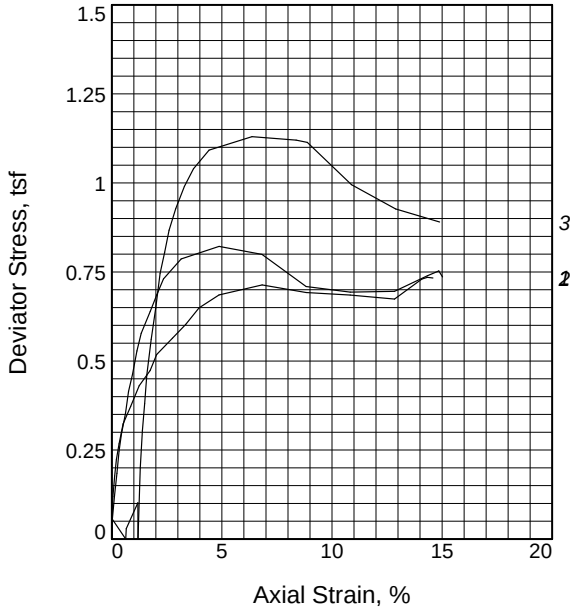


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-031 **Depth:** 17-19' **Sample Number:** TW-165
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	53.8	51.9	51.7
	Dry Density, pcf	68.1	62.0	70.0
	Saturation, %	98.6	81.6	99.1
	Void Ratio	1.4742	1.7182	1.4072
	Diameter, in.	1.38	1.36	1.37
	Height, in.	2.79	2.81	2.81
At Test	Water Content, %	53.8	51.9	51.7
	Dry Density, pcf	68.1	62.0	70.0
	Saturation, %	98.6	81.6	99.1
	Void Ratio	1.4742	1.7182	1.4072
	Diameter, in.	1.38	1.36	1.37
	Height, in.	2.79	2.81	2.81
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.822	0.735	1.130
Ult. Stress, tsf		0.693	0.733	0.890
σ_1 Failure, tsf		1.321	1.735	3.130
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

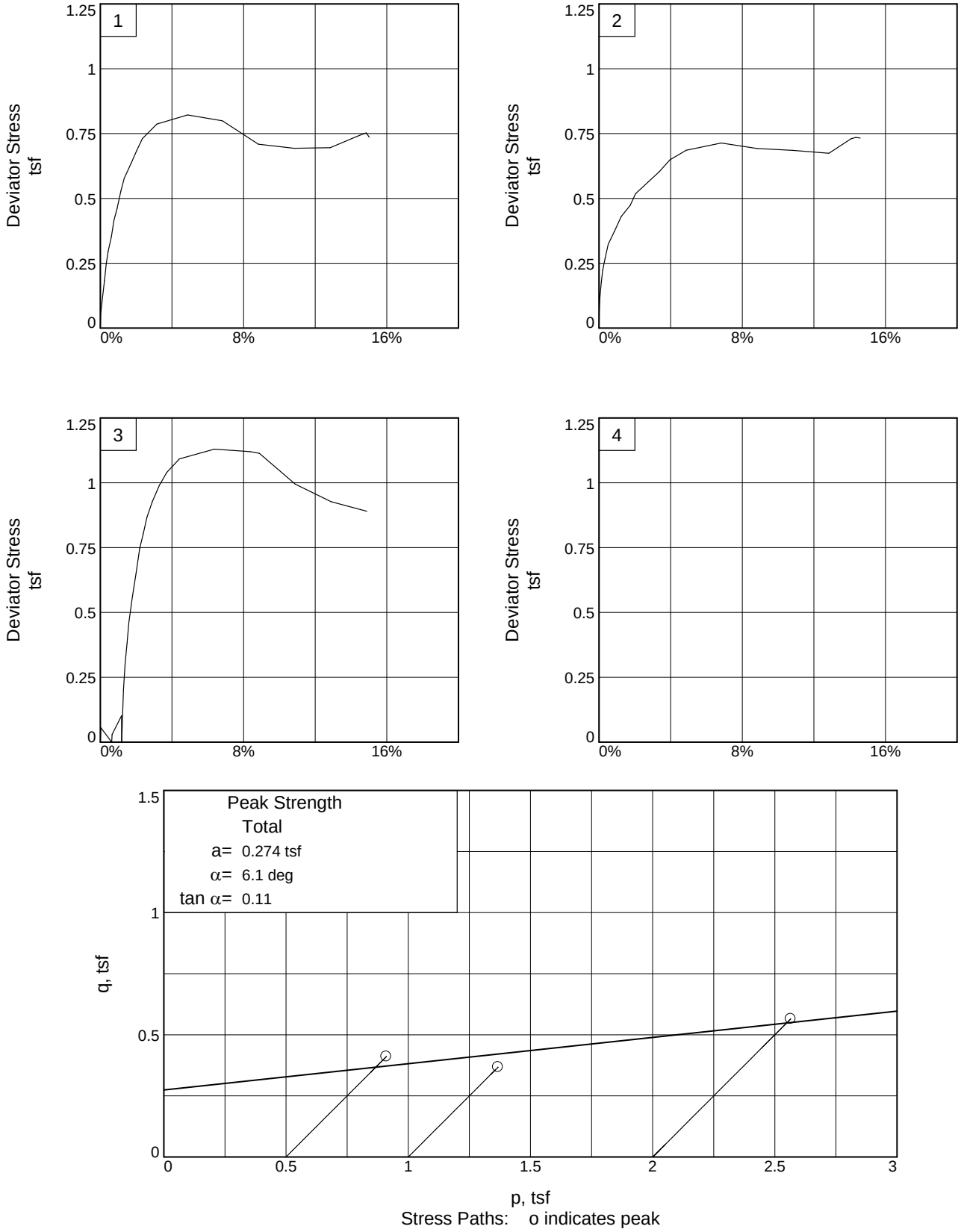
Location: GDRL-033

Sample Number: TW-172 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST



Stress Paths: o indicates peak

Client: KLJ Engineering, LLC

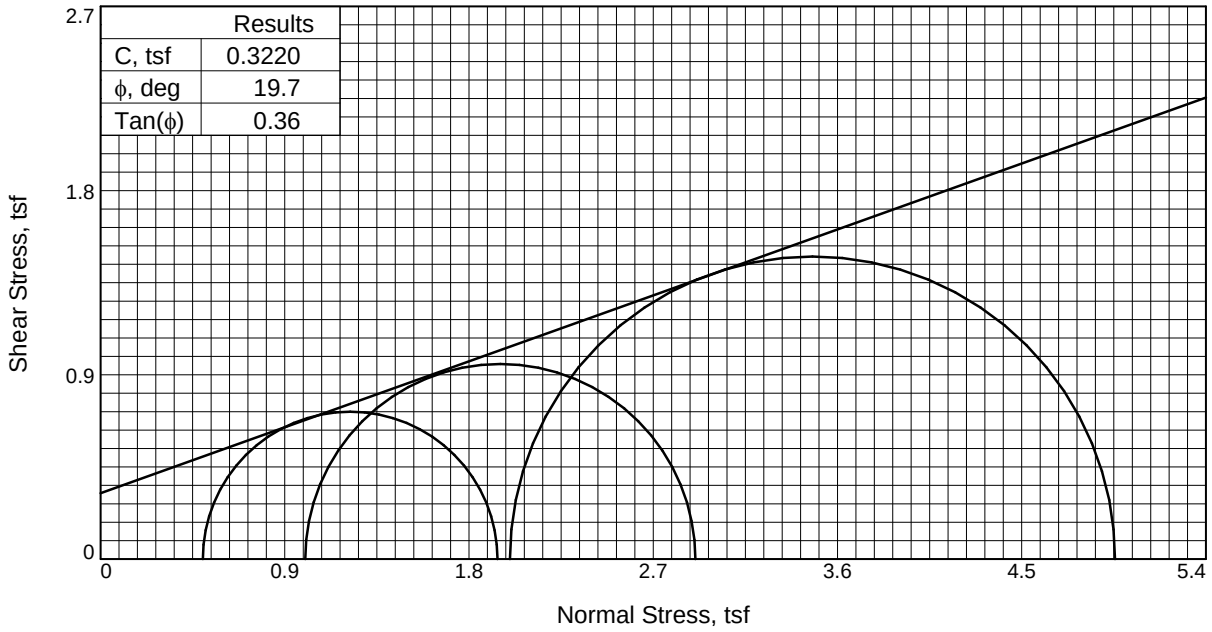
Project: 8-029(200)069; PCN 22888

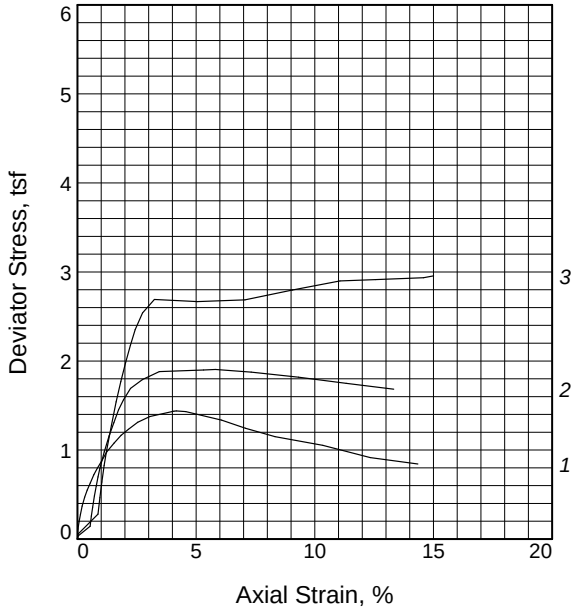
Location: GDRL-033 **Depth:** 7-9' **Sample Number:** TW-172

Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	45.6	46.3	39.8
	Dry Density, pcf	74.4	73.8	80.3
	Saturation, %	97.2	97.3	97.7
	Void Ratio	1.2658	1.2853	1.1002
	Diameter, in.	1.37	1.39	1.39
	Height, in.	2.82	2.82	2.81
At Test	Water Content, %	45.6	46.3	39.8
	Dry Density, pcf	74.4	73.8	80.3
	Saturation, %	97.2	97.3	97.7
	Void Ratio	1.2658	1.2853	1.1002
	Diameter, in.	1.37	1.39	1.39
	Height, in.	2.82	2.82	2.81
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.439	1.906	2.956
Ult. Stress, tsf		0.843	1.684	2.956
σ_1 Failure, tsf		1.939	2.906	4.956
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

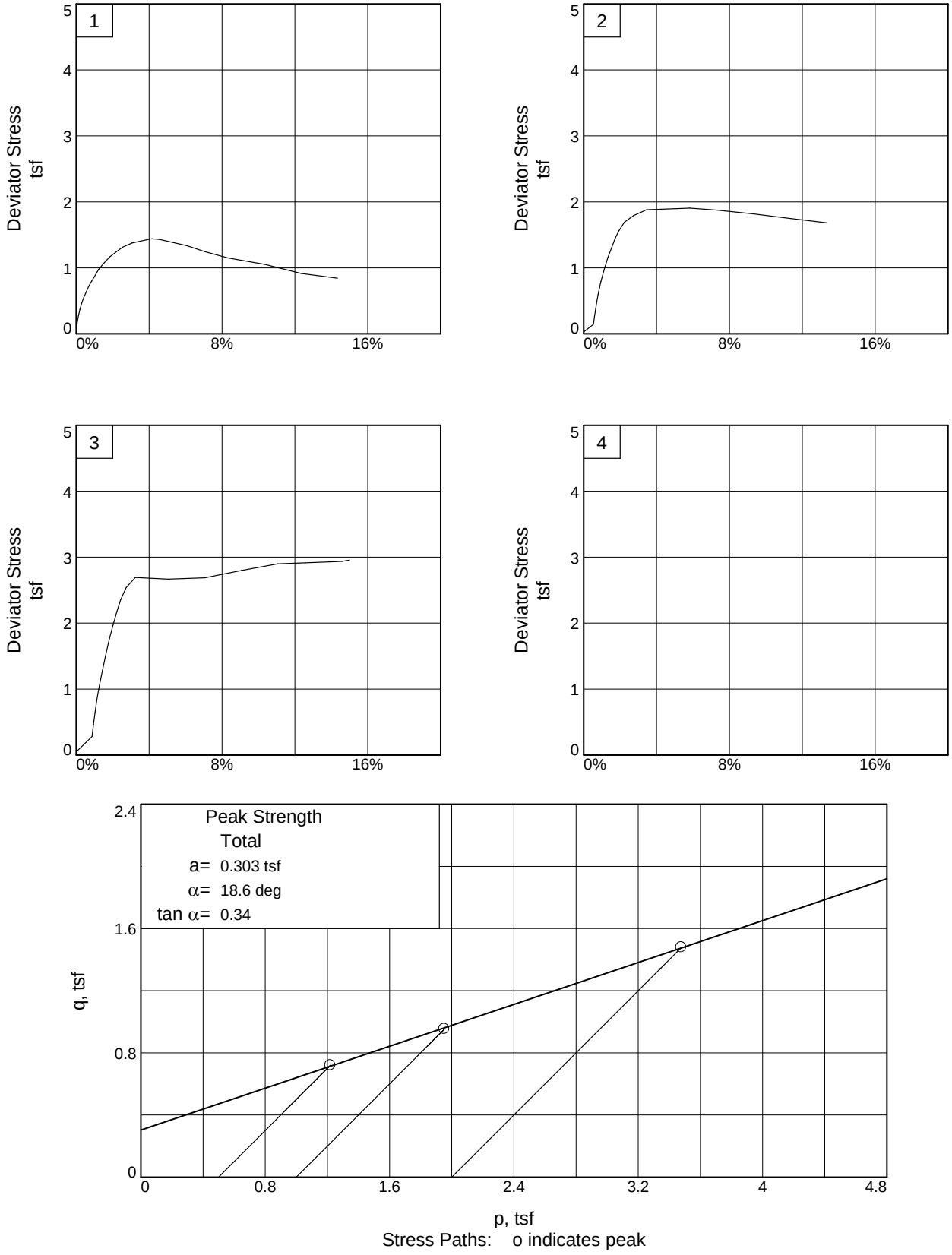
Location: CAA-034

Sample Number: TW-180 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

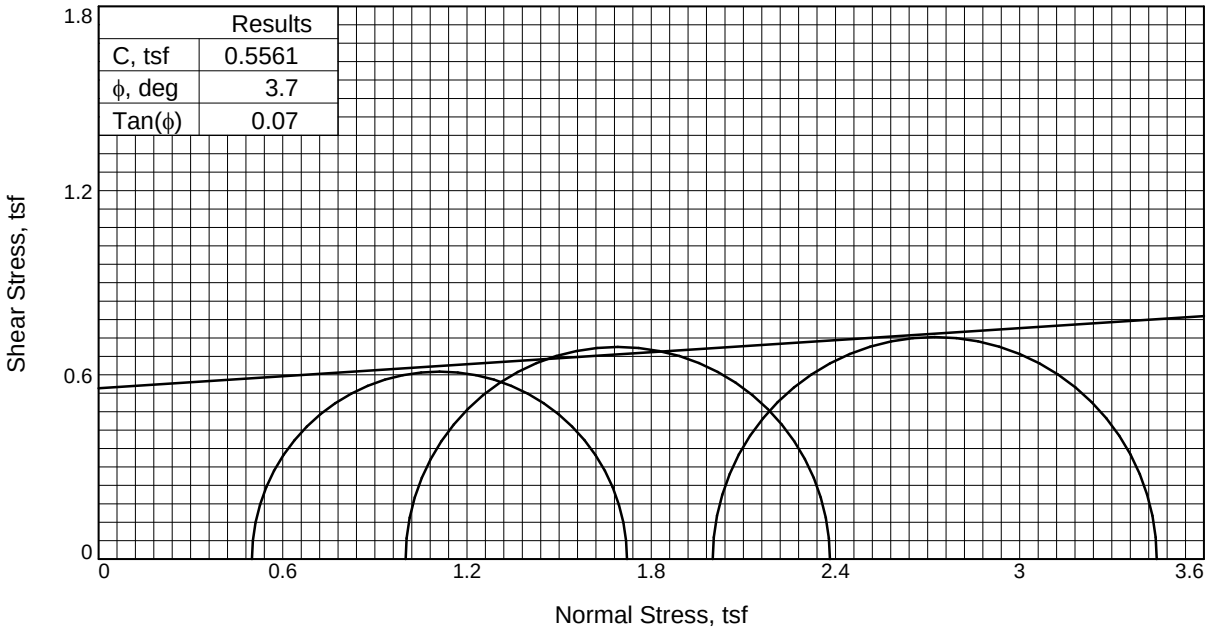
Tested By: ST

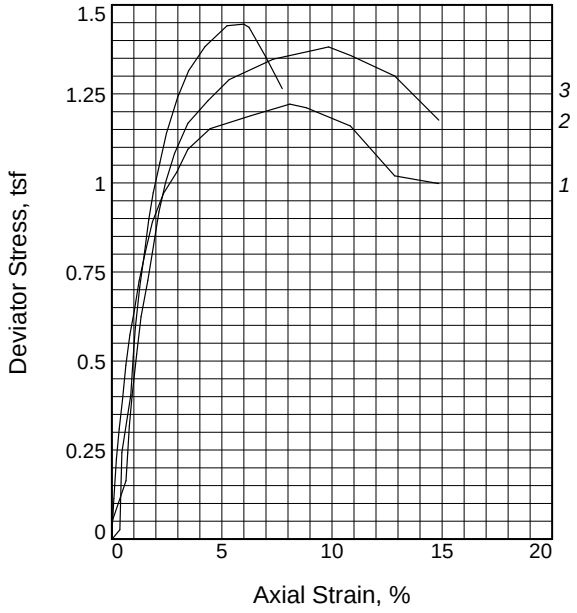


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-034 **Depth:** 17-19' **Sample Number:** TW-180
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	50.0	49.3	49.8
	Dry Density, pcf	71.2	71.8	71.3
	Saturation, %	98.7	98.8	98.5
	Void Ratio	1.3674	1.3471	1.3644
	Diameter, in.	1.37	1.39	1.37
	Height, in.	2.79	2.79	2.79
At Test	Water Content, %	50.0	49.3	49.8
	Dry Density, pcf	71.2	71.8	71.3
	Saturation, %	98.7	98.8	98.5
	Void Ratio	1.3674	1.3471	1.3644
	Diameter, in.	1.37	1.39	1.37
	Height, in.	2.79	2.79	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.221	1.382	1.446
Ult. Stress, tsf		0.998	1.176	1.265
σ_1 Failure, tsf		1.721	2.382	3.446
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

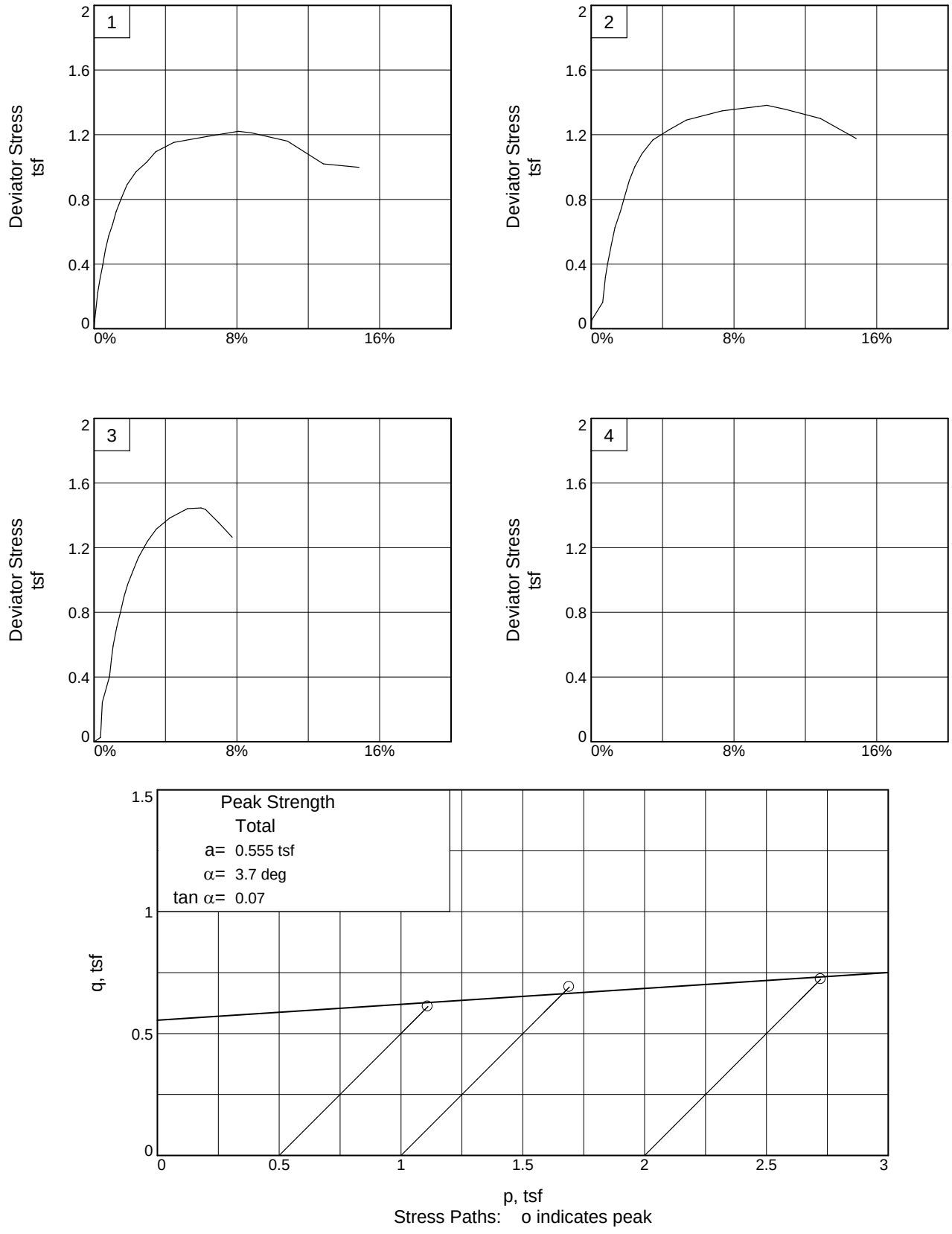
Location: GDRL-035

Sample Number: TW-184 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

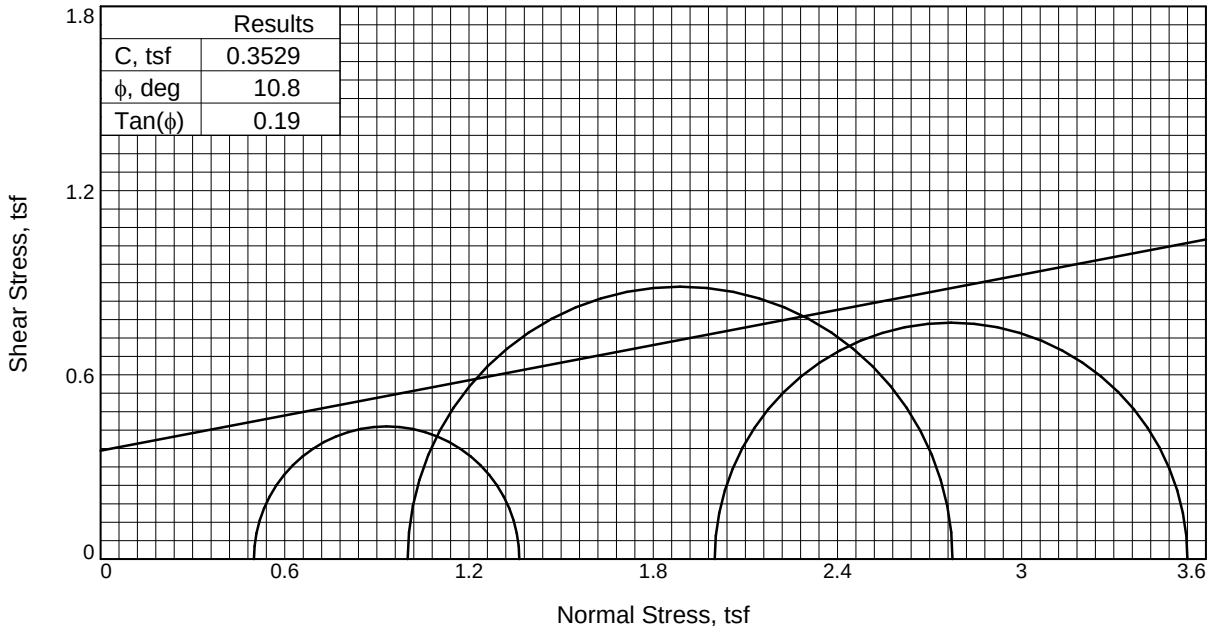
Tested By: ST

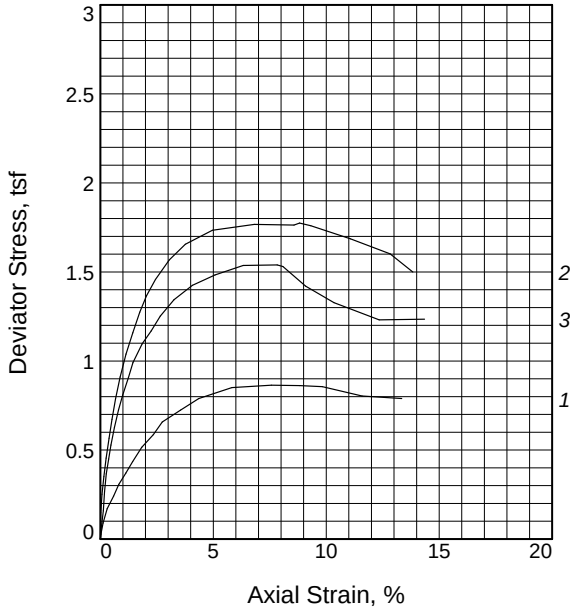


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-035 **Depth:** 7-9' **Sample Number:** TW-184
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	45.2	48.1	47.2
	Dry Density, pcf	79.1	75.0	74.9
	Saturation, %	108.0	104.1	102.0
	Void Ratio	1.1296	1.2469	1.2490
	Diameter, in.	1.39	1.39	1.36
	Height, in.	2.87	2.86	2.80
At Test	Water Content, %	45.2	48.1	47.2
	Dry Density, pcf	79.1	75.0	74.9
	Saturation, %	108.0	104.1	102.0
	Void Ratio	1.1296	1.2469	1.2490
	Diameter, in.	1.39	1.39	1.36
	Height, in.	2.87	2.86	2.80
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.864	1.775	1.539
Ult. Stress, tsf		0.789	1.500	1.231
σ_1 Failure, tsf		1.364	2.775	3.540
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained
Sample Type: Shelby Tube
Description: FAT CLAY(CH), brown

Assumed Specific Gravity= 2.7
Remarks: UU Triaxial: ASTM D2850.

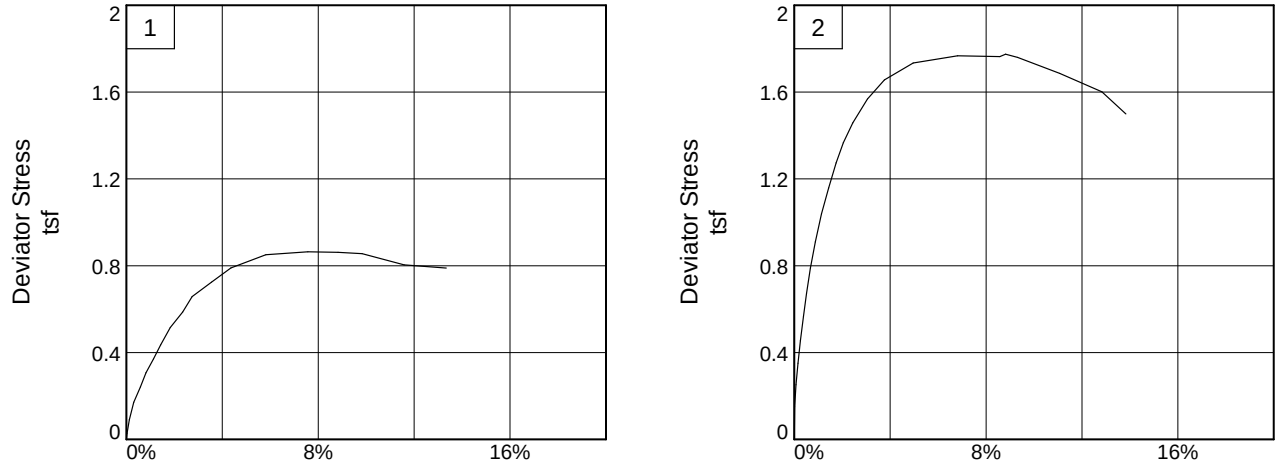
Figure _____

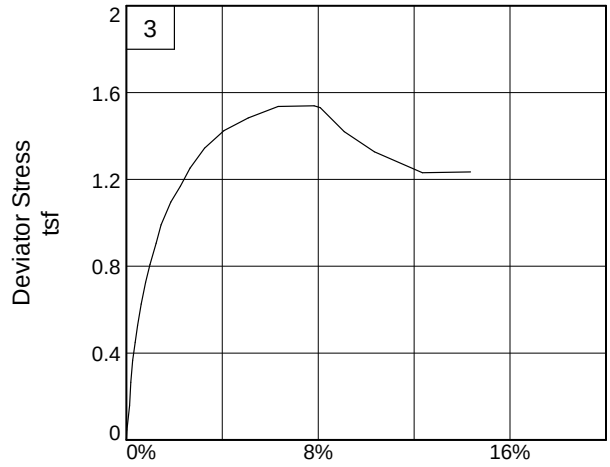
Client: KLJ Engineering, LLC

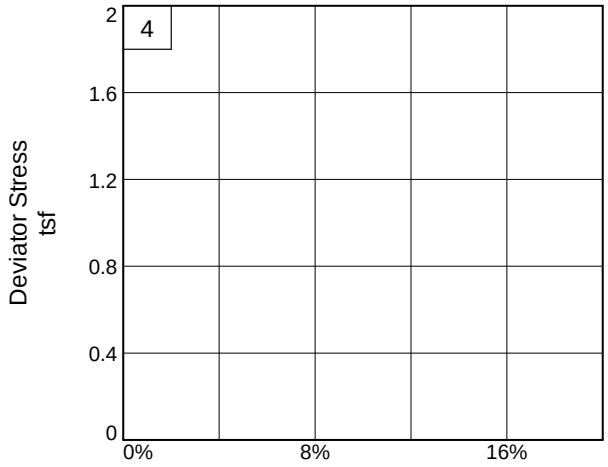
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota
Location: GDRL-037
Sample Number: TW-192 **Depth:** 7-9'
Proj. No.: B2009724 **Date Sampled:** 12/21/2020

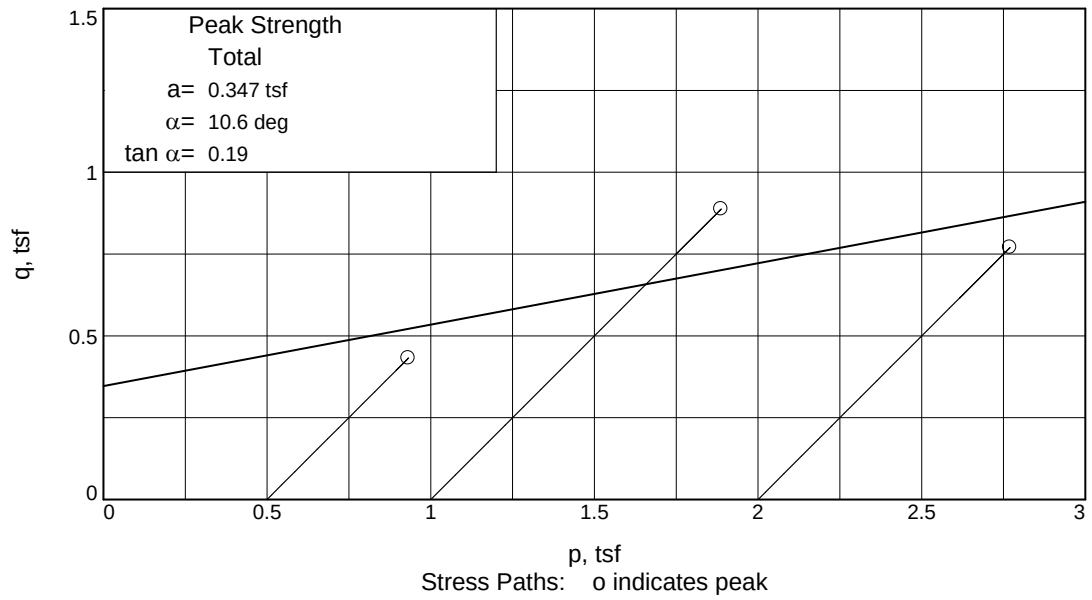
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST





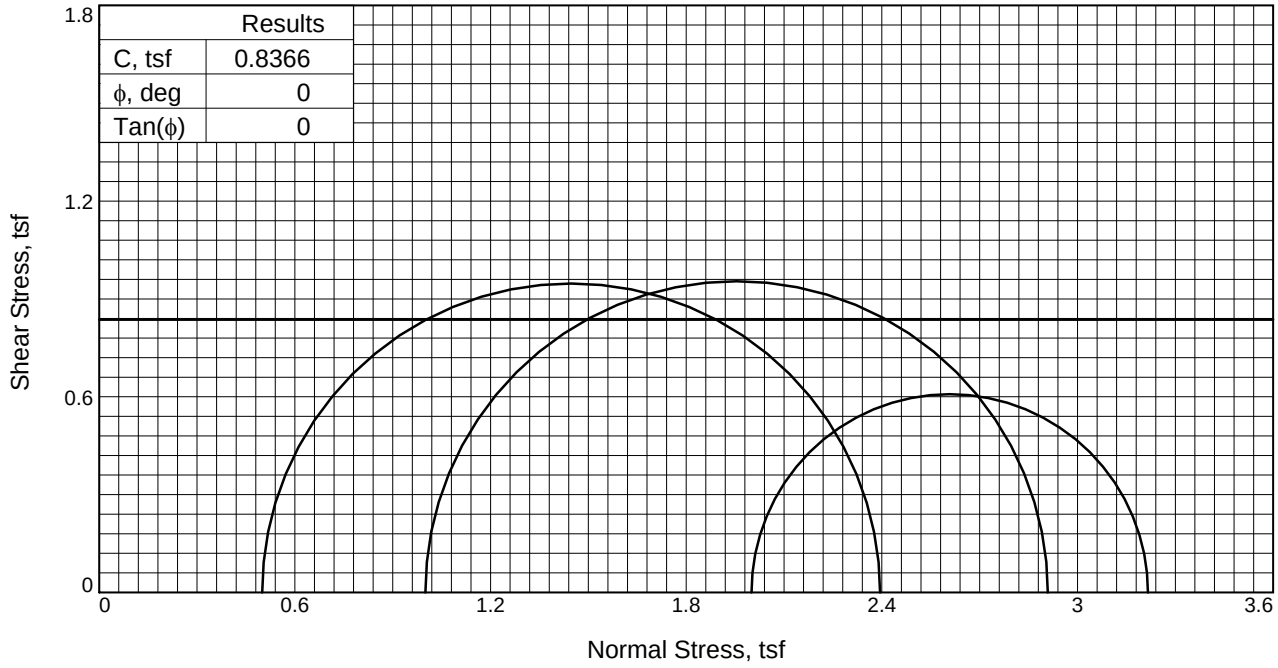


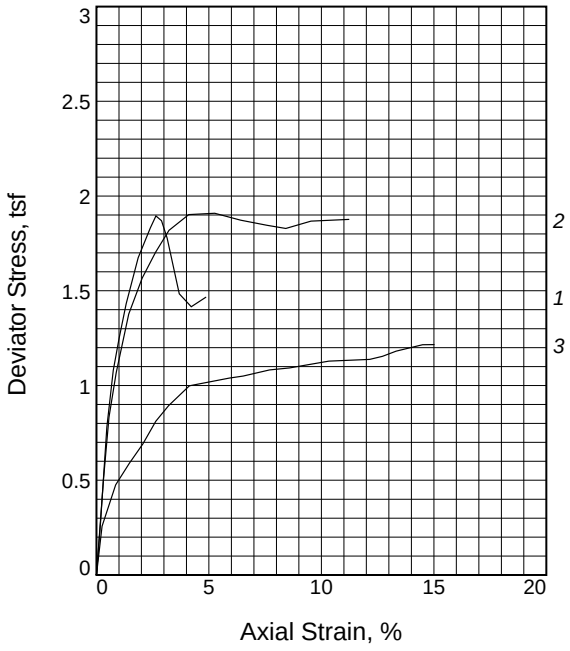


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-037 **Depth:** 7-9' **Sample Number:** TW-192
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	41.5	43.0	40.5
	Dry Density, pcf	79.3	77.4	79.1
	Saturation, %	99.5	98.6	96.8
	Void Ratio	1.1263	1.1776	1.1307
	Diameter, in.	1.431	1.426	1.423
	Height, in.	2.799	2.852	2.807
At Test	Water Content, %	41.5	43.0	40.5
	Dry Density, pcf	79.3	77.4	79.1
	Saturation, %	99.5	98.6	96.8
	Void Ratio	1.1263	1.1776	1.1307
	Diameter, in.	1.431	1.426	1.423
	Height, in.	2.799	2.852	2.807
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.895	1.909	1.216
Ult. Stress, tsf		1.416	1.829	1.216
σ_1 Failure, tsf		2.394	2.909	3.216
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

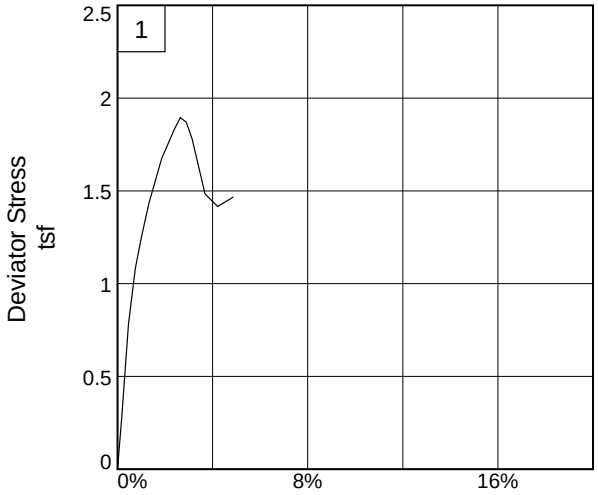
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

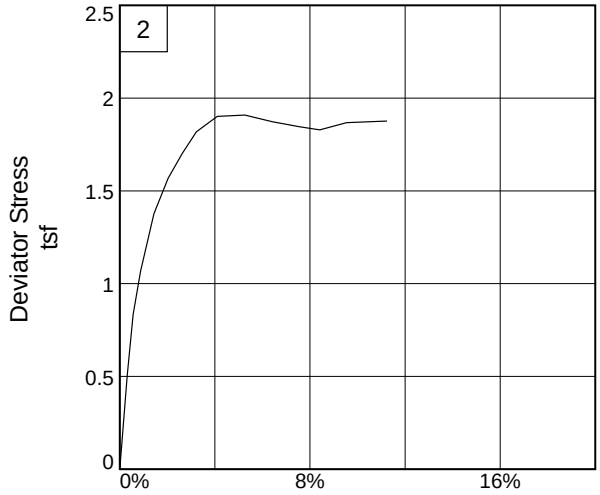
Source of Sample: CAA-039 **Depth:** 7-9'

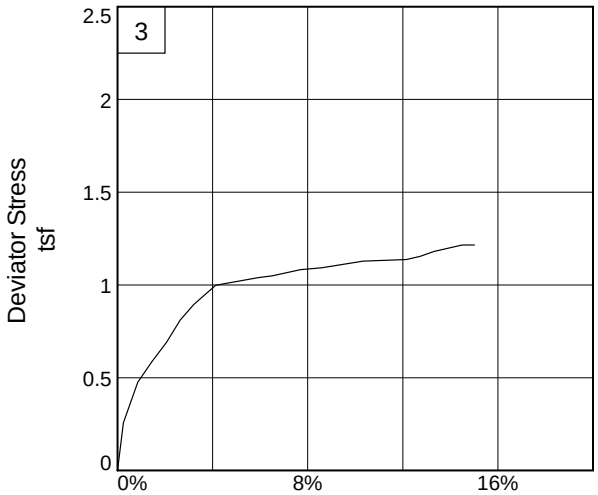
Sample Number: TW-200

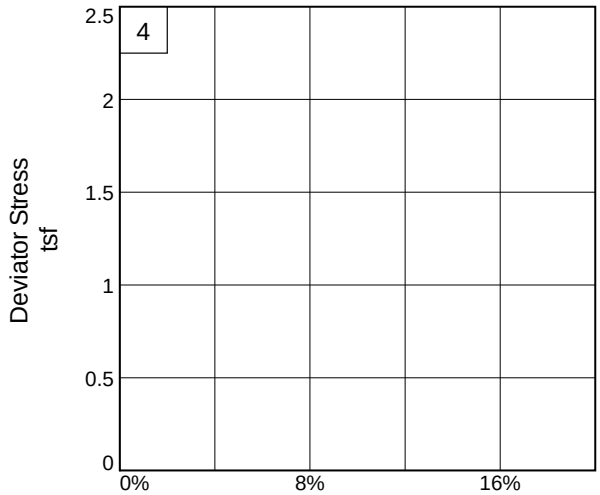
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

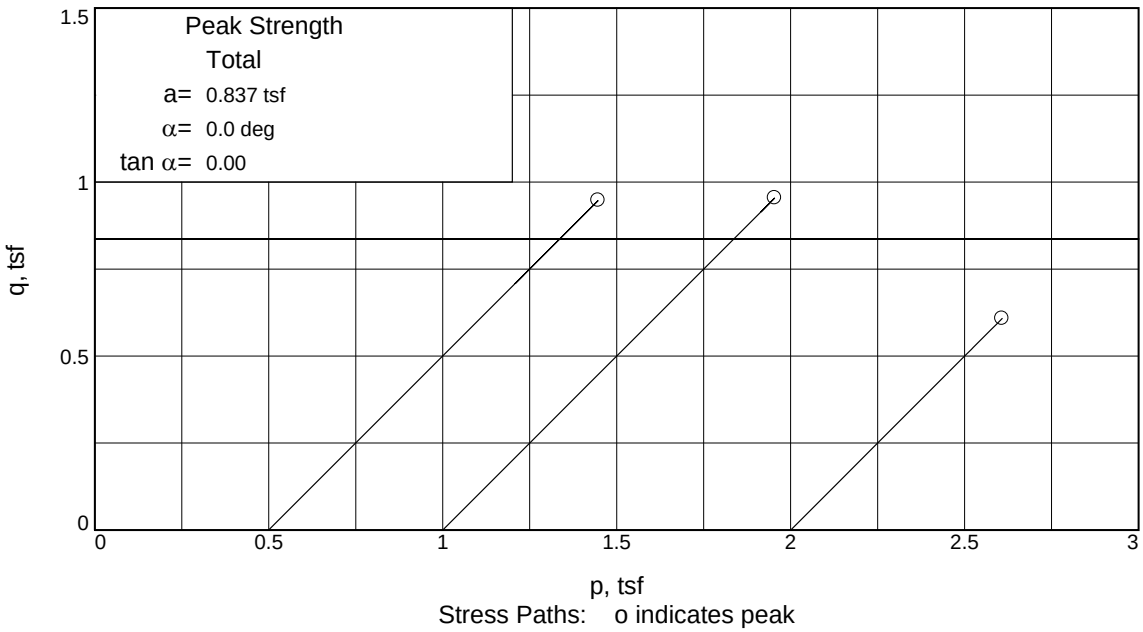
BRAUN INTERTEC











Stress Paths: o indicates peak

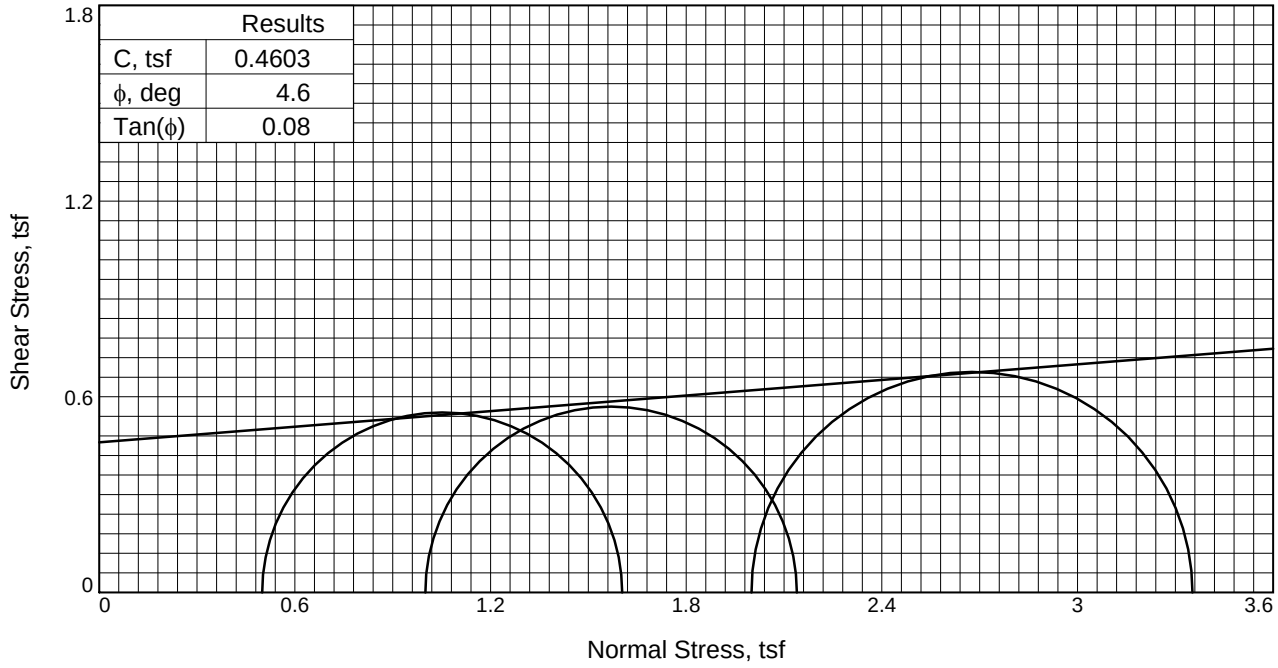
Client: KLJ Engineering LLC

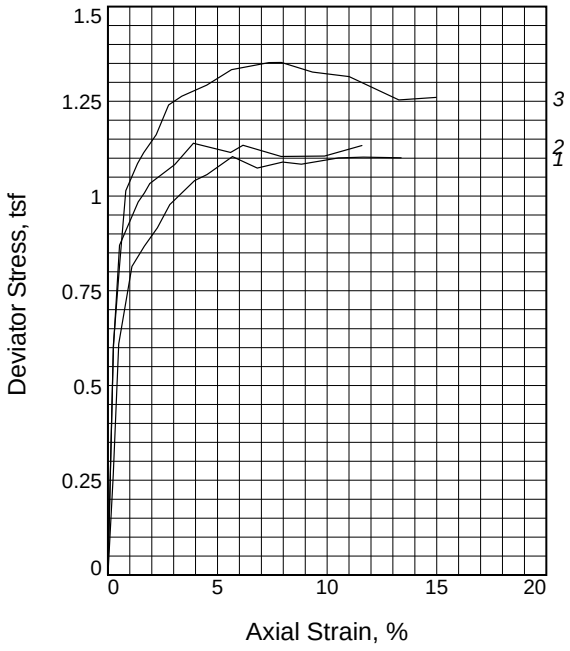
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-039 **Depth:** 7-9' **Sample Number:** TW-200

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	39.3	41.6	41.8
	Dry Density, pcf	81.4	79.4	79.2
	Saturation, %	99.1	100.0	99.9
	Void Ratio	1.0694	1.1218	1.1287
	Diameter, in.	1.416	1.416	1.412
	Height, in.	2.833	2.822	2.818
At Test	Water Content, %	39.3	41.6	41.8
	Dry Density, pcf	81.4	79.4	79.2
	Saturation, %	99.1	100.0	99.9
	Void Ratio	1.0694	1.1218	1.1287
	Diameter, in.	1.416	1.416	1.412
	Height, in.	2.833	2.822	2.818
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.104	1.139	1.352
Ult. Stress, tsf		1.074	1.105	1.254
σ_1 Failure, tsf		1.604	2.139	3.352
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

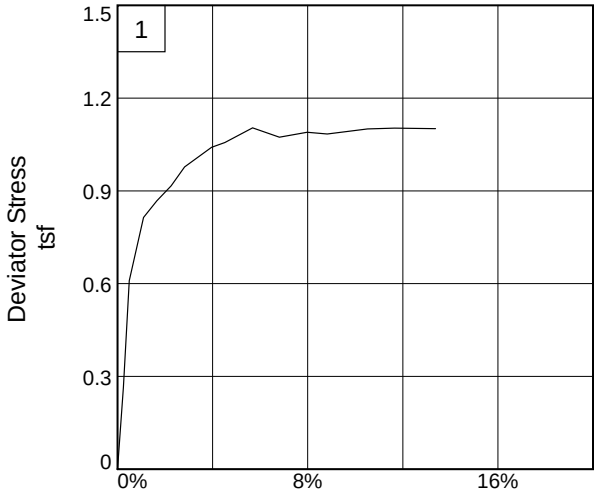
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

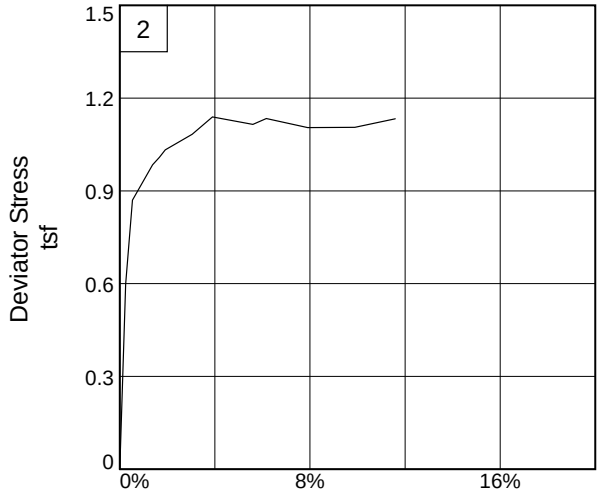
Source of Sample: CAA-039 **Depth:** 17-19'

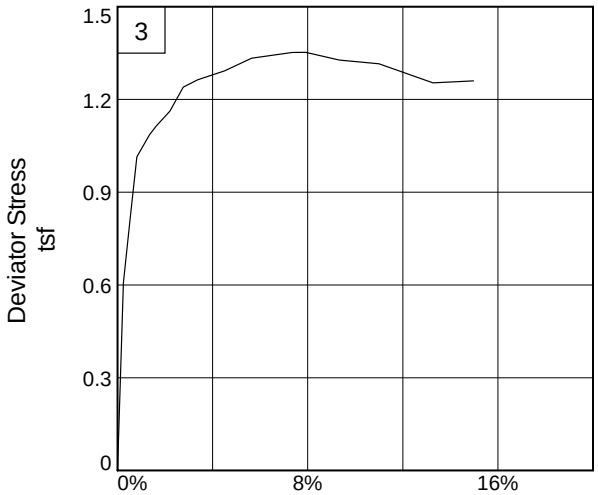
Sample Number: TW-203

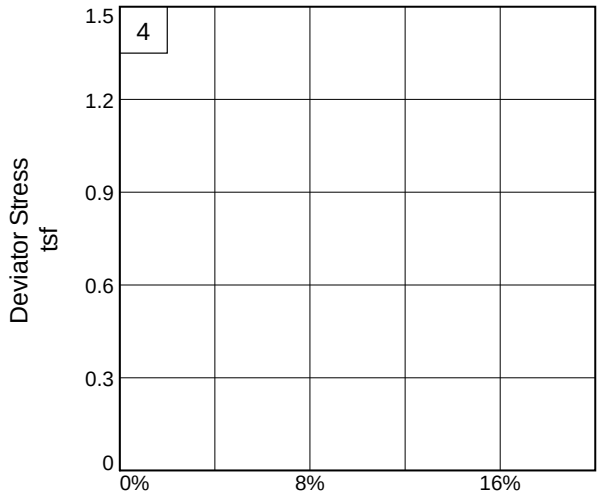
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

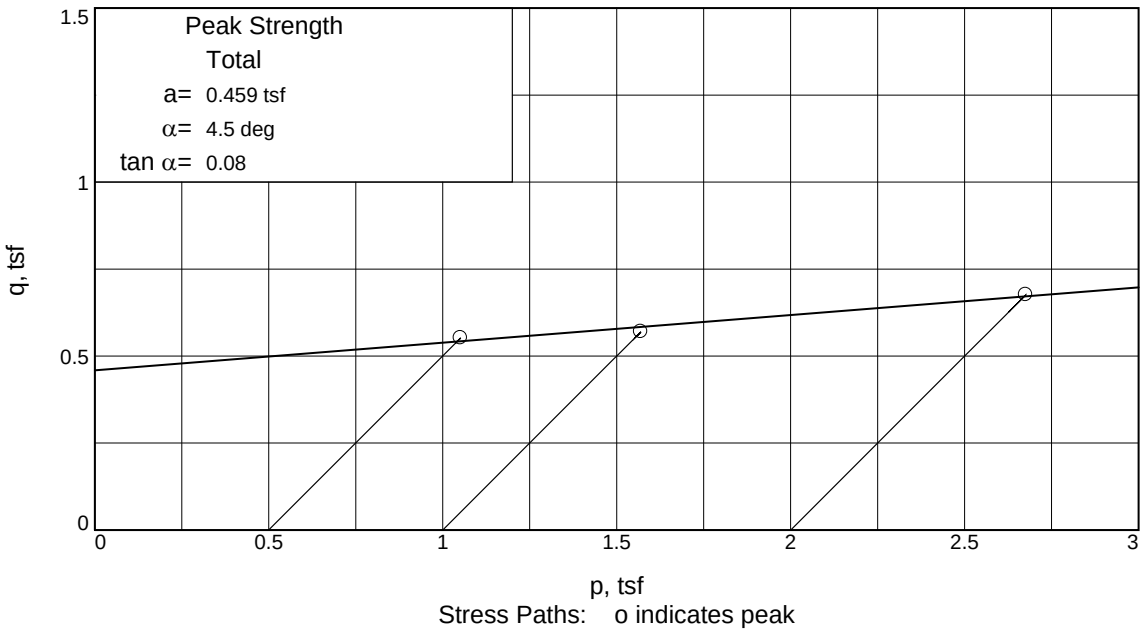
BRAUN INTERTEC











Stress Paths: o indicates peak

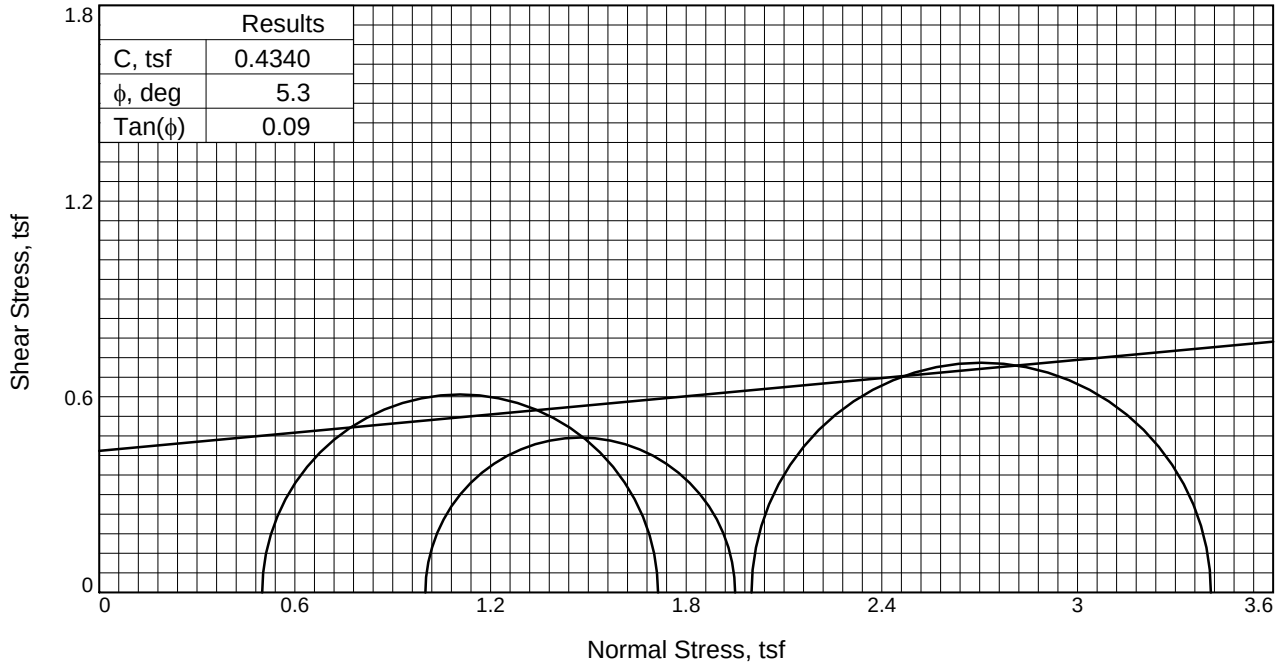
Client: KLJ Engineering LLC

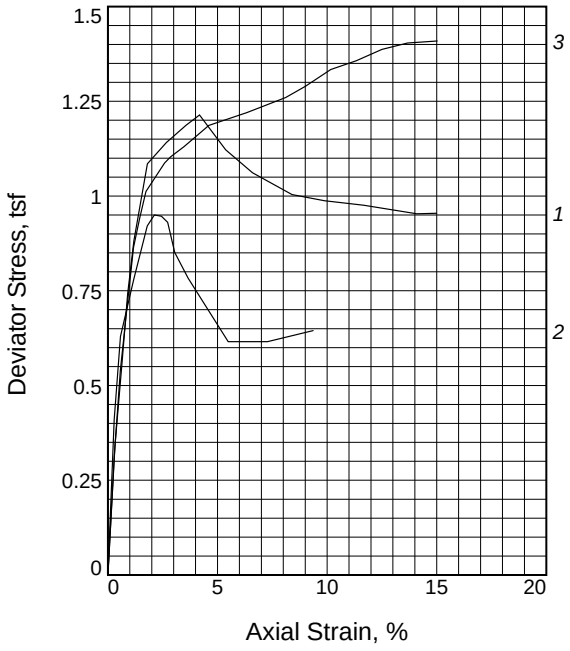
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-039 **Depth:** 17-19' **Sample Number:** TW-203

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.8	44.9	42.2
	Dry Density, pcf	77.2	76.0	78.7
	Saturation, %	100.0	99.5	99.9
	Void Ratio	1.1830	1.2181	1.1419
	Diameter, in.	1.427	1.409	1.419
	Height, in.	2.774	2.788	2.824
At Test	Water Content, %	43.8	44.9	42.2
	Dry Density, pcf	77.2	76.0	78.7
	Saturation, %	100.0	99.5	99.9
	Void Ratio	1.1830	1.2181	1.1419
	Diameter, in.	1.427	1.409	1.419
	Height, in.	2.774	2.788	2.824
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.214	0.950	1.409
Ult. Stress, tsf		0.953	0.616	1.409
σ_1 Failure, tsf		1.714	1.950	3.409
σ_3 Failure, tsf		0.500	1.000	2.000

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

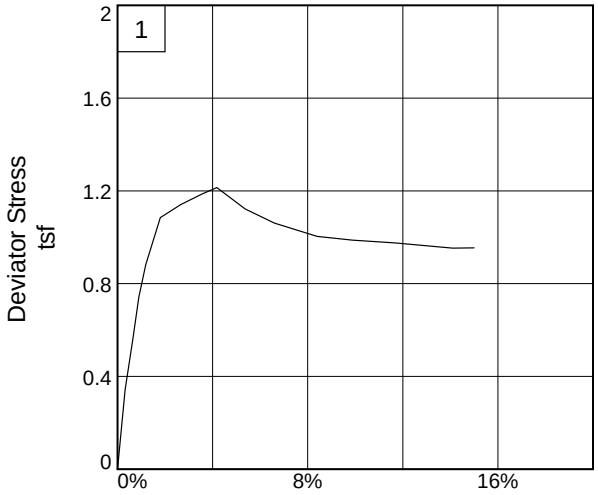
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

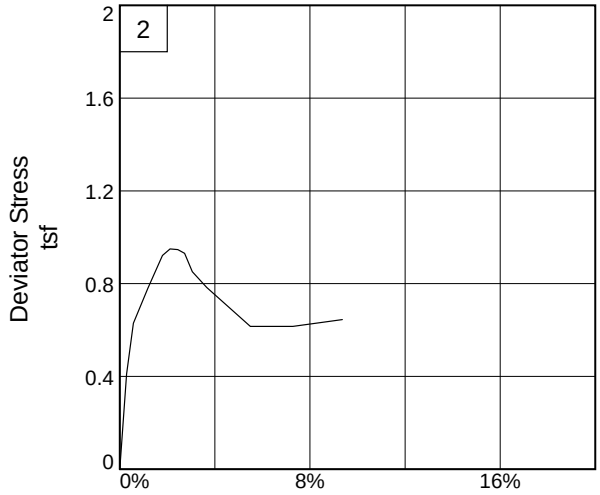
Source of Sample: CAA-041 **Depth:** 7-9'

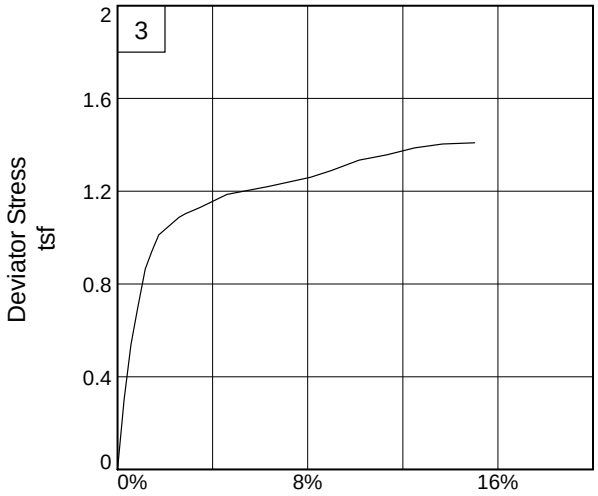
Sample Number: TW-211

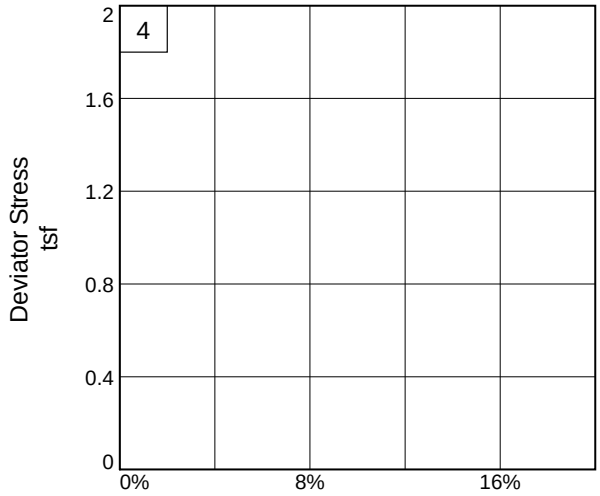
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

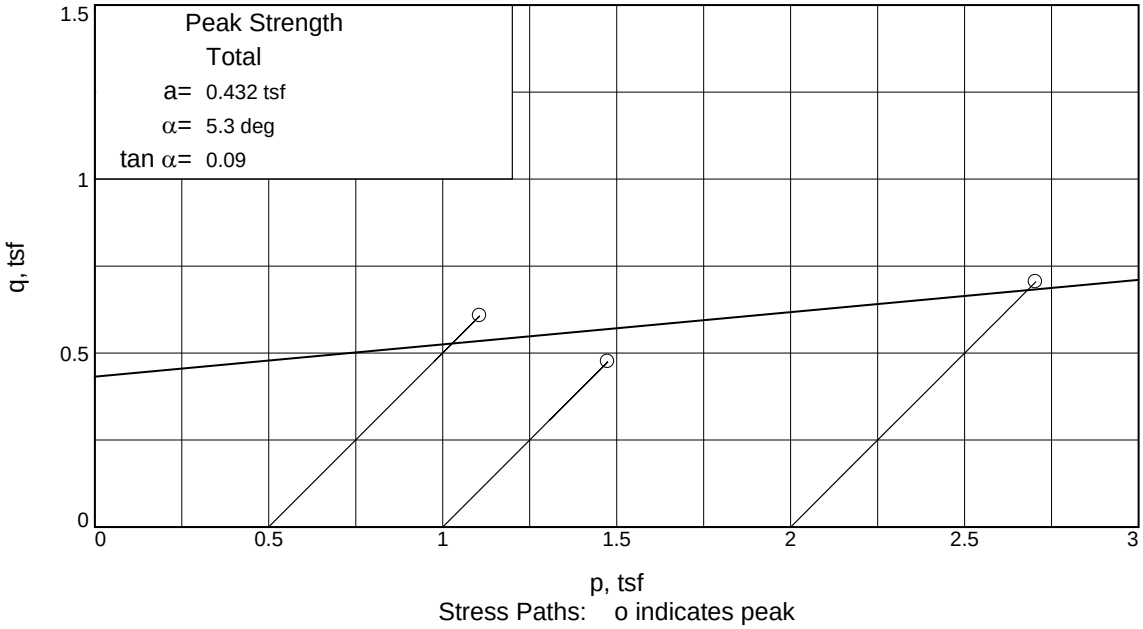
BRAUN INTERTEC











Stress Paths: o indicates peak

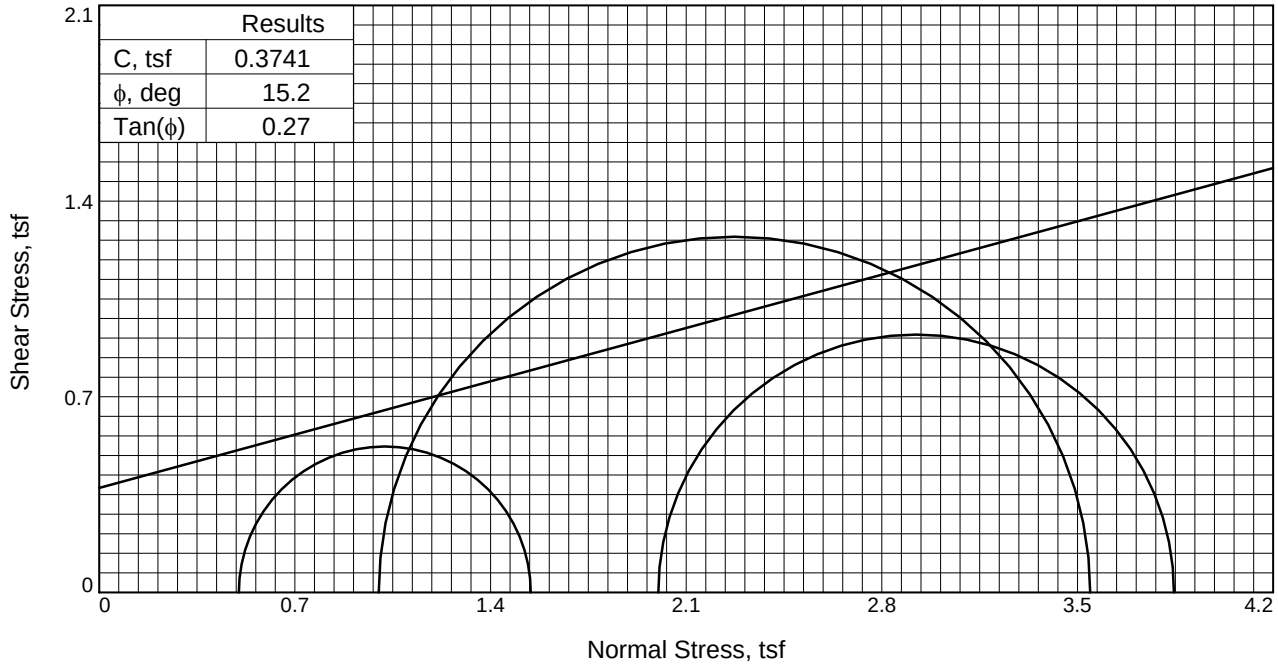
Client: KLJ Engineering LLC

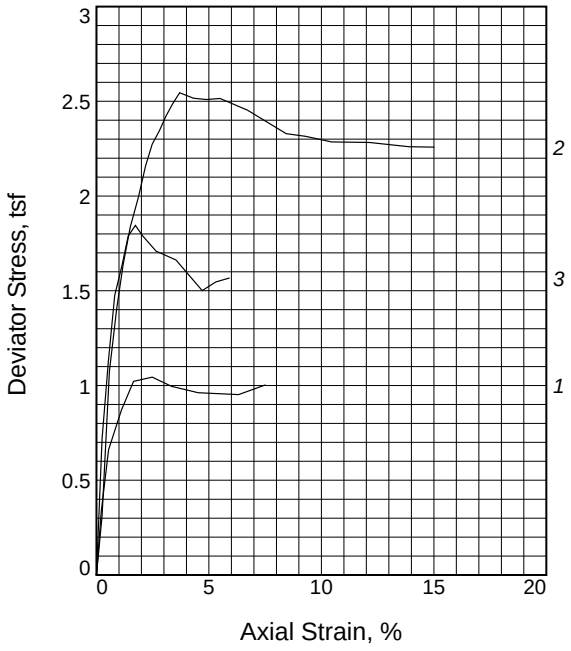
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-041 **Depth:** 7-9' **Sample Number:** TW-211

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	45.3	43.6	43.7
	Dry Density, pcf	75.8	74.8	77.2
	Saturation, %	99.9	93.8	99.8
	Void Ratio	1.2237	1.2537	1.1822
	Diameter, in.	1.426	1.425	1.424
	Height, in.	2.786	2.785	2.828
At Test	Water Content, %	45.3	43.6	43.7
	Dry Density, pcf	75.8	74.8	77.2
	Saturation, %	99.9	93.8	99.8
	Void Ratio	1.2237	1.2537	1.1822
	Diameter, in.	1.426	1.425	1.424
	Height, in.	2.786	2.785	2.828
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.044	2.545	1.845
Ult. Stress, tsf		0.952	2.258	1.501
σ_1 Failure, tsf		1.544	3.545	3.845
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

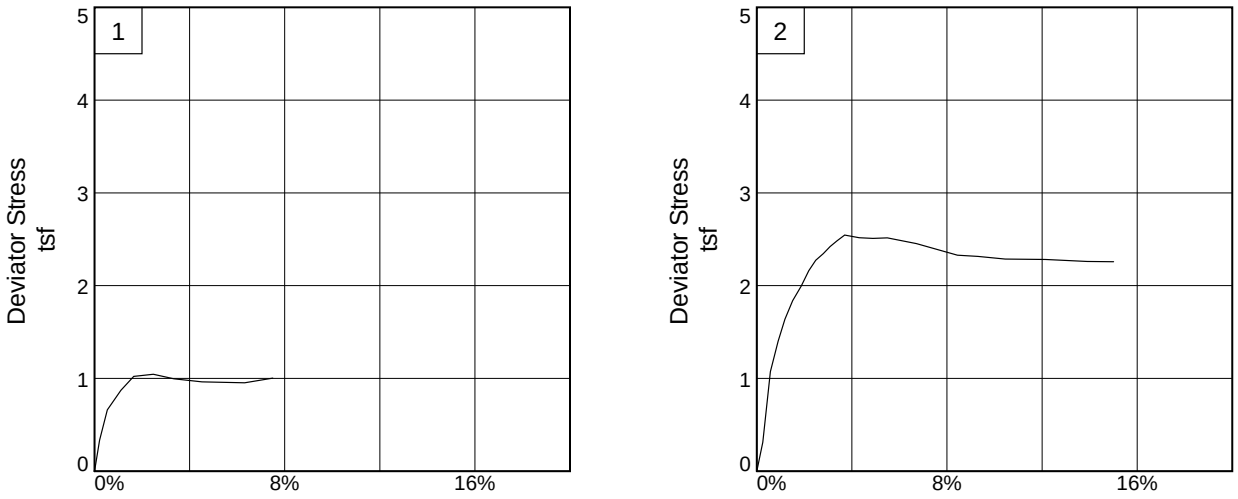
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

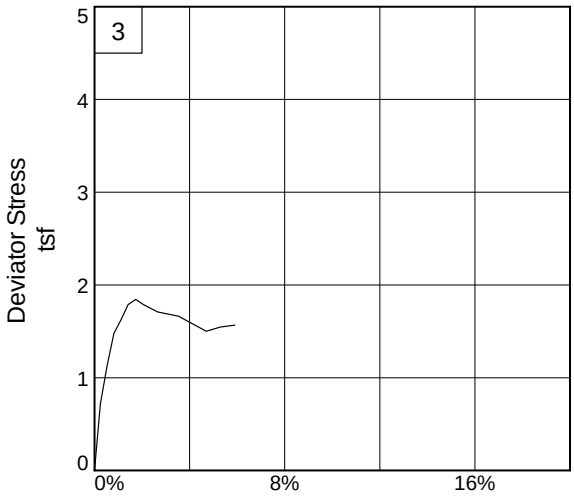
Source of Sample: CAA-041 **Depth:** 17-19'

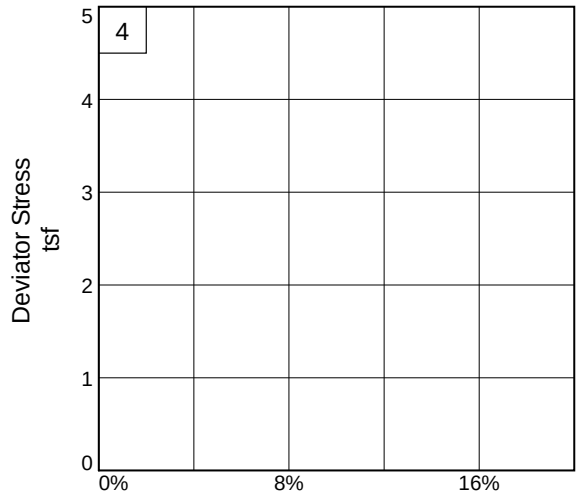
Sample Number: TW-214

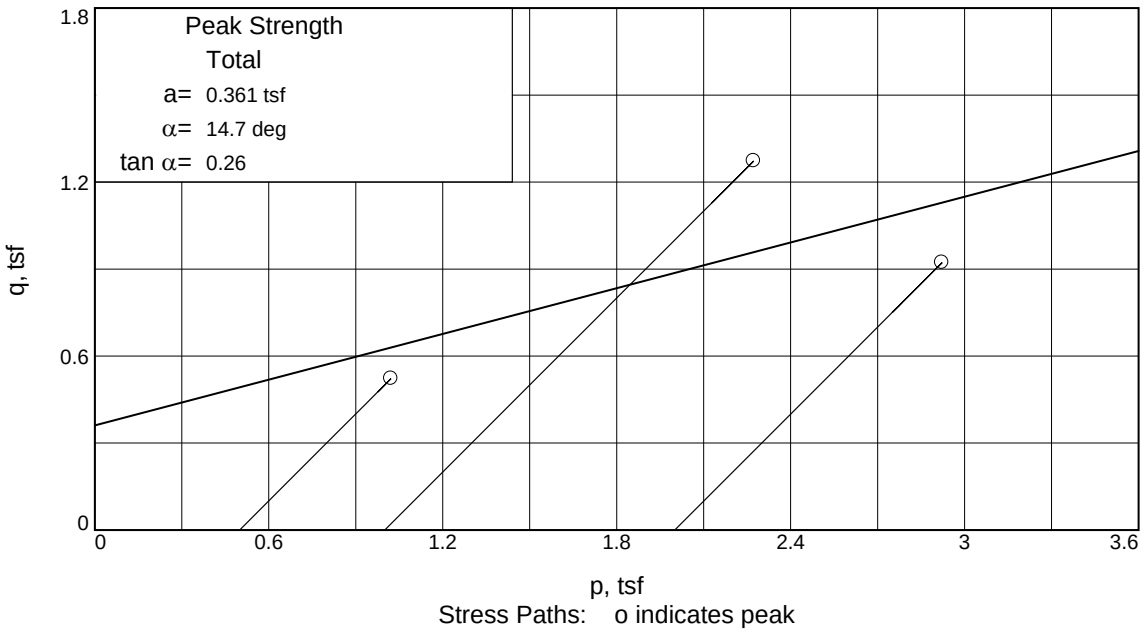
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

BRAUN INTERTEC









Stress Paths: o indicates peak

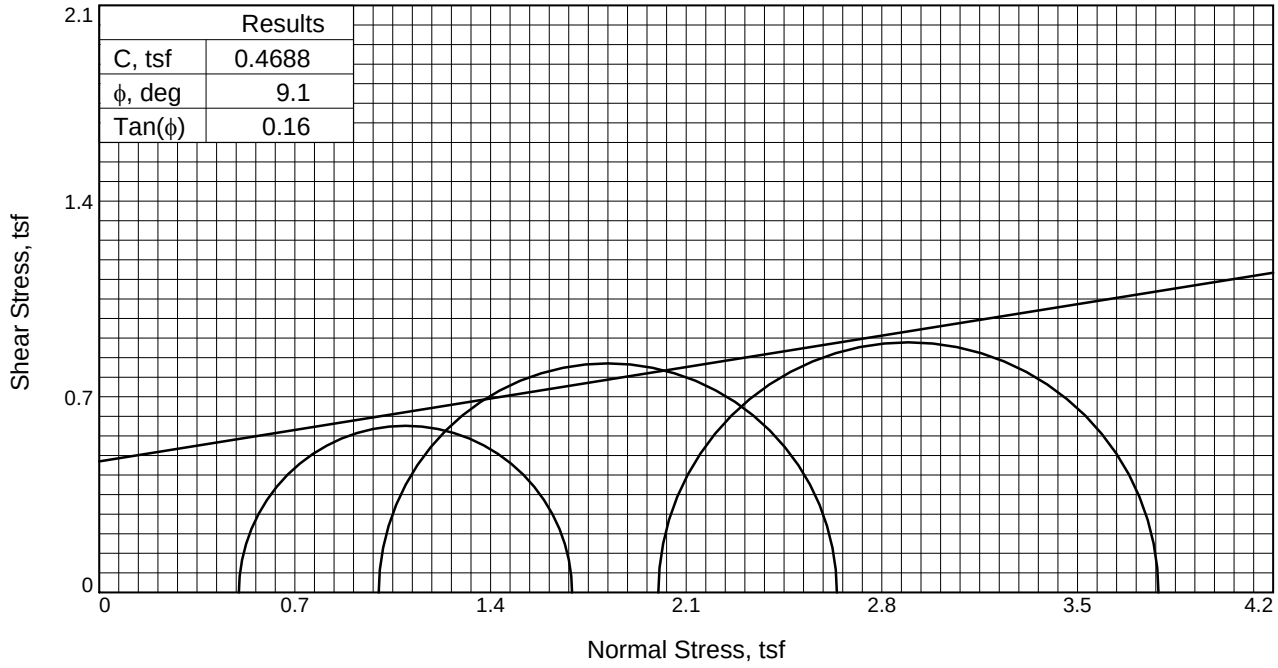
Client: KLJ Engineering LLC

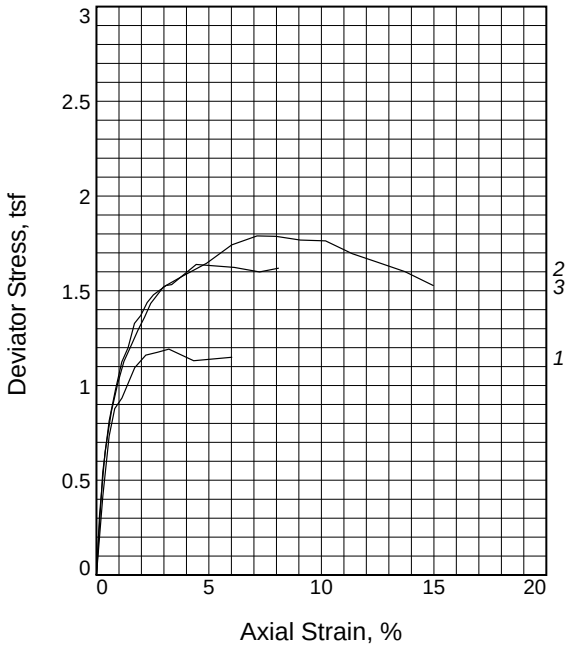
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-041 **Depth:** 17-19' **Sample Number:** TW-214

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	45.4	43.8	45.5
	Dry Density, pcf	74.9	76.5	74.7
	Saturation, %	98.0	98.3	97.9
	Void Ratio	1.2515	1.2023	1.2553
	Diameter, in.	1.418	1.409	1.400
	Height, in.	2.824	2.841	2.858
At Test	Water Content, %	45.4	43.8	45.5
	Dry Density, pcf	74.9	76.5	74.7
	Saturation, %	98.0	98.3	97.9
	Void Ratio	1.2515	1.2023	1.2553
	Diameter, in.	1.418	1.409	1.400
	Height, in.	2.824	2.841	2.858
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.192	1.639	1.789
Ult. Stress, tsf		1.130	1.599	1.528
σ_1 Failure, tsf		1.692	2.639	3.790
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), light brown

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

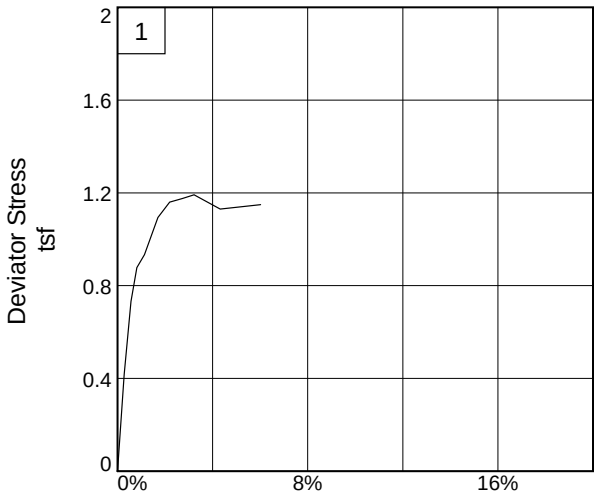
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

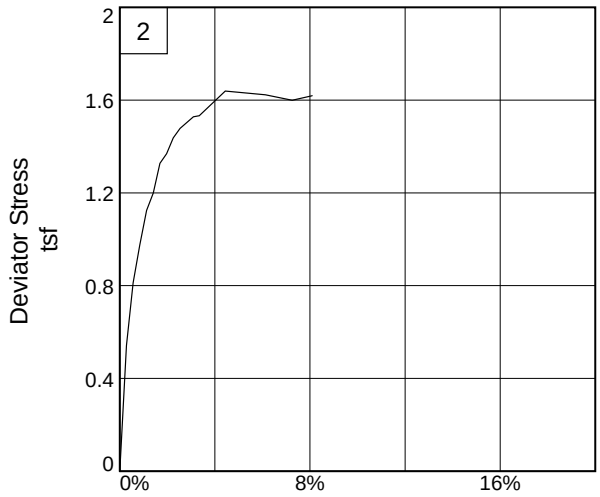
Source of Sample: CAA-043 **Depth:** 7-9'

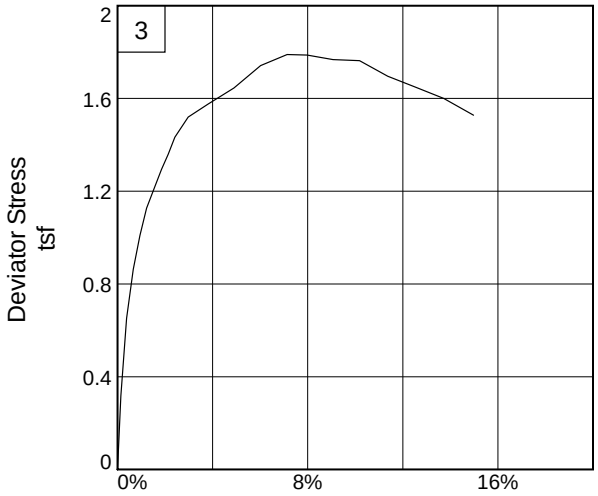
Sample Number: TW-222

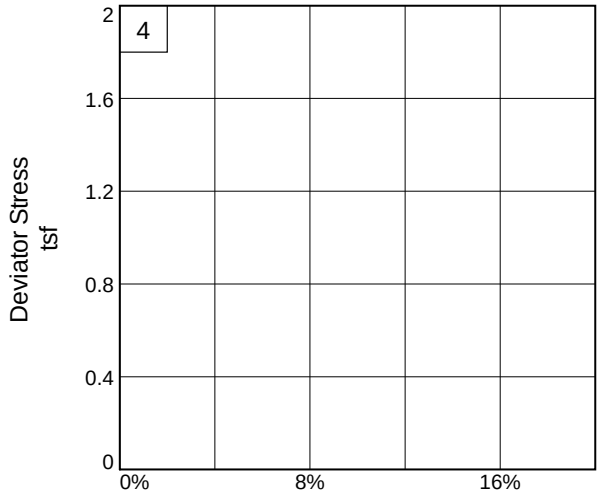
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

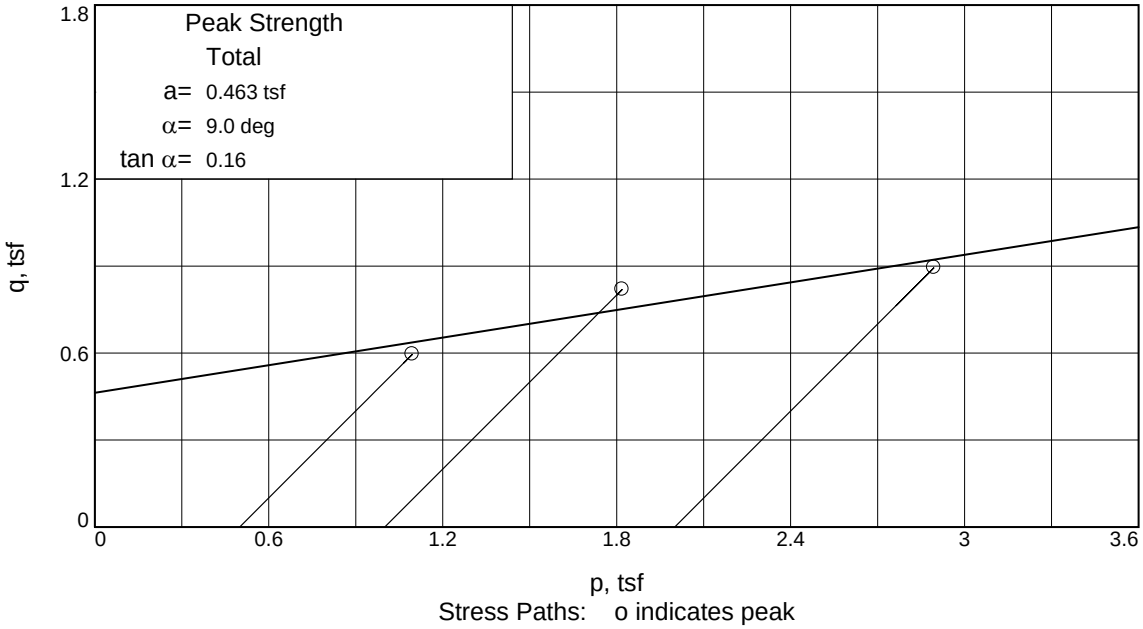
BRAUN INTERTEC











Stress Paths: o indicates peak

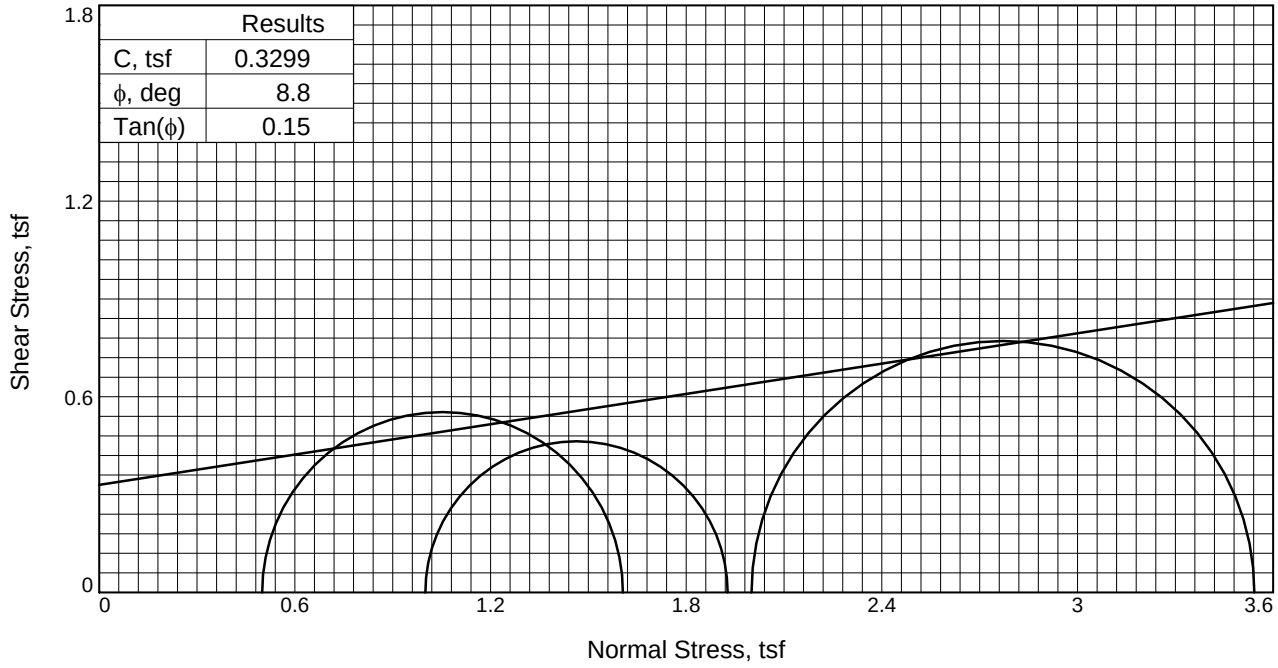
Client: KLJ Engineering LLC

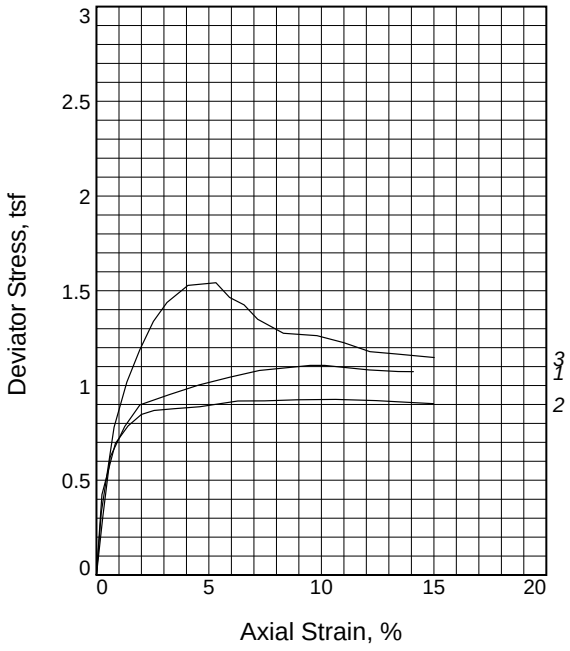
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-043 **Depth:** 7-9' **Sample Number:** TW-222

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	51.2	52.8	51.9
	Dry Density, pcf	70.4	69.4	69.5
	Saturation, %	99.1	99.6	98.4
	Void Ratio	1.3947	1.4294	1.4247
	Diameter, in.	1.425	1.438	1.430
	Height, in.	2.789	2.849	2.804
At Test	Water Content, %	51.2	52.8	51.9
	Dry Density, pcf	70.4	69.4	69.5
	Saturation, %	99.1	99.6	98.4
	Void Ratio	1.3947	1.4294	1.4247
	Diameter, in.	1.426	1.438	1.430
	Height, in.	2.789	2.849	2.804
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.106	0.927	1.542
Ult. Stress, tsf		1.073	0.905	1.148
σ_1 Failure, tsf		1.606	1.927	3.542
σ_3 Failure, tsf		0.500	1.000	2.000

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

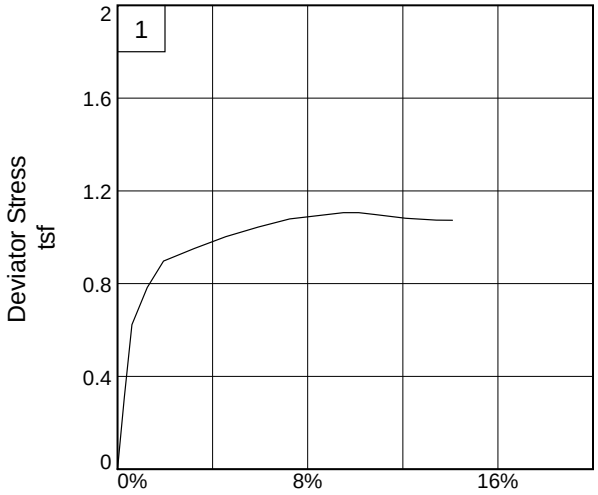
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

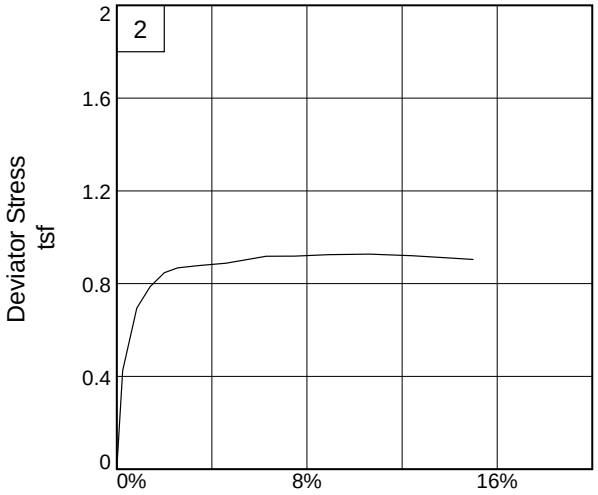
Source of Sample: CAA-043 **Depth:** 17-19'

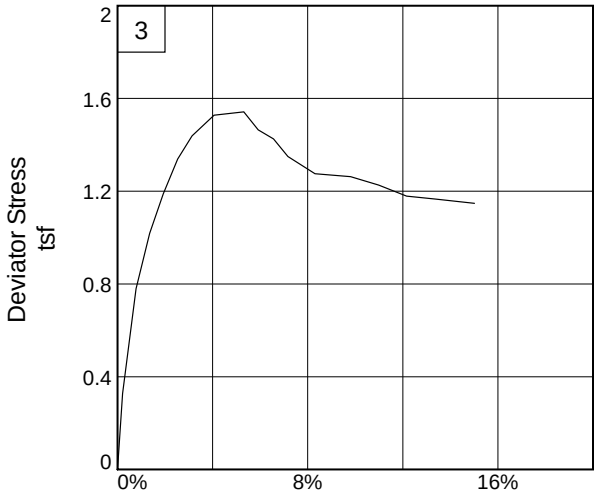
Sample Number: TW-225

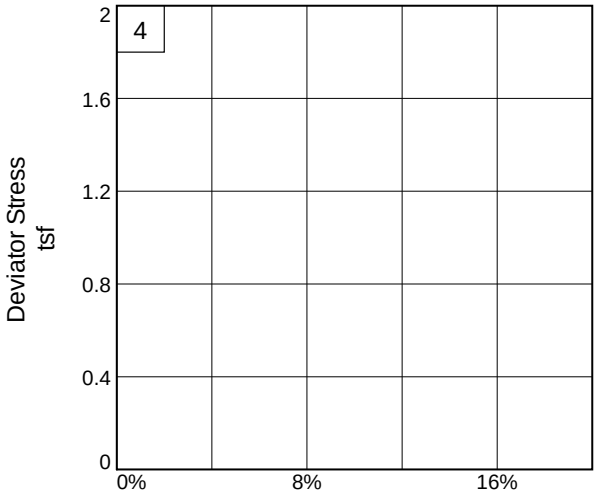
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

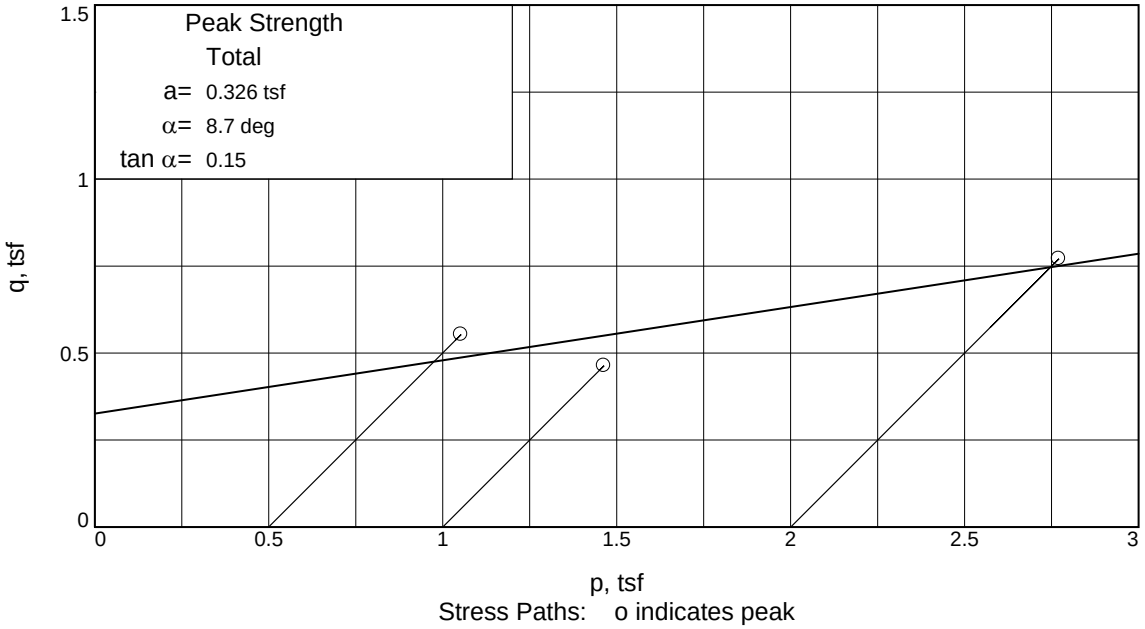
BRAUN INTERTEC











Stress Paths: o indicates peak

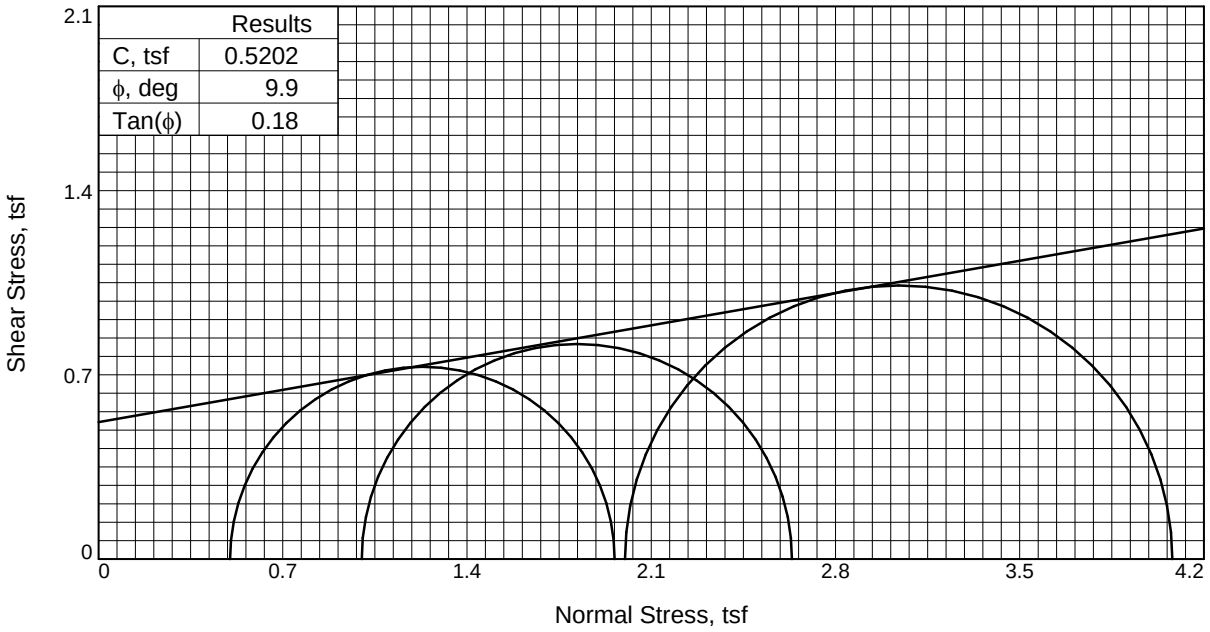
Client: KLJ Engineering LLC

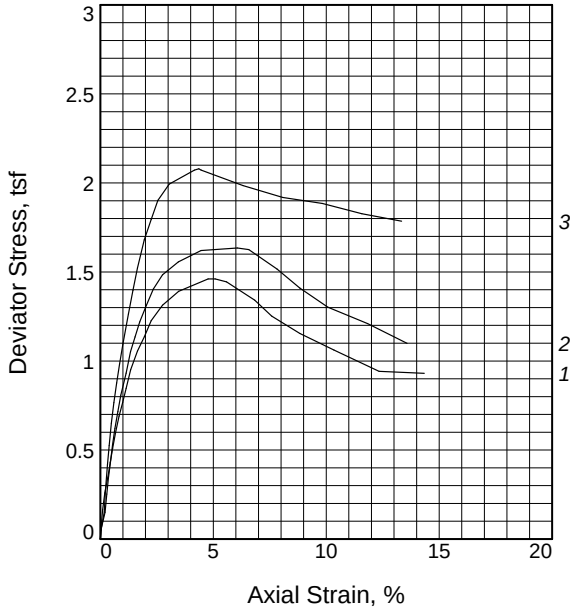
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-043 **Depth:** 17-19' **Sample Number:** TW-225

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	45.6	47.0	43.3
	Dry Density, pcf	75.9	69.9	69.5
	Saturation, %	100.9	90.0	82.1
	Void Ratio	1.2198	1.4104	1.4246
	Diameter, in.	1.36	1.38	1.38
	Height, in.	2.81	2.90	2.99
At Test	Water Content, %	45.6	47.0	43.3
	Dry Density, pcf	75.9	69.9	69.5
	Saturation, %	100.9	90.0	82.1
	Void Ratio	1.2198	1.4104	1.4246
	Diameter, in.	1.36	1.38	1.38
	Height, in.	2.81	2.90	2.99
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.461	1.634	2.079
Ult. Stress, tsf		0.931	1.099	1.785
σ_1 Failure, tsf		1.961	2.634	4.080
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

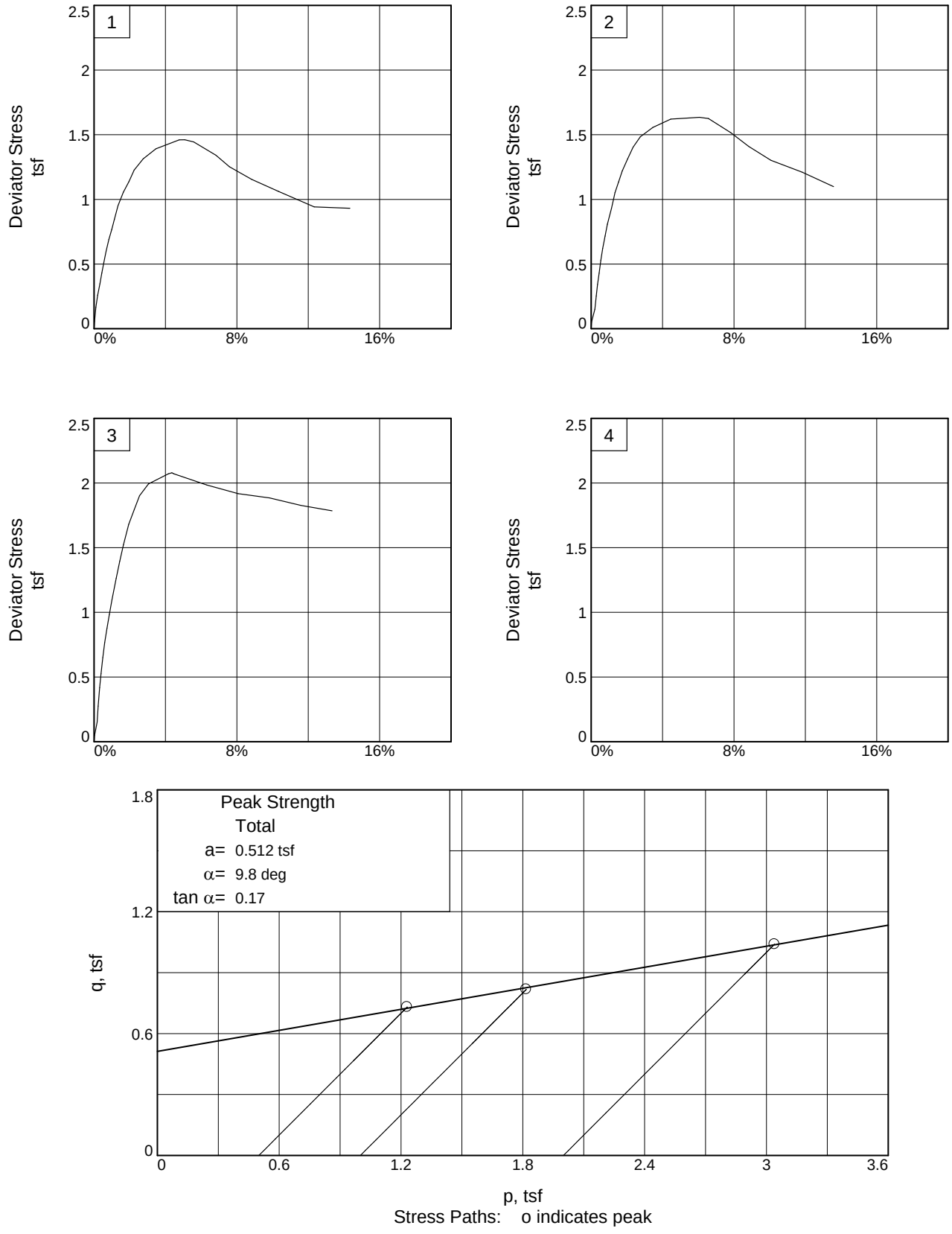
Location: GDRL-044

Sample Number: TW-229 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/22/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

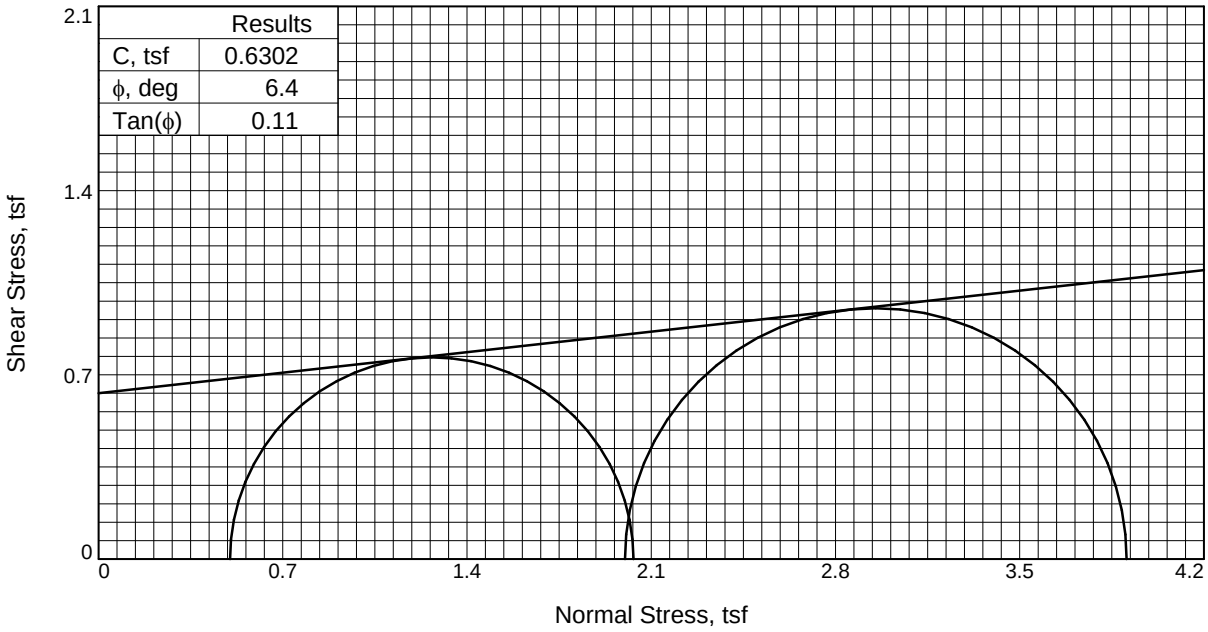
Tested By: ST

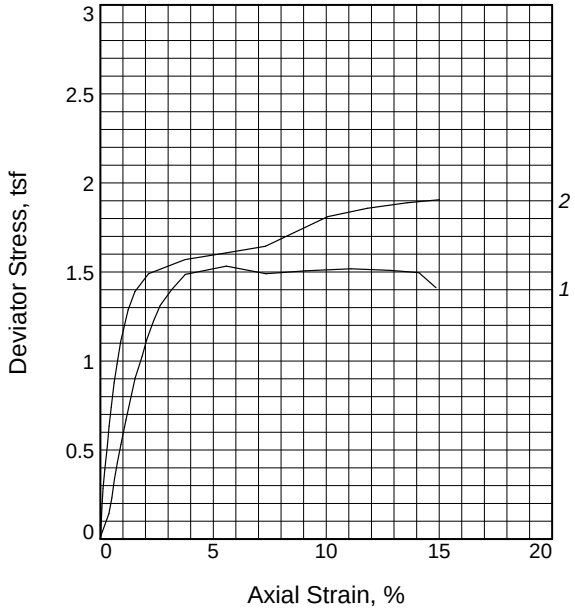


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-044 **Depth:** 7-9' **Sample Number:** TW-229
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2
Initial	Water Content, %	44.7	48.1
	Dry Density, pcf	75.6	74.3
	Saturation, %	98.1	102.4
	Void Ratio	1.2296	1.2684
	Diameter, in.	1.33	1.39
	Height, in.	2.86	2.90
At Test	Water Content, %	44.7	48.1
	Dry Density, pcf	75.6	74.3
	Saturation, %	98.1	102.4
	Void Ratio	1.2296	1.2684
	Diameter, in.	1.33	1.39
	Height, in.	2.86	2.90
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		1.533	1.906
Ult. Stress, tsf		1.412	1.906
σ_1 Failure, tsf		2.032	3.906
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.
Only 2 points tested due to sample disturbance during trimming.

Figure _____

Client: KLJ Engineering, LLC

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

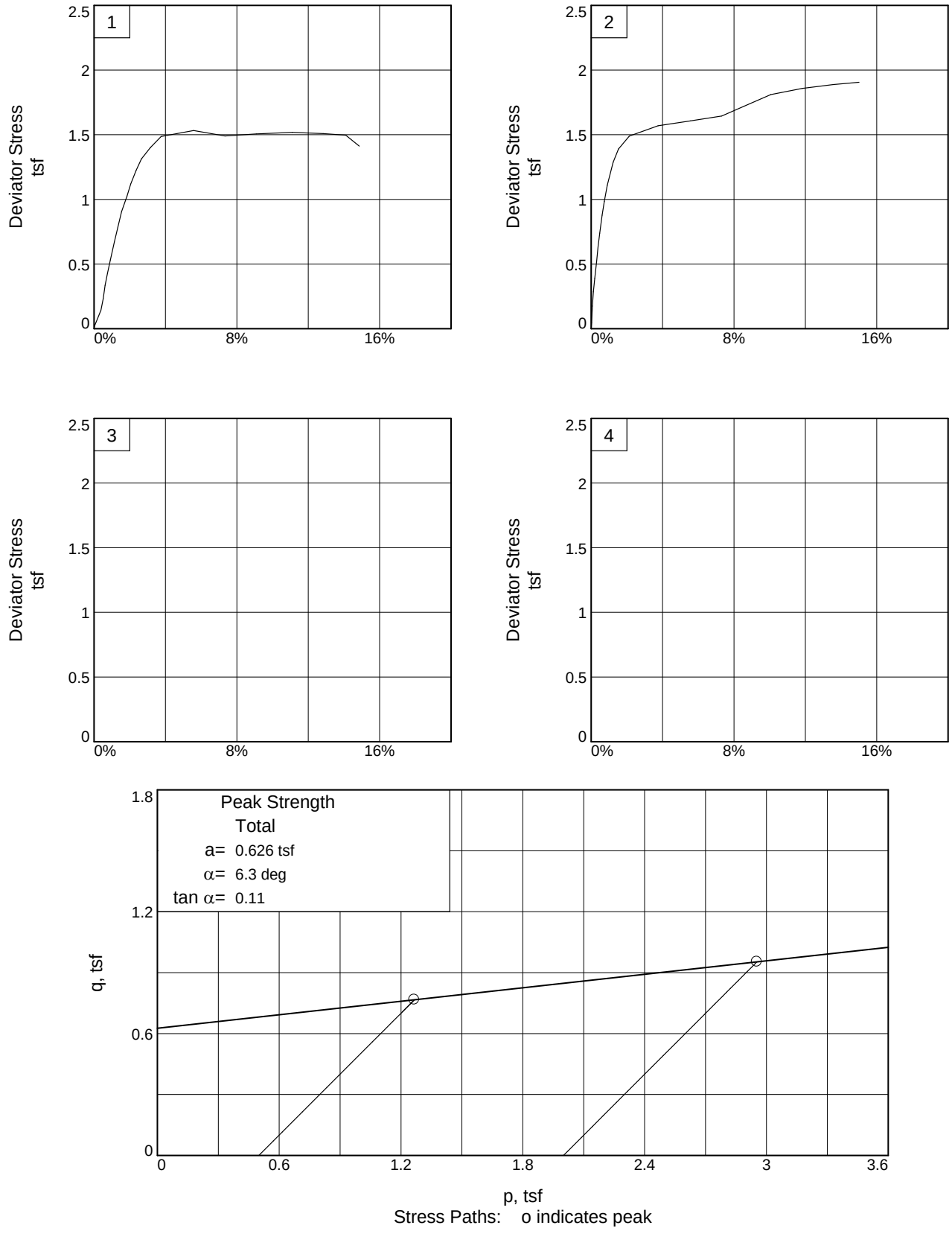
Location: GDRL-046

Sample Number: TW-237 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/22/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

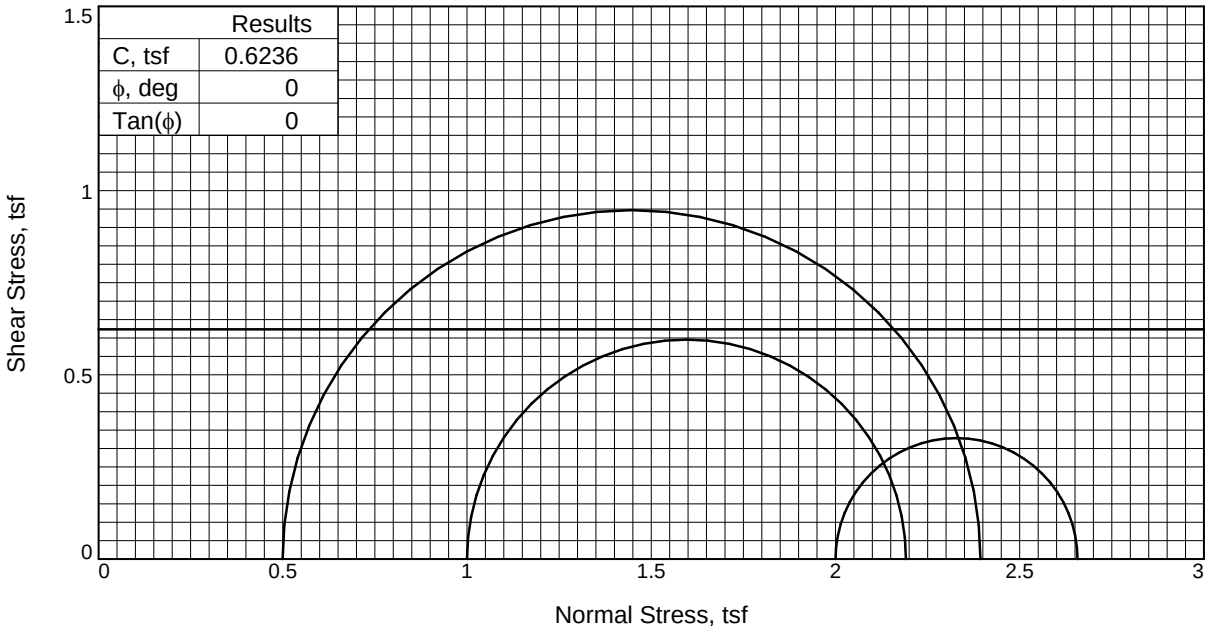
Tested By: ST

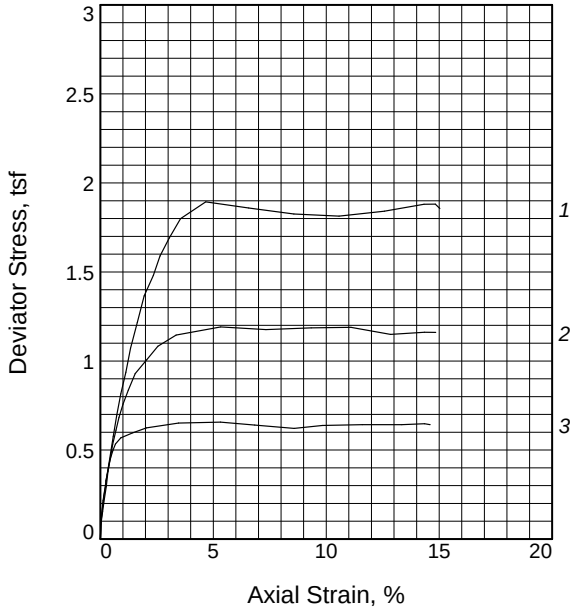


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-046 **Depth:** 7-9' **Sample Number:** TW-237
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	43.6	48.7	59.2
	Dry Density, pcf	79.0	74.6	67.7
	Saturation, %	103.9	104.3	107.4
	Void Ratio	1.1326	1.2608	1.4887
	Diameter, in.	1.38	1.38	1.36
	Height, in.	2.86	2.85	2.92
At Test	Water Content, %	43.6	48.7	59.2
	Dry Density, pcf	79.0	74.6	67.7
	Saturation, %	103.9	104.3	107.4
	Void Ratio	1.1326	1.2608	1.4887
	Diameter, in.	1.38	1.38	1.36
	Height, in.	2.86	2.85	2.92
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.894	1.191	0.657
Ult. Stress, tsf		1.814	1.150	0.622
σ_1 Failure, tsf		2.393	2.191	2.657
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

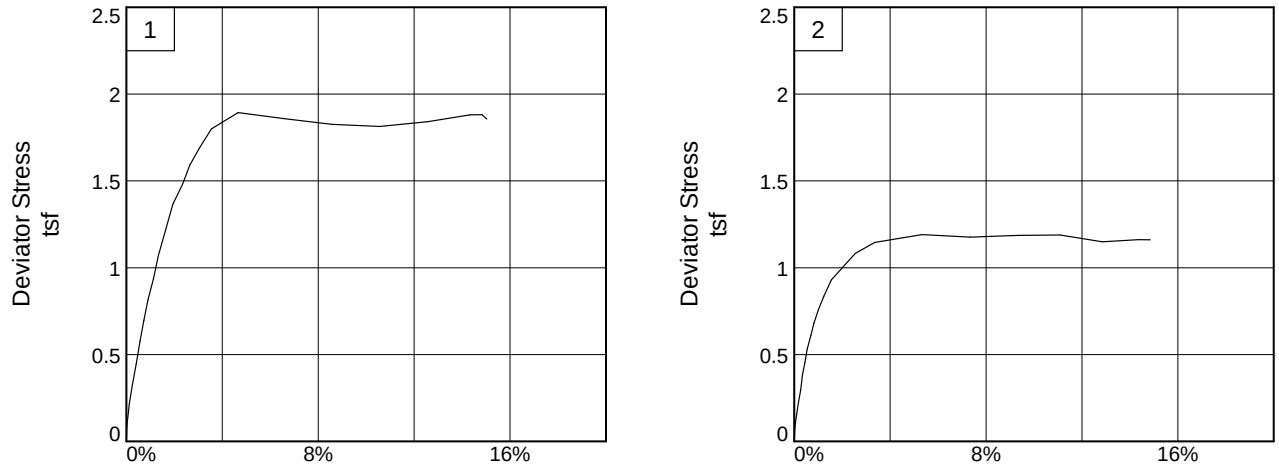
Location: CAA-047

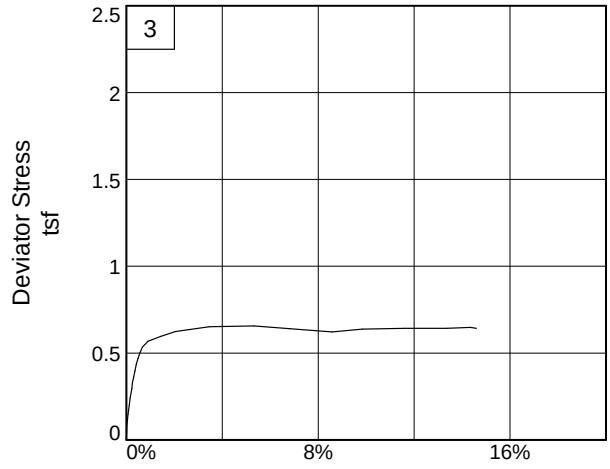
Sample Number: TW-244 **Depth:** 17-19'

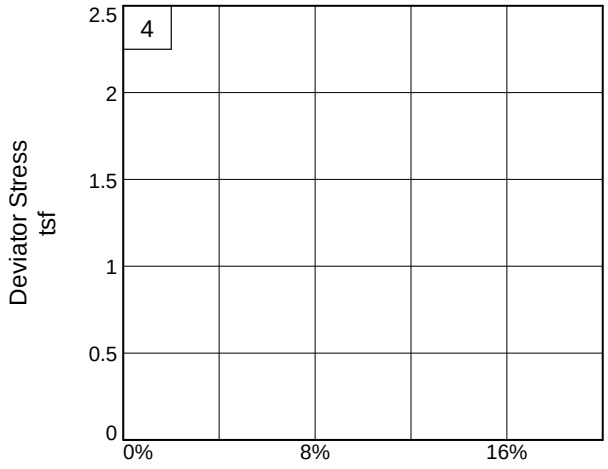
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

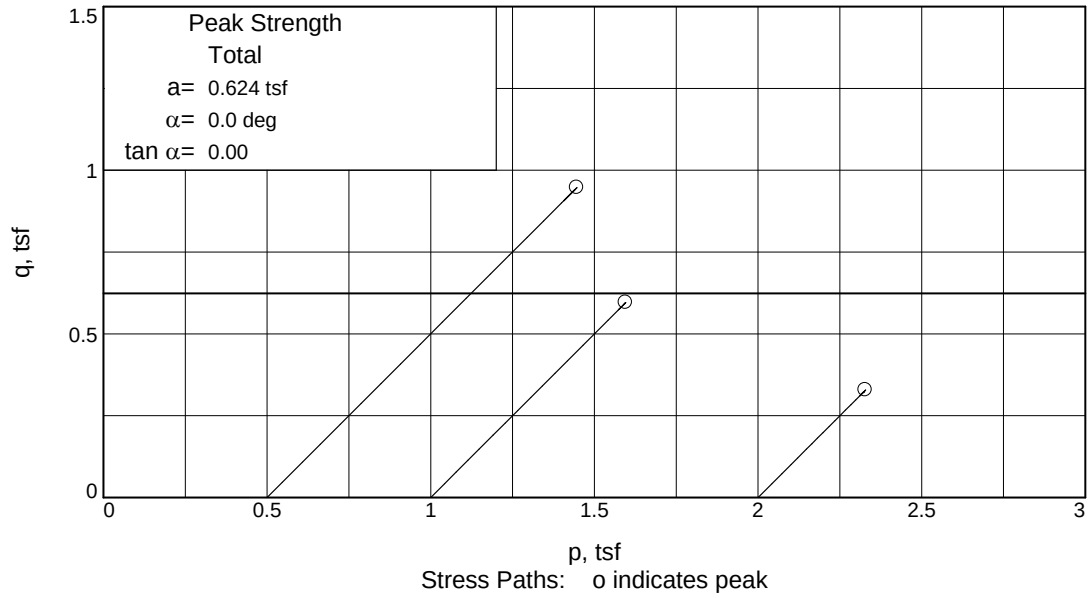
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST







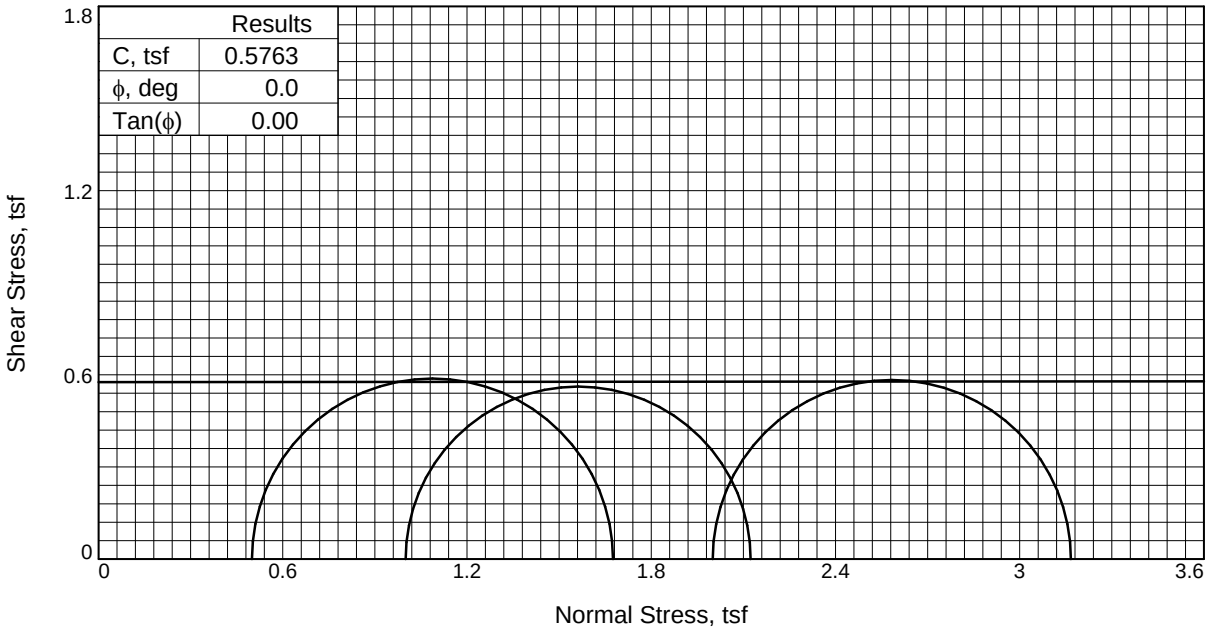


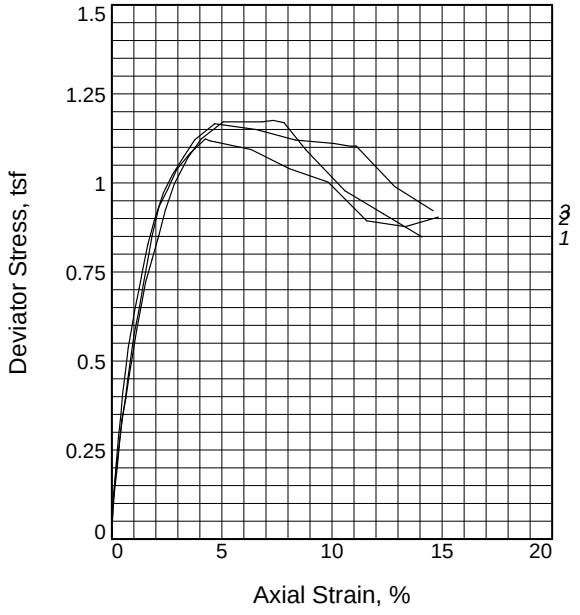
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-047 **Depth:** 17-19' **Sample Number:** TW-244
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	42.3	43.7	47.9
	Dry Density, pcf	79.5	78.9	75.1
	Saturation, %	102.1	103.8	103.9
	Void Ratio	1.1194	1.1351	1.2437
	Diameter, in.	1.38	1.39	1.39
	Height, in.	2.89	2.90	2.87
At Test	Water Content, %	42.3	43.7	47.9
	Dry Density, pcf	79.5	78.9	75.1
	Saturation, %	102.1	103.8	103.9
	Void Ratio	1.1194	1.1351	1.2437
	Diameter, in.	1.38	1.39	1.39
	Height, in.	2.89	2.90	2.87
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.176	1.124	1.166
Ult. Stress, tsf		0.848	0.877	0.922
σ_1 Failure, tsf		1.675	2.124	3.167
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

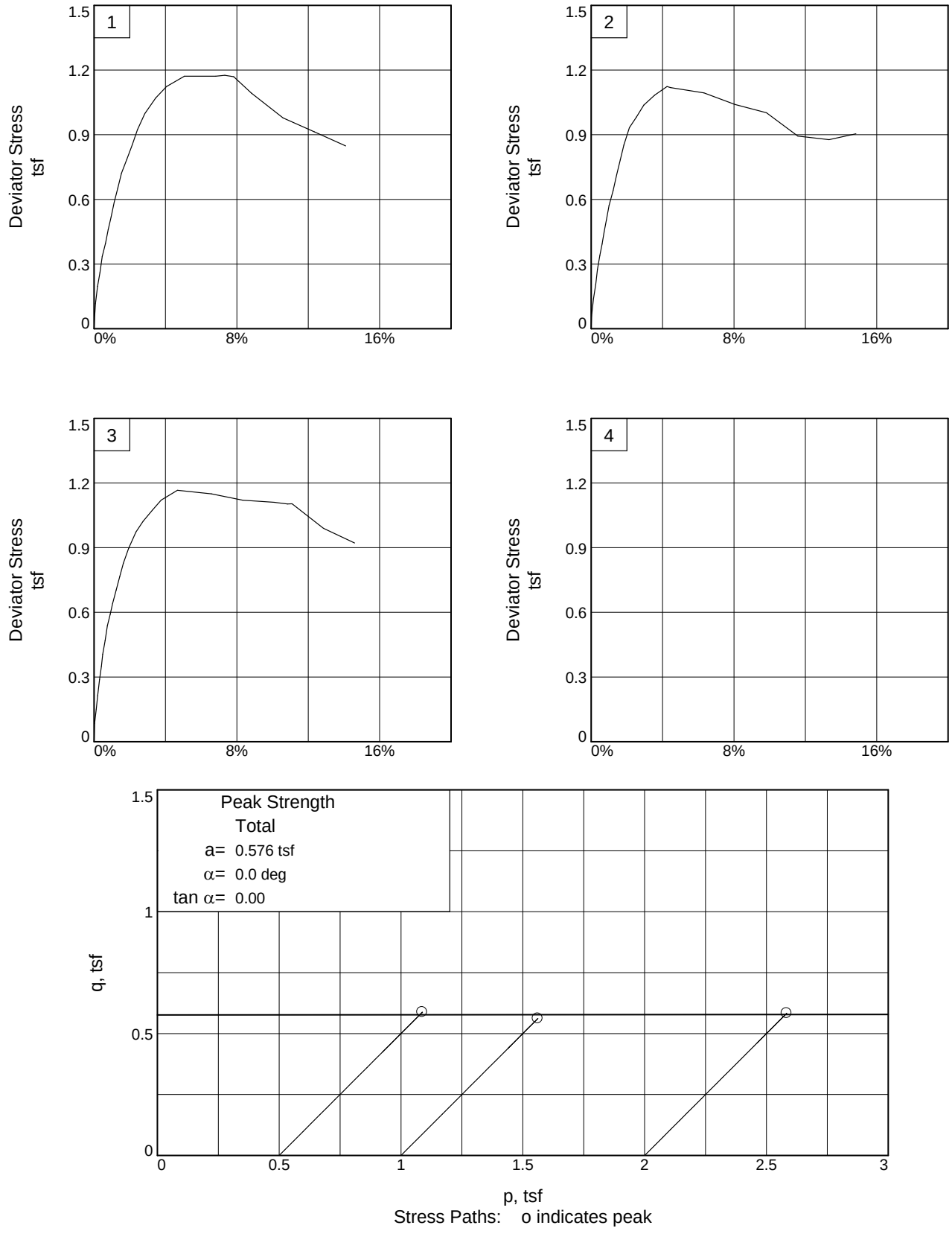
Location: CAA-049

Sample Number: TW-1040 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

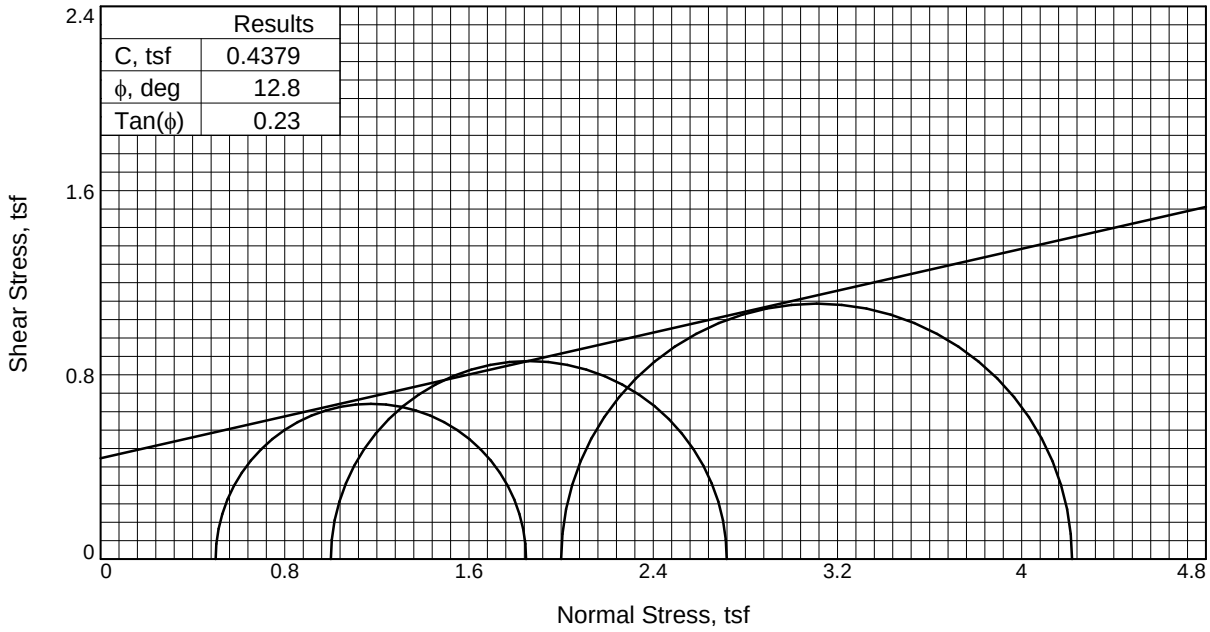
Tested By: ST

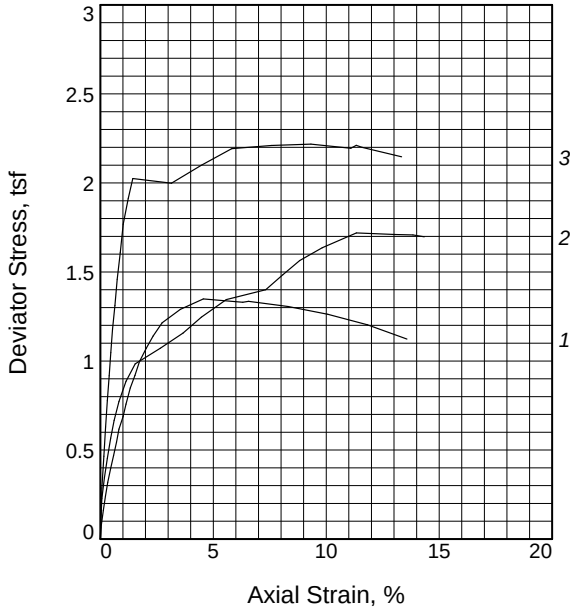


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-049 **Depth:** 7-9' **Sample Number:** TW-1040
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	47.5	47.1	49.5
	Dry Density, pcf	75.7	77.9	74.7
	Saturation, %	104.4	109.2	106.4
	Void Ratio	1.2273	1.1647	1.2557
	Diameter, in.	1.39	1.38	1.38
	Height, in.	2.94	2.88	2.93
At Test	Water Content, %	47.5	47.1	49.5
	Dry Density, pcf	75.7	77.9	74.7
	Saturation, %	104.4	109.2	106.4
	Void Ratio	1.2273	1.1647	1.2557
	Diameter, in.	1.39	1.38	1.38
	Height, in.	2.94	2.88	2.93
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.348	1.719	2.218
Ult. Stress, tsf		1.123	1.697	2.147
σ_1 Failure, tsf		1.848	2.719	4.218
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

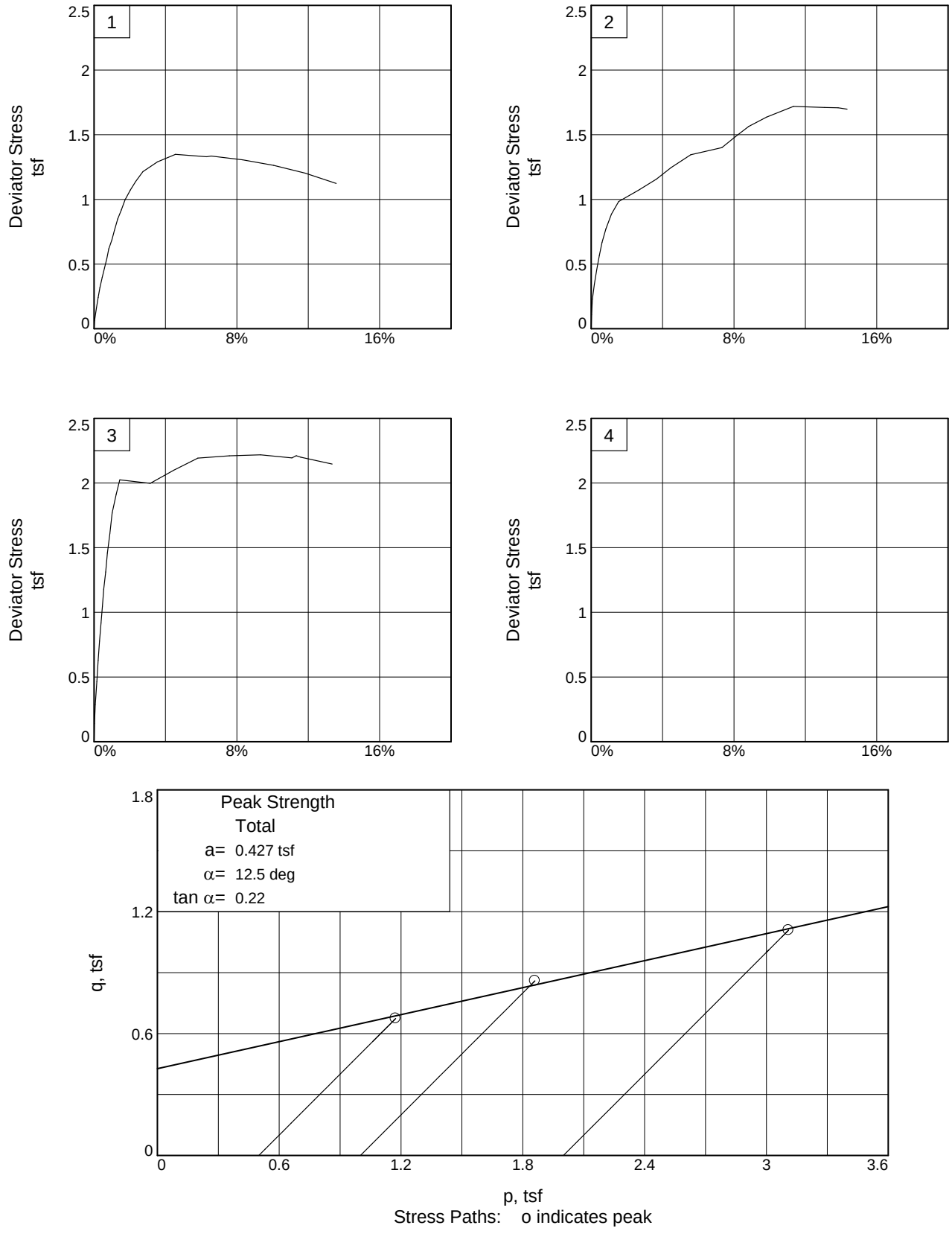
Location: CAA-049

Sample Number: TW-1043 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

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Braun Intertec Corporation
Lenexa, Kansas

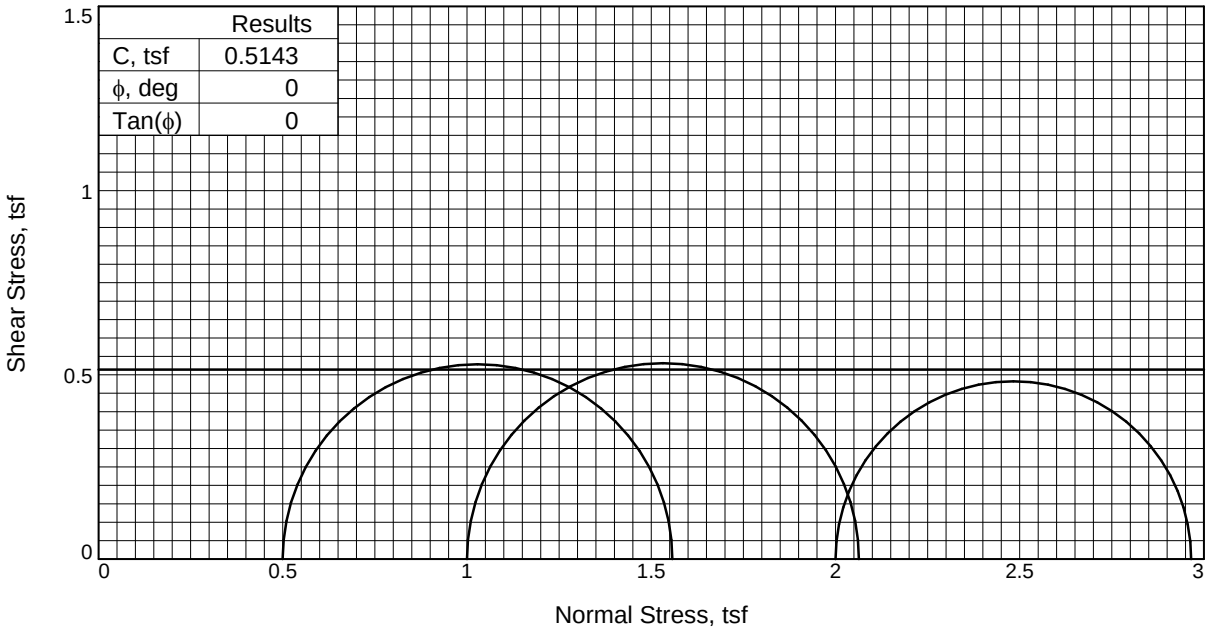
Tested By: ST

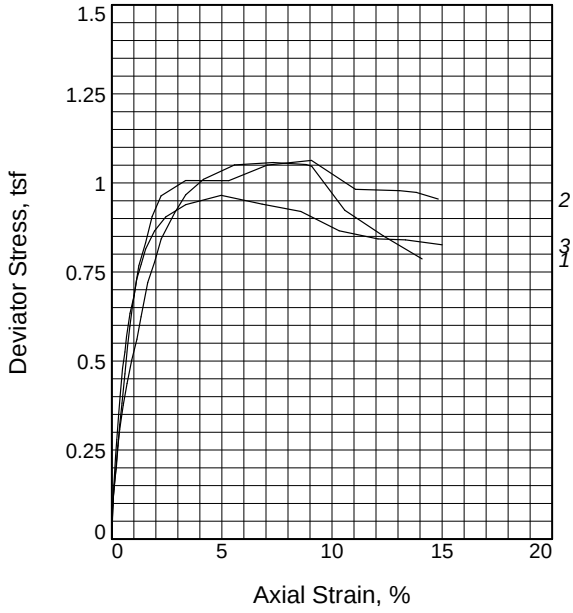


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-049 **Depth:** 17-19' **Sample Number:** TW-1043
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	45.7	45.5	58.2
	Dry Density, pcf	79.3	79.5	69.6
	Saturation, %	109.6	109.7	110.6
	Void Ratio	1.1255	1.1207	1.4215
	Diameter, in.	1.38	1.38	1.34
	Height, in.	2.97	2.82	2.94
At Test	Water Content, %	45.7	45.5	58.2
	Dry Density, pcf	79.3	79.5	69.6
	Saturation, %	109.6	109.7	110.6
	Void Ratio	1.1255	1.1207	1.4215
	Diameter, in.	1.38	1.38	1.34
	Height, in.	2.97	2.82	2.94
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.058	1.063	0.965
Ult. Stress, tsf		0.787	0.955	0.826
σ_1 Failure, tsf		1.557	2.064	2.965
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

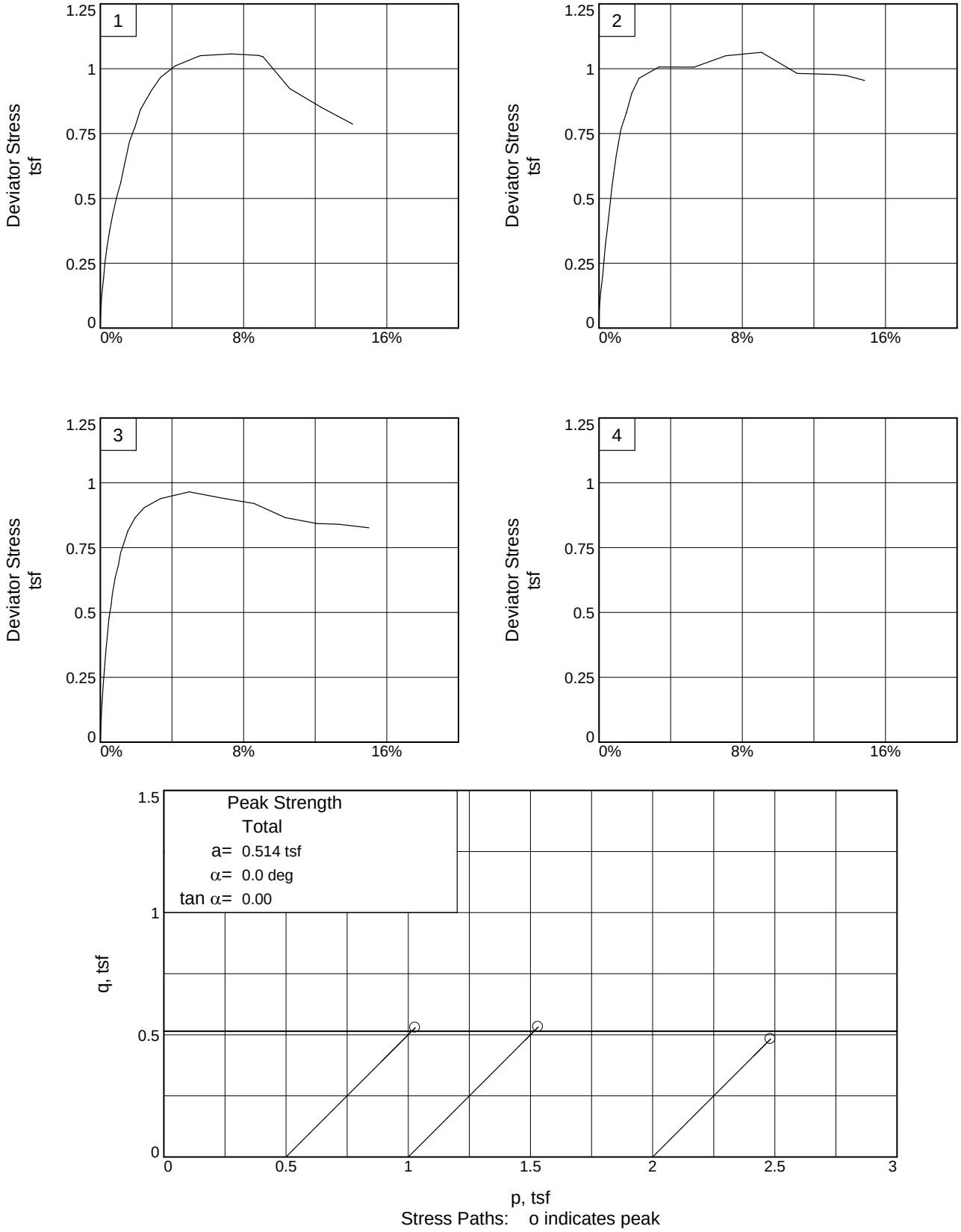
Location: GDRL-051

Sample Number: TW-1032 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

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Braun Intertec Corporation
Lenexa, Kansas

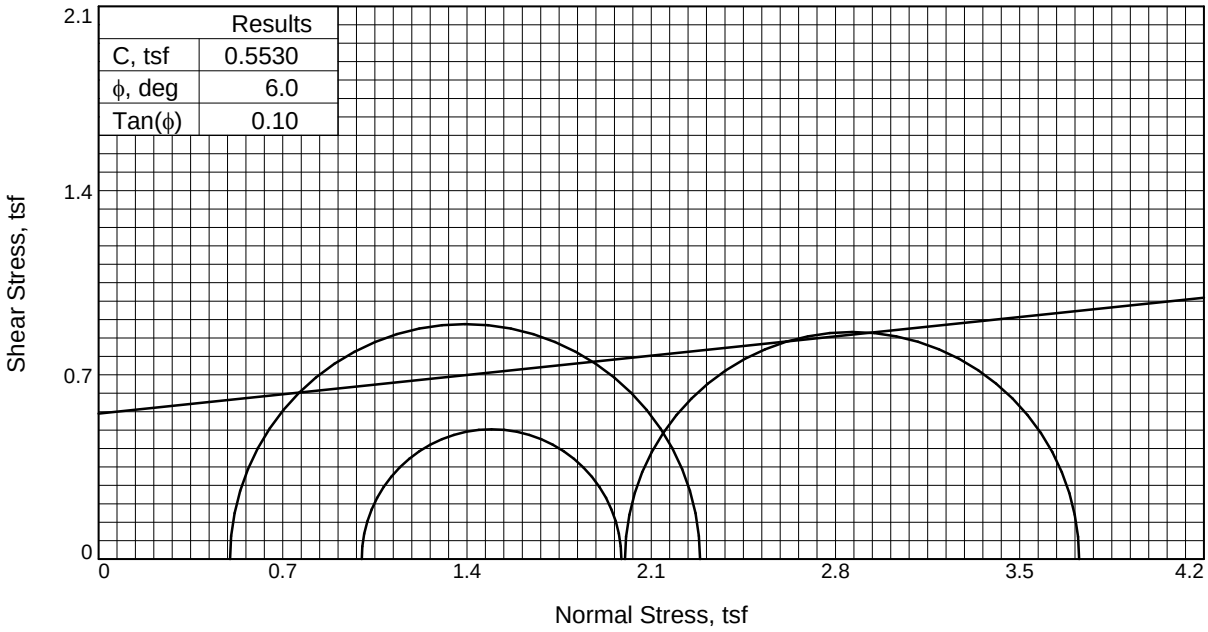
Tested By: ST

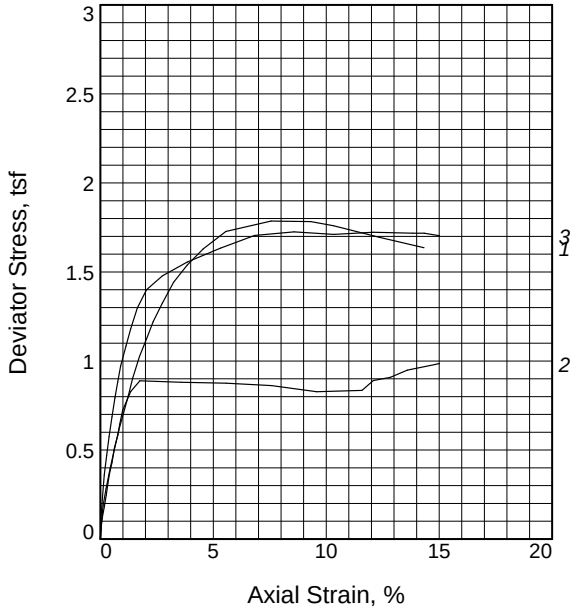


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-051 **Depth:** 7-9' **Sample Number:** TW-1032
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	41.5	44.5	42.0
	Dry Density, pcf	81.1	80.1	79.3
	Saturation, %	103.9	108.8	100.8
	Void Ratio	1.0788	1.1036	1.1260
	Diameter, in.	1.39	1.39	1.38
	Height, in.	2.83	2.81	2.87
At Test	Water Content, %	41.5	44.5	42.0
	Dry Density, pcf	81.1	80.1	79.3
	Saturation, %	103.9	108.8	100.8
	Void Ratio	1.0788	1.1036	1.1260
	Diameter, in.	1.39	1.39	1.38
	Height, in.	2.83	2.81	2.87
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.786	0.986	1.725
Ult. Stress, tsf		1.636	0.986	1.703
σ_1 Failure, tsf		2.285	1.986	3.726
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

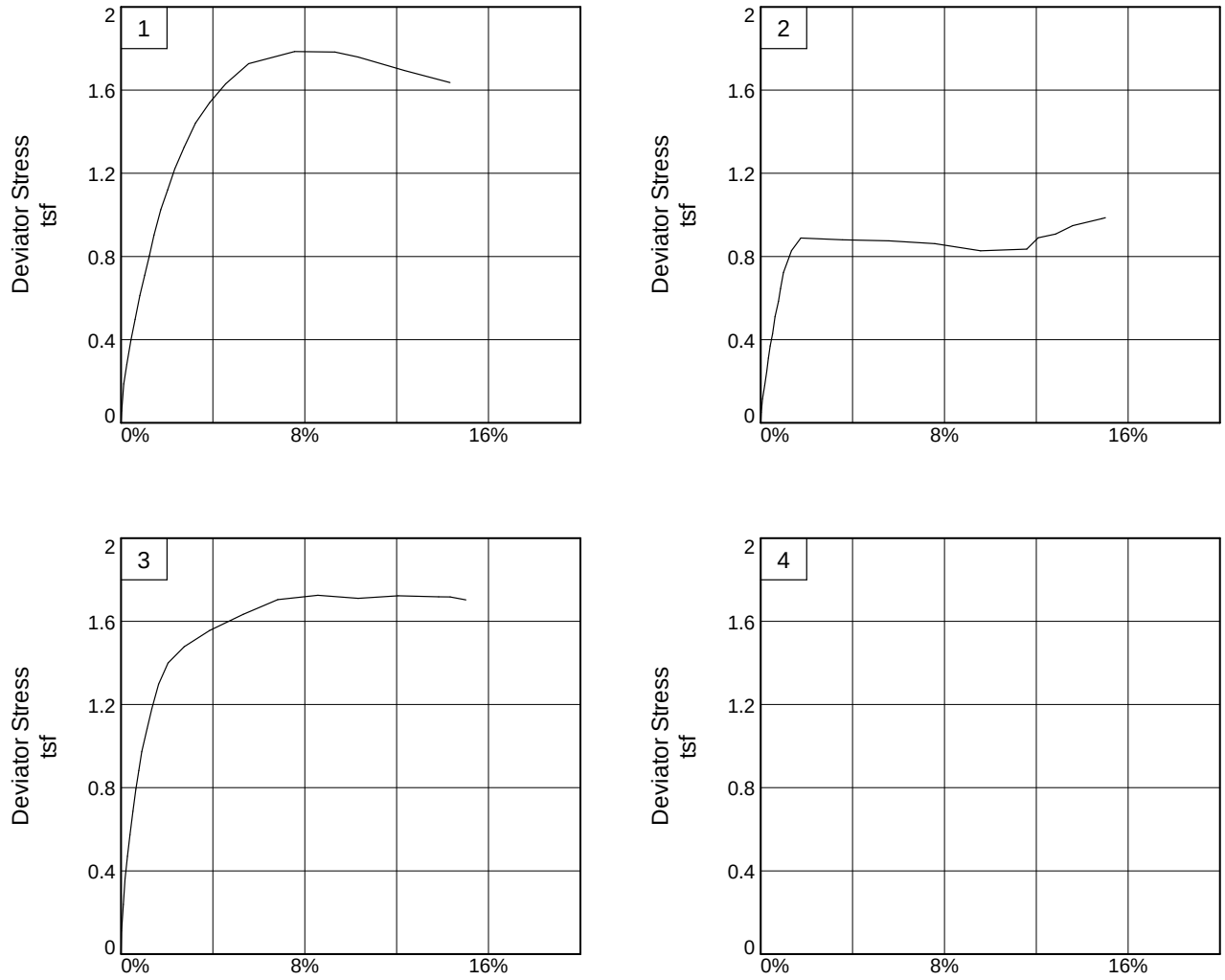
Location: GDRL-053

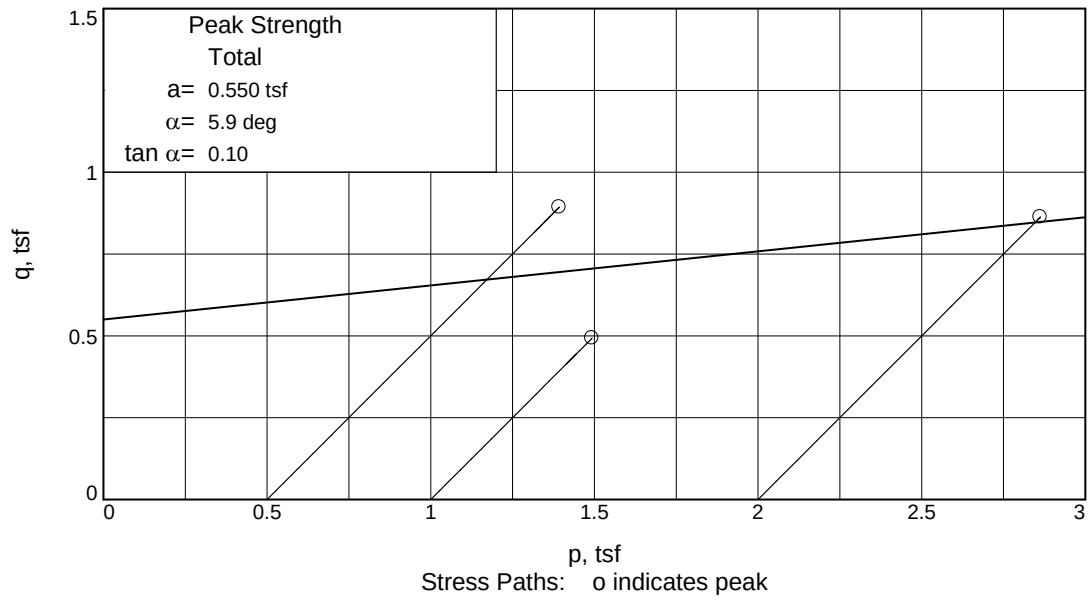
Sample Number: TW-1024 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

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Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST



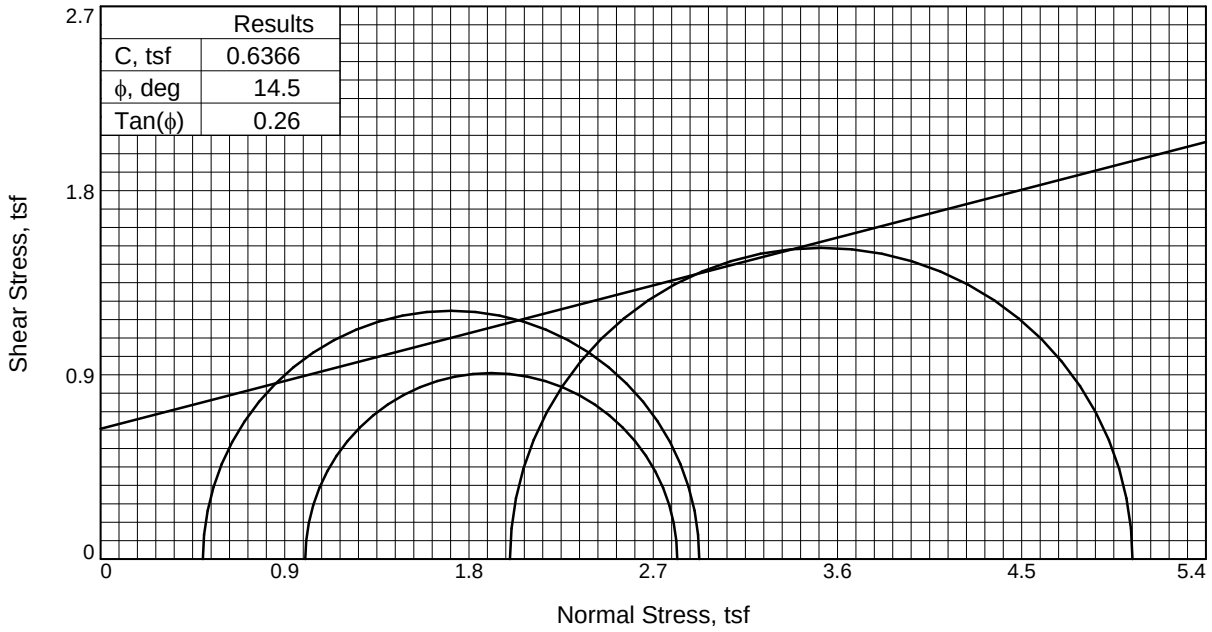


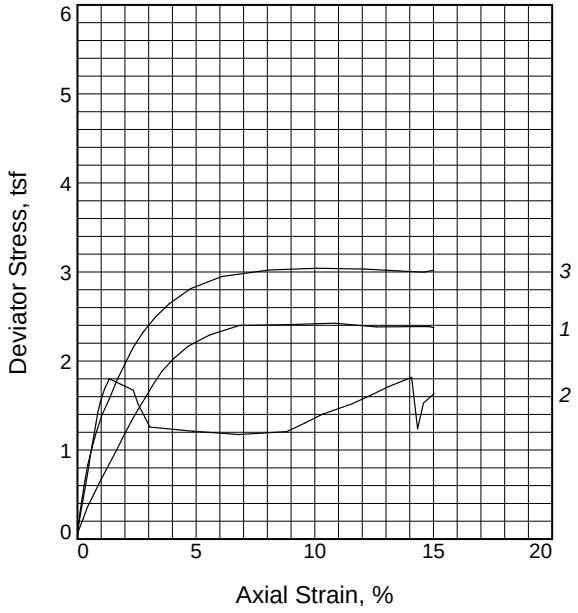
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-053 **Depth:** 7-9' **Sample Number:** TW-1024
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	39.4	42.1	39.4
	Dry Density, pcf	84.7	76.9	82.5
	Saturation, %	107.3	95.3	102.0
	Void Ratio	0.9909	1.1923	1.0430
	Diameter, in.	1.38	1.40	1.39
	Height, in.	2.86	2.79	2.79
At Test	Water Content, %	39.4	42.1	39.4
	Dry Density, pcf	84.7	76.9	82.5
	Saturation, %	107.3	95.3	102.0
	Void Ratio	0.9909	1.1923	1.0430
	Diameter, in.	1.38	1.40	1.39
	Height, in.	2.86	2.79	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.425	1.817	3.041
Ult. Stress, tsf		2.374	1.239	2.998
σ_1 Failure, tsf		2.925	2.817	5.041
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

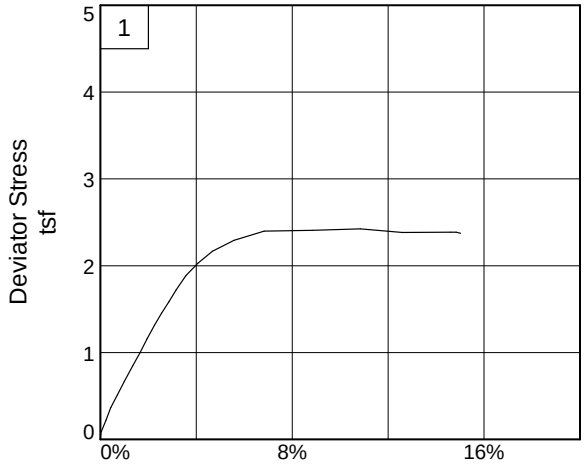
Location: CAA-054

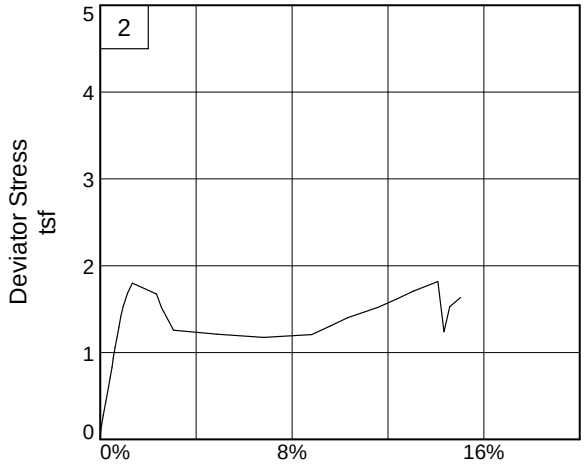
Sample Number: TW-1020 **Depth:** 17-19'

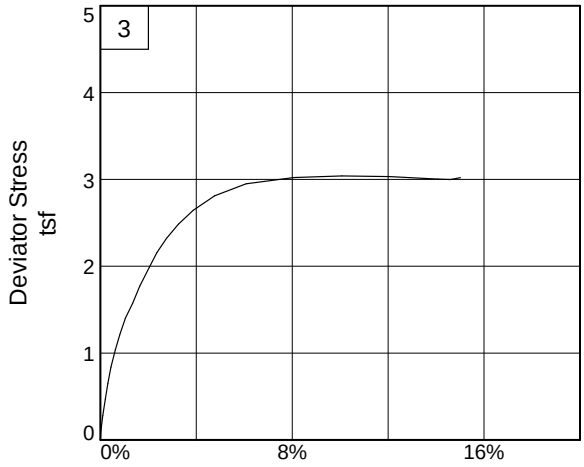
Proj. No.: B2009724 **Date Sampled:** 12/21/2020

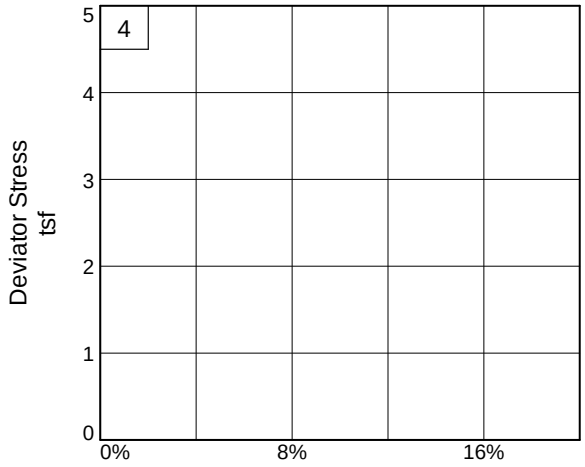
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Braun Intertec Corporation
Lenexa, Kansas

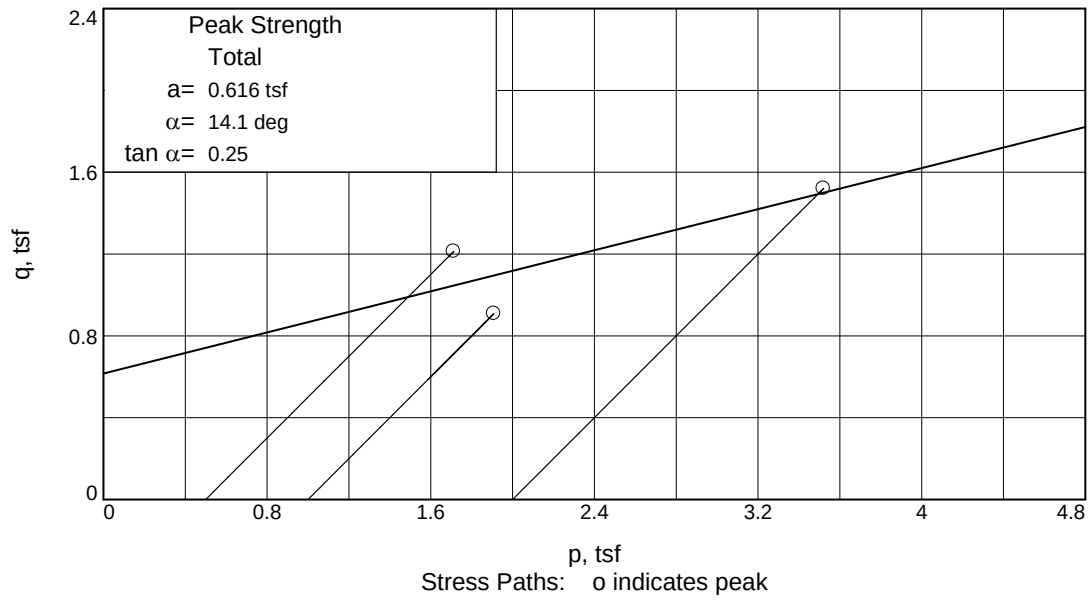
Tested By: ST









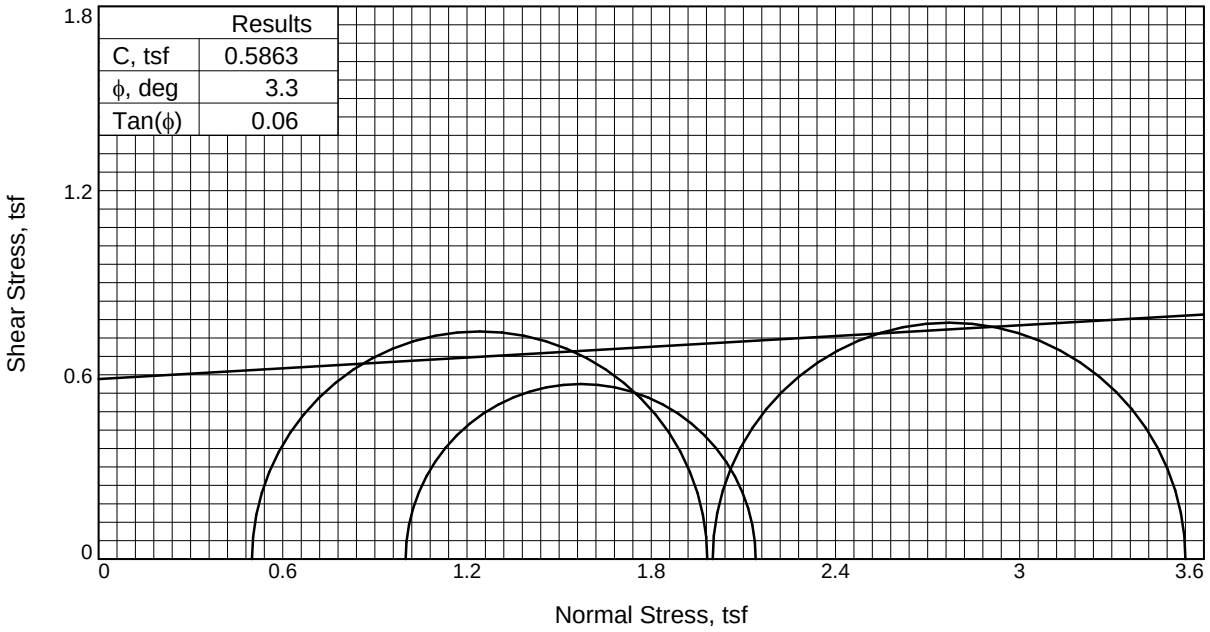


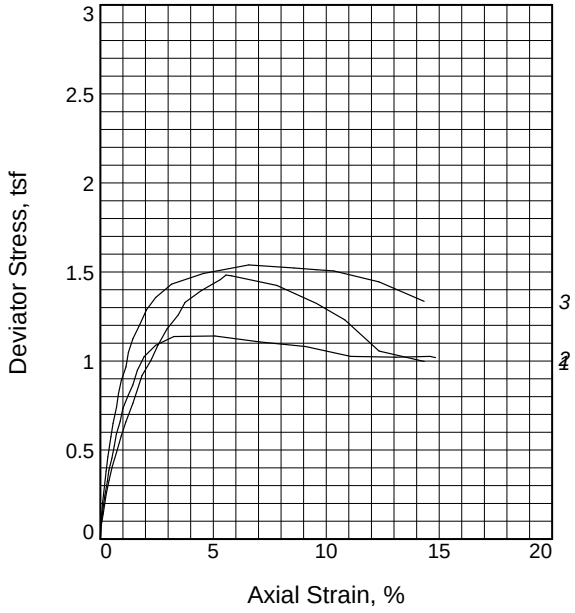
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-054 **Depth:** 17-19' **Sample Number:** TW-1020
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	42.4	48.9	44.9
	Dry Density, pcf	78.4	71.9	75.9
	Saturation, %	99.5	98.2	99.4
	Void Ratio	1.1513	1.3450	1.2212
	Diameter, in.	1.36	1.36	1.37
	Height, in.	2.84	2.80	2.80
At Test	Water Content, %	42.4	48.9	44.9
	Dry Density, pcf	78.4	71.9	75.9
	Saturation, %	99.5	98.2	99.4
	Void Ratio	1.1513	1.3450	1.2212
	Diameter, in.	1.36	1.36	1.37
	Height, in.	2.84	2.80	2.80
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.483	1.140	1.540
Ult. Stress, tsf		0.997	1.019	1.335
σ_1 Failure, tsf		1.983	2.140	3.540
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

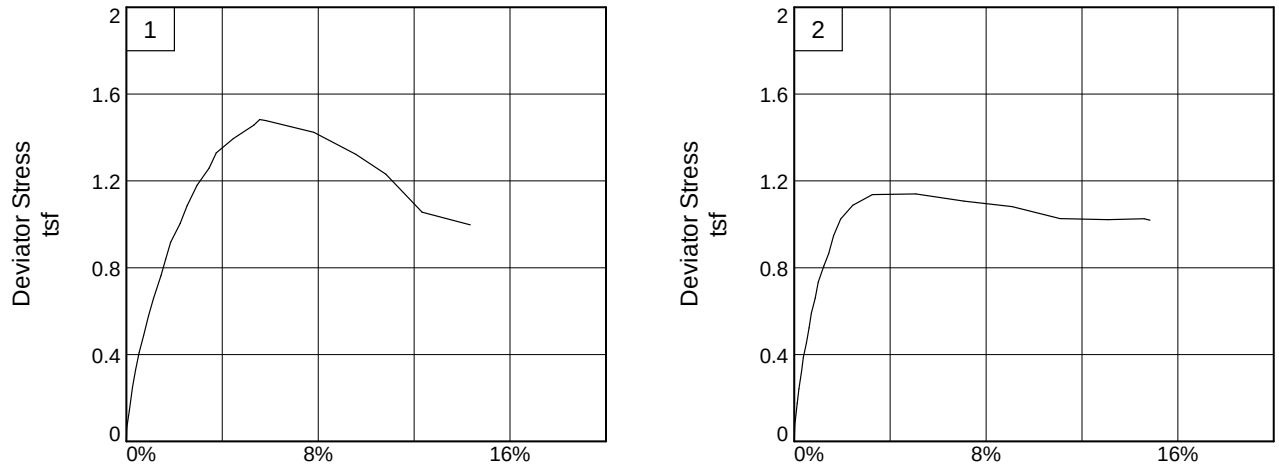
Location: GDRL-055

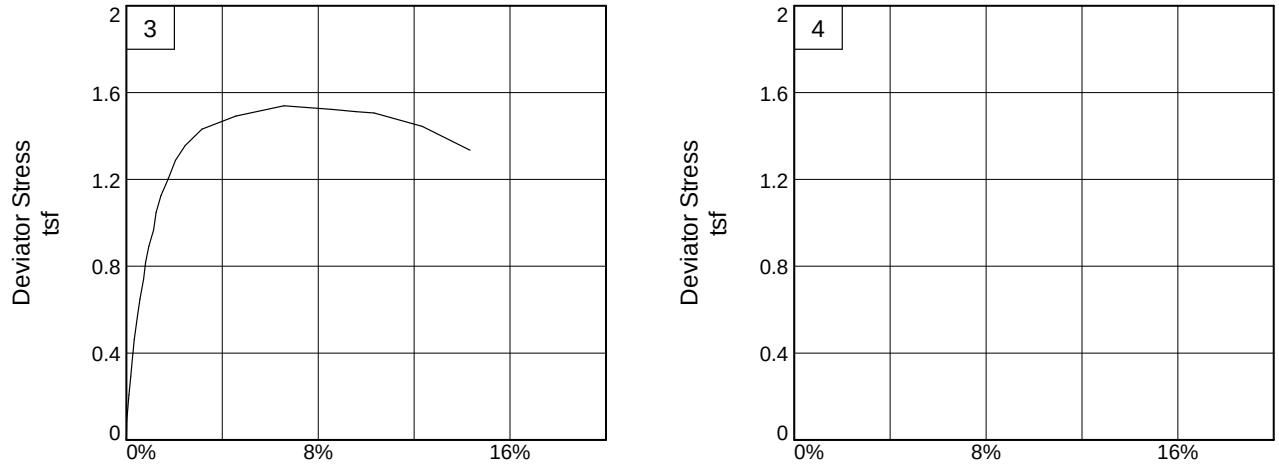
Sample Number: TW-1013 **Depth:** 7-9'

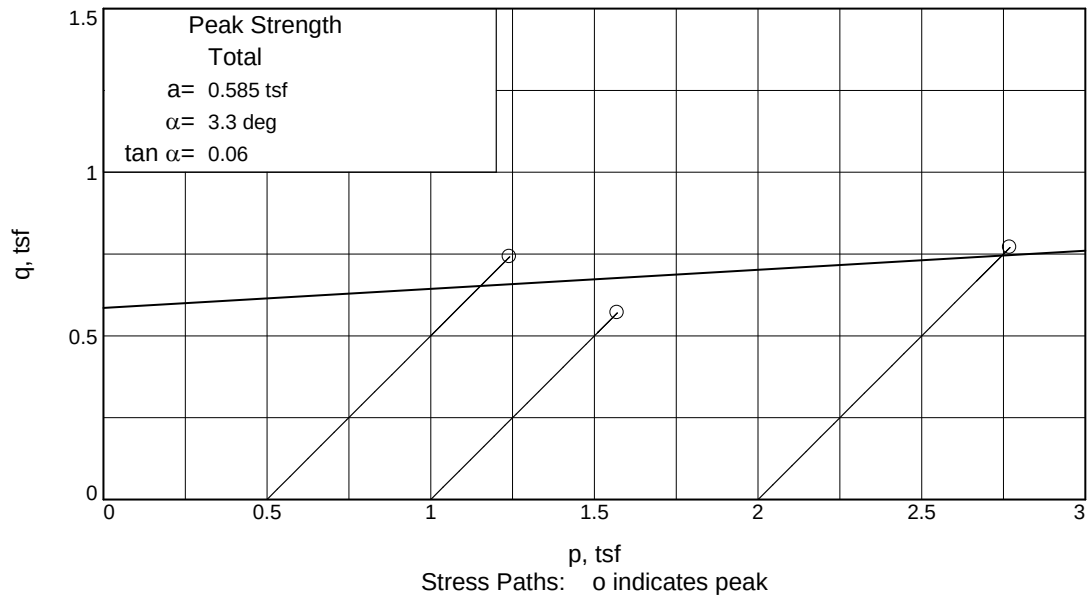
Proj. No.: B2009724 **Date Sampled:** 12/21/2020

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Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST



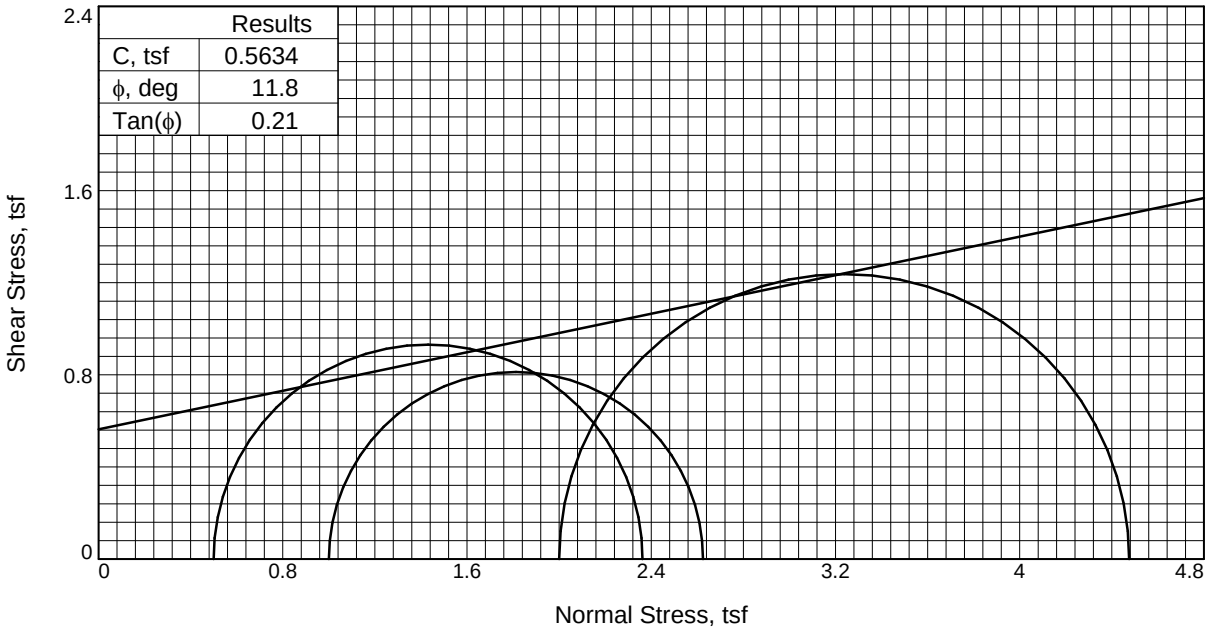


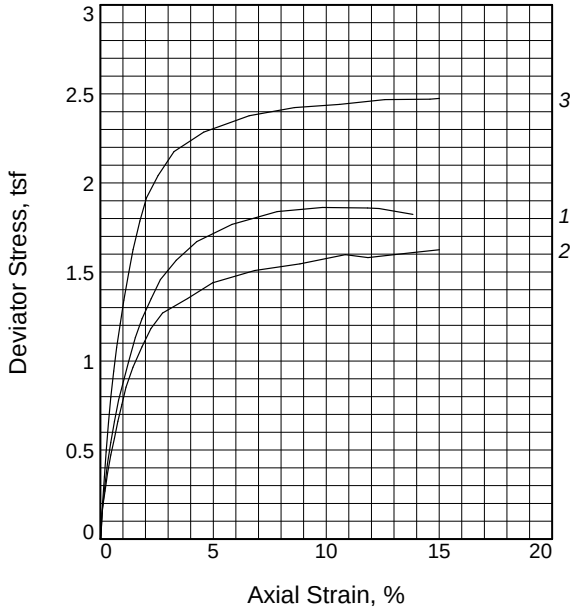


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-055 **Depth:** 7-9' **Sample Number:** TW-1013
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	38.4	37.8	35.0
	Dry Density, pcf	80.1	83.0	86.0
	Saturation, %	94.1	98.9	98.7
	Void Ratio	1.1032	1.0313	0.9589
	Diameter, in.	1.35	1.35	1.35
	Height, in.	2.81	2.80	2.79
At Test	Water Content, %	38.4	37.8	35.0
	Dry Density, pcf	80.1	83.0	86.0
	Saturation, %	94.1	98.9	98.7
	Void Ratio	1.1032	1.0313	0.9589
	Diameter, in.	1.35	1.35	1.35
	Height, in.	2.81	2.80	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.862	1.625	2.475
Ult. Stress, tsf		1.823	1.625	2.475
σ_1 Failure, tsf		2.362	2.625	4.475
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

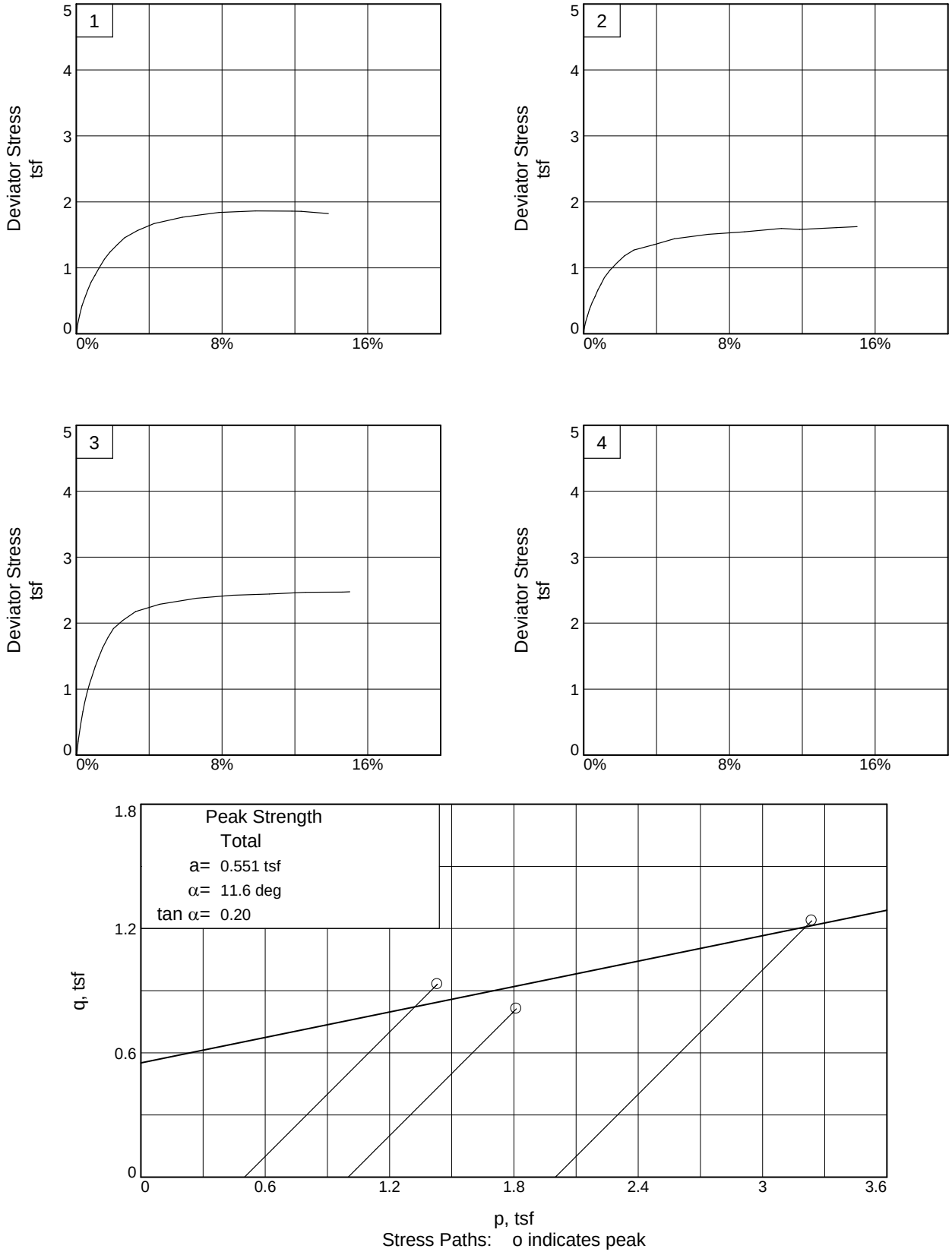
Location: CAA-057

Sample Number: TW-1002 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST



Client: KLJ Engineering, LLC

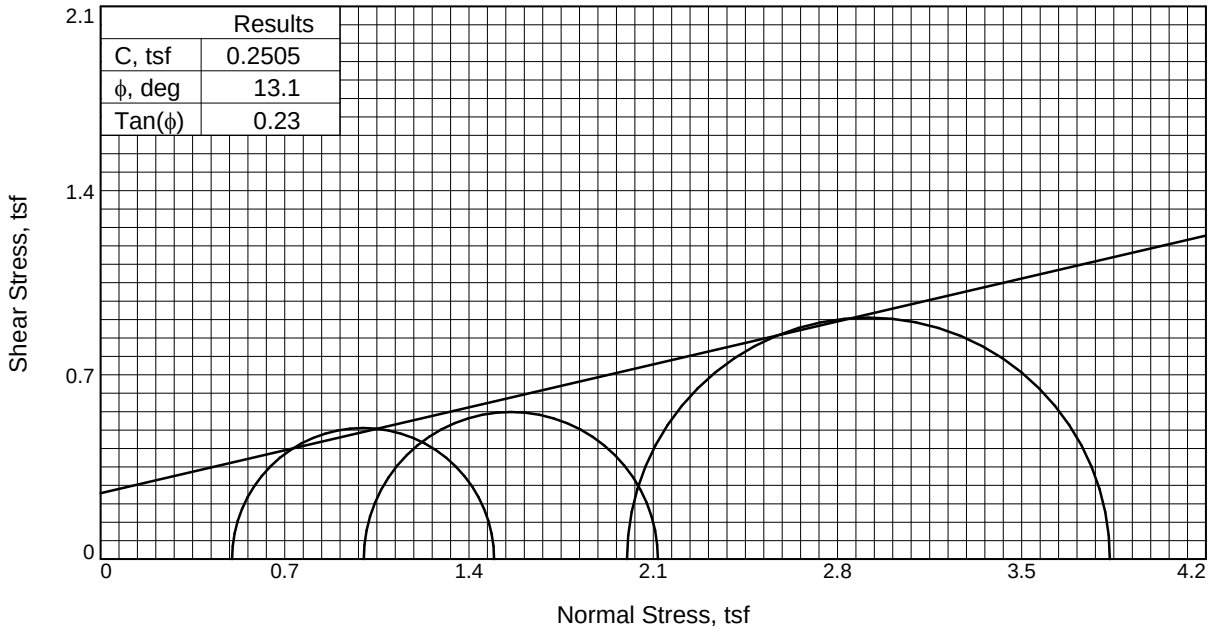
Project: 8-029(200)069; PCN 22888

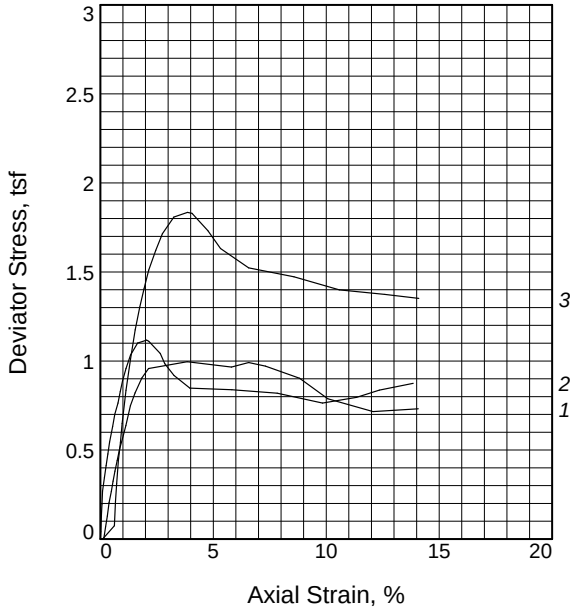
Location: CAA-057 **Depth:** 7-9' **Sample Number:** TW-1002

Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	59.2	58.4	57.1
	Dry Density, pcf	65.8	63.2	66.4
	Saturation, %	102.4	94.5	100.4
	Void Ratio	1.5603	1.6687	1.5371
	Diameter, in.	1.36	1.35	1.35
	Height, in.	2.79	2.80	2.79
At Test	Water Content, %	59.2	58.4	57.1
	Dry Density, pcf	65.8	63.2	66.4
	Saturation, %	102.4	94.5	100.4
	Void Ratio	1.5603	1.6687	1.5371
	Diameter, in.	1.36	1.35	1.35
	Height, in.	2.79	2.80	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.996	1.118	1.835
Ult. Stress, tsf		0.716	0.763	1.352
σ_1 Failure, tsf		1.495	2.118	3.835
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

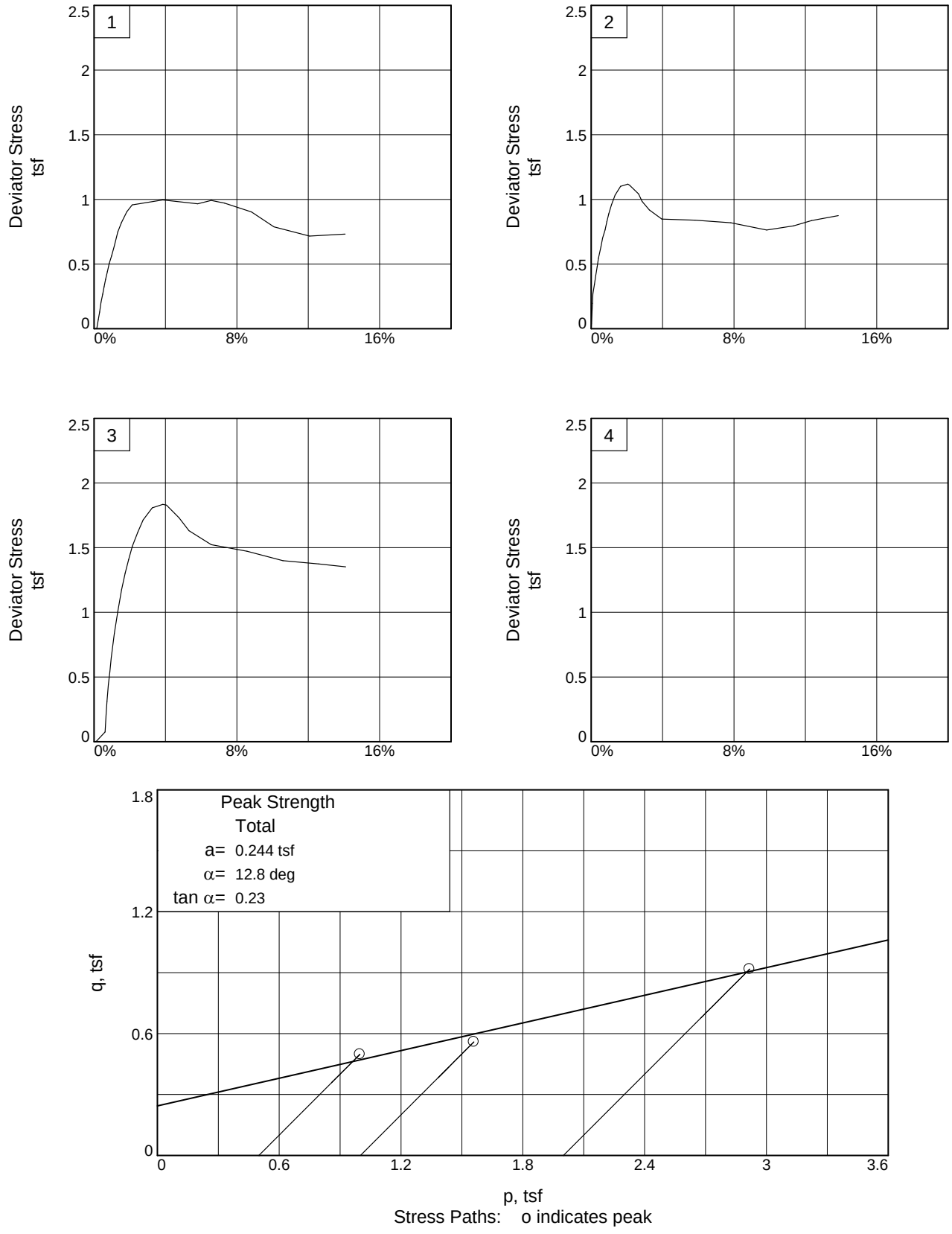
Location: CAA-057

Sample Number: TW-1005 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/21/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

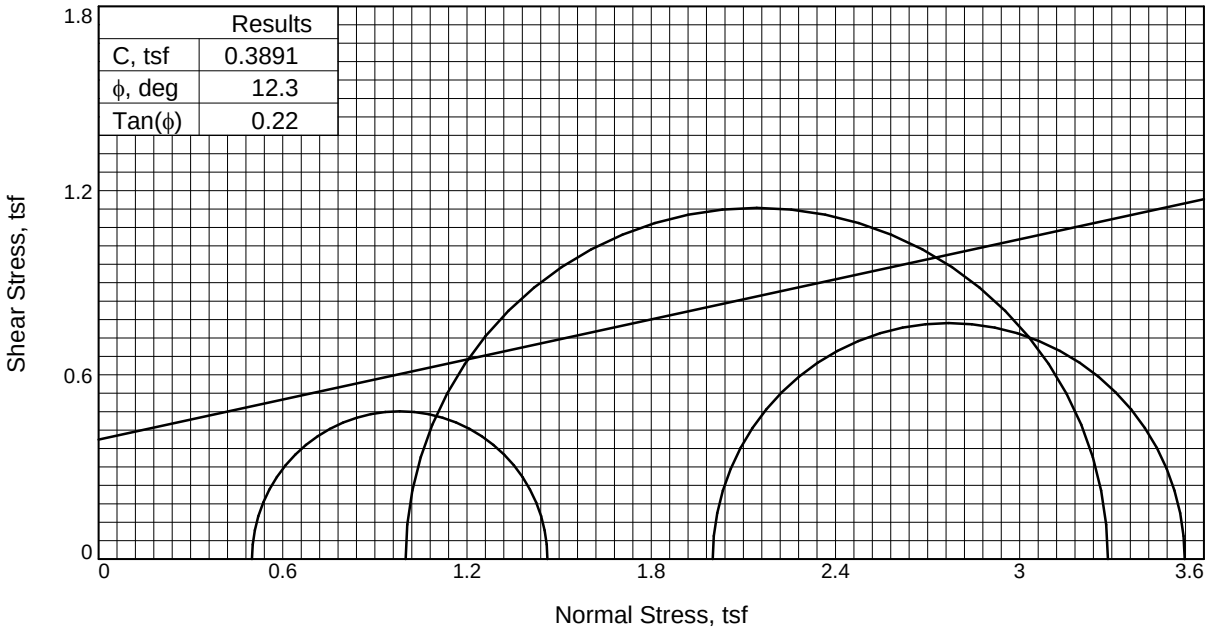
Tested By: ST

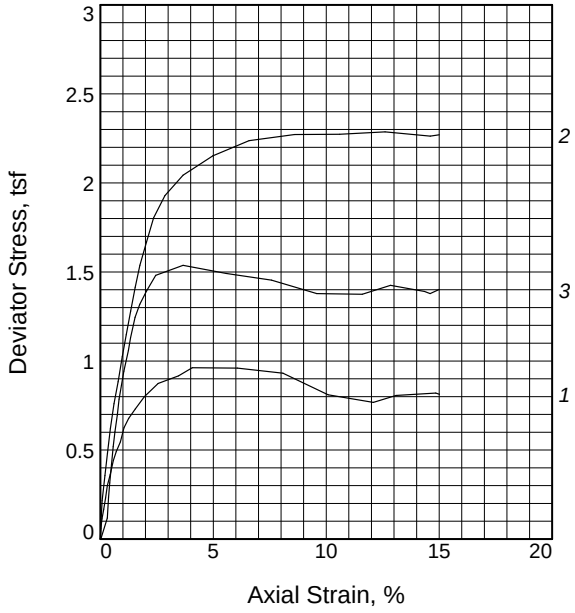


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-057 **Depth:** 17-19' **Sample Number:** TW-1005
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	45.0	42.2	47.2
	Dry Density, pcf	73.3	78.6	75.2
	Saturation, %	93.5	99.4	102.7
	Void Ratio	1.2999	1.1452	1.2419
	Diameter, in.	1.38	1.35	1.34
	Height, in.	2.79	2.80	2.79
At Test	Water Content, %	45.0	42.2	47.2
	Dry Density, pcf	73.3	78.6	75.2
	Saturation, %	93.5	99.4	102.7
	Void Ratio	1.2999	1.1452	1.2419
	Diameter, in.	1.38	1.35	1.34
	Height, in.	2.79	2.80	2.79
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.962	2.287	1.537
Ult. Stress, tsf		0.768	2.263	1.375
σ_1 Failure, tsf		1.462	3.287	3.537
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

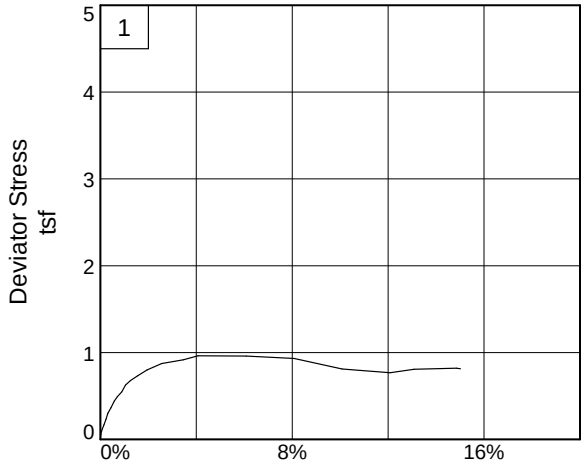
Location: CAA-059

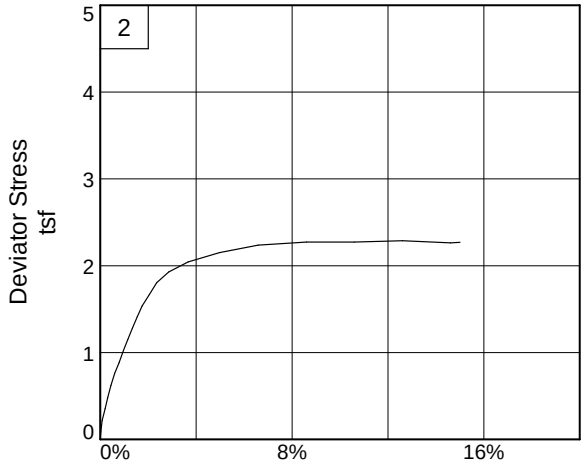
Sample Number: TW-1054 **Depth:** 7-9'

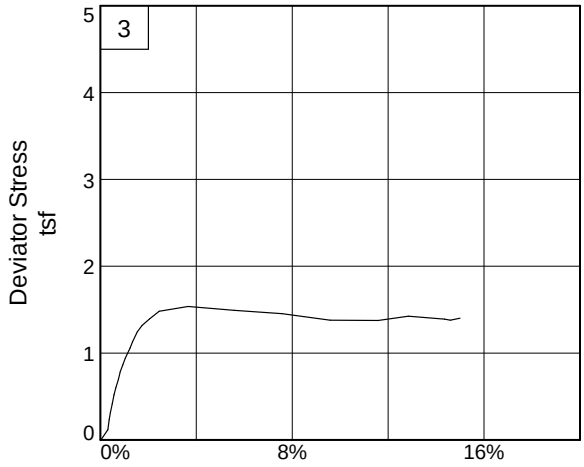
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

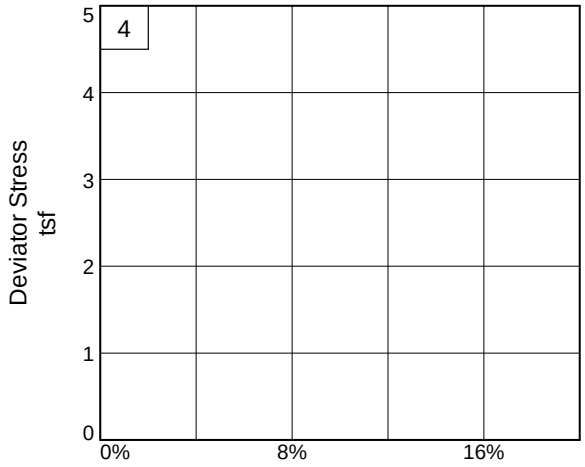
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

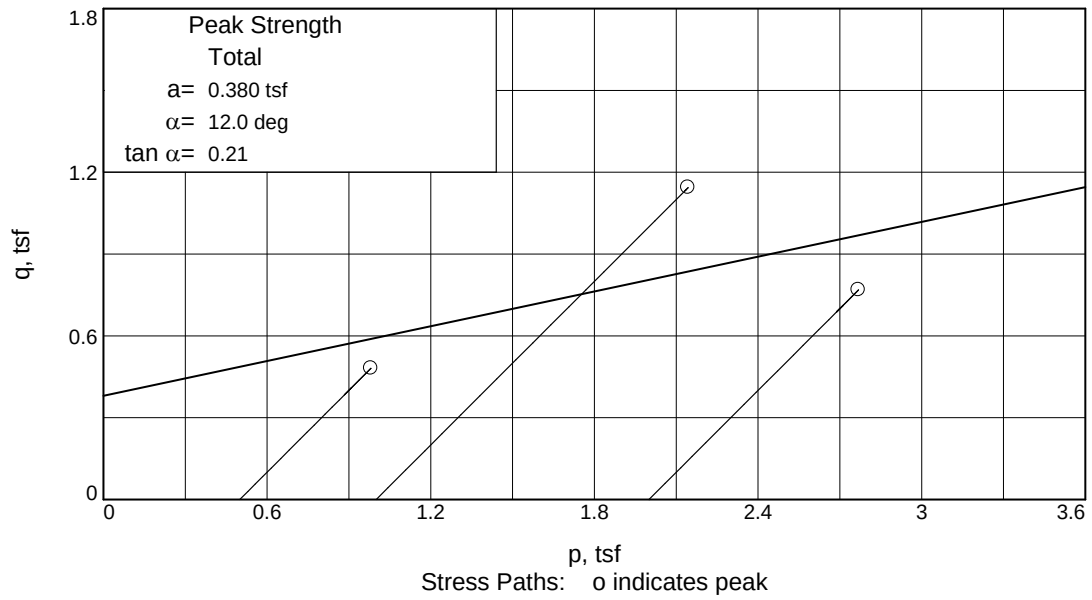
Tested By: ST









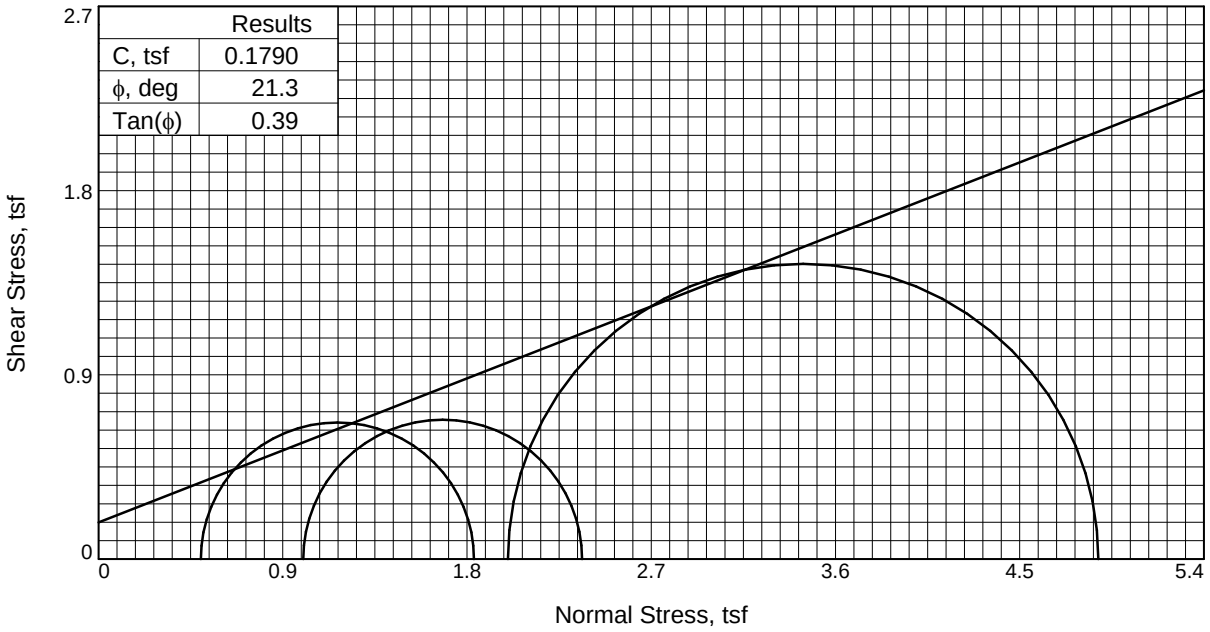


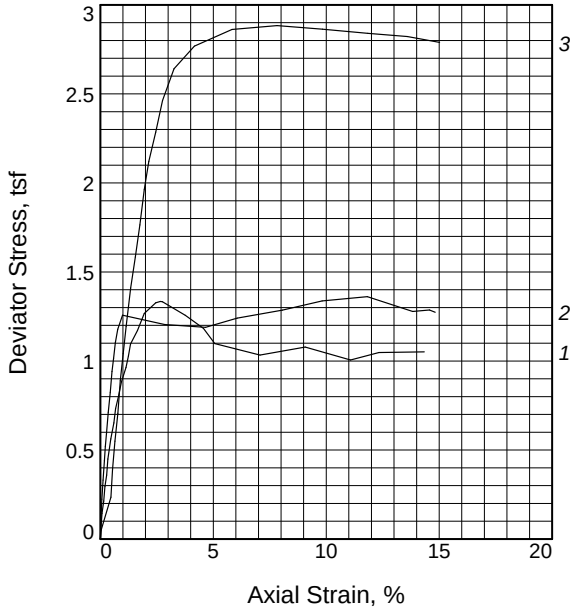
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-059 **Depth:** 7-9' **Sample Number:** TW-1054
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	50.0	48.0	43.2
	Dry Density, pcf	72.8	74.3	80.2
	Saturation, %	102.8	102.2	105.9
	Void Ratio	1.3139	1.2674	1.1027
	Diameter, in.	1.35	1.37	1.34
	Height, in.	2.78	2.79	2.80
At Test	Water Content, %	50.0	48.0	43.2
	Dry Density, pcf	72.8	74.3	80.2
	Saturation, %	102.8	102.2	105.9
	Void Ratio	1.3139	1.2674	1.1027
	Diameter, in.	1.35	1.37	1.34
	Height, in.	2.78	2.79	2.80
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.334	1.362	2.884
Ult. Stress, tsf		1.033	1.274	2.789
σ_1 Failure, tsf		1.834	2.362	4.884
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

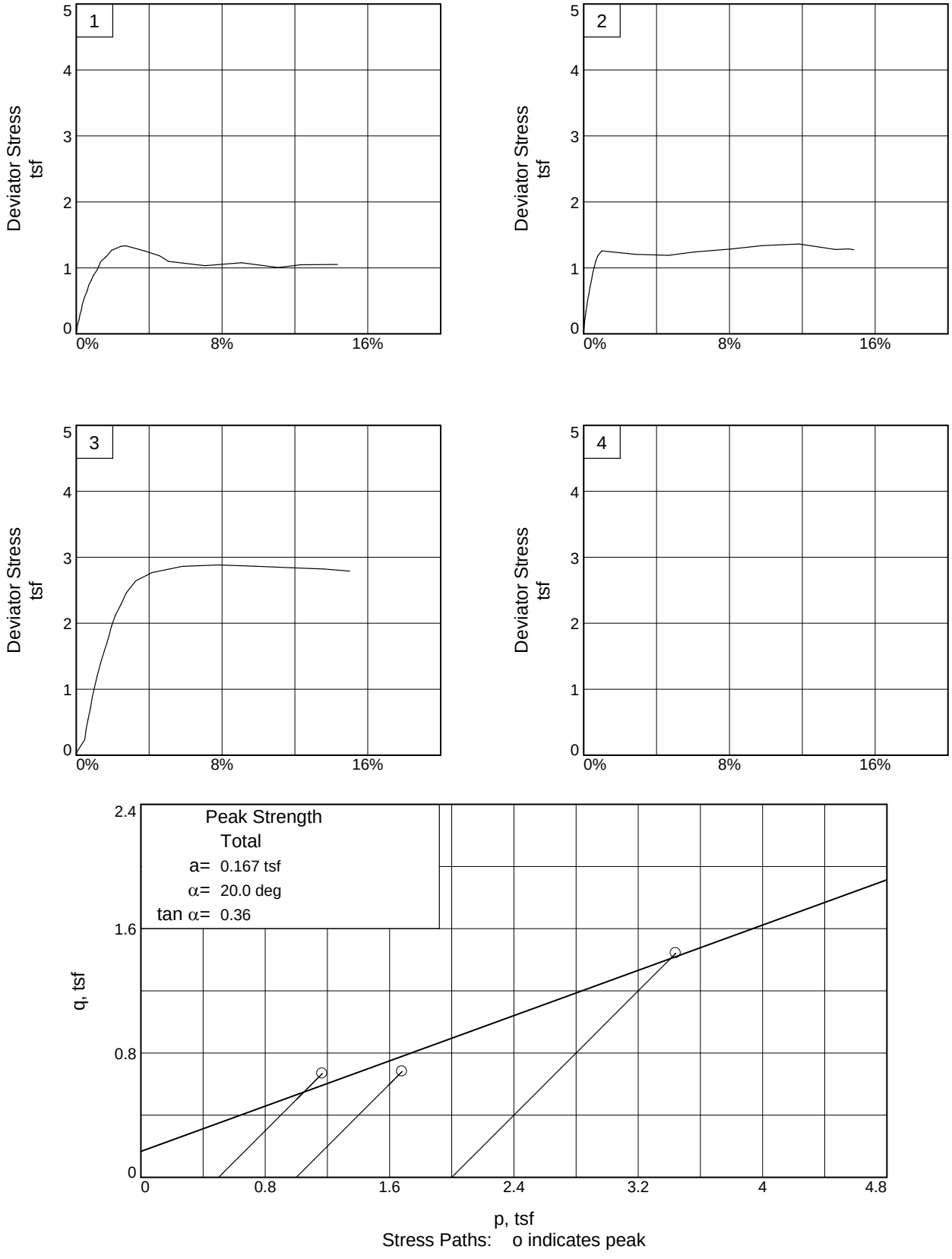
Location: CAA-060

Sample Number: TW-1061 **Depth:** 17-19'

Proj. No.: B2009724 **Date Sampled:** 12/22/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST



Client: KLJ Engineering, LLC

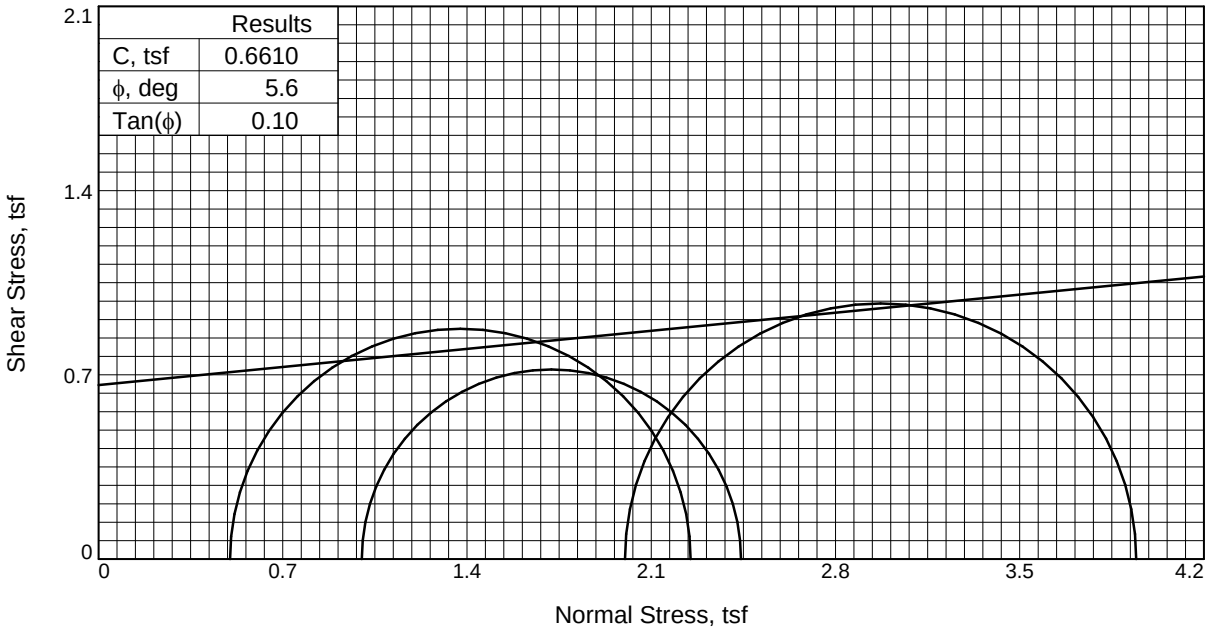
Project: 8-029(200)069; PCN 22888

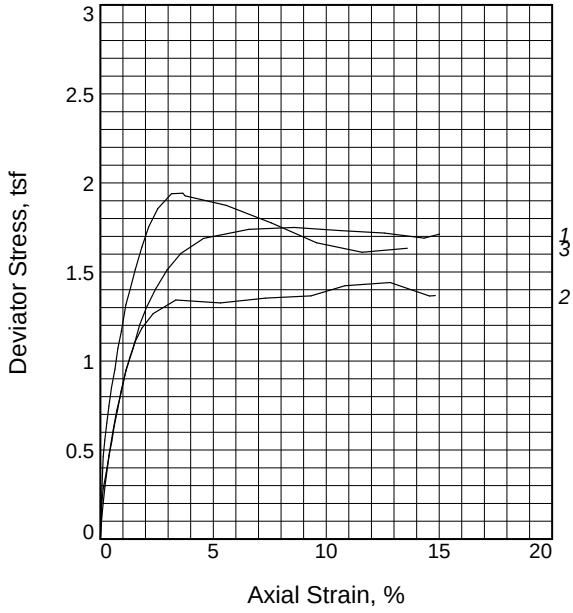
Location: CAA-060 **Depth:** 17-19' **Sample Number:** TW-1061

Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	41.0	43.2	41.1
	Dry Density, pcf	80.1	77.4	79.6
	Saturation, %	100.3	98.9	99.3
	Void Ratio	1.1031	1.1787	1.1164
	Diameter, in.	1.35	1.36	1.38
	Height, in.	2.80	2.81	2.82
At Test	Water Content, %	41.0	43.2	41.1
	Dry Density, pcf	80.1	77.4	79.6
	Saturation, %	100.3	98.9	99.3
	Void Ratio	1.1031	1.1787	1.1164
	Diameter, in.	1.35	1.36	1.38
	Height, in.	2.80	2.81	2.82
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.750	1.441	1.942
Ult. Stress, tsf		1.690	1.365	1.611
σ_1 Failure, tsf		2.249	2.441	3.943
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

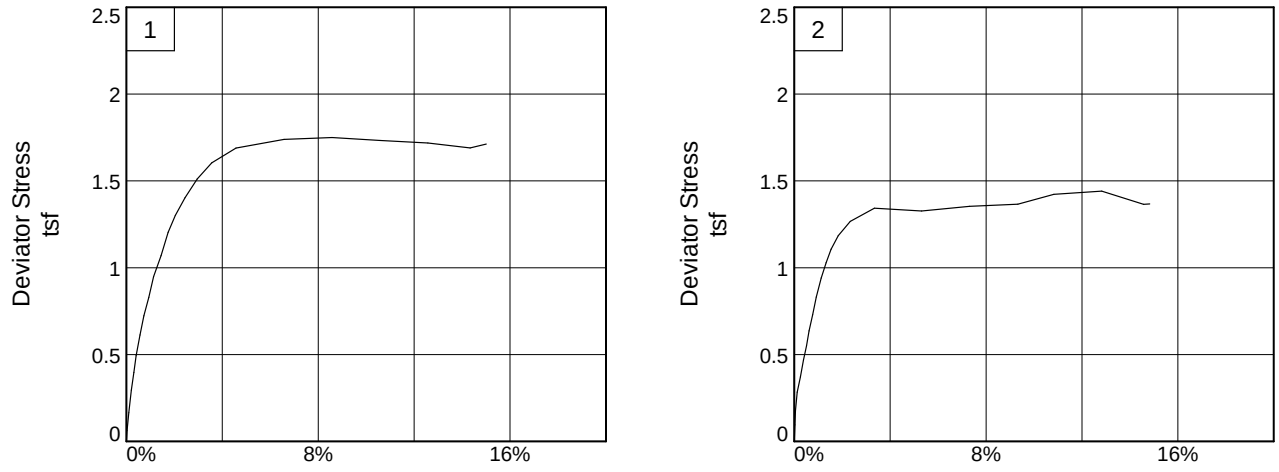
Location: GDRL-062

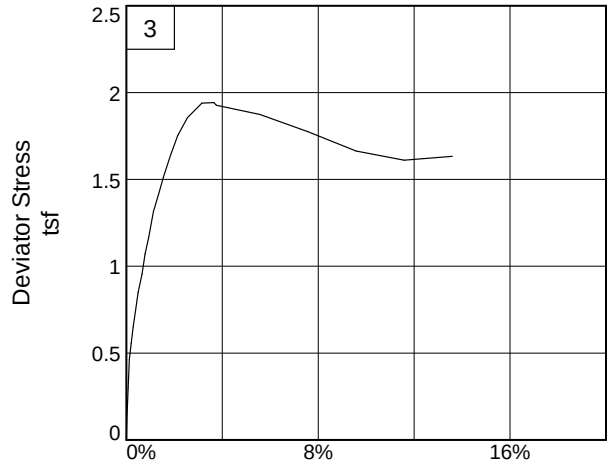
Sample Number: TW-1069 **Depth:** 7-9'

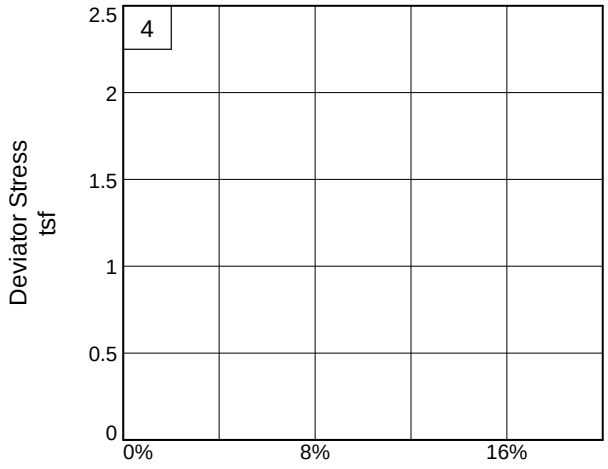
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

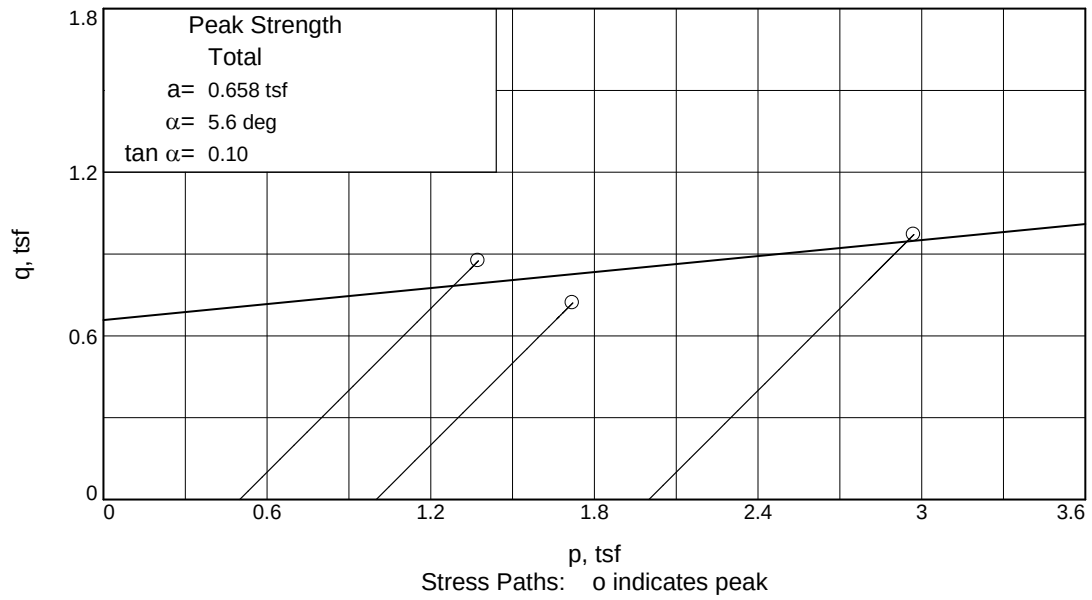
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST







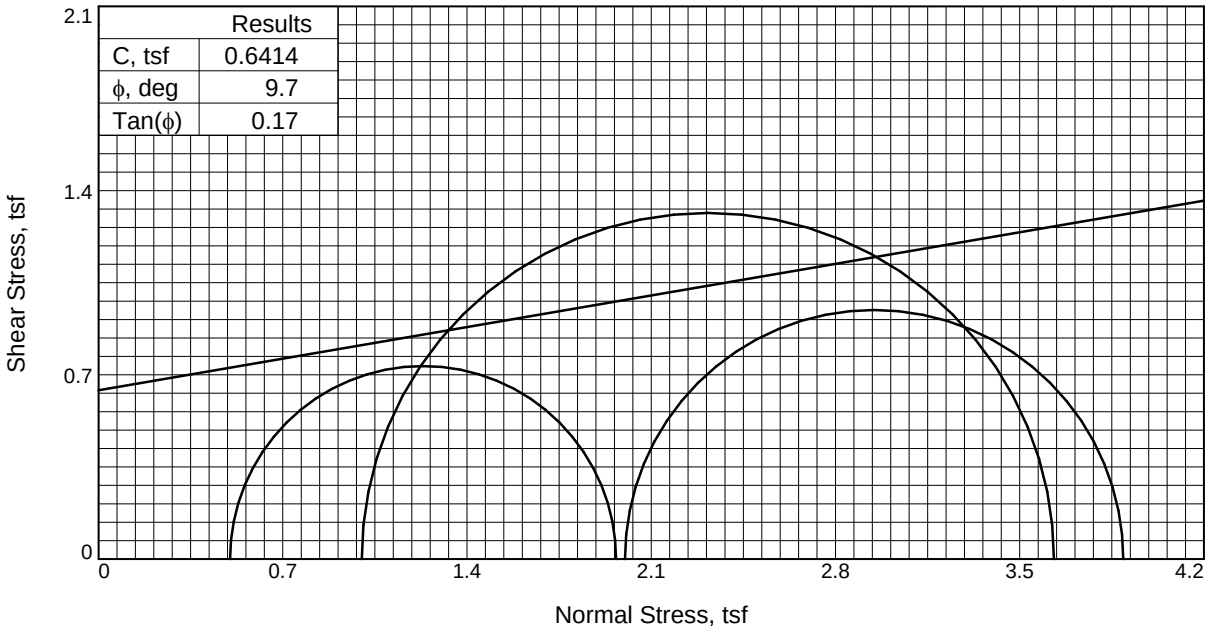


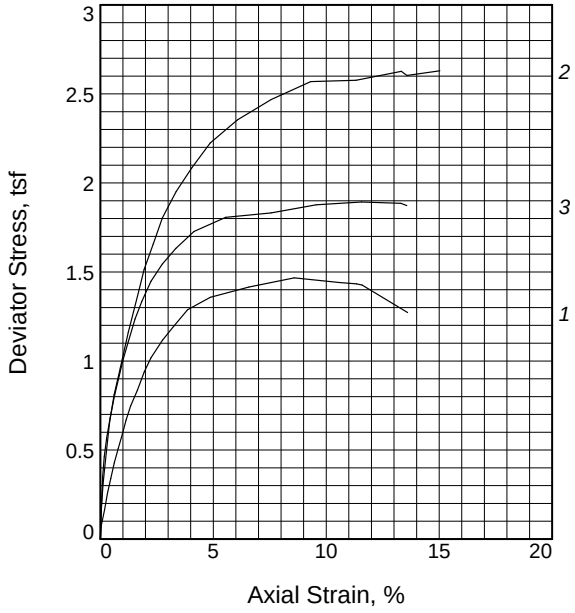
Stress Paths: o indicates peak

Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-062 **Depth:** 7-9' **Sample Number:** TW-1069
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	38.7	38.3	38.8
	Dry Density, pcf	81.2	83.1	81.6
	Saturation, %	97.2	100.5	98.2
	Void Ratio	1.0752	1.0291	1.0666
	Diameter, in.	1.36	1.36	1.37
	Height, in.	2.81	2.77	2.80
At Test	Water Content, %	38.7	38.3	38.8
	Dry Density, pcf	81.2	83.1	81.6
	Saturation, %	97.2	100.5	98.2
	Void Ratio	1.0752	1.0291	1.0666
	Diameter, in.	1.36	1.36	1.37
	Height, in.	2.81	2.77	2.80
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.467	2.630	1.893
Ult. Stress, tsf		1.272	2.630	1.873
σ_1 Failure, tsf		1.966	3.630	3.893
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

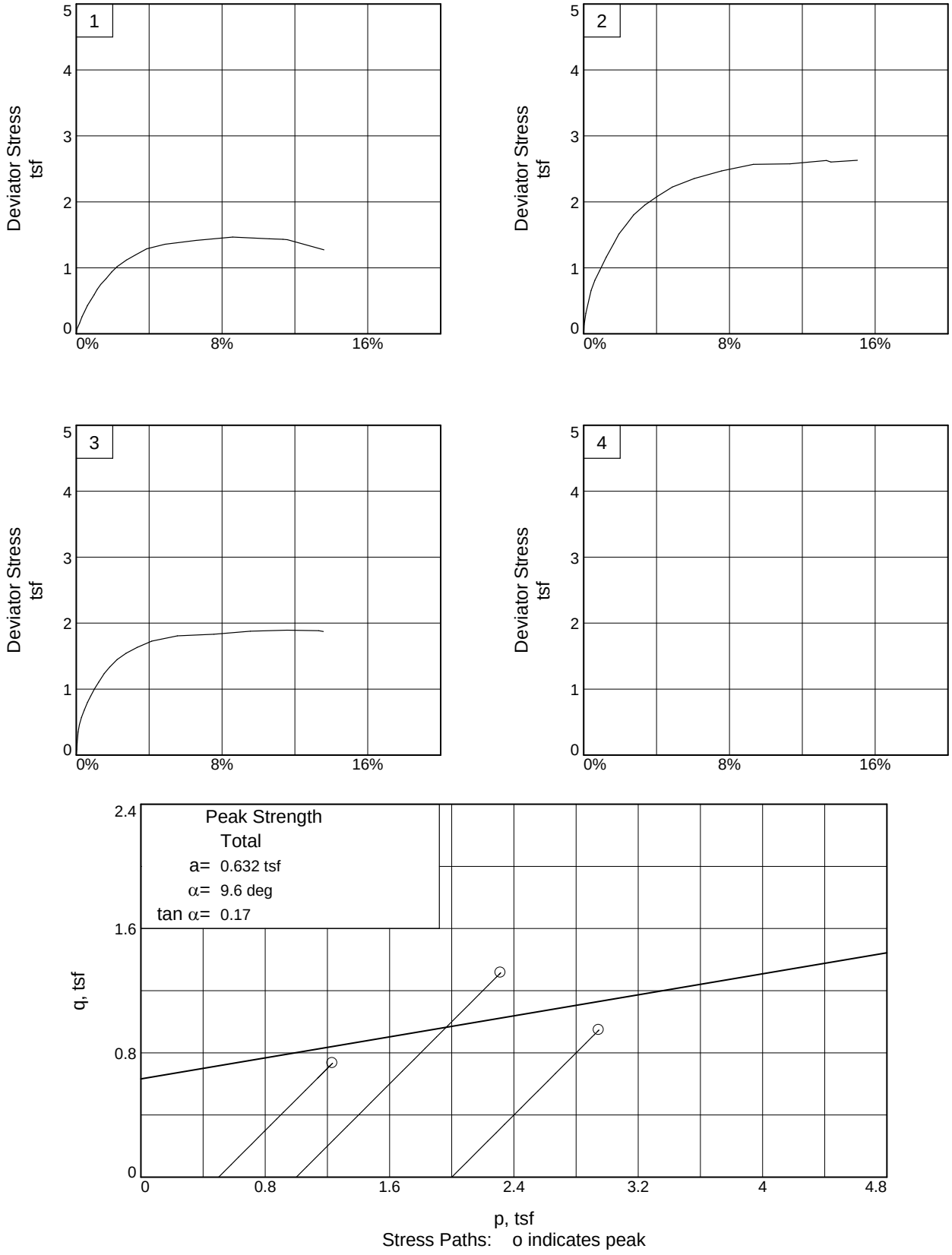
Location: GDRL-064

Sample Number: TW-1077 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/20/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

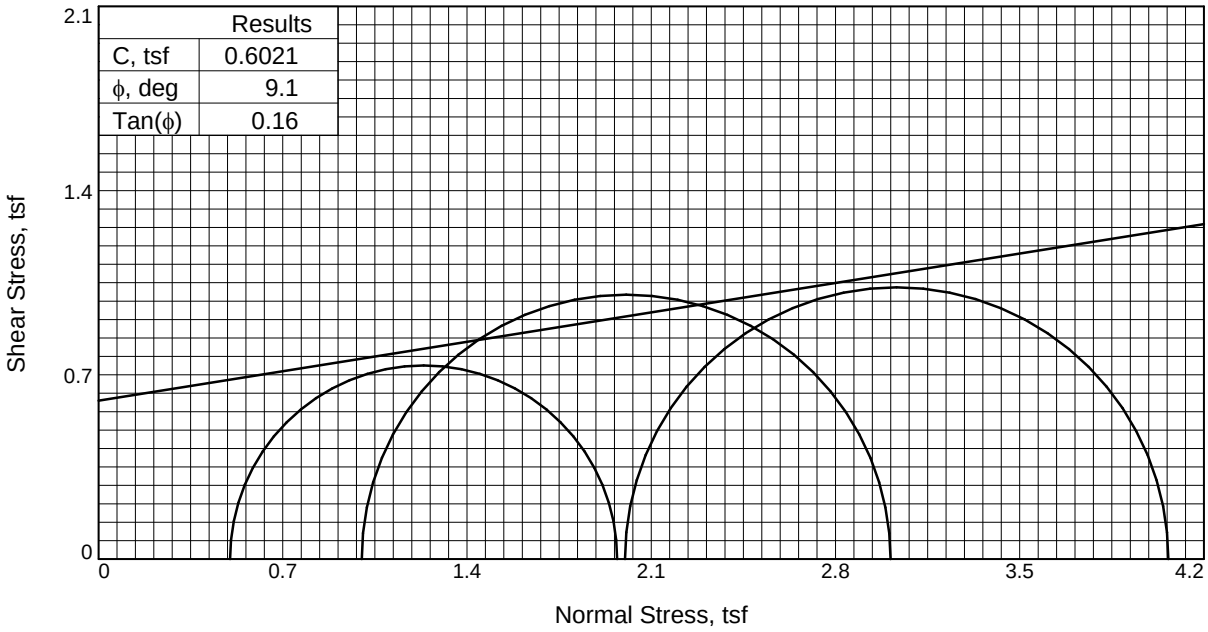
Tested By: ST

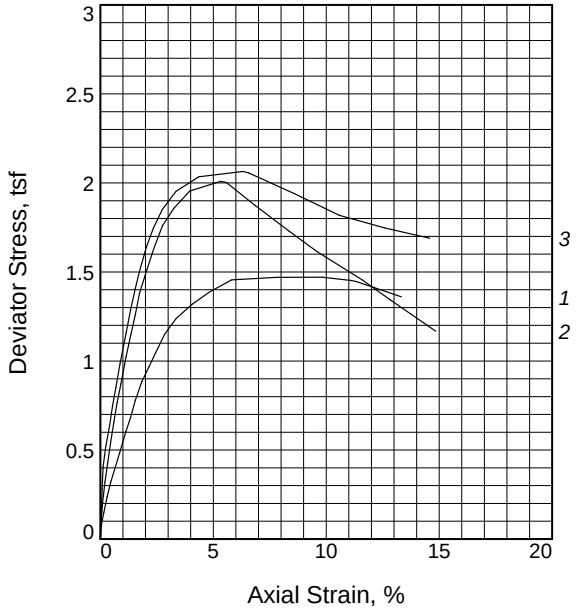


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-064 **Depth:** 7-9' **Sample Number:** TW-1077
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	43.2	42.1	41.3
	Dry Density, pcf	76.9	78.9	77.7
	Saturation, %	97.8	100.1	95.5
	Void Ratio	1.1917	1.1361	1.1692
	Diameter, in.	1.36	1.36	1.36
	Height, in.	2.77	2.80	2.82
At Test	Water Content, %	43.2	42.1	41.3
	Dry Density, pcf	76.9	78.9	77.7
	Saturation, %	97.8	100.1	95.5
	Void Ratio	1.1917	1.1361	1.1692
	Diameter, in.	1.36	1.36	1.36
	Height, in.	2.77	2.80	2.82
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.471	2.009	2.064
Ult. Stress, tsf		1.361	1.167	1.689
σ_1 Failure, tsf		1.971	3.009	4.065
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

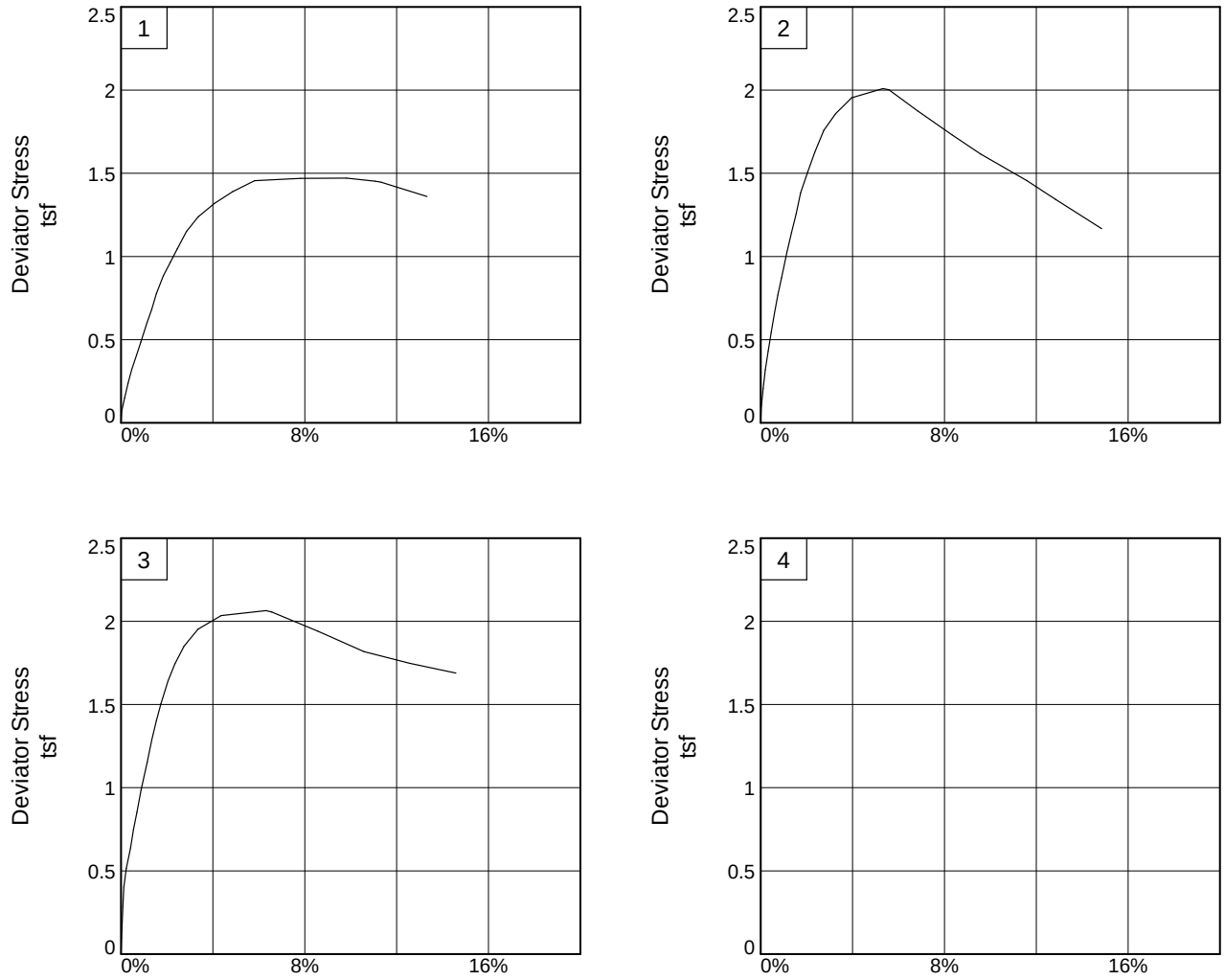
Location: GDRL-066

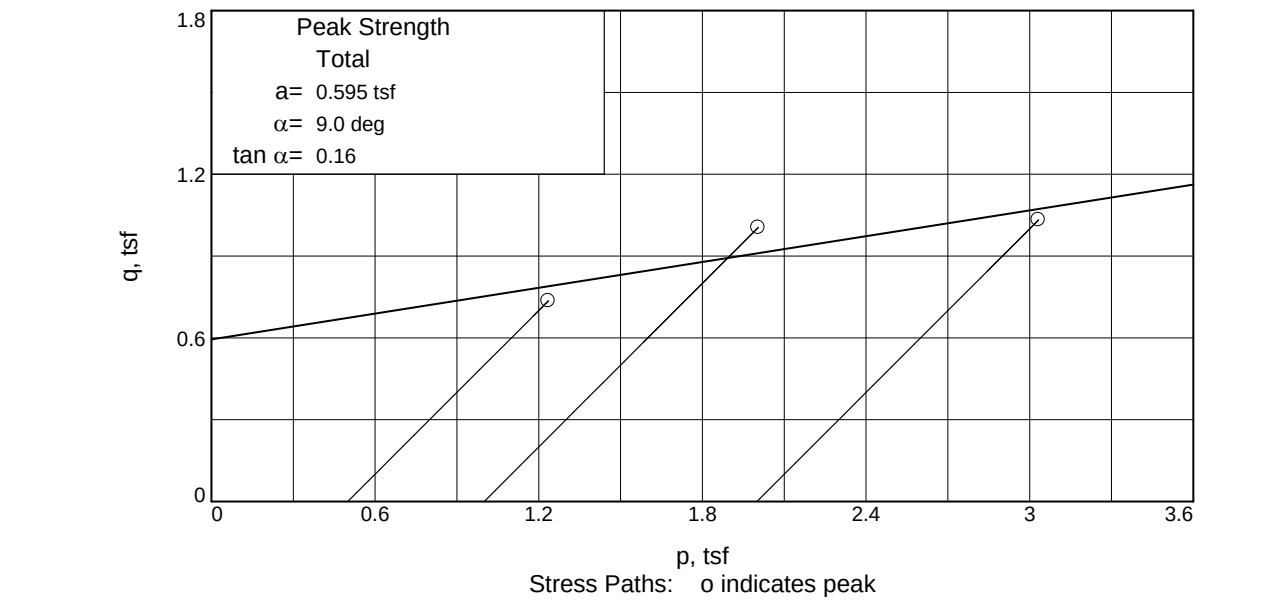
Sample Number: TW-1085 **Depth:** 7-9'

Proj. No.: B2009724 **Date Sampled:** 12/22/2020

TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

Tested By: ST

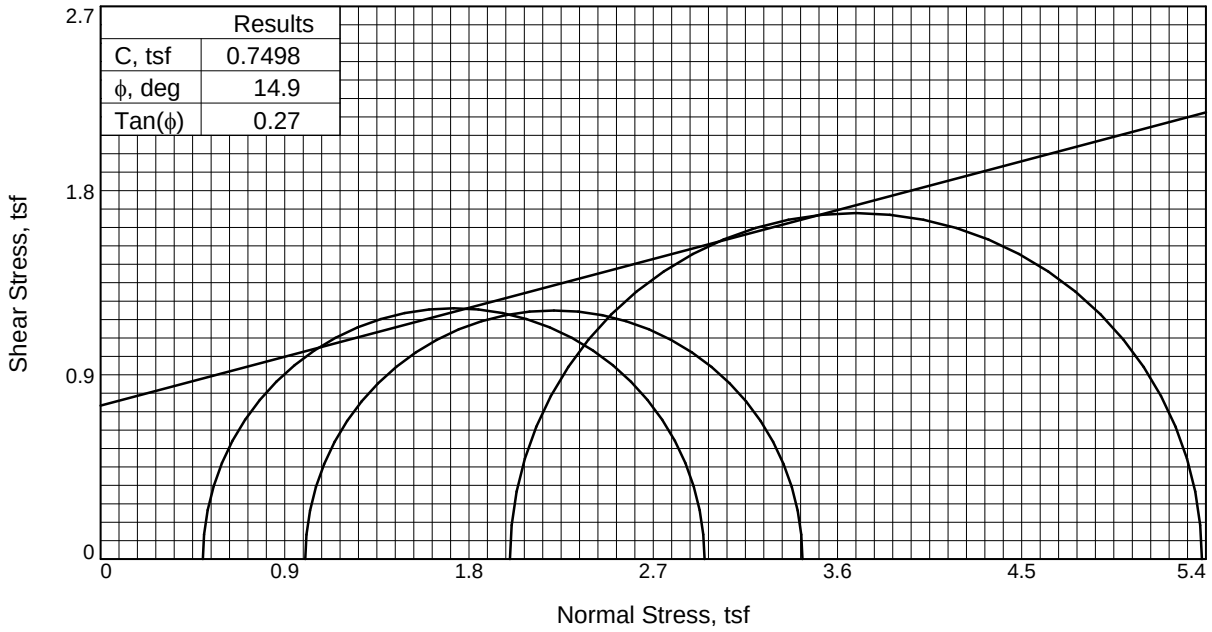


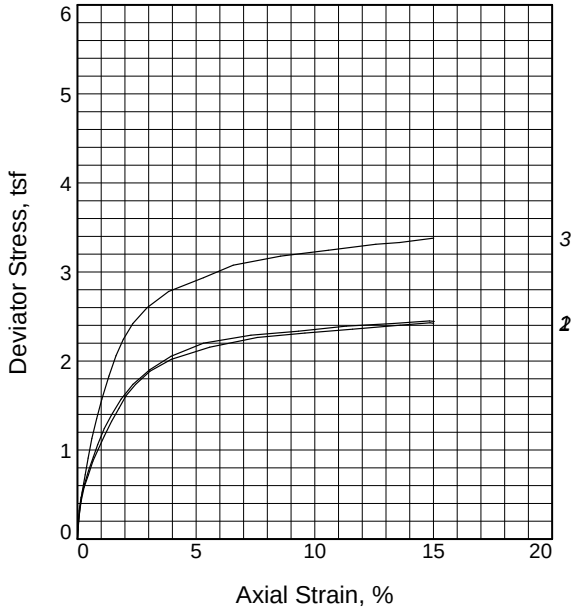


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: GDRL-066 **Depth:** 7-9' **Sample Number:** TW-1085
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	34.6	34.8	35.3
	Dry Density, pcf	87.3	86.6	85.4
	Saturation, %	100.4	99.3	98.1
	Void Ratio	0.9304	0.9453	0.9730
	Diameter, in.	1.37	1.37	1.37
	Height, in.	2.79	2.80	2.80
At Test	Water Content, %	34.6	34.8	35.3
	Dry Density, pcf	87.3	86.6	85.4
	Saturation, %	100.4	99.3	98.1
	Void Ratio	0.9304	0.9453	0.9730
	Diameter, in.	1.37	1.37	1.37
	Height, in.	2.79	2.80	2.80
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.451	2.429	3.380
Ult. Stress, tsf		2.443	2.424	3.380
σ_1 Failure, tsf		2.951	3.429	5.380
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.7

Remarks: UU Triaxial: ASTM D2850.

Figure _____

Client: KLJ Engineering, LLC

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

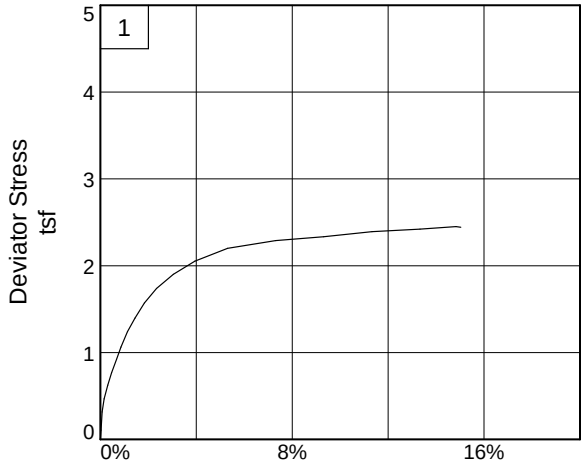
Location: CAA-067

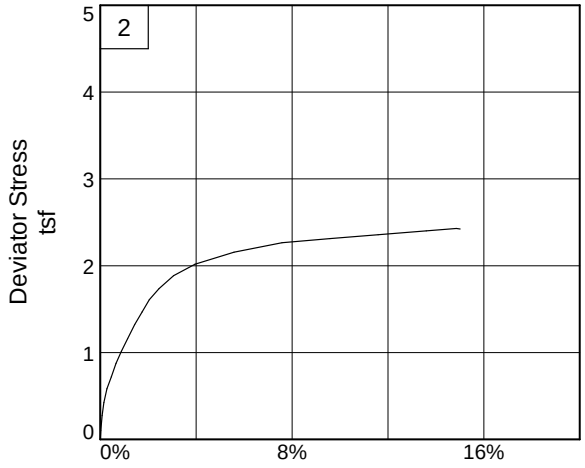
Sample Number: TW-1092 **Depth:** 17-19'

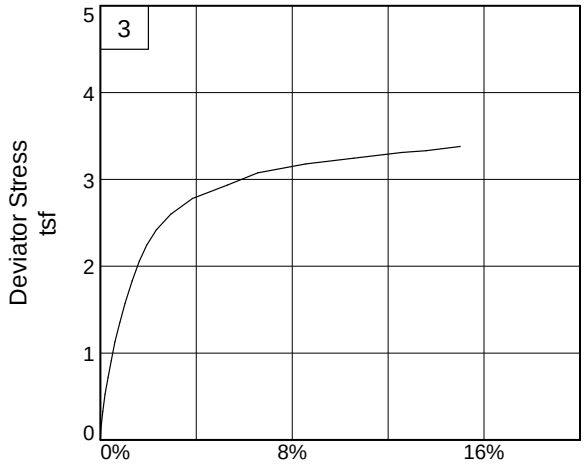
Proj. No.: B2009724 **Date Sampled:** 12/22/2020

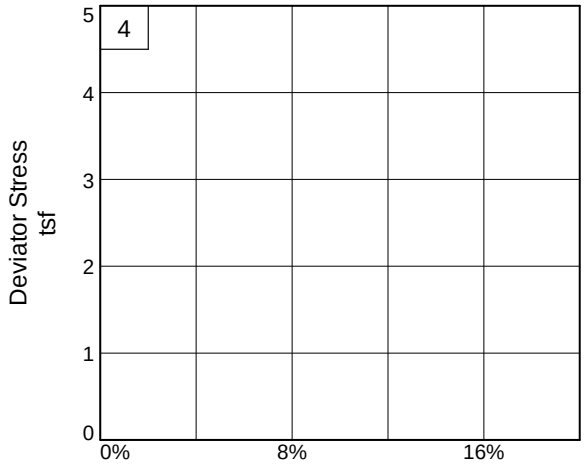
TRIAXIAL SHEAR TEST REPORT
Braun Intertec Corporation
Lenexa, Kansas

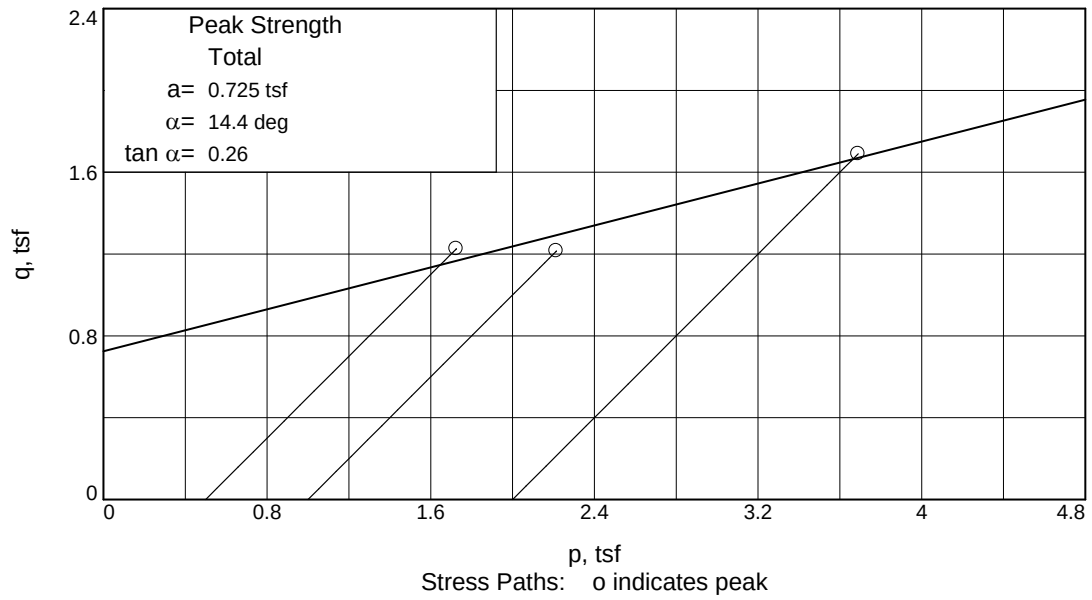
Tested By: ST







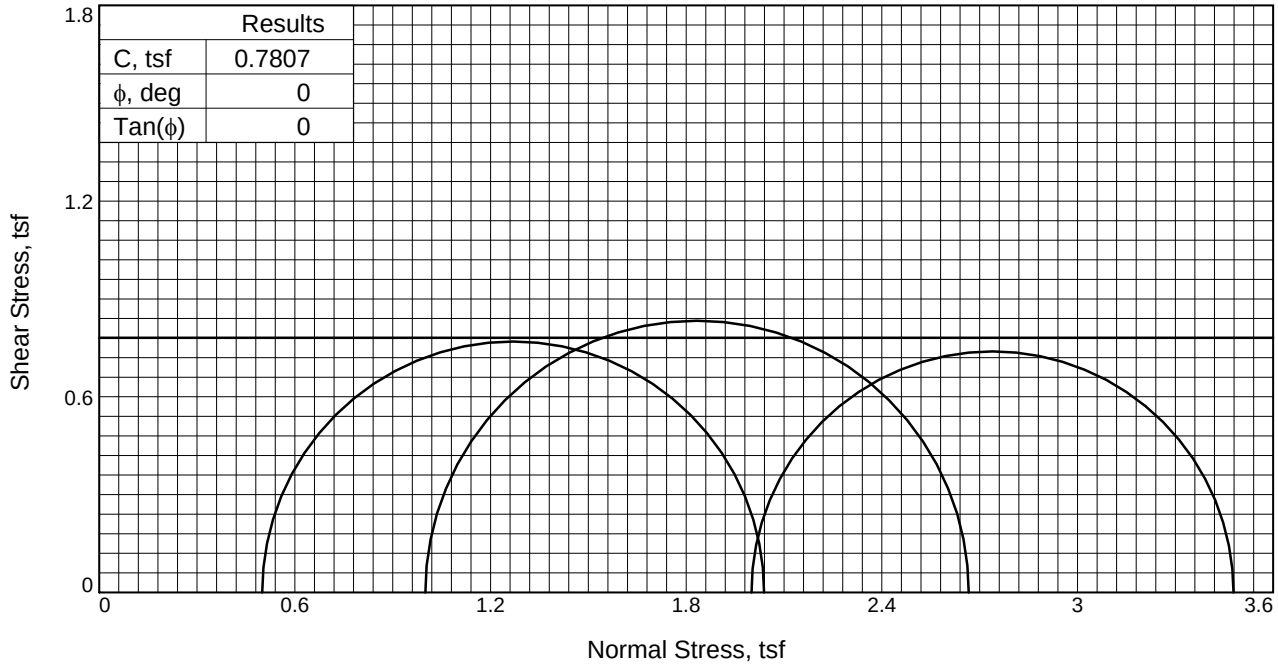


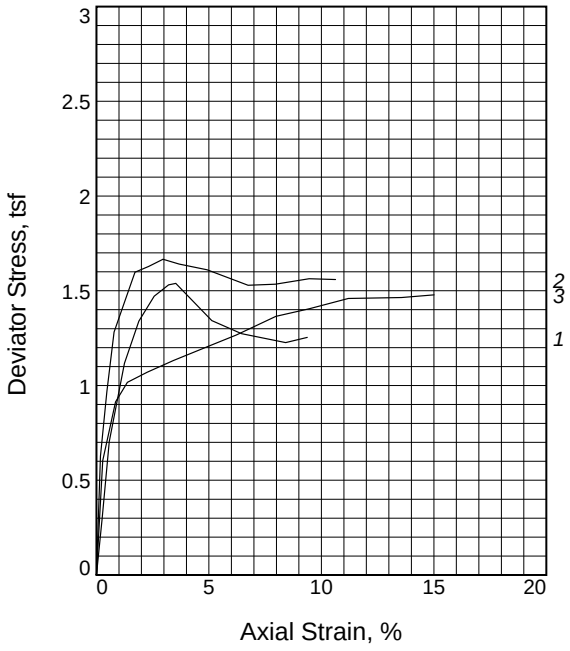


Client: KLJ Engineering, LLC
Project: 8-029(200)069; PCN 22888
Location: CAA-067 **Depth:** 17-19' **Sample Number:** TW-1092
Project No.: B2009724 **Figure** _____

Braun Intertec Corporation

Tested By: ST





Sample No.		1	2	3
Initial	Water Content, %	41.7	43.8	48.0
	Dry Density, pcf	79.0	76.6	72.8
	Saturation, %	99.3	98.4	98.6
	Void Ratio	1.1329	1.2013	1.3148
	Diameter, in.	1.427	1.416	1.416
	Height, in.	2.807	2.804	2.832
At Test	Water Content, %	41.7	43.8	48.0
	Dry Density, pcf	79.0	76.6	72.8
	Saturation, %	99.3	98.4	98.6
	Void Ratio	1.1329	1.2013	1.3148
	Diameter, in.	1.427	1.416	1.416
	Height, in.	2.807	2.804	2.832
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.539	1.666	1.478
Ult. Stress, tsf		1.226	1.529	1.478
σ_1 Failure, tsf		2.039	2.667	3.478
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

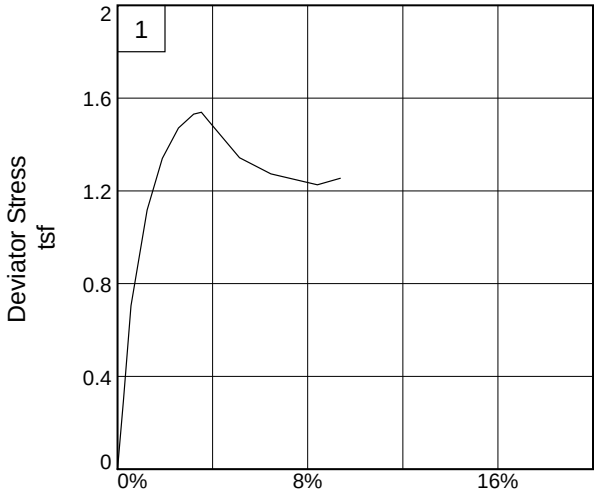
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

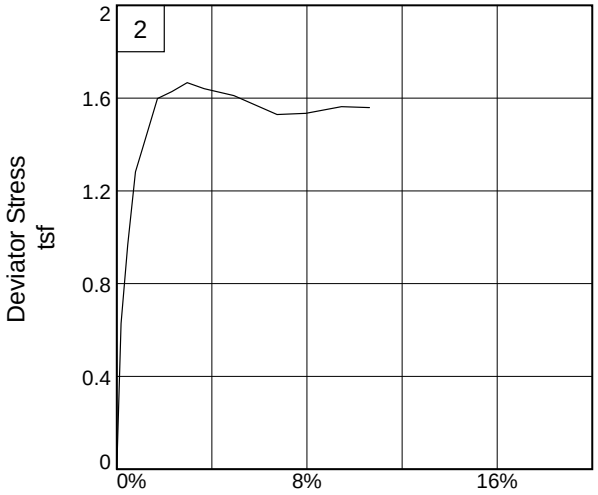
Source of Sample: GDRL-069 **Depth:** 7-9'

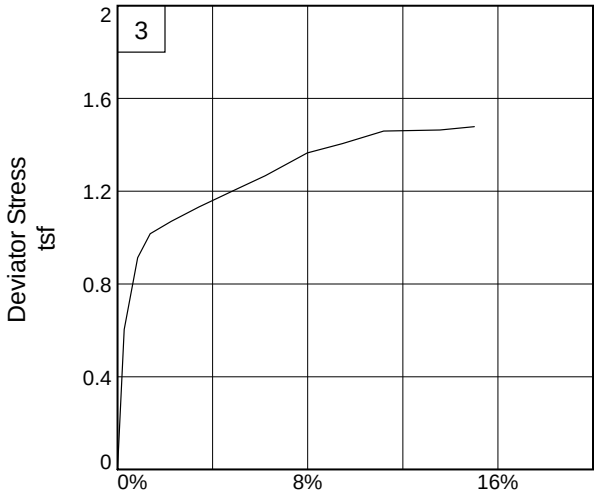
Sample Number: TW-1100

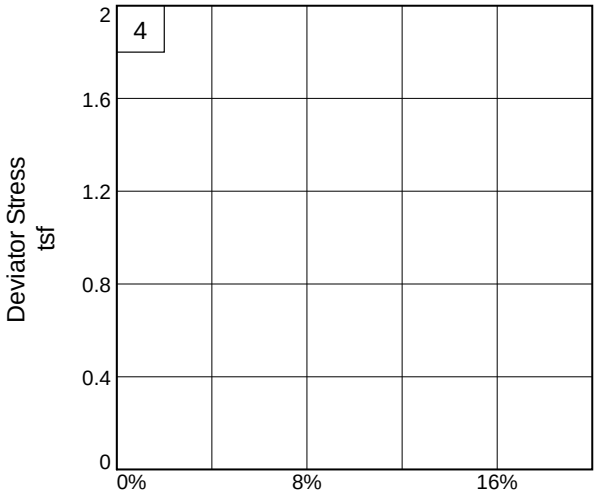
Proj. No.: B2009724 **Date Sampled:** 12/28/2020

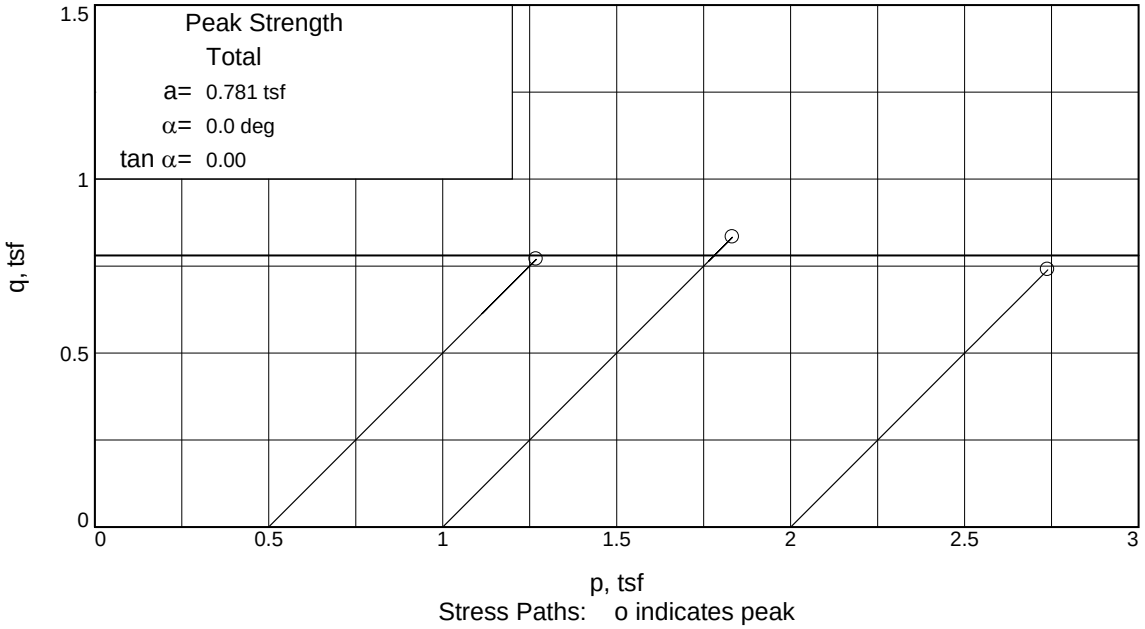
BRAUN INTERTEC











Stress Paths: o indicates peak

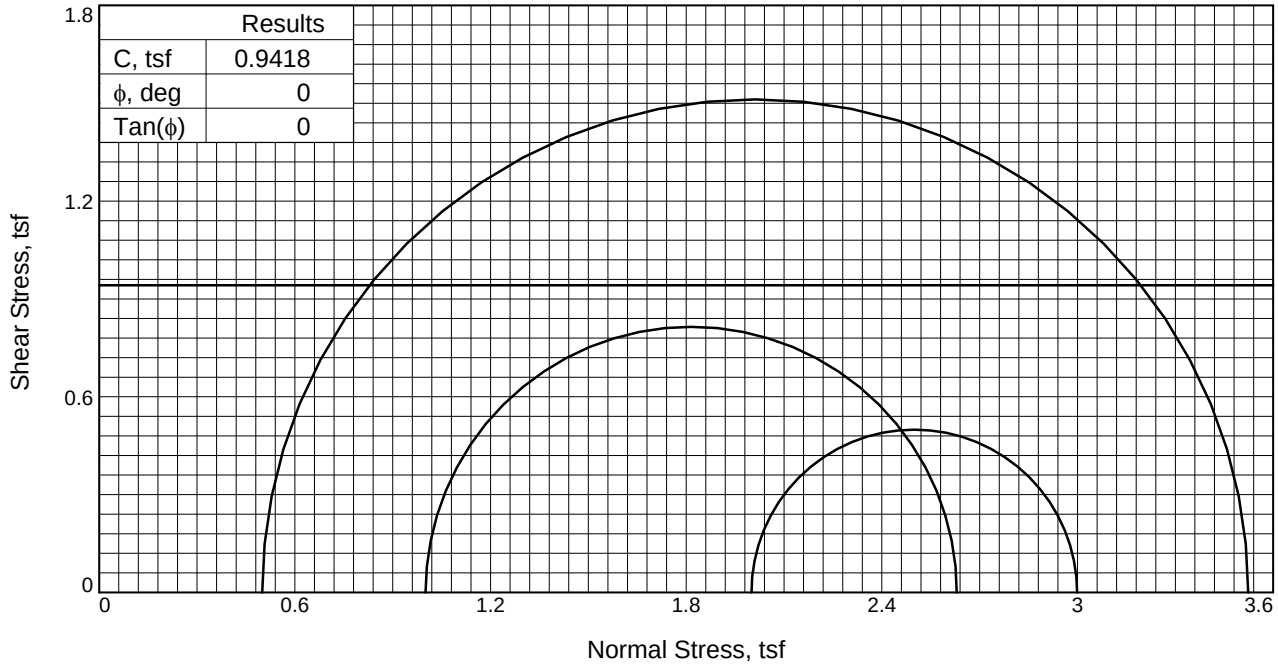
Client: KLJ Engineering LLC

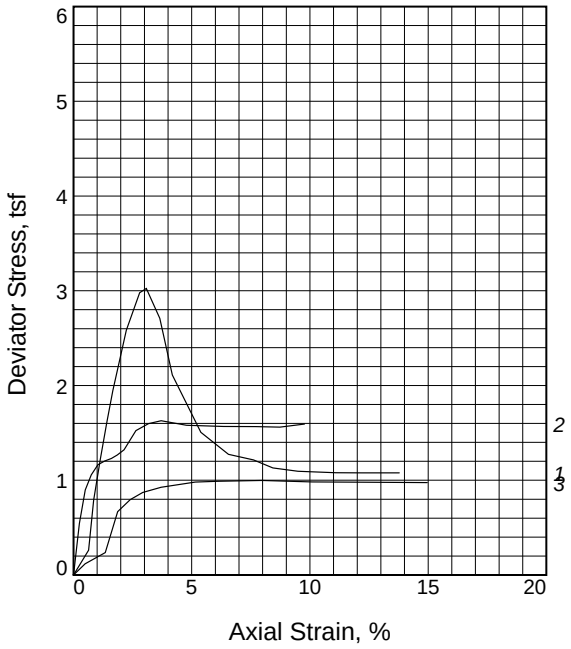
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-069 **Depth:** 7-9' **Sample Number:** TW-1100

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.7	46.0	46.0
	Dry Density, pcf	78.0	75.0	75.1
	Saturation, %	99.2	99.5	99.8
	Void Ratio	1.1609	1.2479	1.2438
	Diameter, in.	1.417	1.409	1.394
	Height, in.	2.823	2.805	2.834
At Test	Water Content, %	42.7	46.0	46.0
	Dry Density, pcf	78.0	75.0	75.1
	Saturation, %	99.2	99.5	99.8
	Void Ratio	1.1609	1.2479	1.2438
	Diameter, in.	1.417	1.409	1.394
	Height, in.	2.823	2.805	2.834
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.001	2.000
Fail. Stress, tsf		3.024	1.629	0.998
Ult. Stress, tsf		1.078	1.561	0.975
σ_1 Failure, tsf		3.523	2.630	2.999
σ_3 Failure, tsf		0.500	1.001	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

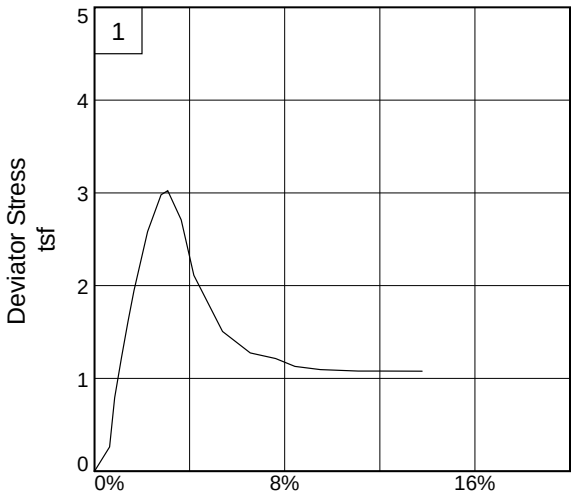
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

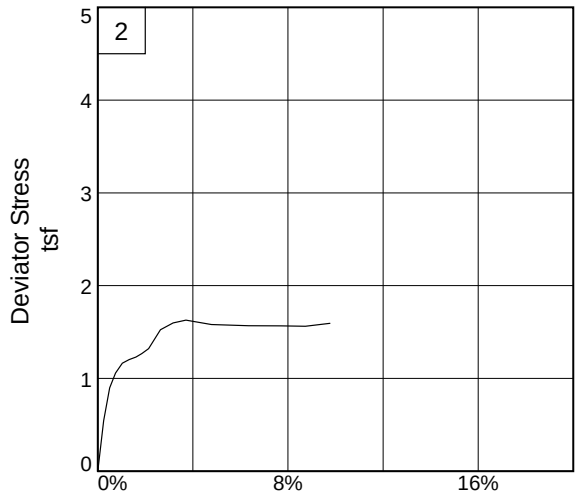
Source of Sample: CAA-071 **Depth:** 17-19'

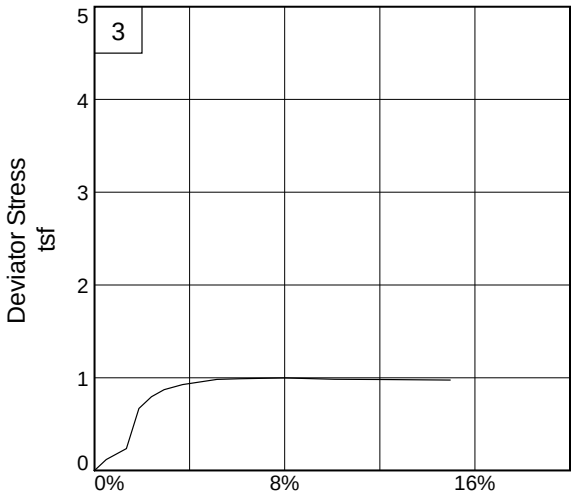
Sample Number: TW-1111

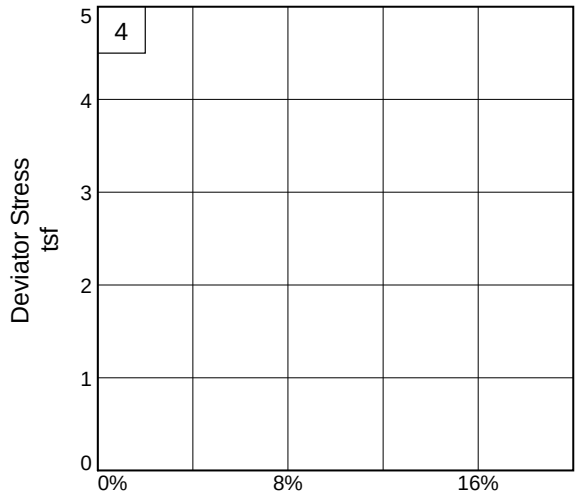
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

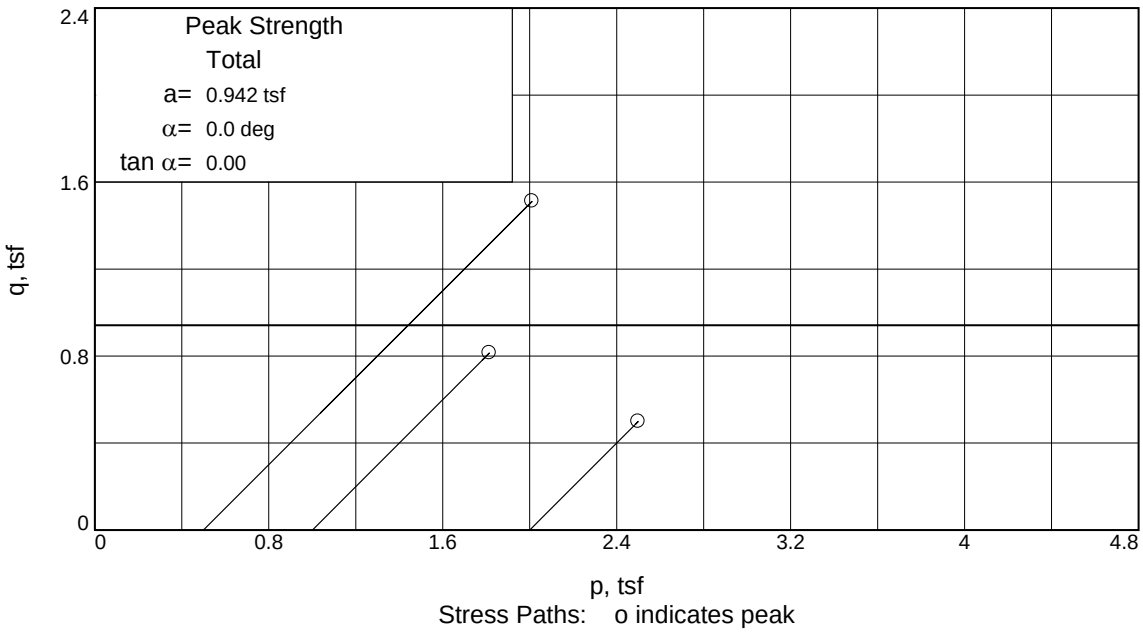
BRAUN INTERTEC











Stress Paths: o indicates peak

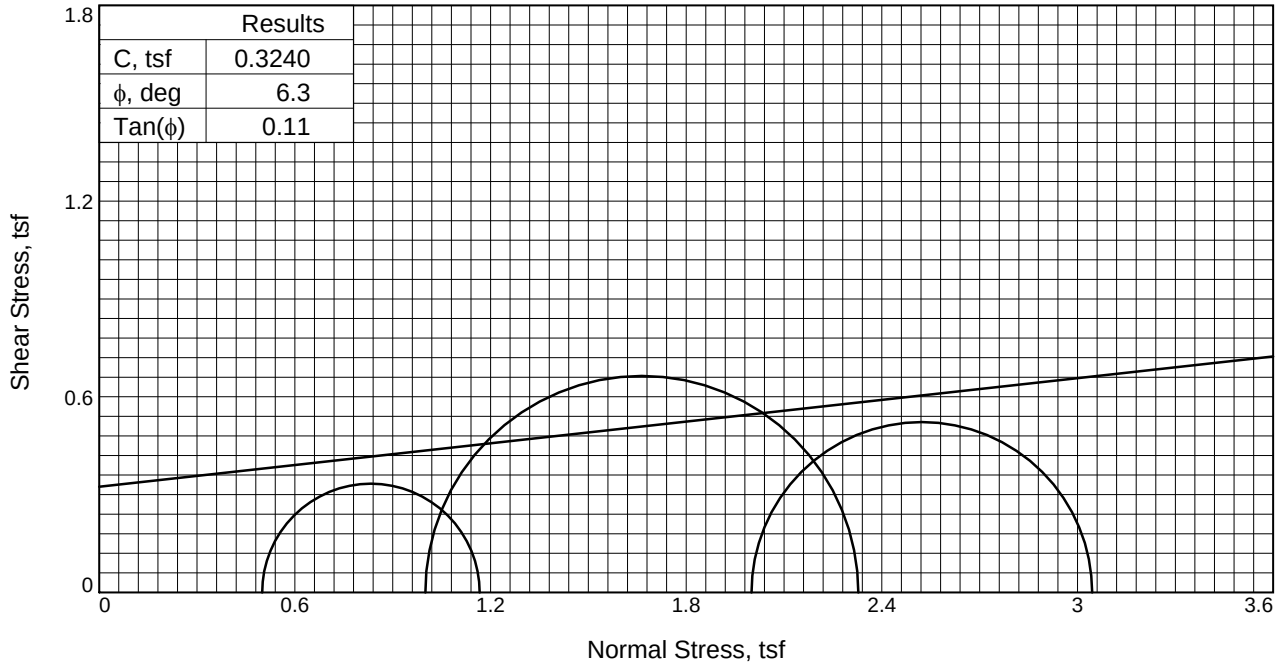
Client: KLJ Engineering LLC

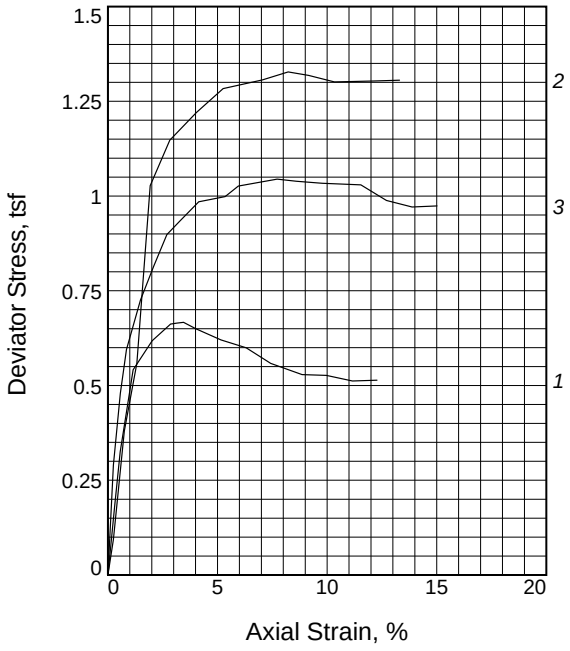
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-071 **Depth:** 17-19' **Sample Number:** TW-1111

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.6	40.6	44.7
	Dry Density, pcf	77.5	80.3	74.1
	Saturation, %	93.4	99.7	94.7
	Void Ratio	1.1735	1.0990	1.2752
	Diameter, in.	1.411	1.414	1.420
	Height, in.	2.868	2.796	2.825
At Test	Water Content, %	40.6	40.6	44.7
	Dry Density, pcf	77.5	80.3	74.1
	Saturation, %	93.4	99.7	94.7
	Void Ratio	1.1735	1.0990	1.2752
	Diameter, in.	1.411	1.414	1.420
	Height, in.	2.868	2.796	2.825
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.667	1.328	1.045
Ult. Stress, tsf		0.512	1.301	0.971
σ_1 Failure, tsf		1.167	2.328	3.045
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

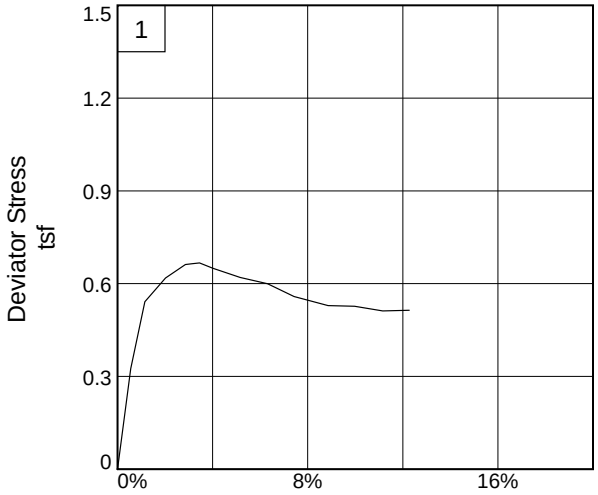
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

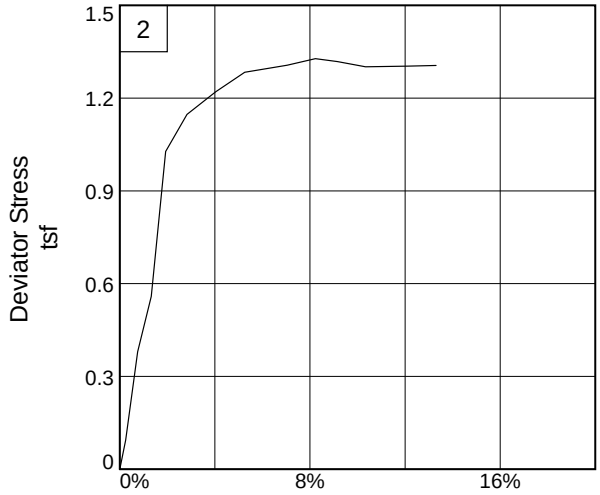
Source of Sample: GDRL-073 **Depth:** 7-9'

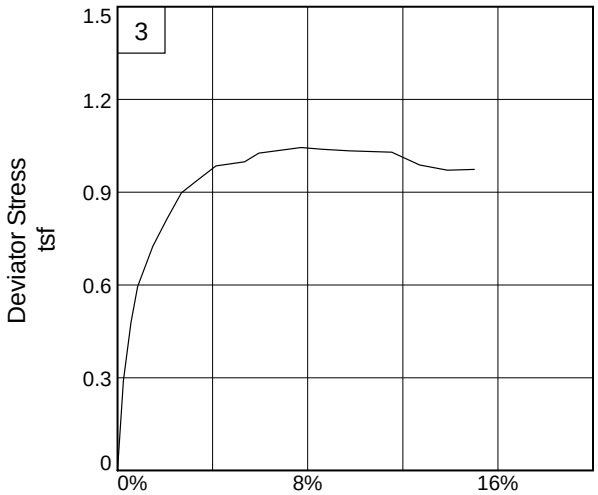
Sample Number: TW-1119

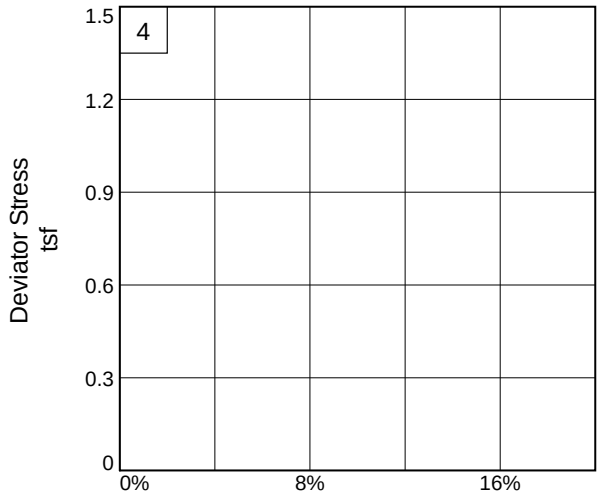
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

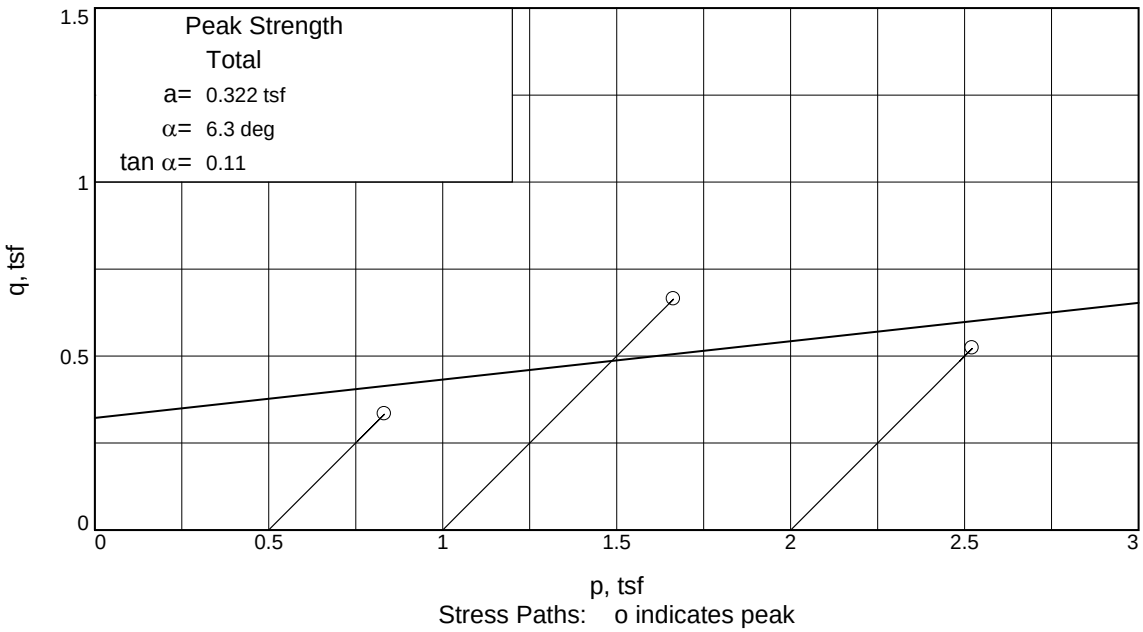
BRAUN INTERTEC











Stress Paths: o indicates peak

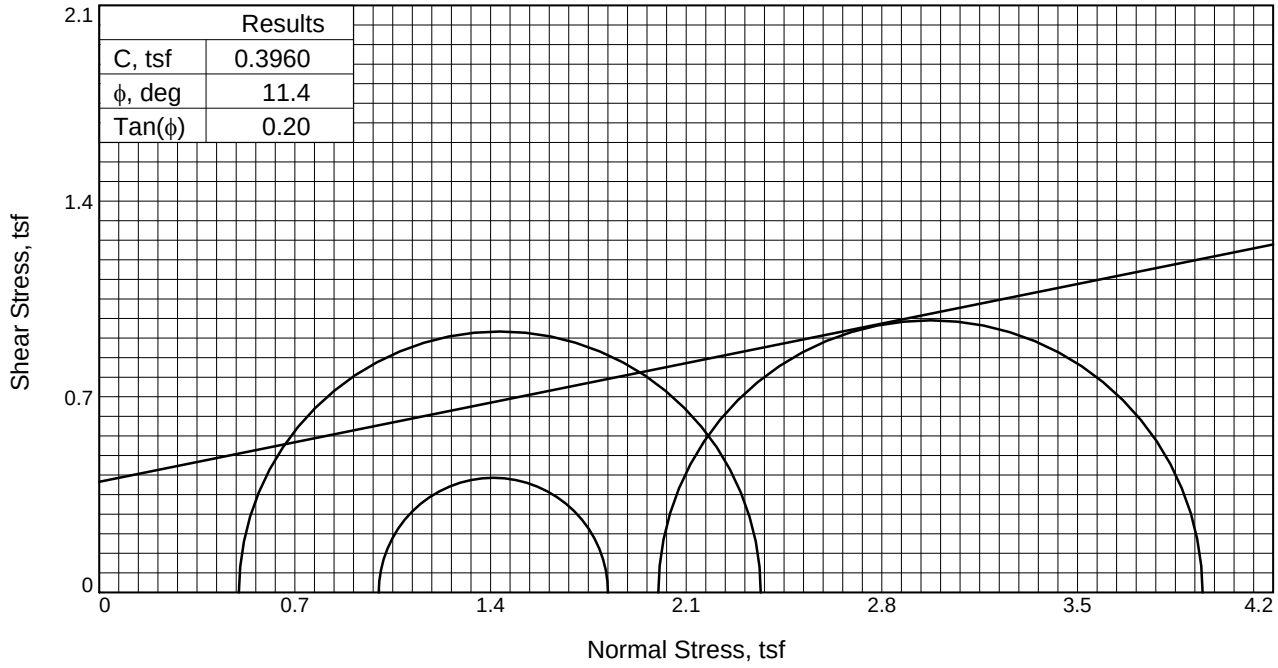
Client: KLJ Engineering LLC

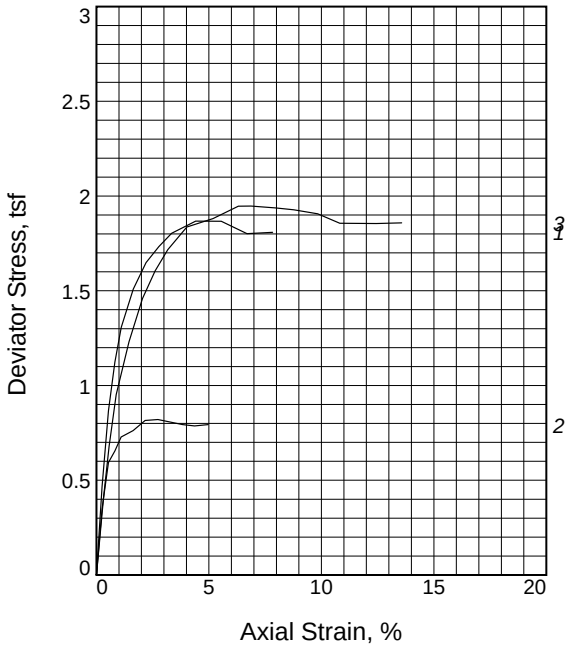
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-073 **Depth:** 7-9' **Sample Number:** TW-1119

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.8	42.5	40.3
	Dry Density, pcf	80.0	77.7	80.5
	Saturation, %	99.4	98.3	99.4
	Void Ratio	1.1068	1.1686	1.0944
	Diameter, in.	1.410	1.410	1.420
	Height, in.	2.810	2.818	2.837
At Test	Water Content, %	40.8	42.5	40.3
	Dry Density, pcf	80.0	77.7	80.5
	Saturation, %	99.4	98.3	99.4
	Void Ratio	1.1068	1.1686	1.0944
	Diameter, in.	1.410	1.410	1.420
	Height, in.	2.810	2.818	2.837
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.867	0.820	1.947
Ult. Stress, tsf		1.801	0.787	1.855
σ_1 Failure, tsf		2.367	1.820	3.947
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

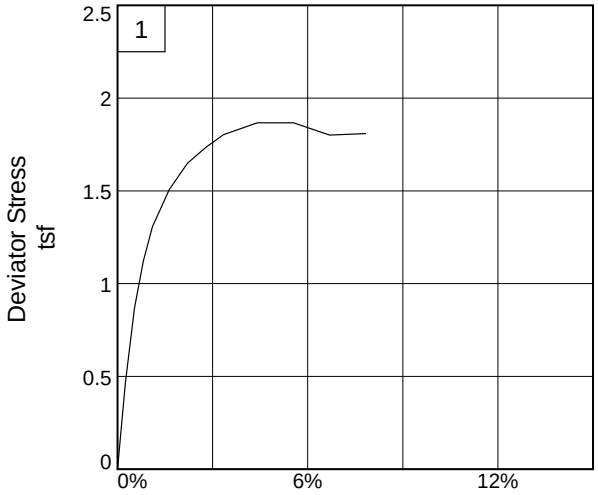
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

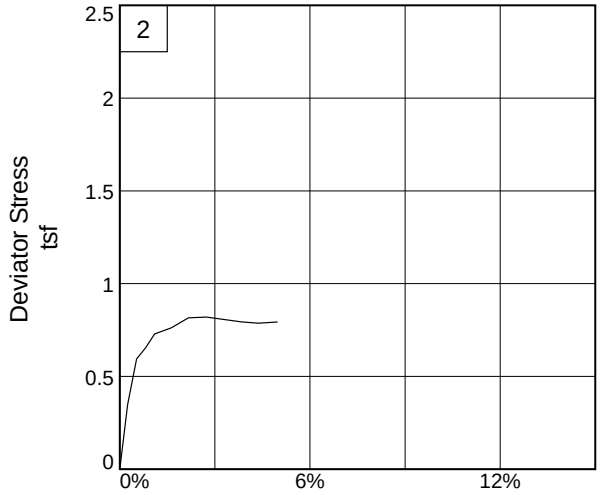
Source of Sample: CAA-074 **Depth:** 7-9'

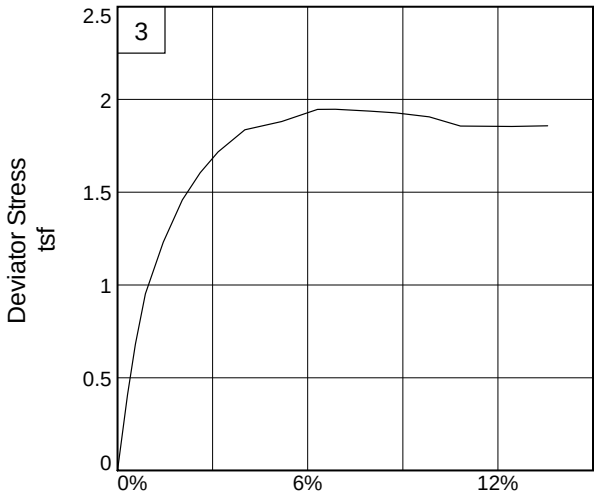
Sample Number: TW-1123

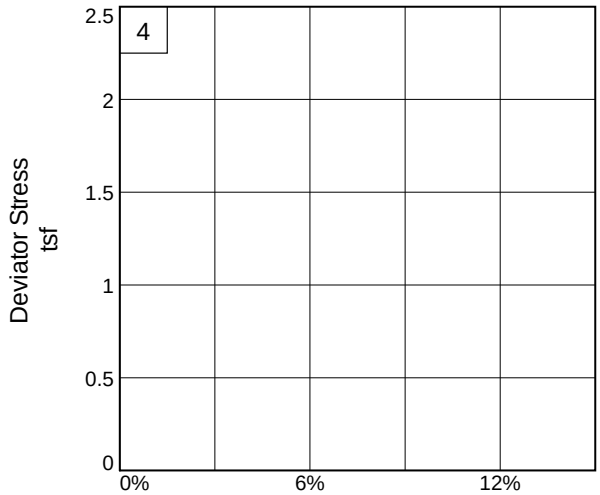
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

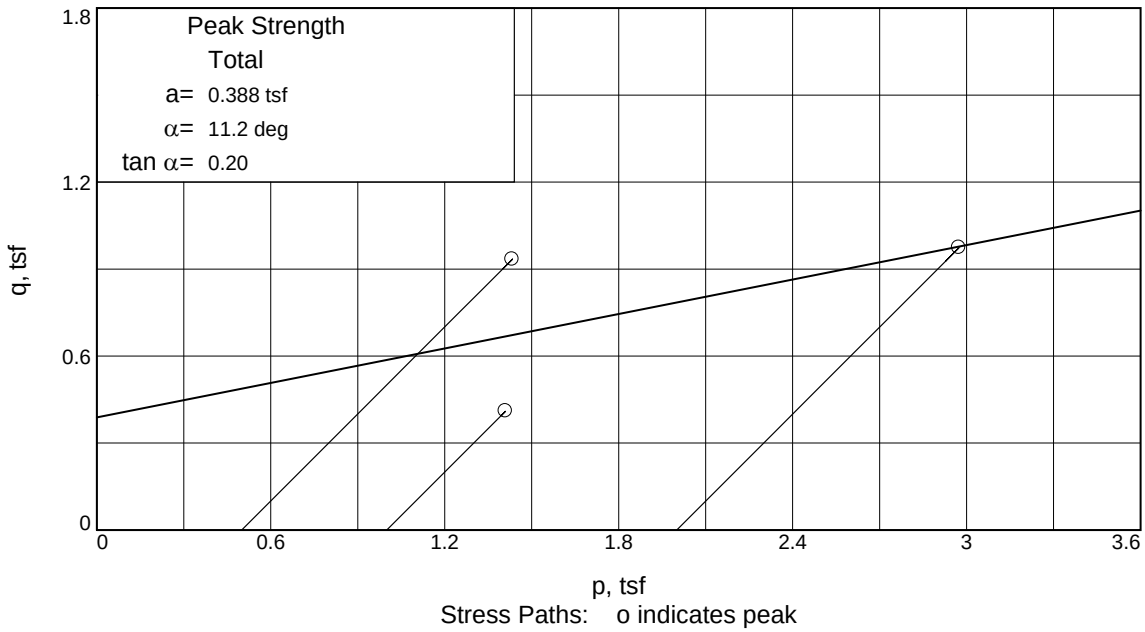
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

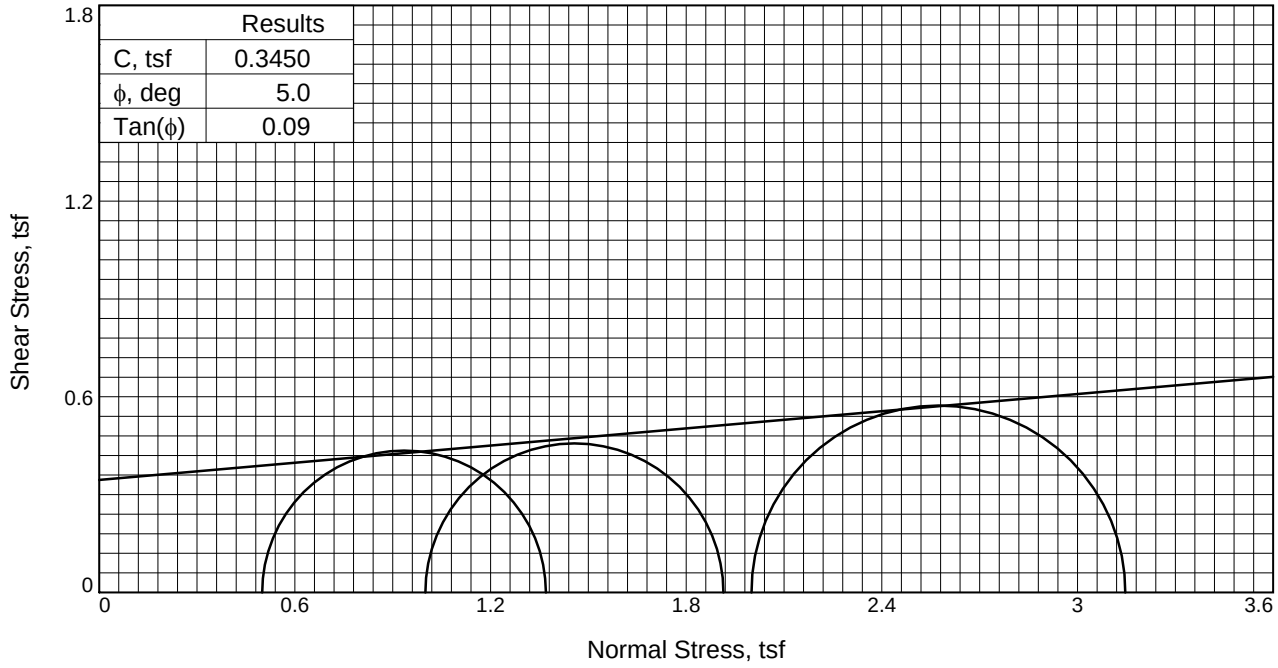
Client: KLJ Engineering LLC

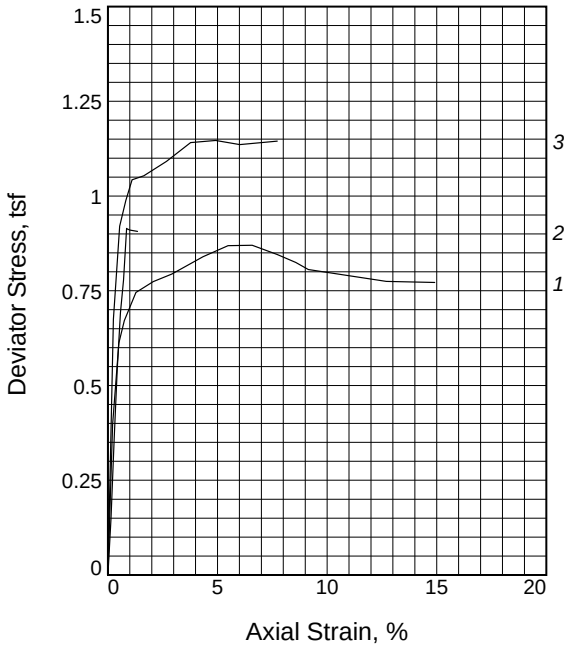
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-074 **Depth:** 7-9' **Sample Number:** TW-1123

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	65.3	60.4	47.4
	Dry Density, pcf	61.1	64.0	72.7
	Saturation, %	99.9	99.7	97.0
	Void Ratio	1.7710	1.6433	1.3255
	Diameter, in.	1.427	1.424	1.413
	Height, in.	2.811	2.807	2.809
At Test	Water Content, %	65.3	60.4	48.0
	Dry Density, pcf	61.1	64.0	72.7
	Saturation, %	99.9	99.7	98.1
	Void Ratio	1.7710	1.6433	1.3255
	Diameter, in.	1.427	1.424	1.413
	Height, in.	2.811	2.807	2.809
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.870	0.914	1.146
Ult. Stress, tsf		0.806	0.910	1.136
σ_1 Failure, tsf		1.370	1.914	3.147
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CL), gray and brown, A-7-5

Assumed Specific Gravity= 2.71

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

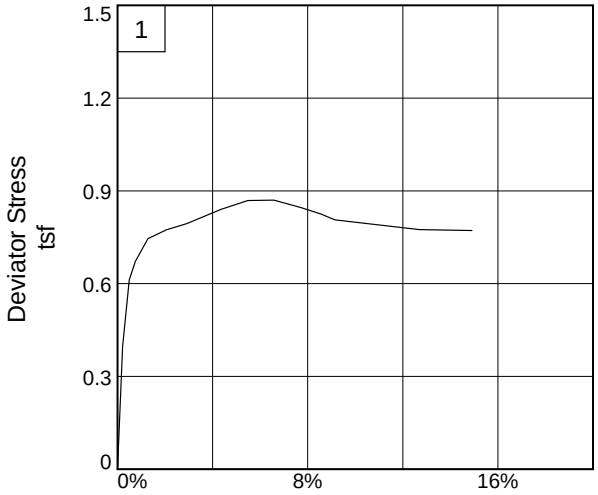
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

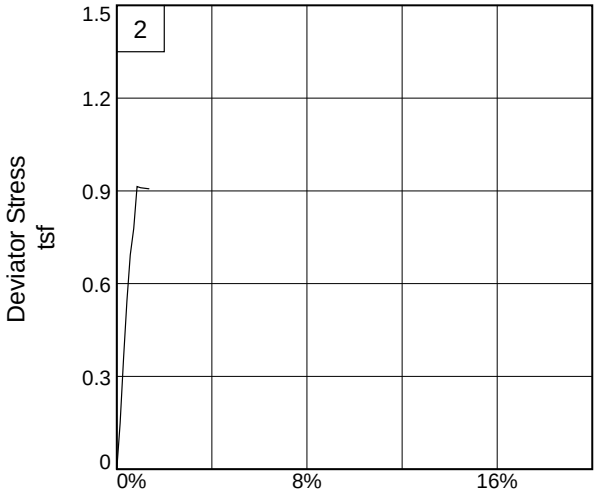
Source of Sample: CAA-074 **Depth:** 17-19'

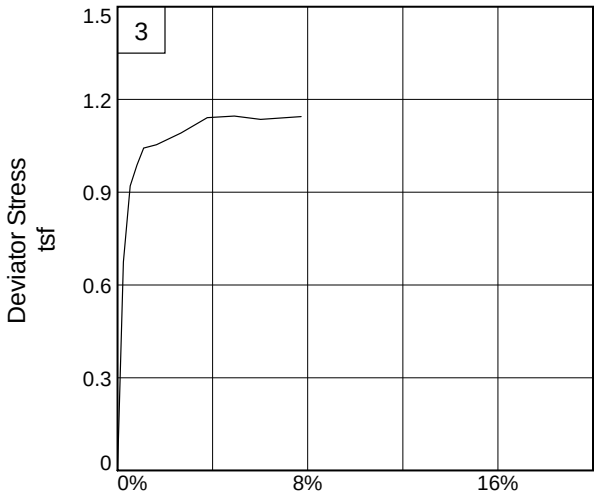
Sample Number: TW-1126

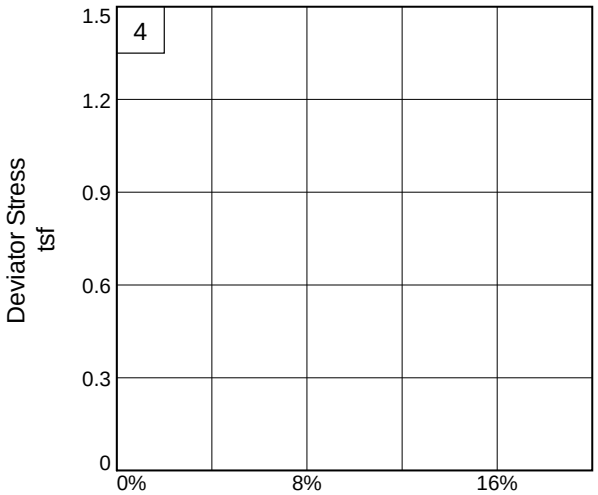
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

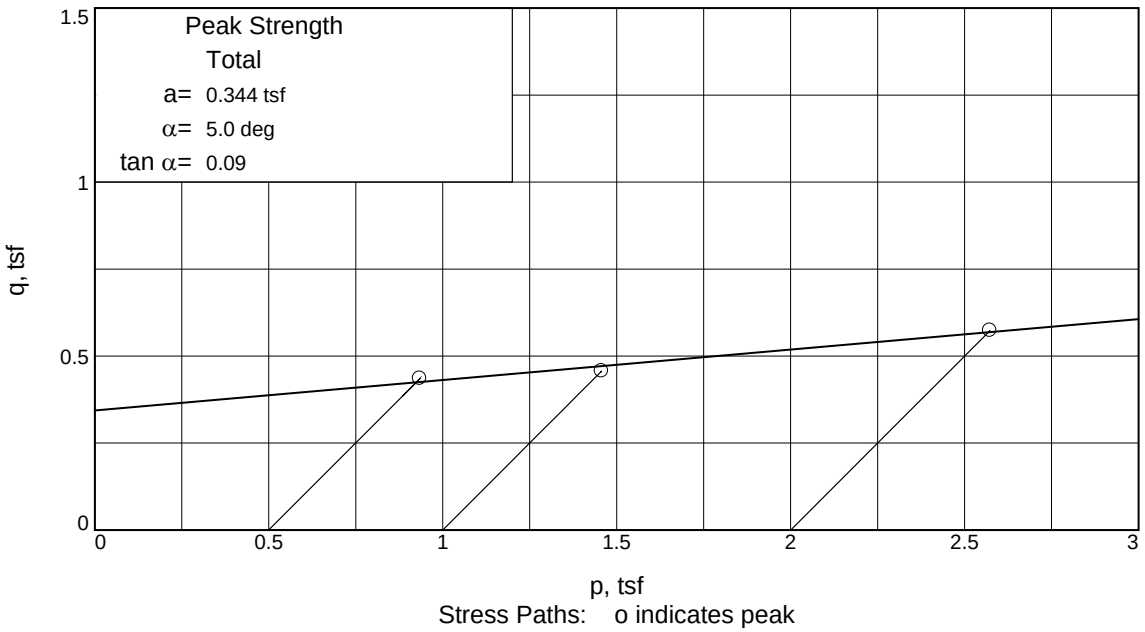
BRAUN INTERTEC











Stress Paths: o indicates peak

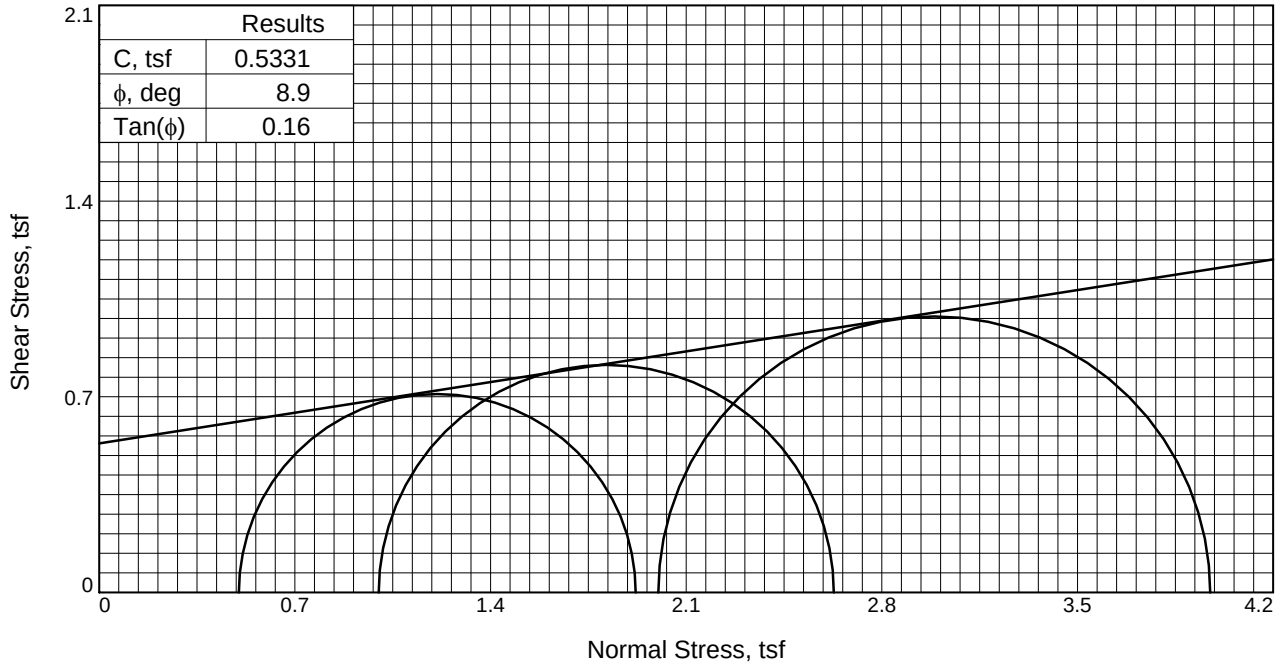
Client: KLJ Engineering LLC

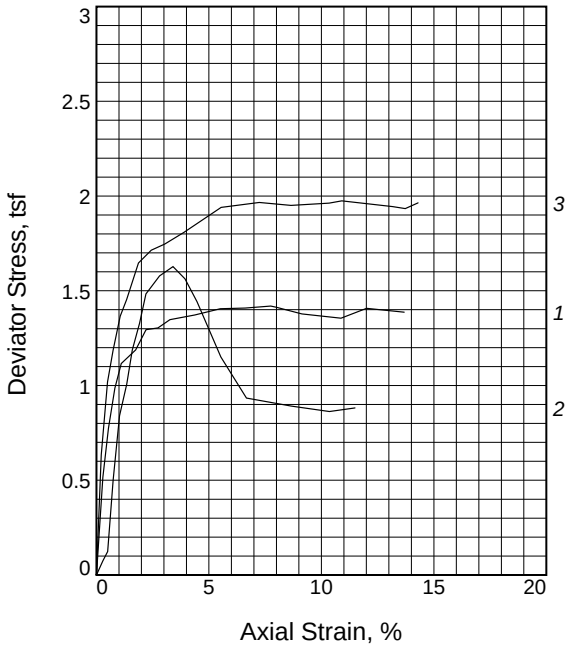
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-074 **Depth:** 17-19' **Sample Number:** TW-1126

Project No.: B2009724 **Figure** _____

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Sample No.		1	2	3
Initial	Water Content, %	47.4	43.7	42.9
	Dry Density, pcf	72.9	76.0	77.2
	Saturation, %	97.6	97.0	97.8
	Void Ratio	1.3120	1.2167	1.1827
	Diameter, in.	1.400	1.372	1.383
	Height, in.	2.814	2.819	2.833
At Test	Water Content, %	47.4	43.7	42.9
	Dry Density, pcf	72.9	76.0	77.2
	Saturation, %	97.6	97.0	97.8
	Void Ratio	1.3120	1.2167	1.1827
	Diameter, in.	1.400	1.372	1.383
	Height, in.	2.814	2.819	2.833
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.420	1.628	1.974
Ult. Stress, tsf		1.355	0.863	1.934
σ_1 Failure, tsf		1.919	2.628	3.974
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

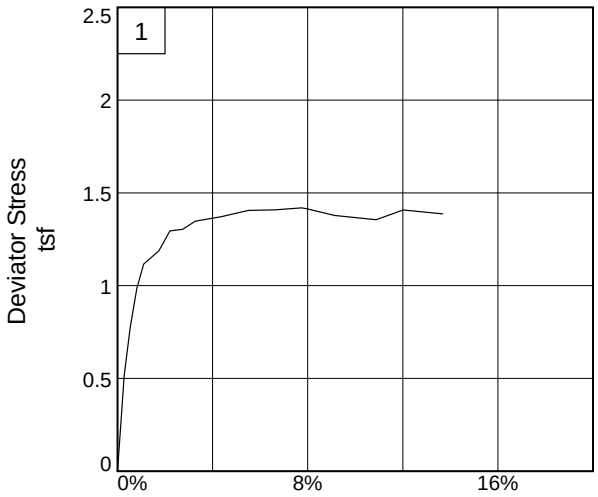
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

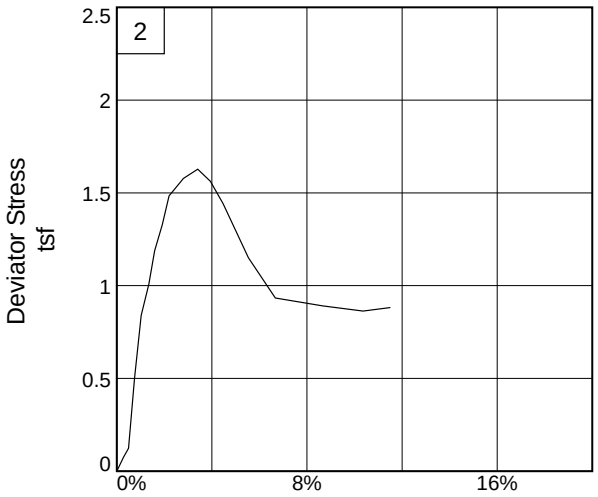
Source of Sample: GDRL-076 **Depth:** 7-9'

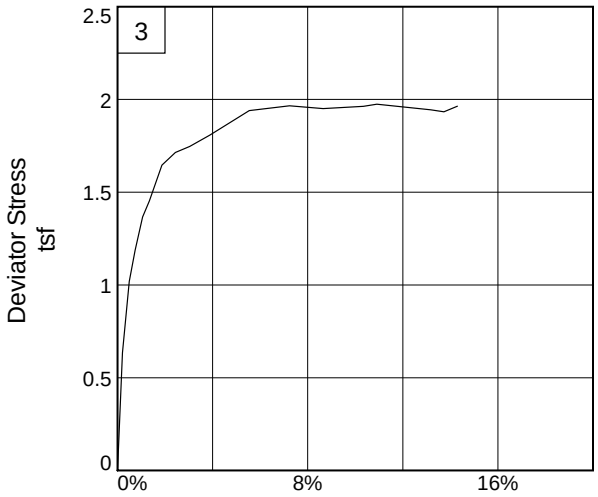
Sample Number: TW-1134

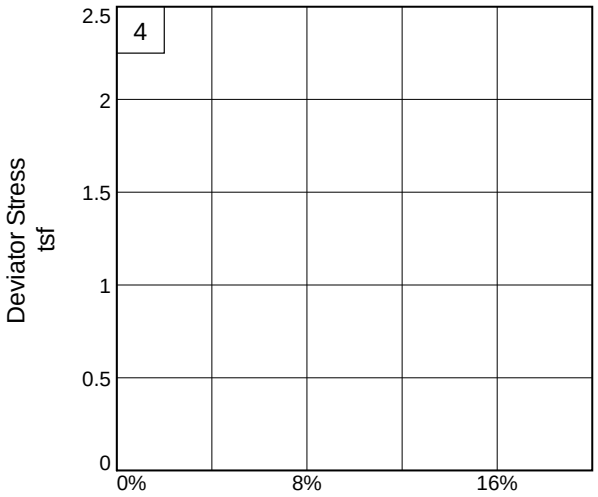
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

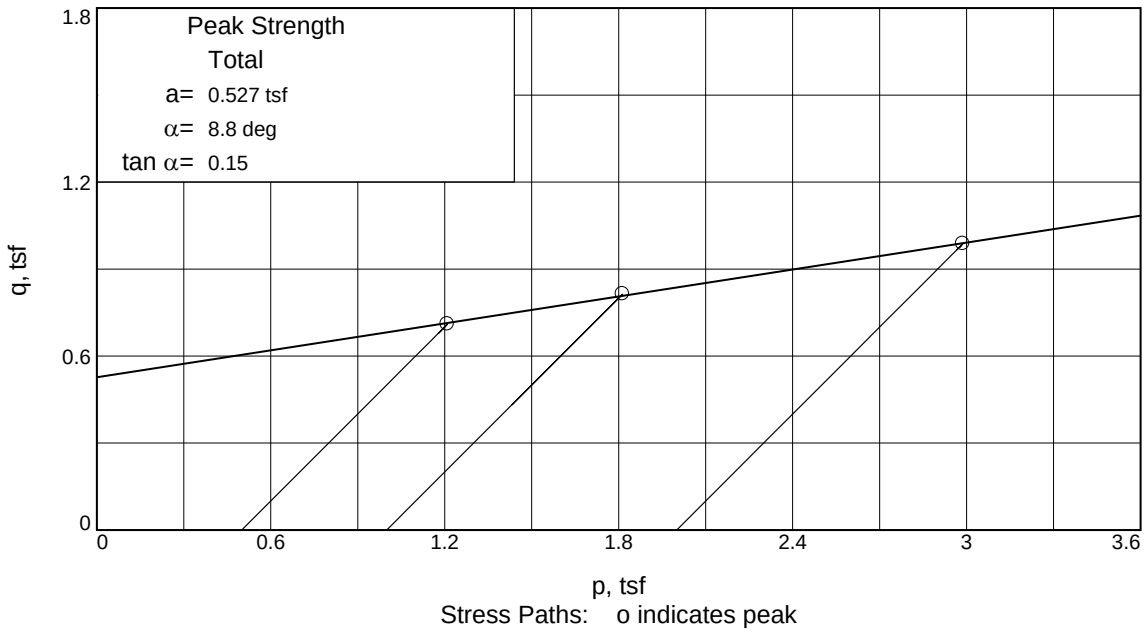
BRAUN INTERTEC











Stress Paths: o indicates peak

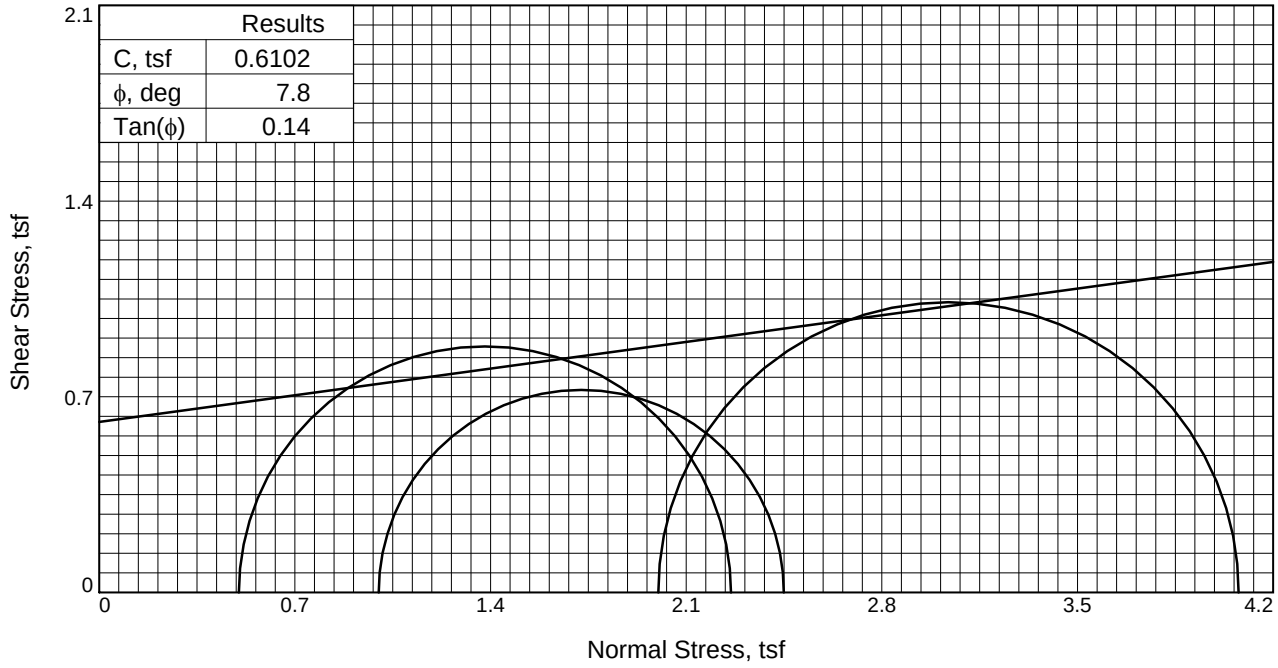
Client: KLJ Engineering LLC

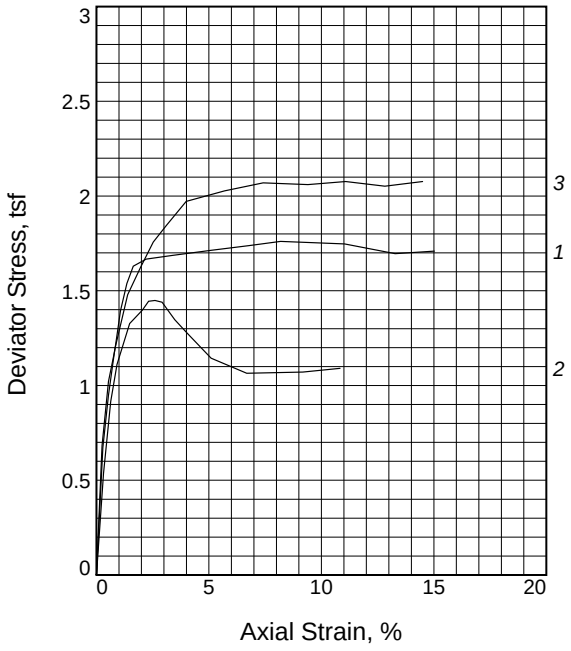
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-076 **Depth:** 7-9' **Sample Number:** TW-1134

Project No.: B2009724 **Figure** _____

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Sample No.		1	2	3
Initial	Water Content, %	37.2	45.4	41.0
	Dry Density, pcf	82.9	75.3	79.0
	Saturation, %	97.1	98.9	97.8
	Void Ratio	1.0329	1.2398	1.1327
	Diameter, in.	1.412	1.406	1.418
	Height, in.	2.809	2.844	2.808
At Test	Water Content, %	37.2	45.4	41.0
	Dry Density, pcf	82.9	75.3	79.0
	Saturation, %	97.1	98.9	97.8
	Void Ratio	1.0329	1.2398	1.1327
	Diameter, in.	1.412	1.406	1.418
	Height, in.	2.809	2.844	2.808
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.760	1.449	2.076
Ult. Stress, tsf		1.696	1.065	2.052
σ_1 Failure, tsf		2.260	2.449	4.076
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

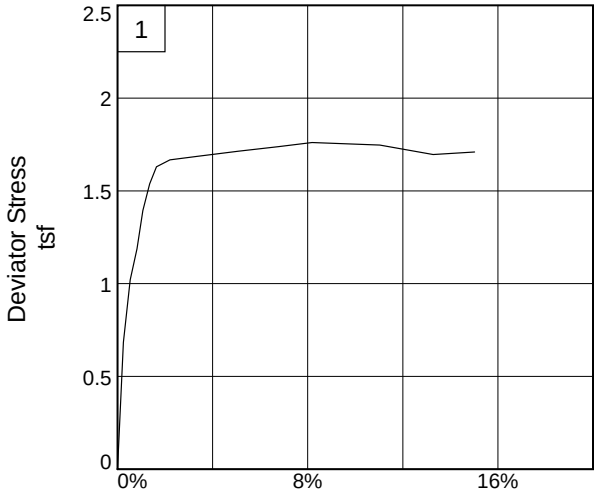
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

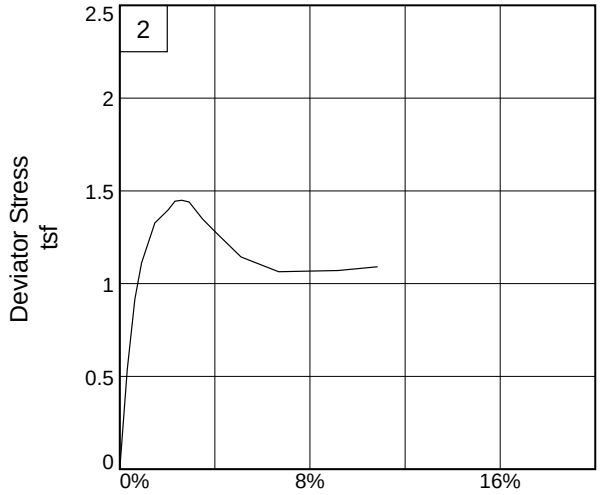
Source of Sample: GDRL-078 **Depth:** 7-9'

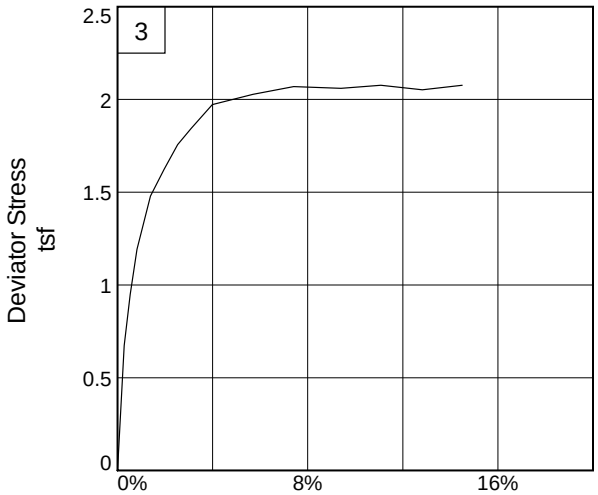
Sample Number: TW-1142

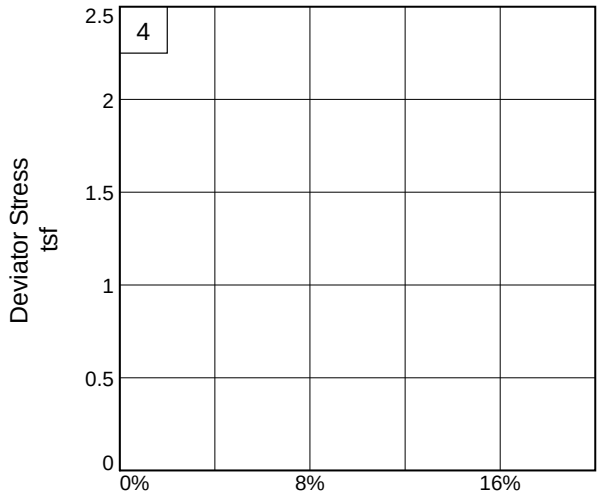
Proj. No.: B2009724 **Date Sampled:** 12/30/2020

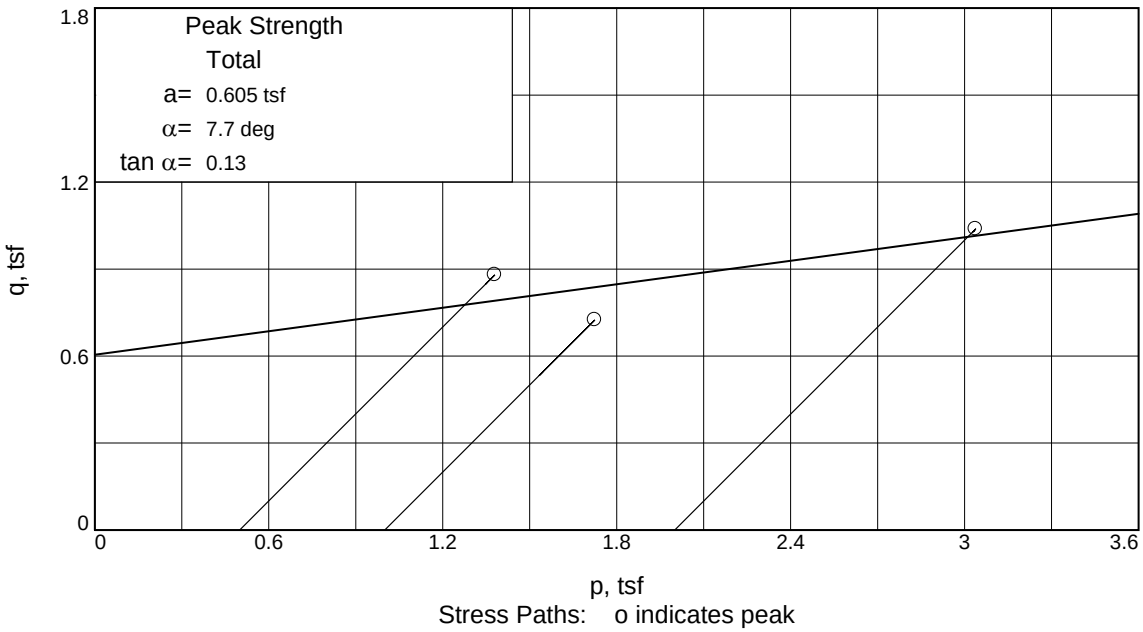
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

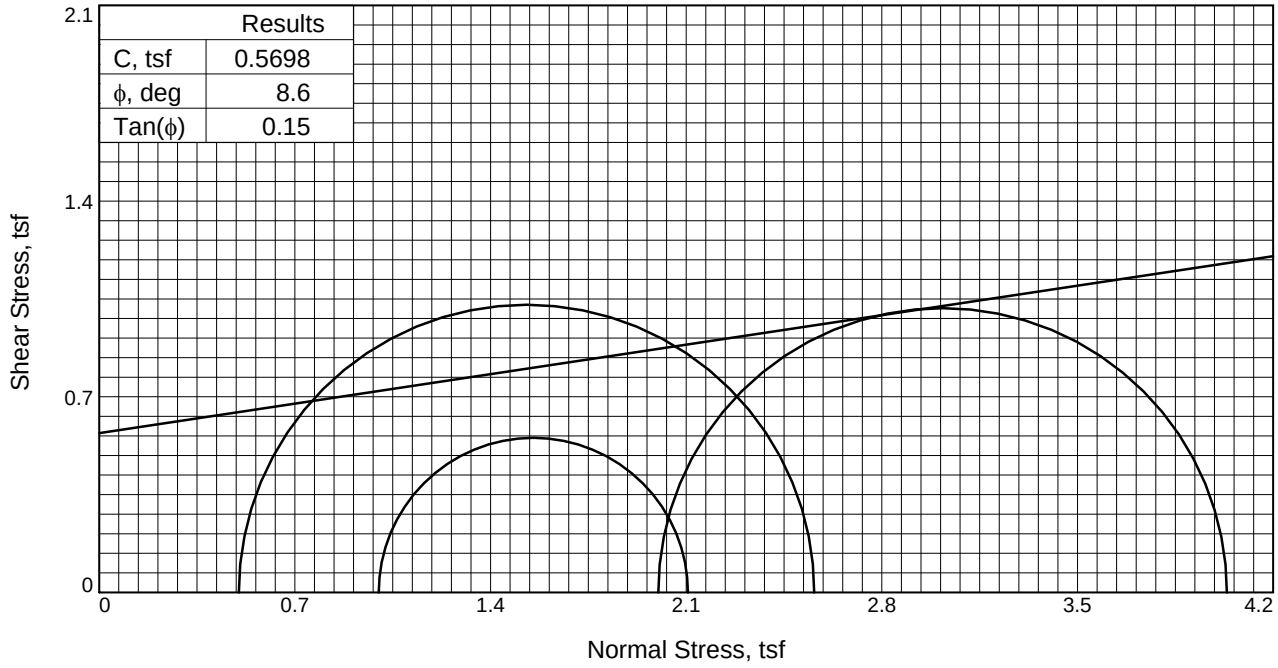
Client: KLJ Engineering LLC

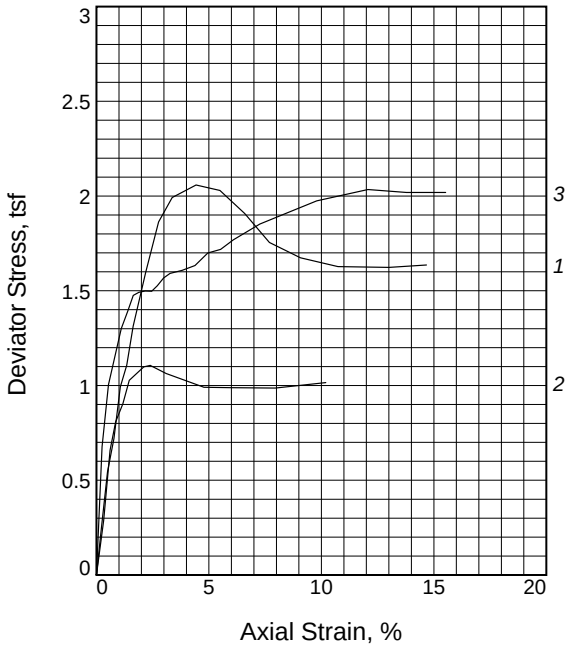
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-078 **Depth:** 7-9' **Sample Number:** TW-1142

Project No.: B2009724 **Figure** _____

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Sample No.		1	2	3
Initial	Water Content, %	40.2	43.8	40.1
	Dry Density, pcf	80.9	77.9	80.7
	Saturation, %	98.3	99.8	97.5
	Void Ratio	1.1295	1.2125	1.1346
	Diameter, in.	1.422	1.409	1.418
	Height, in.	2.822	2.805	2.809
At Test	Water Content, %	40.2	43.8	40.1
	Dry Density, pcf	80.9	77.9	80.7
	Saturation, %	98.3	99.8	97.5
	Void Ratio	1.1295	1.2125	1.1346
	Diameter, in.	1.422	1.409	1.418
	Height, in.	2.822	2.805	2.809
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.058	1.106	2.034
Ult. Stress, tsf		1.624	0.986	
σ_1 Failure, tsf		2.558	2.106	4.034
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.76

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

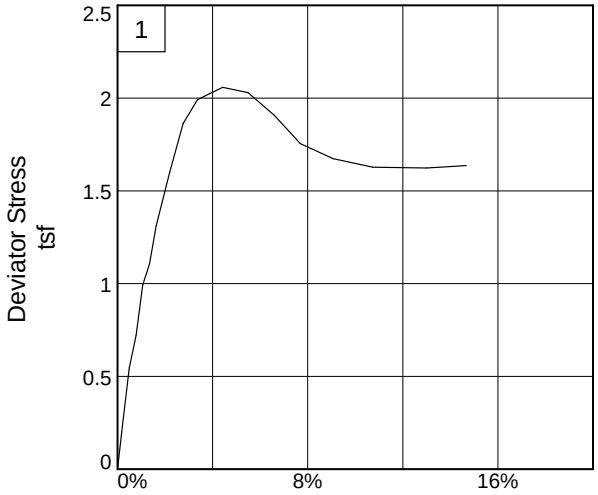
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

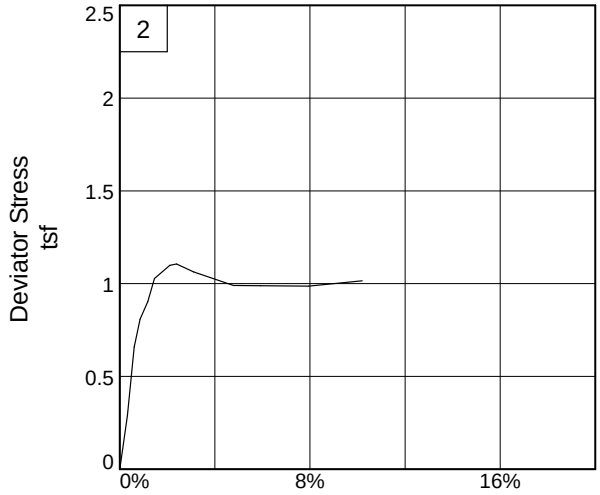
Source of Sample: CAA-079 **Depth:** 7-9'

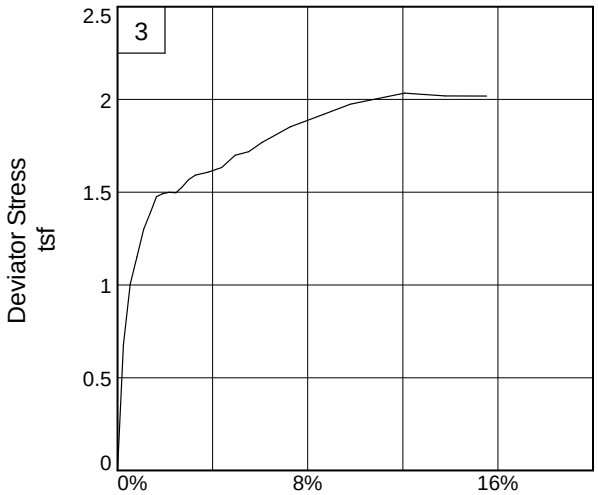
Sample Number: TW-1146

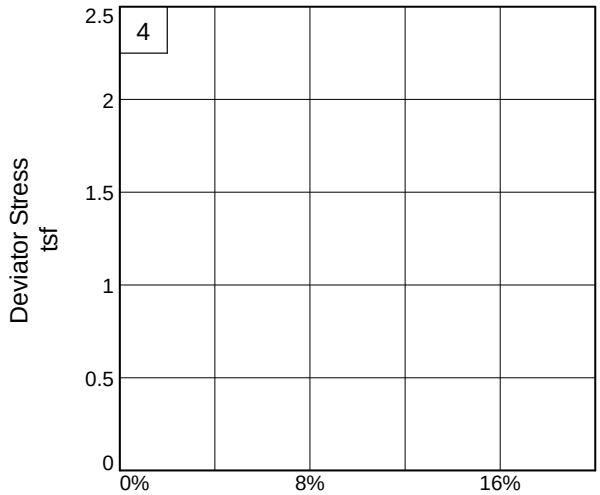
Proj. No.: B2009724 **Date Sampled:** 12/30/2020

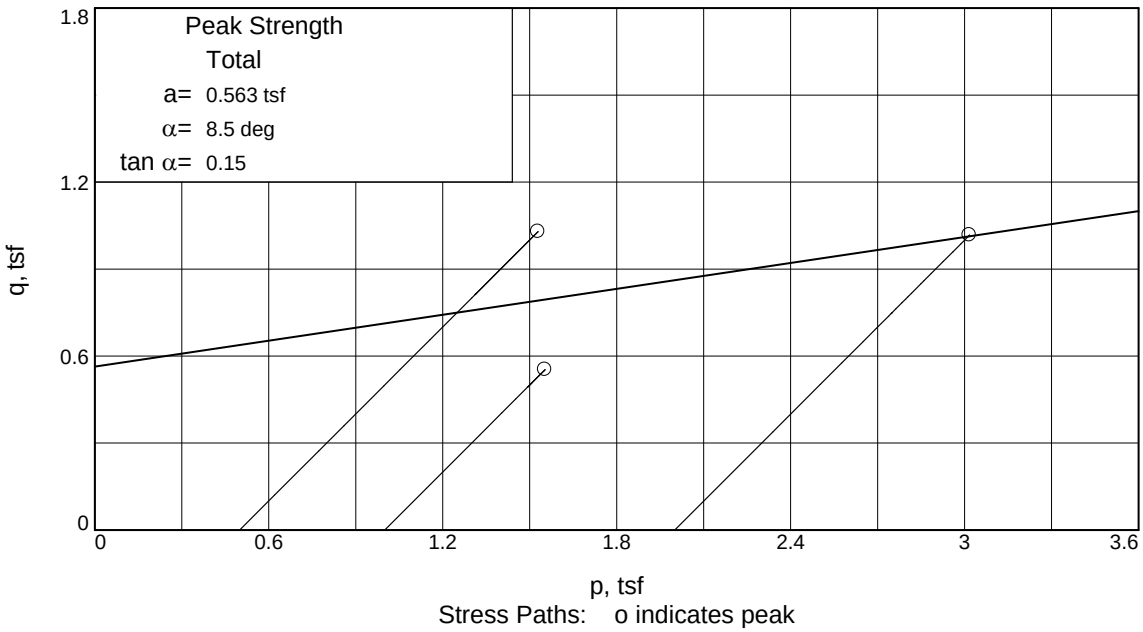
BRAUN INTERTEC











Stress Paths: o indicates peak

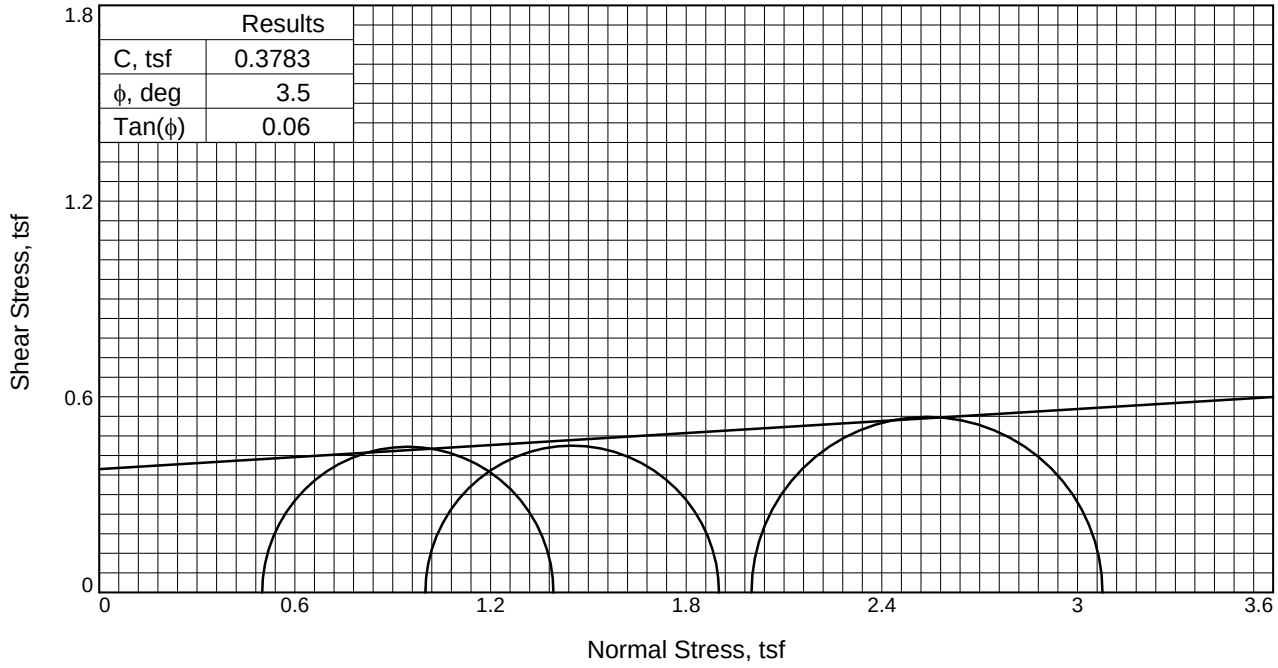
Client: KLJ Engineering LLC

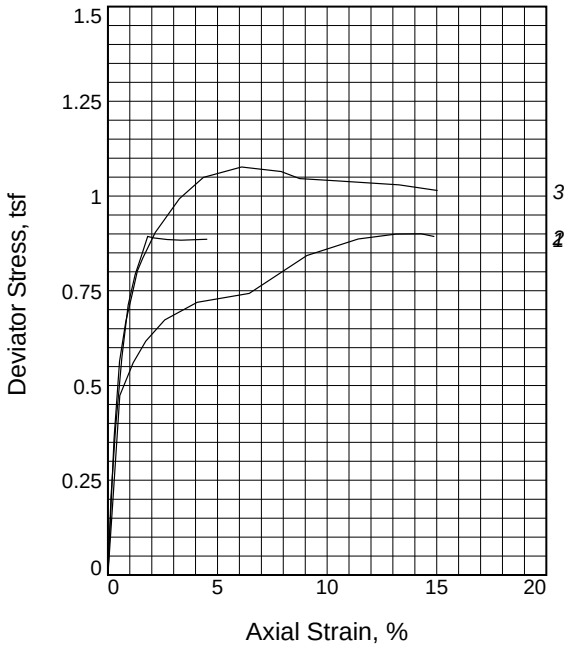
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-079 **Depth:** 7-9' **Sample Number:** TW-1146

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	52.5	50.3	54.3
	Dry Density, pcf	69.2	68.0	68.3
	Saturation, %	98.6	91.9	99.9
	Void Ratio	1.4375	1.4781	1.4680
	Diameter, in.	1.424	1.423	1.411
	Height, in.	2.815	2.777	2.823
At Test	Water Content, %	52.5	50.3	54.3
	Dry Density, pcf	69.2	68.0	68.3
	Saturation, %	98.6	91.9	99.9
	Void Ratio	1.4375	1.4781	1.4680
	Diameter, in.	1.424	1.423	1.411
	Height, in.	2.815	2.777	2.823
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.893	0.900	1.077
Ult. Stress, tsf		0.883	0.893	1.015
σ_1 Failure, tsf		1.393	1.900	3.077
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

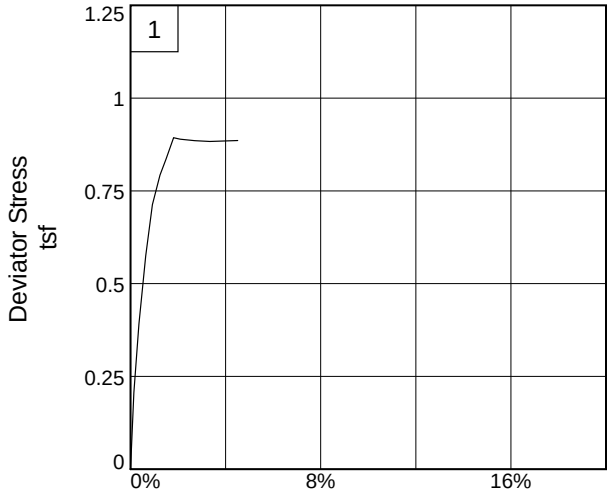
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

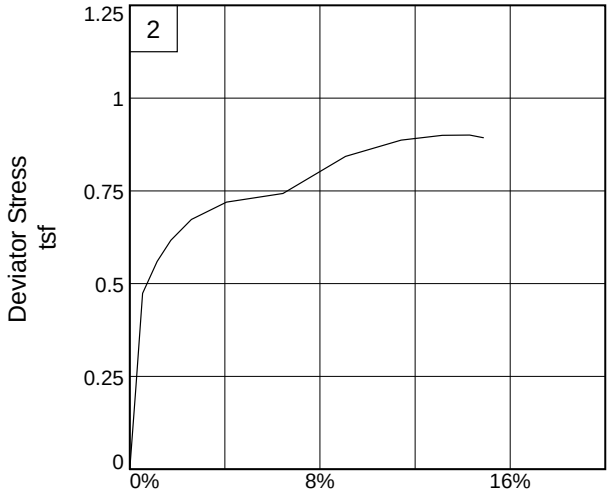
Source of Sample: CAA-079 **Depth:** 17-19'

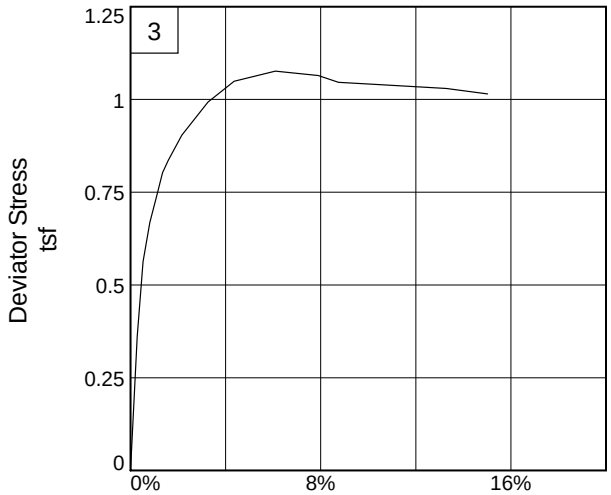
Sample Number: TW-1149

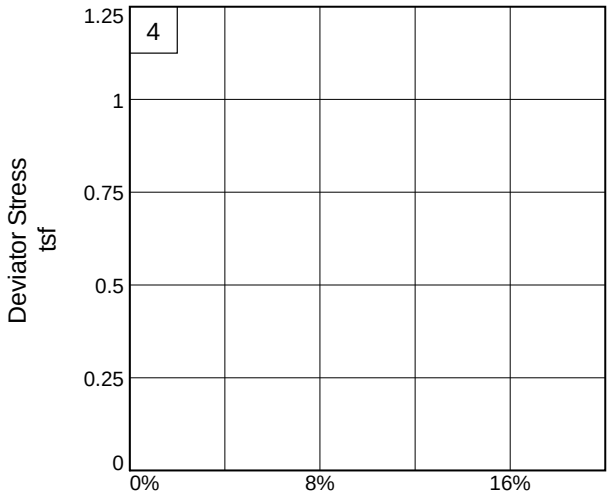
Proj. No.: B2009724 **Date Sampled:** 12/20/2020

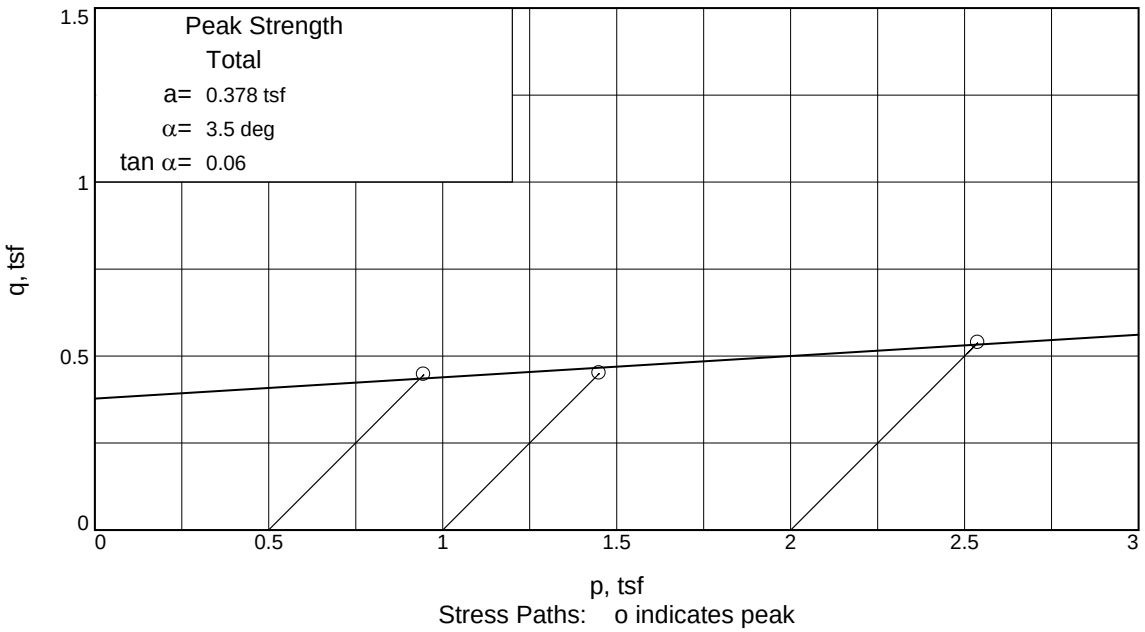
BRAUN INTERTEC











Stress Paths: o indicates peak

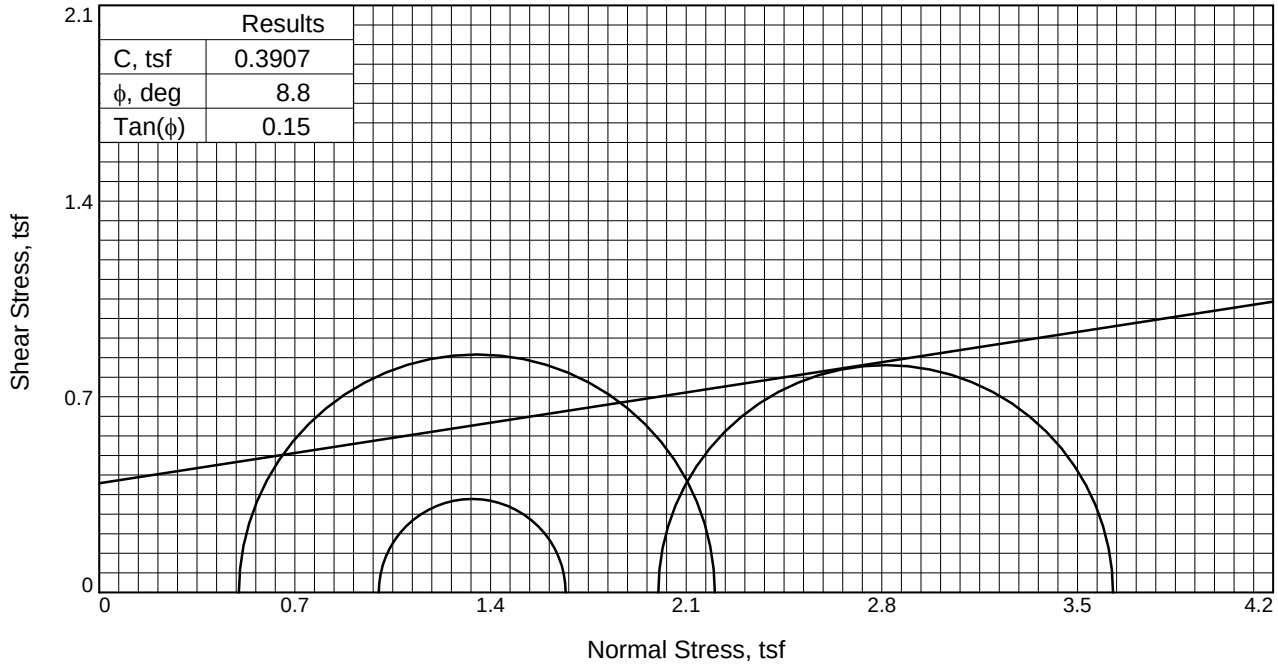
Client: KLJ Engineering LLC

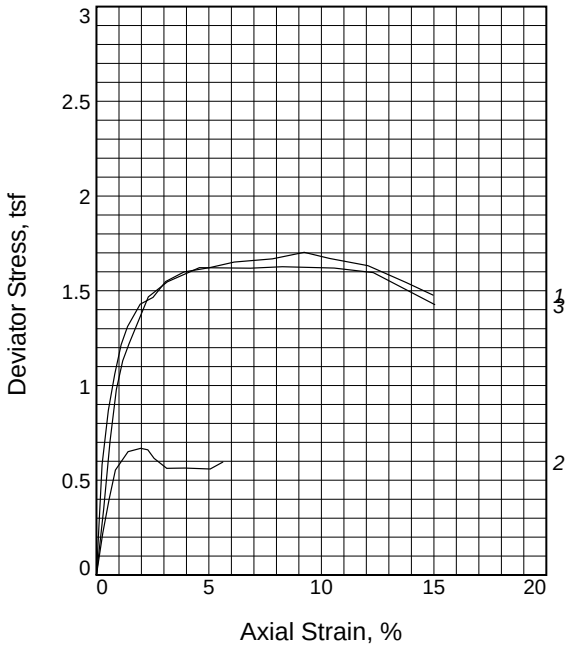
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-079 **Depth:** 17-19' **Sample Number:** TW-1149

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	39.6	43.5	40.6
	Dry Density, pcf	80.9	76.7	78.8
	Saturation, %	98.7	98.3	96.3
	Void Ratio	1.0825	1.1962	1.1388
	Diameter, in.	1.405	1.400	1.413
	Height, in.	2.826	2.846	2.820
At Test	Water Content, %	39.6	43.5	40.6
	Dry Density, pcf	80.9	76.7	78.8
	Saturation, %	98.7	98.3	96.3
	Void Ratio	1.0825	1.1962	1.1388
	Diameter, in.	1.405	1.400	1.413
	Height, in.	2.826	2.846	2.820
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.703	0.669	1.627
Ult. Stress, tsf		1.477	0.559	1.427
σ_1 Failure, tsf		2.202	1.669	3.627
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

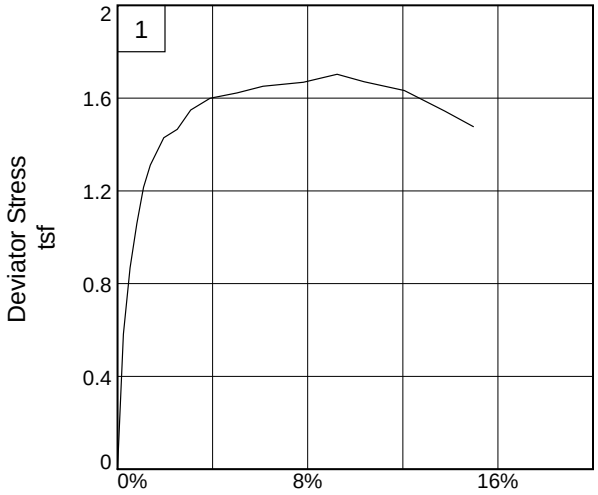
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

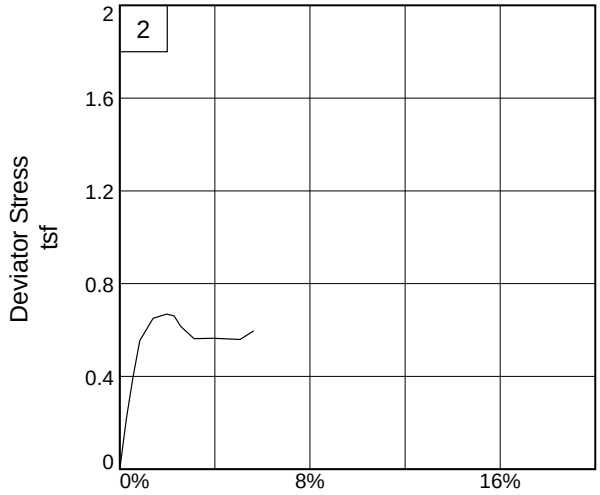
Source of Sample: GDRL-081 **Depth:** 7-9'

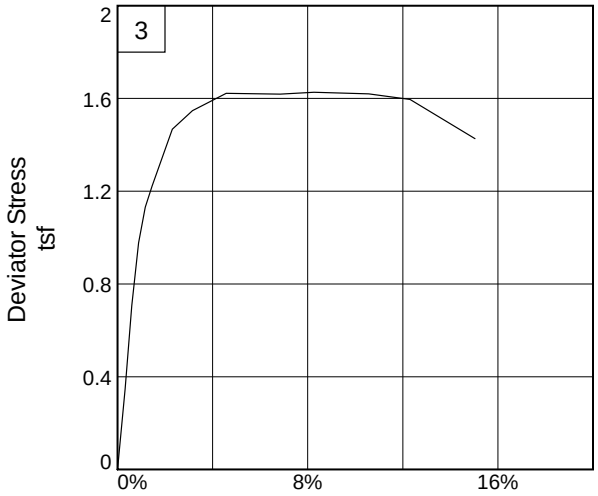
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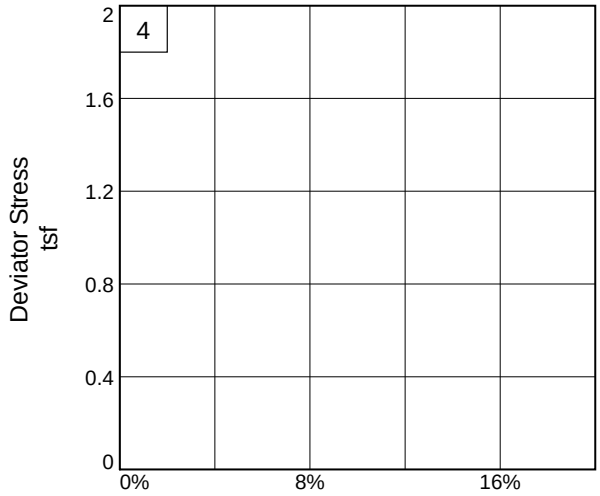
Proj. No.: B2009724 **Date Sampled:** 12/30/2020

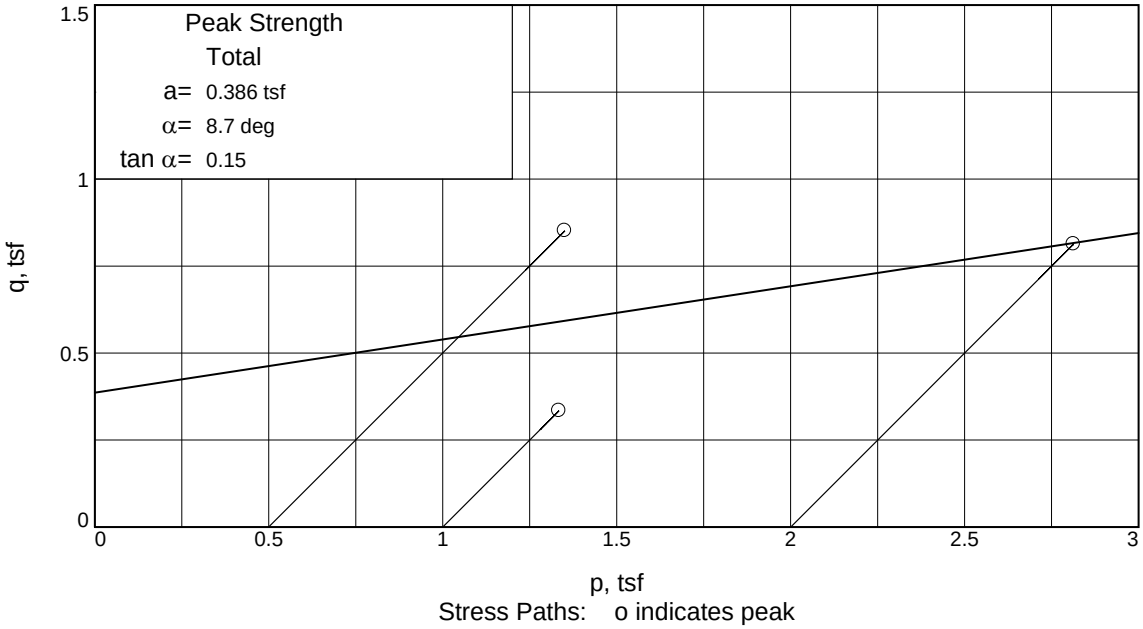
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

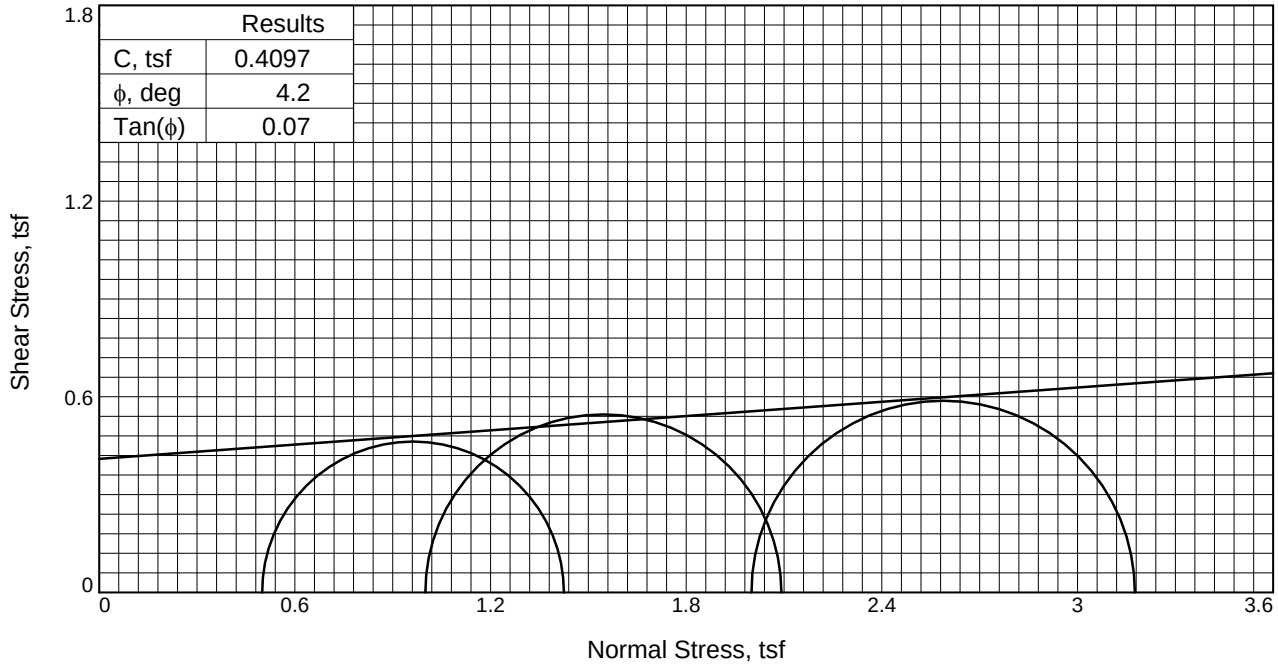
Client: KLJ Engineering LLC

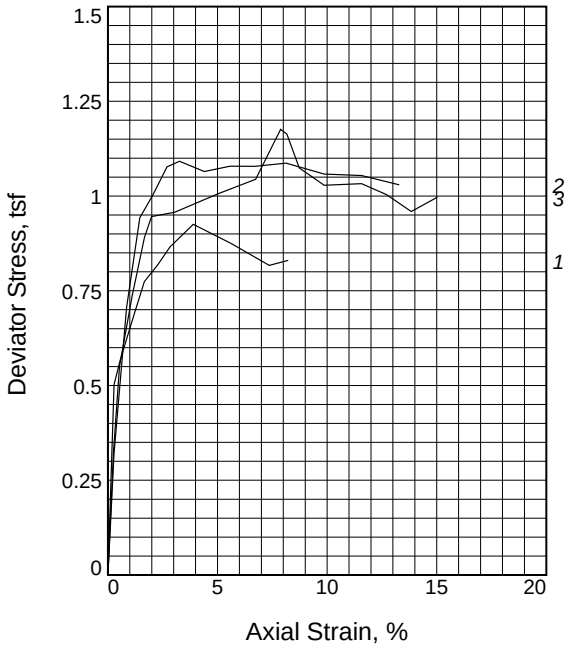
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-081 **Depth:** 7-9' **Sample Number:** TW-1160

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	56.0	53.6	50.1
	Dry Density, pcf	67.1	68.4	71.5
	Saturation, %	99.8	98.9	99.7
	Void Ratio	1.5137	1.4629	1.3579
	Diameter, in.	1.427	1.423	1.425
	Height, in.	2.827	2.817	2.818
At Test	Water Content, %	56.0	53.6	50.1
	Dry Density, pcf	67.1	68.4	71.5
	Saturation, %	99.8	98.9	99.7
	Void Ratio	1.5137	1.4629	1.3579
	Diameter, in.	1.427	1.423	1.425
	Height, in.	2.827	2.817	2.818
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.925	1.092	1.176
Ult. Stress, tsf		0.830	1.065	0.959
σ_1 Failure, tsf		1.425	2.092	3.176
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

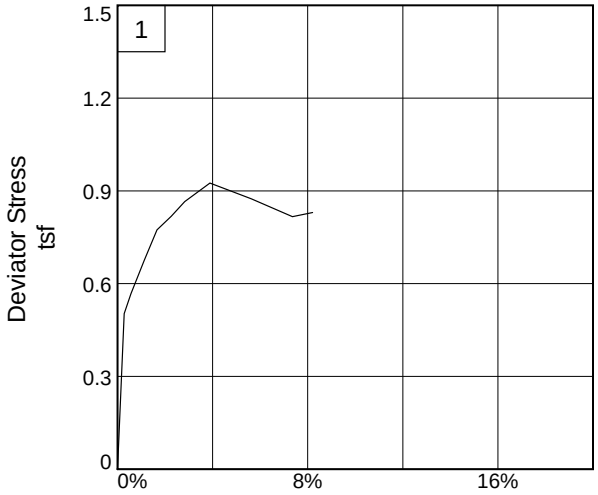
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

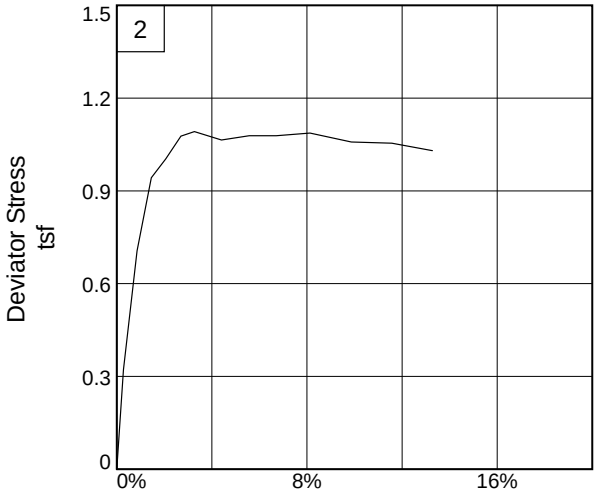
Source of Sample: CAA-083 **Depth:** 17-19'

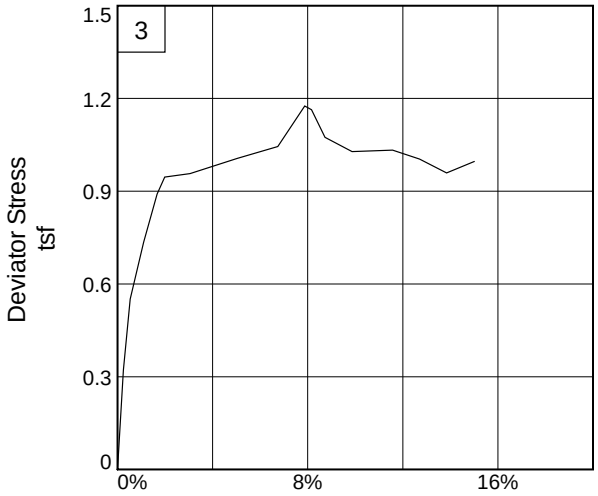
Sample Number: TW-1172

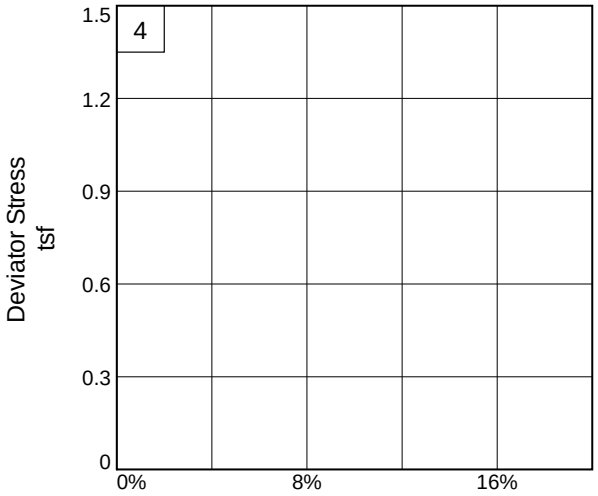
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

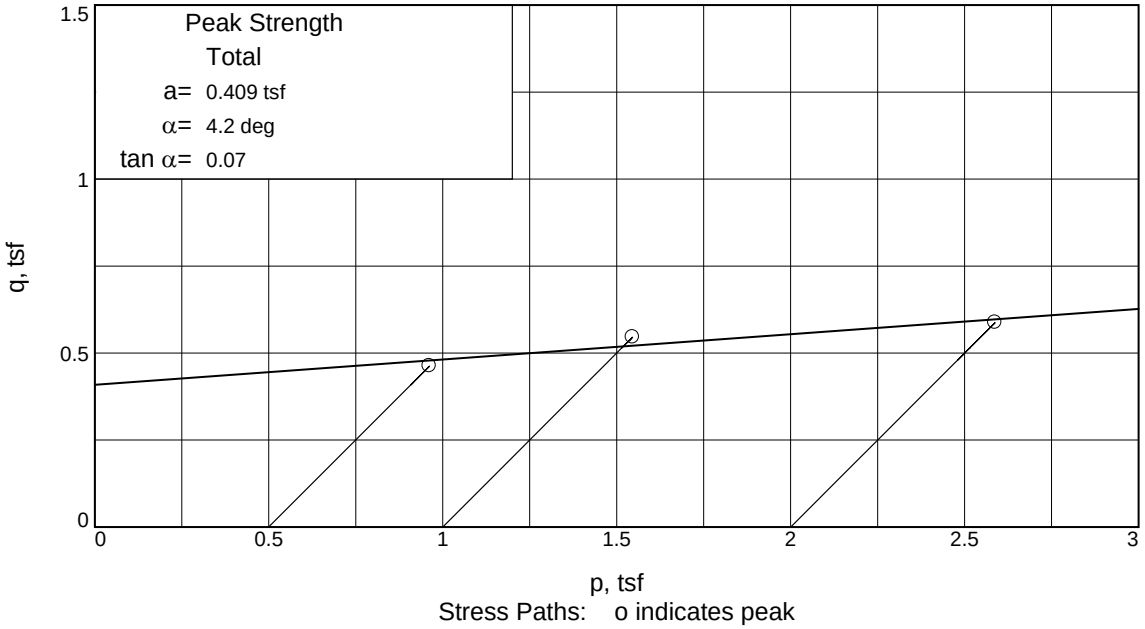
BRAUN INTERTEC











Stress Paths: o indicates peak

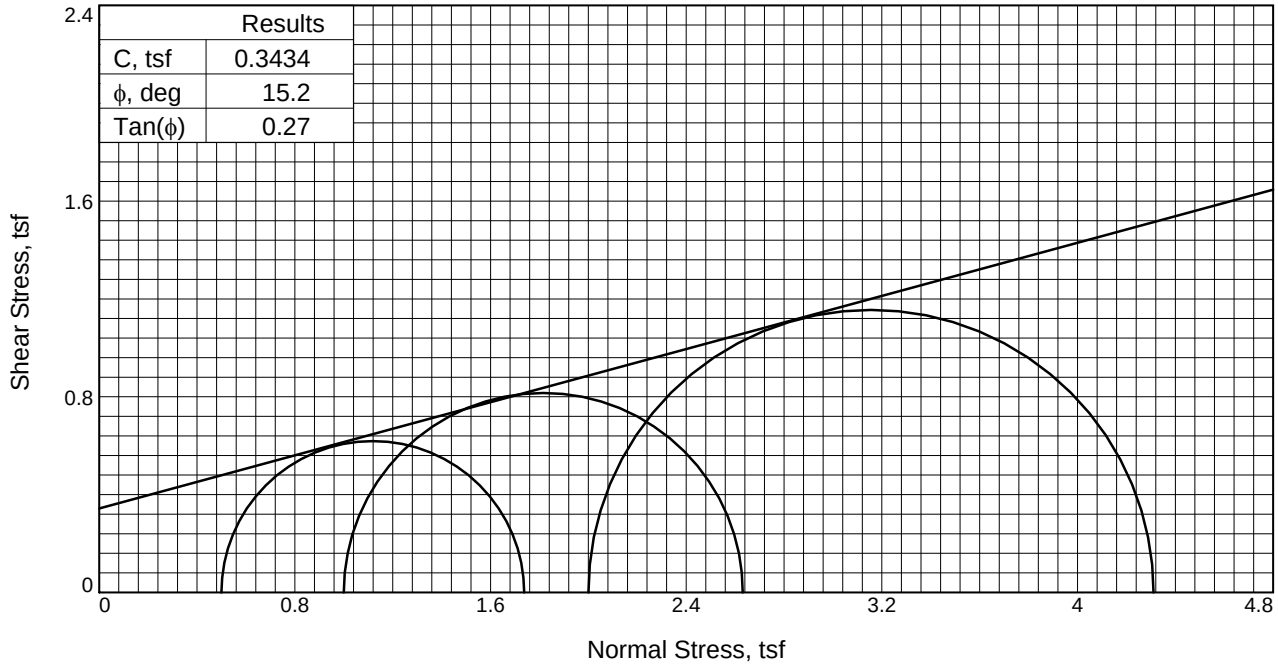
Client: KLJ Engineering LLC

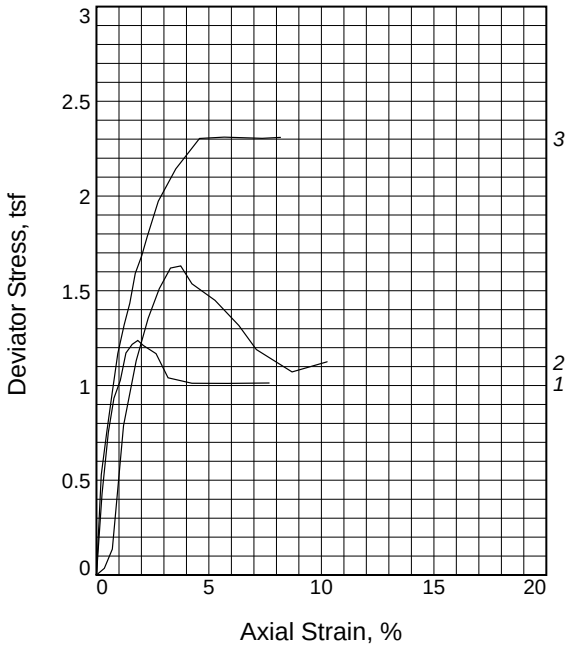
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-083 **Depth:** 17-19' **Sample Number:** TW-1172

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.8	39.9	37.8
	Dry Density, pcf	79.4	81.3	82.9
	Saturation, %	98.2	99.9	98.5
	Void Ratio	1.1222	1.0810	1.0402
	Diameter, in.	1.384	1.391	1.390
	Height, in.	2.828	2.828	2.836
At Test	Water Content, %	40.8	39.9	37.8
	Dry Density, pcf	79.4	81.3	82.9
	Saturation, %	98.2	99.9	98.5
	Void Ratio	1.1222	1.0810	1.0402
	Diameter, in.	1.384	1.391	1.390
	Height, in.	2.828	2.828	2.836
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.238	1.631	2.311
Ult. Stress, tsf		1.011	1.072	2.310
σ_1 Failure, tsf		1.737	2.631	4.311
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

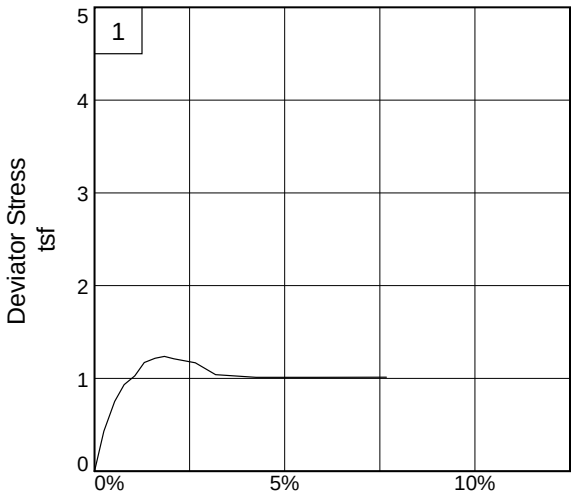
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

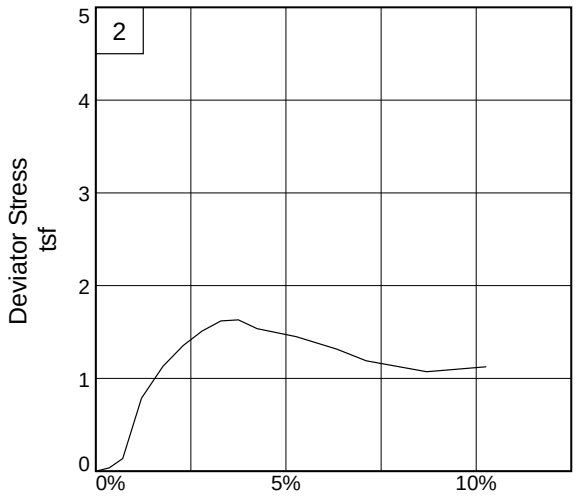
Source of Sample: GDRL-084 **Depth:** 7-9'

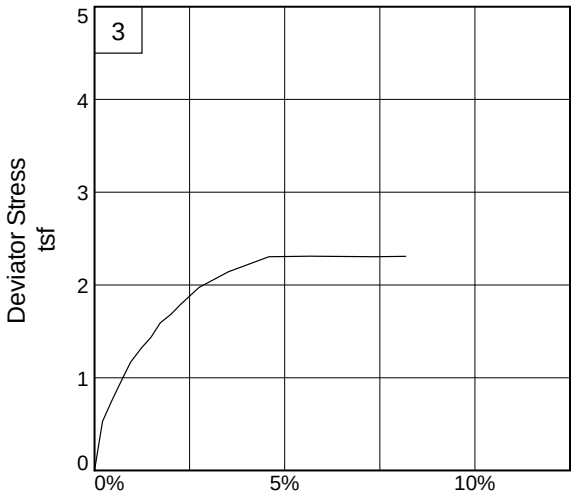
Sample Number: TW-1176

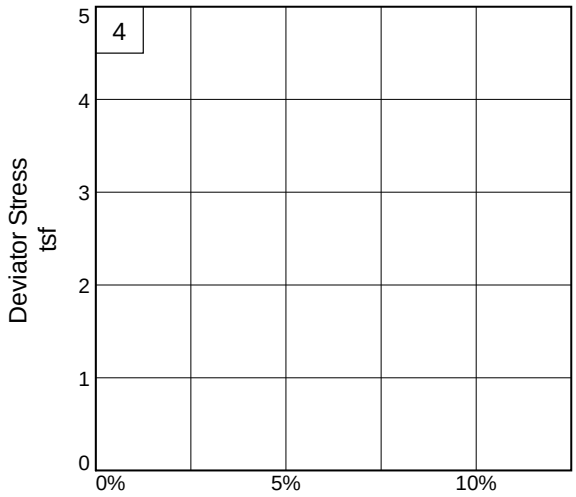
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

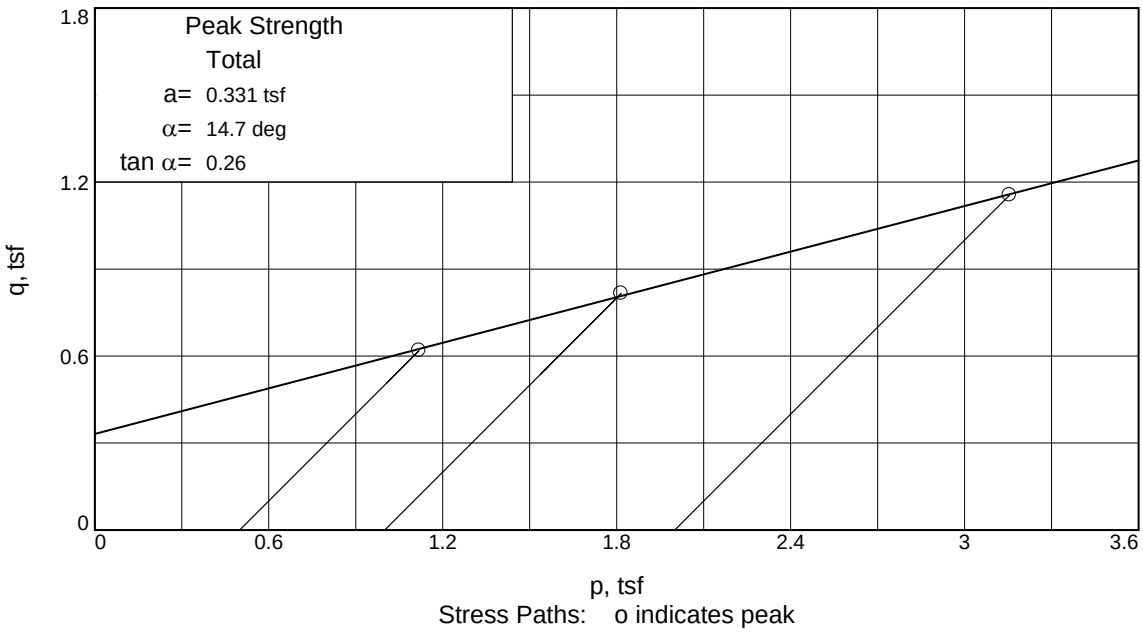
BRAUN INTERTEC











Stress Paths: o indicates peak

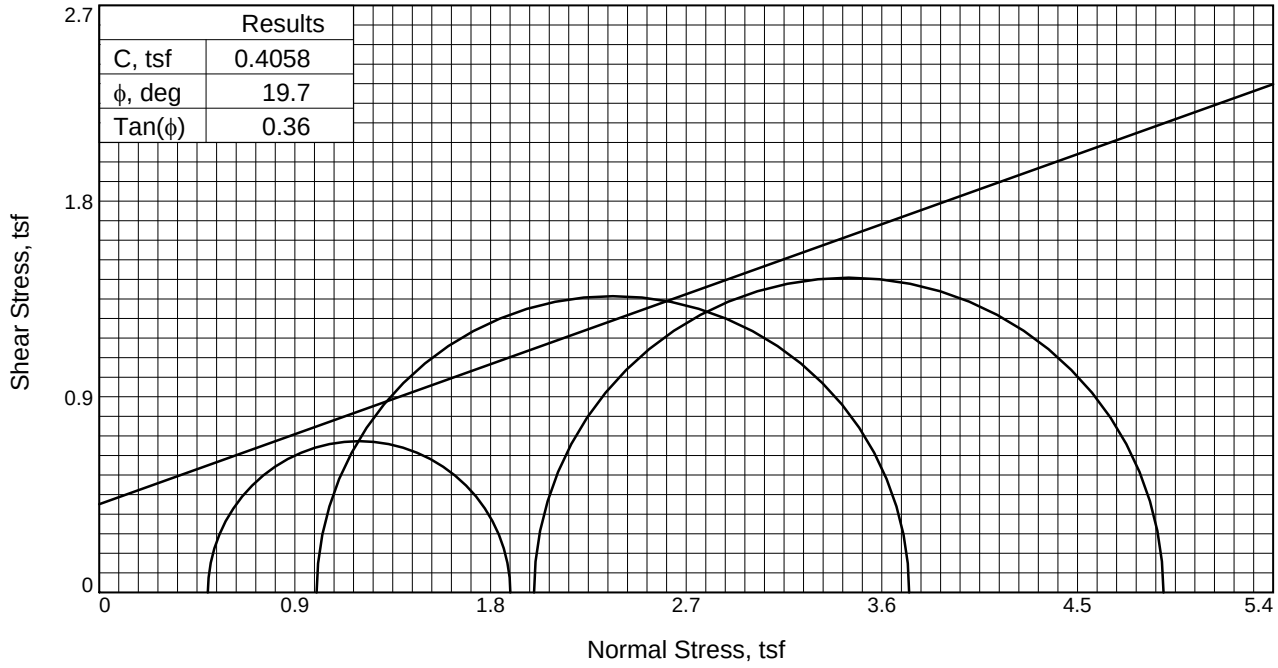
Client: KLJ Engineering LLC

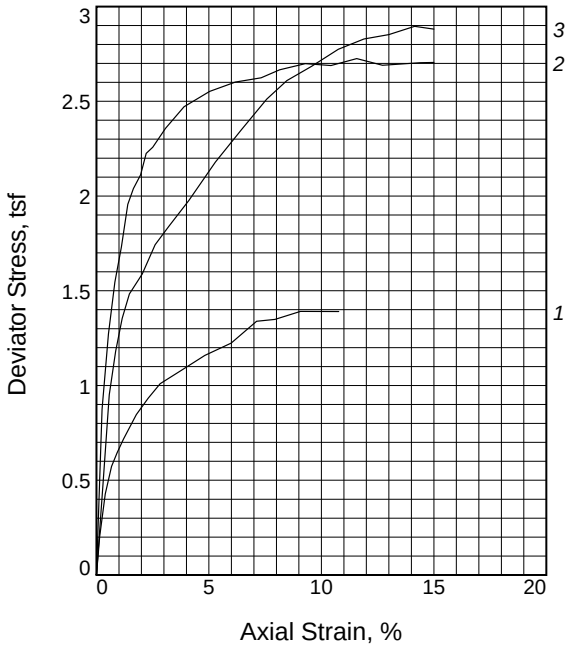
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-084 **Depth:** 7-9' **Sample Number:** TW-1176

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	35.2	26.6	25.6
	Dry Density, pcf	85.6	97.1	98.5
	Saturation, %	98.1	97.5	97.4
	Void Ratio	0.9686	0.7356	0.7104
	Diameter, in.	1.400	1.430	1.470
	Height, in.	2.823	2.800	2.800
At Test	Water Content, %	35.2	26.6	25.6
	Dry Density, pcf	85.6	97.1	98.5
	Saturation, %	98.1	97.5	97.4
	Void Ratio	0.9686	0.7356	0.7104
	Diameter, in.	1.400	1.430	1.470
	Height, in.	2.823	2.800	2.800
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.391	2.726	2.895
Ult. Stress, tsf		1.390	2.690	2.881
σ_1 Failure, tsf		1.891	3.726	4.895
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

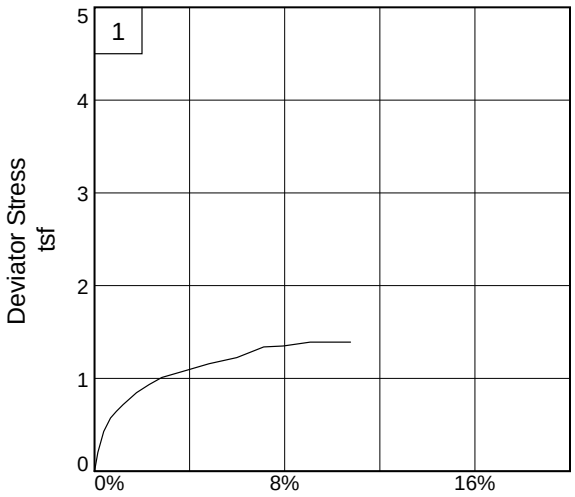
Source of Sample: GDRL-086 **Depth:** 7-9'

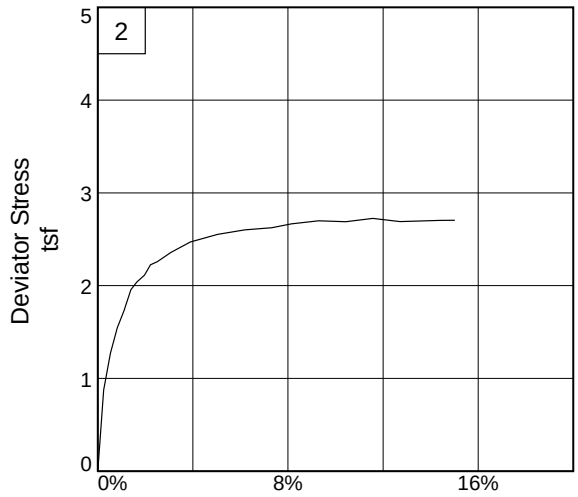
Sample Number: TW-1184

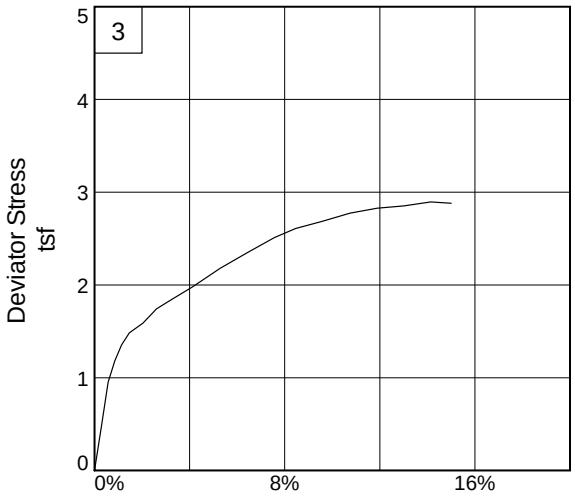
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

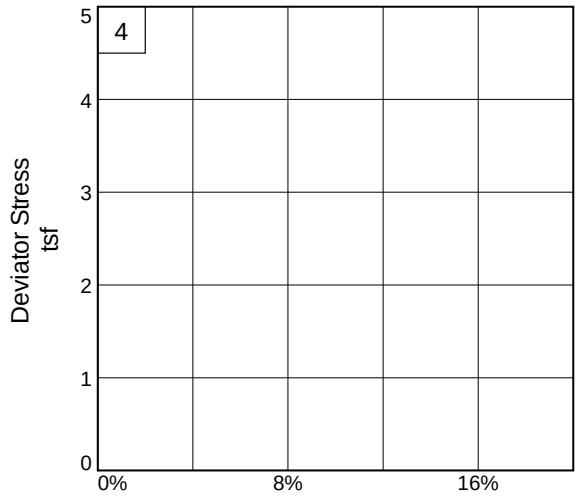
BRAUN INTERTEC

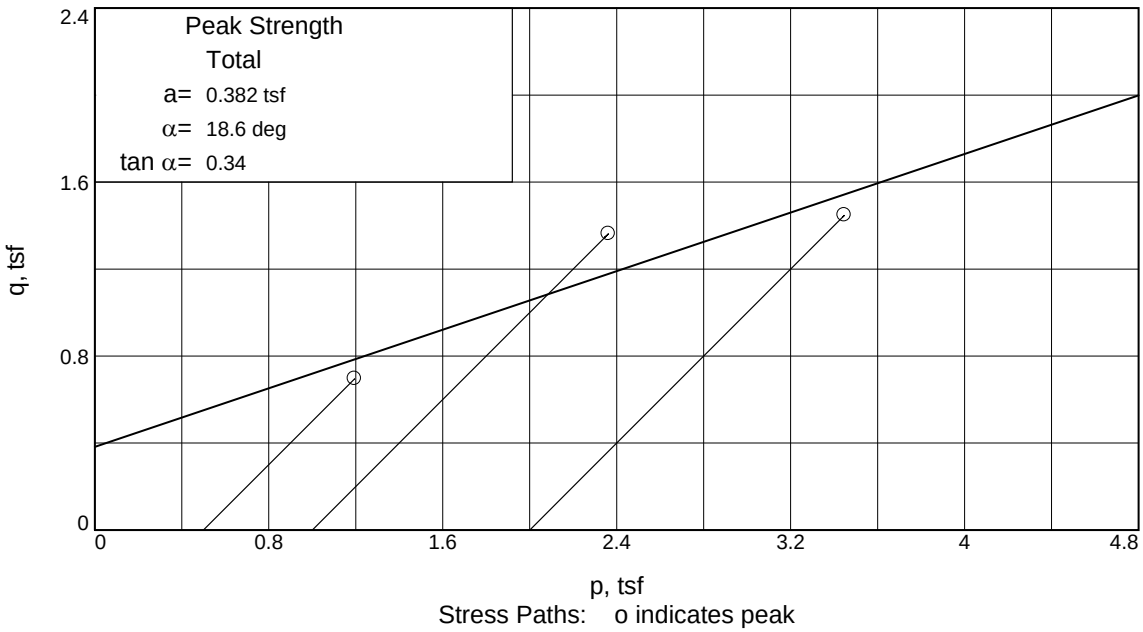
Figure _____











Stress Paths: o indicates peak

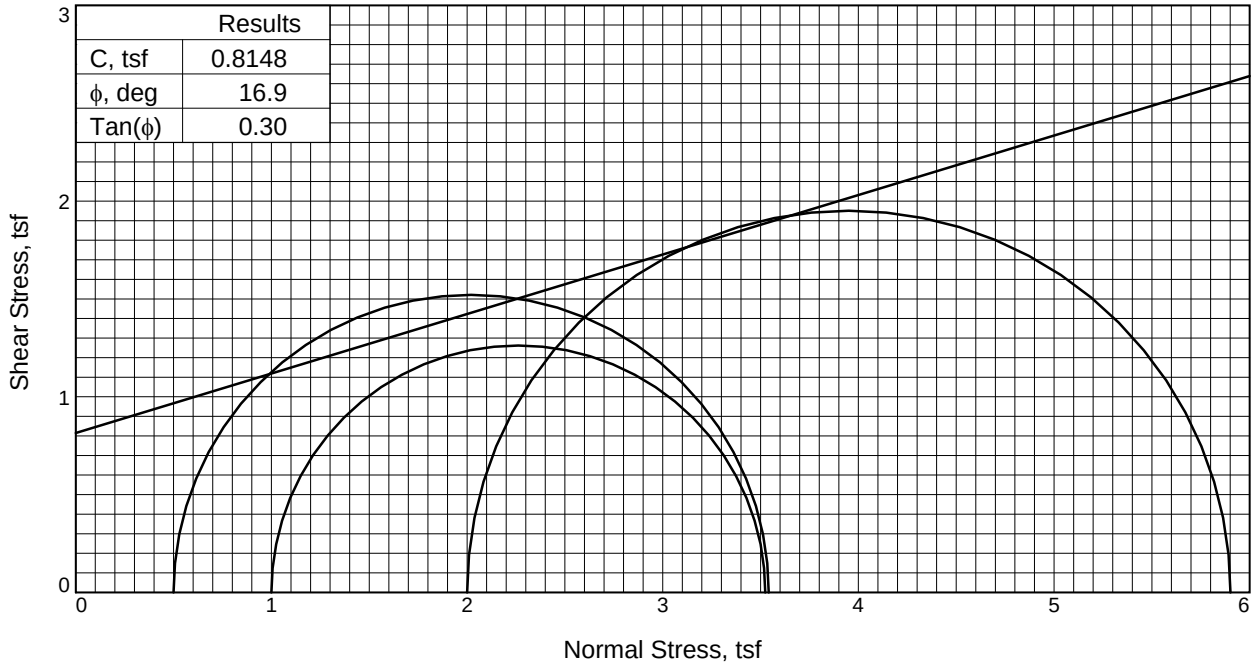
Client: KLJ Engineering LLC

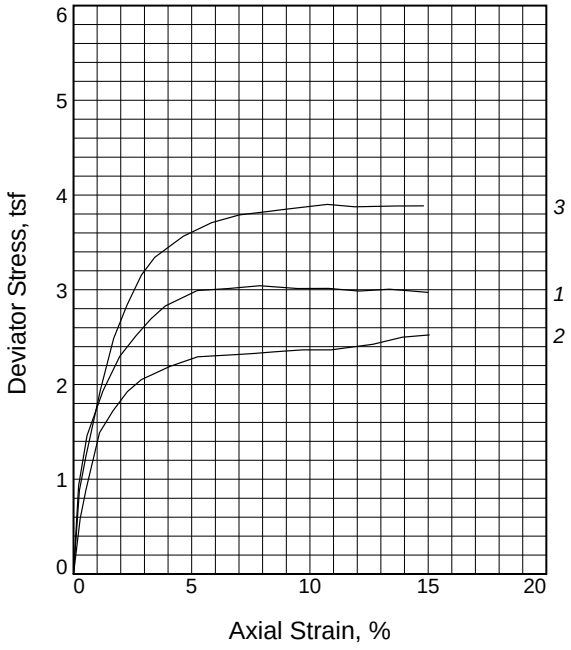
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-086 **Depth:** 7-9' **Sample Number:** TW-1184

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	31.9	31.8	29.3
	Dry Density, pcf	88.2	85.8	92.1
	Saturation, %	94.7	89.1	95.2
	Void Ratio	0.9100	0.9643	0.8300
	Diameter, in.	1.421	1.425	1.420
	Height, in.	2.807	2.818	2.823
At Test	Water Content, %	31.9	31.8	29.3
	Dry Density, pcf	88.2	85.8	92.1
	Saturation, %	94.7	89.1	95.2
	Void Ratio	0.9100	0.9643	0.8300
	Diameter, in.	1.421	1.425	1.420
	Height, in.	2.807	2.818	2.823
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		3.042	2.524	3.902
Ult. Stress, tsf		2.973	2.524	3.876
σ_1 Failure, tsf		3.542	3.524	5.902
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

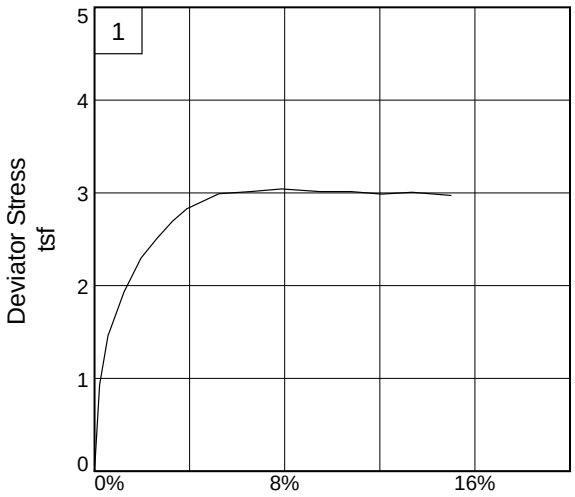
Source of Sample: CAA-087 **Depth:** 7-9'

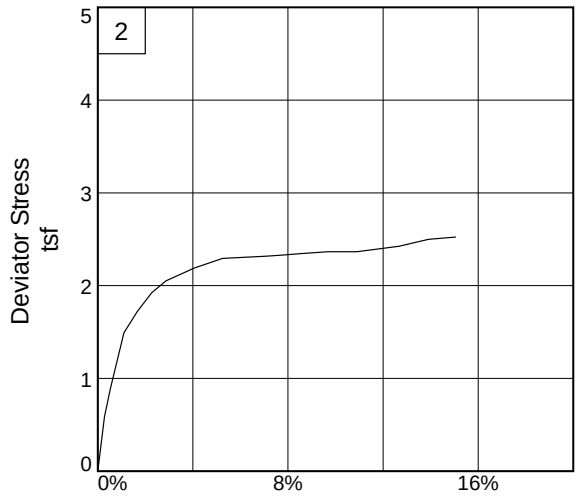
Sample Number: TW-1188

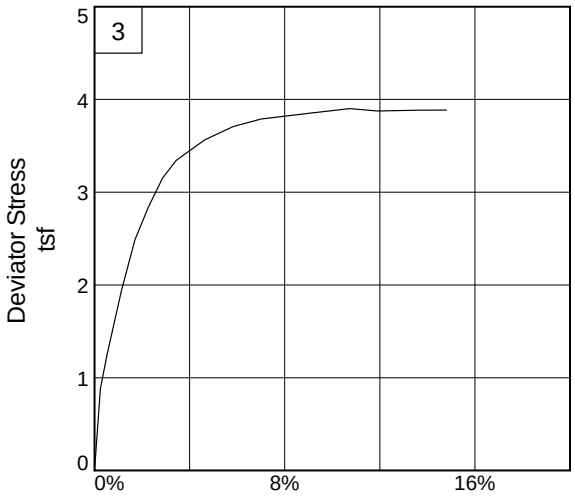
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

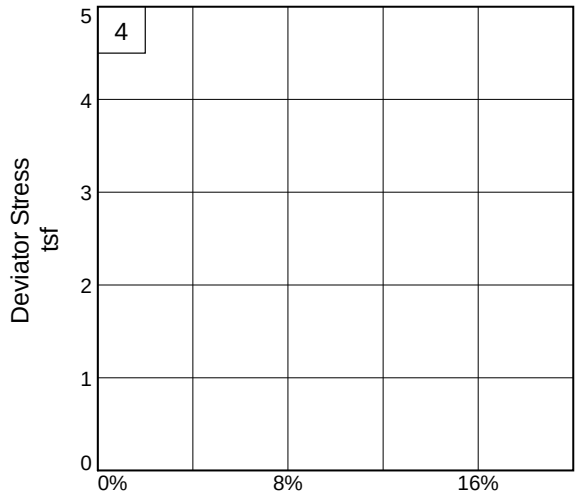
BRAUN INTERTEC

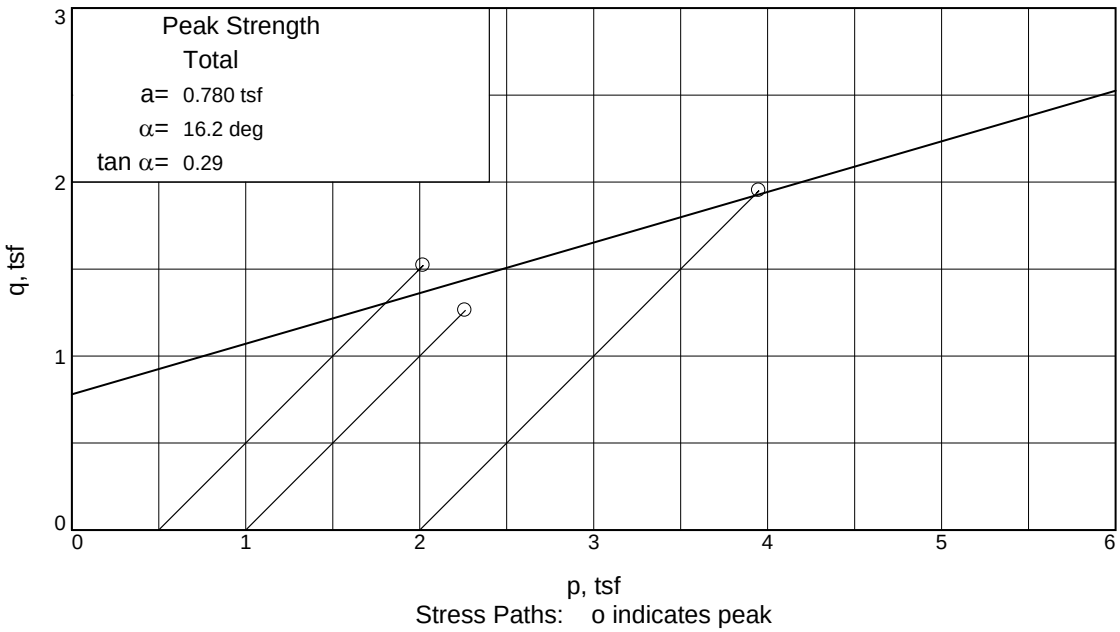
Figure _____











Stress Paths: o indicates peak

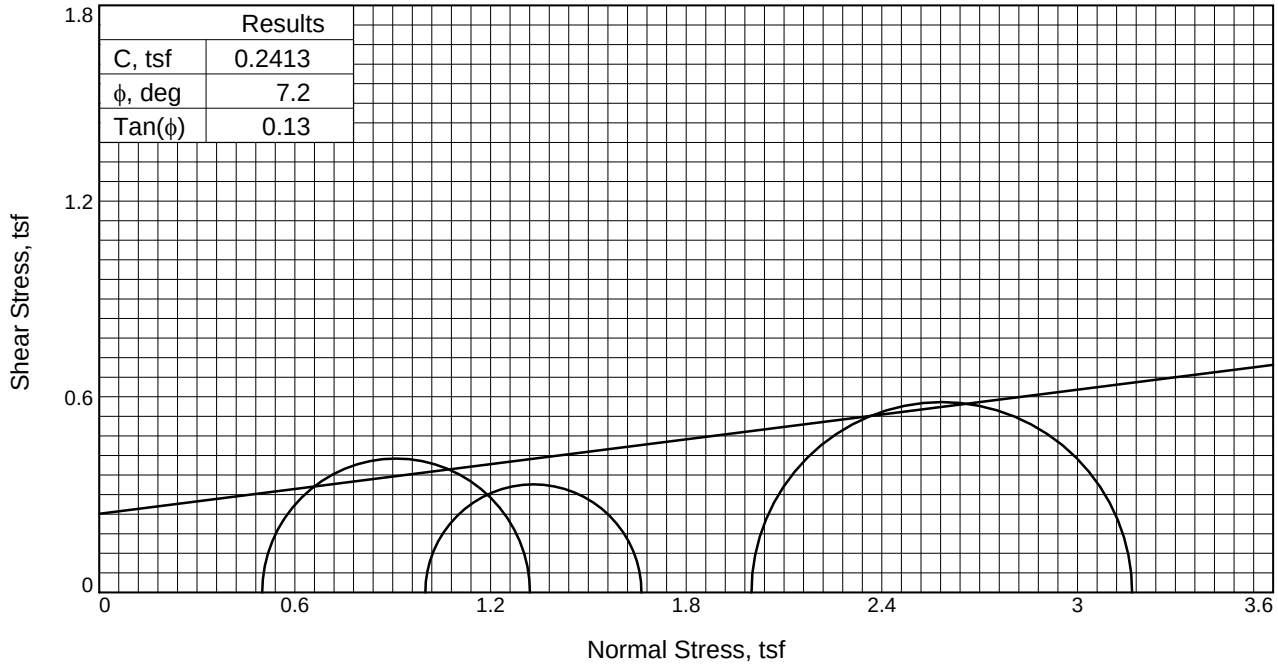
Client: KLJ Engineering LLC

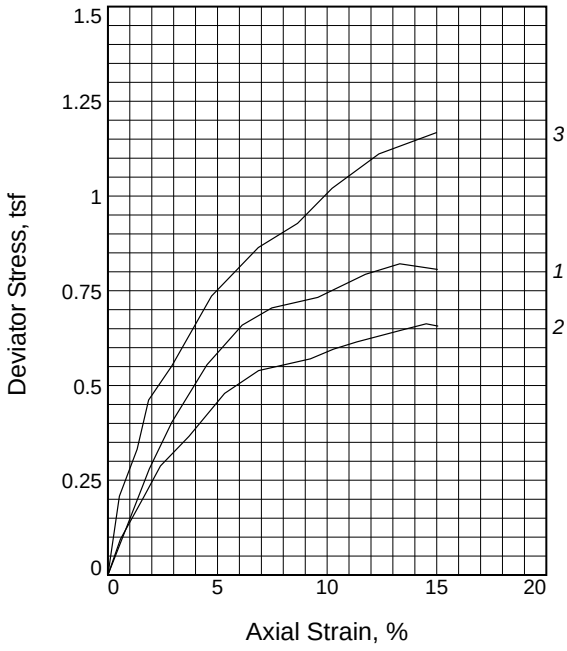
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-087 **Depth:** 7-9' **Sample Number:** TW-1188

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	32.6	30.6	26.9
	Dry Density, pcf	89.1	92.5	95.7
	Saturation, %	98.6	100.0	94.9
	Void Ratio	0.8927	0.8287	0.7673
	Diameter, in.	1.421	1.430	1.438
	Height, in.	2.809	2.837	2.856
At Test	Water Content, %	32.6	30.6	26.9
	Dry Density, pcf	89.1	92.5	95.7
	Saturation, %	98.6	100.0	94.9
	Void Ratio	0.8927	0.8287	0.7673
	Diameter, in.	1.421	1.430	1.438
	Height, in.	2.809	2.837	2.856
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.821	0.663	1.167
Ult. Stress, tsf		0.806	0.657	1.167
σ_1 Failure, tsf		1.321	1.663	3.167
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown and gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

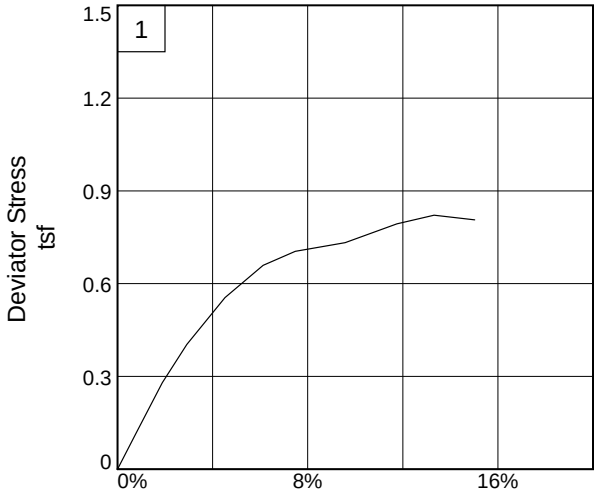
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

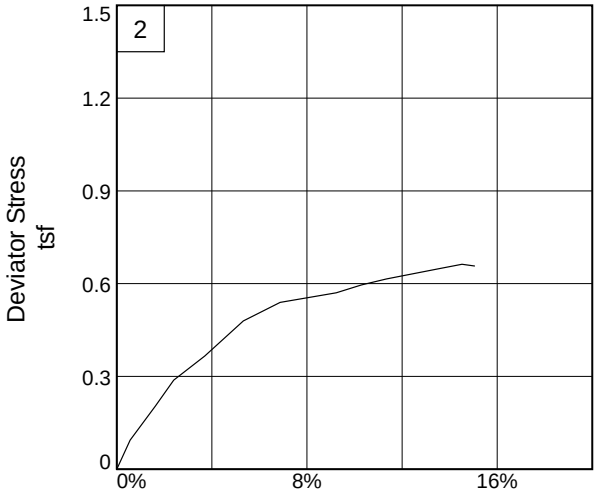
Source of Sample: CAA-087 **Depth:** 17-19'

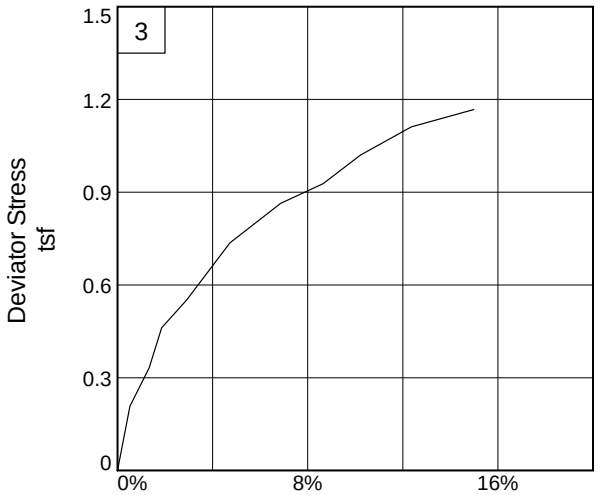
Sample Number: TW-1191

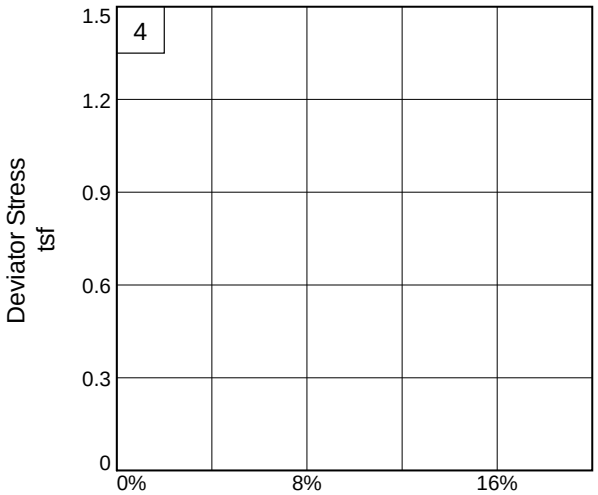
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

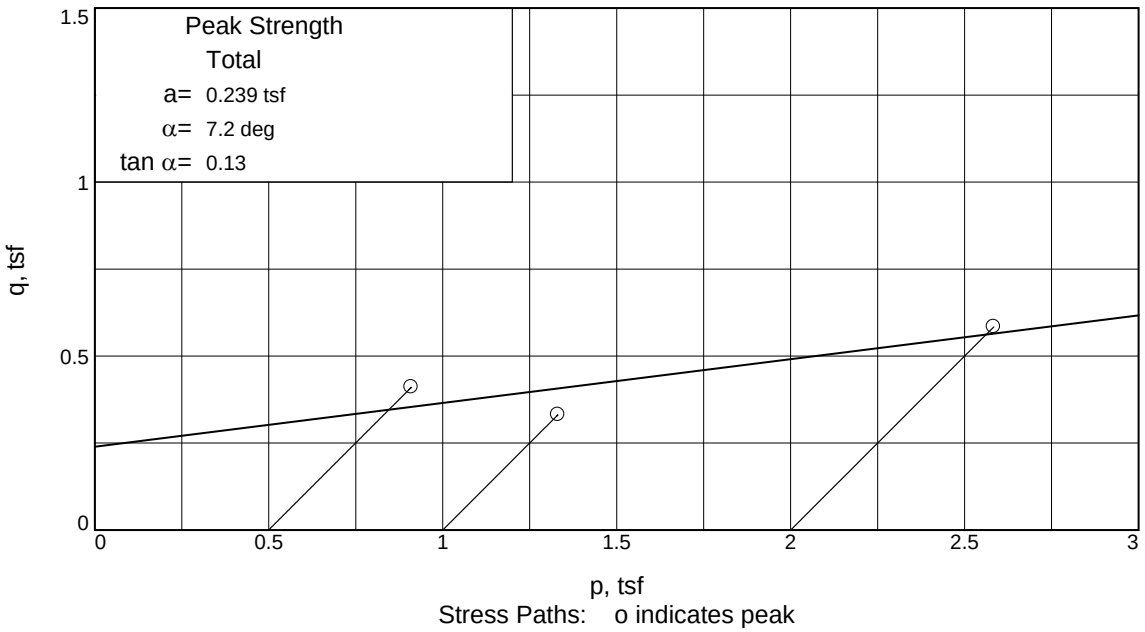
BRAUN INTERTEC











Stress Paths: o indicates peak

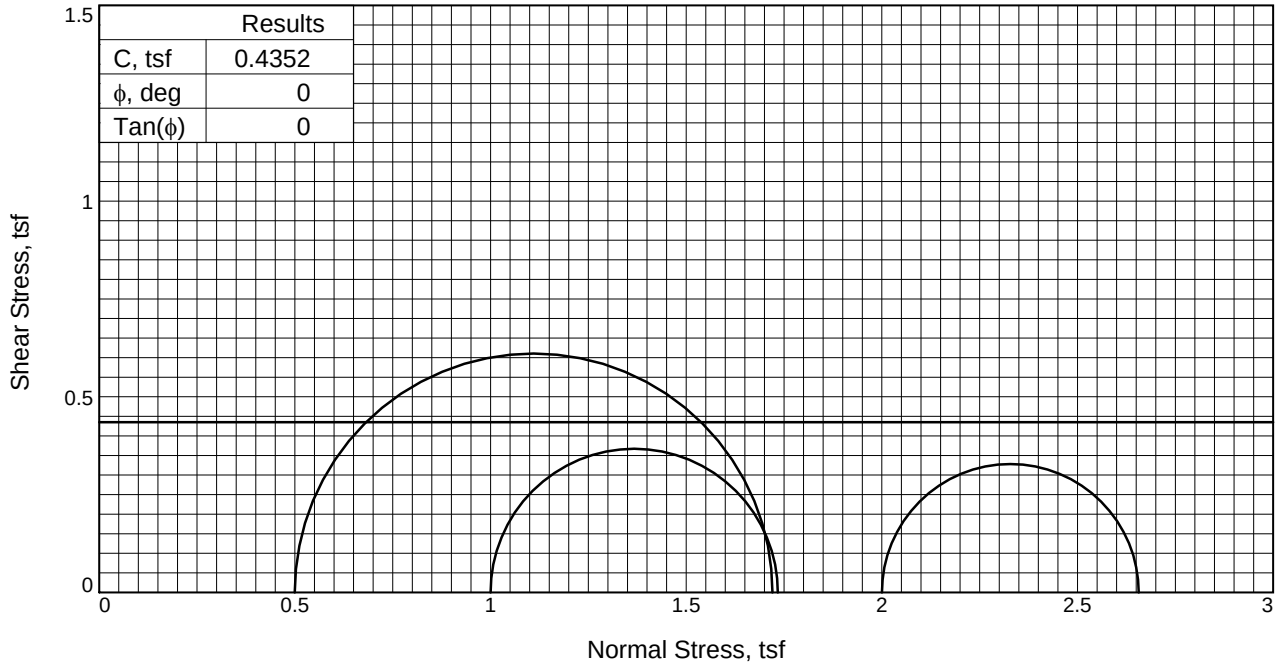
Client: KLJ Engineering LLC

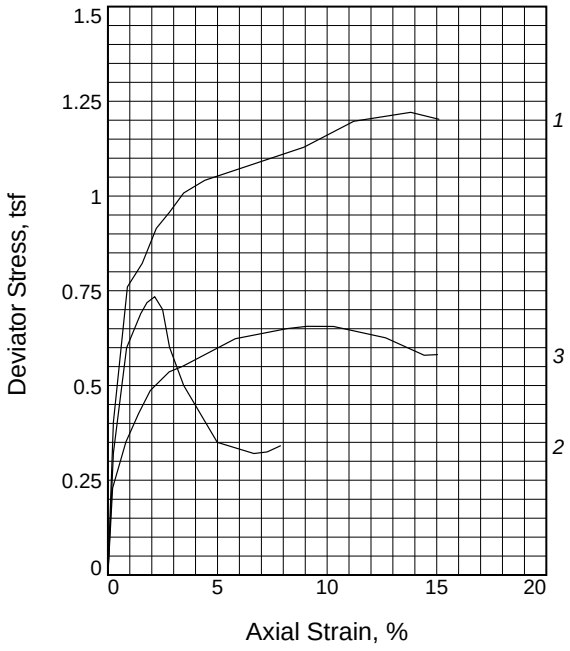
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-087 **Depth:** 17-19' **Sample Number:** TW-1191

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	46.3	42.1	43.3
	Dry Density, pcf	74.8	77.9	77.0
	Saturation, %	99.7	97.7	98.5
	Void Ratio	1.2548	1.1631	1.1877
	Diameter, in.	1.421	1.420	1.412
	Height, in.	2.809	2.808	2.788
At Test	Water Content, %	46.3	42.1	43.3
	Dry Density, pcf	74.8	77.9	77.0
	Saturation, %	99.7	97.7	98.5
	Void Ratio	1.2548	1.1631	1.1877
	Diameter, in.	1.421	1.420	1.412
	Height, in.	2.809	2.808	2.788
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.221	0.734	0.656
Ult. Stress, tsf		1.203	0.320	0.580
σ_1 Failure, tsf		1.720	1.734	2.656
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

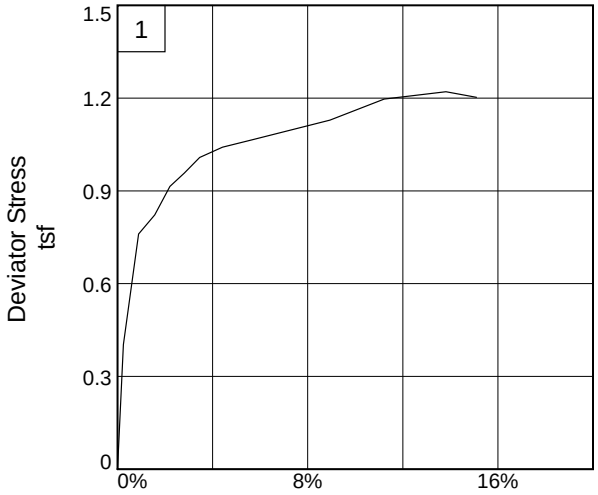
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

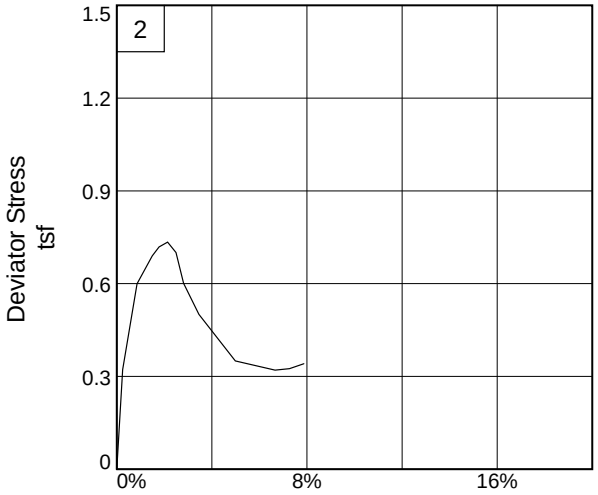
Source of Sample: GDRL-090 **Depth:** 7-9'

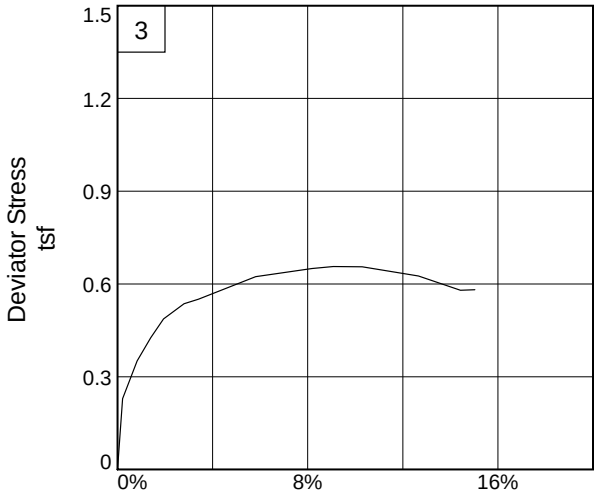
Sample Number: TW-1206

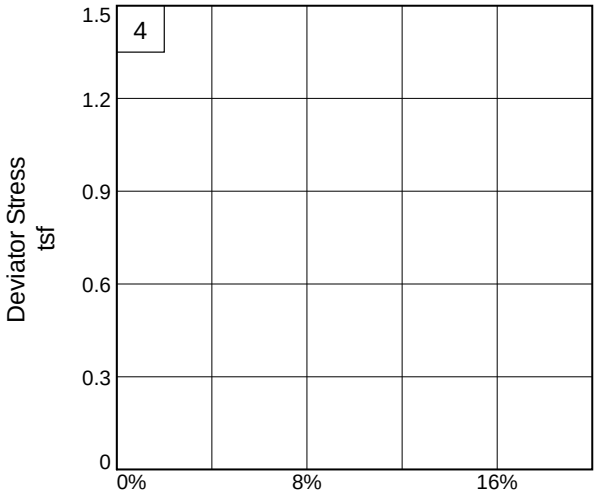
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

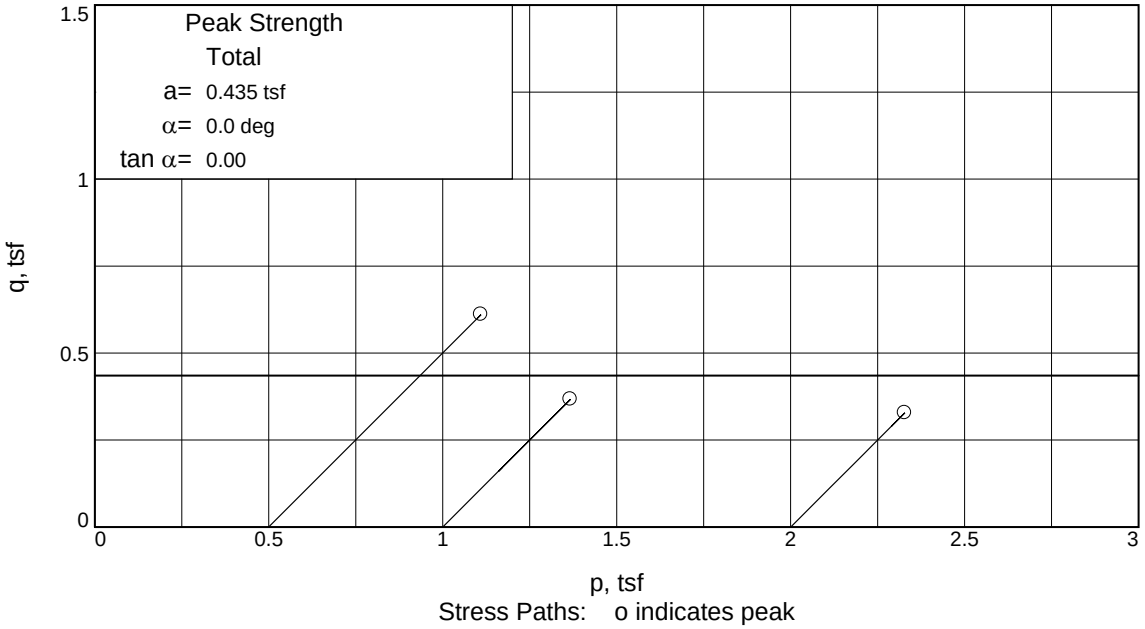
BRAUN INTERTEC











Stress Paths: o indicates peak

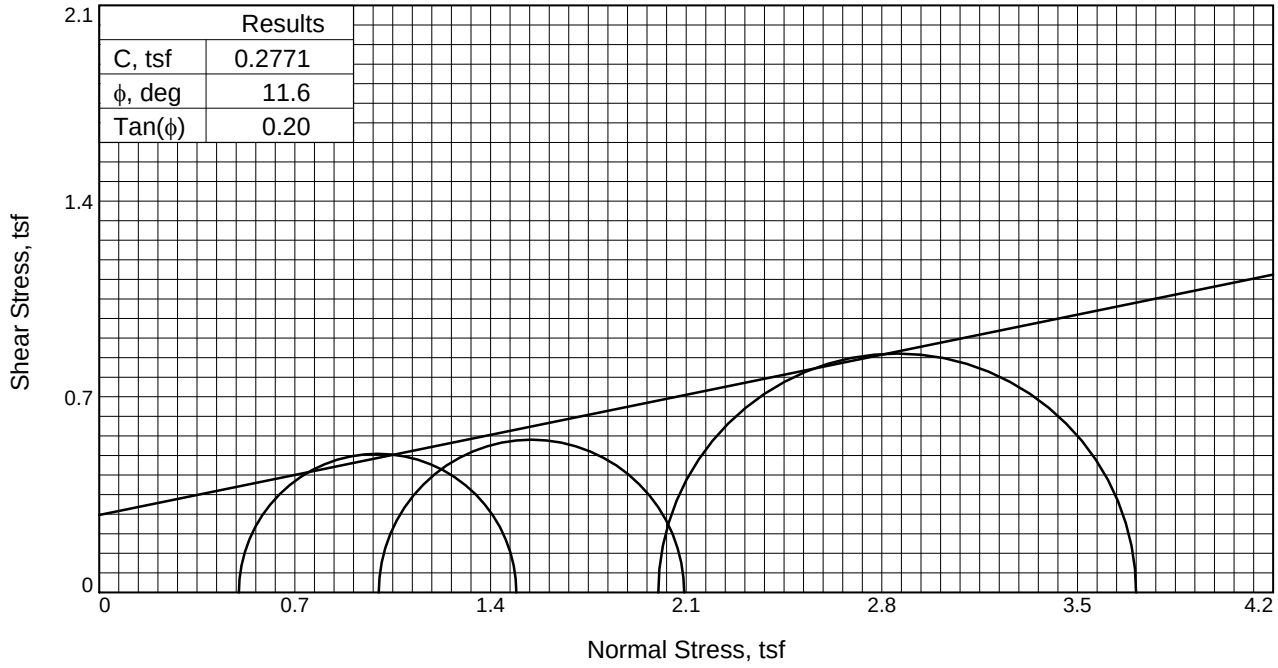
Client: KLJ Engineering LLC

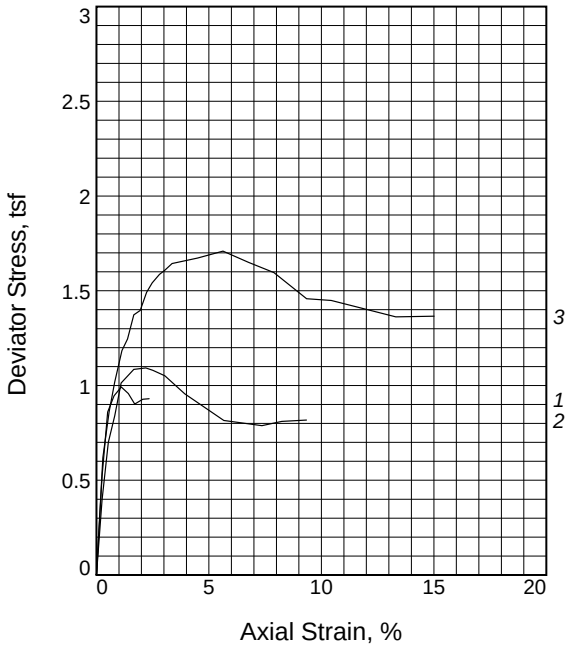
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-090 **Depth:** 7-9' **Sample Number:** TW-1206

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.0	45.2	45.3
	Dry Density, pcf	78.2	75.4	74.9
	Saturation, %	98.1	98.7	97.8
	Void Ratio	1.1549	1.2365	1.2510
	Diameter, in.	1.400	1.400	1.410
	Height, in.	2.816	2.828	2.825
At Test	Water Content, %	42.0	45.2	45.3
	Dry Density, pcf	78.2	75.4	74.9
	Saturation, %	98.1	98.7	97.8
	Void Ratio	1.1549	1.2365	1.2510
	Diameter, in.	1.400	1.400	1.410
	Height, in.	2.816	2.828	2.825
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.992	1.093	1.709
Ult. Stress, tsf		0.902	0.788	1.366
σ_1 Failure, tsf		1.492	2.093	3.710
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

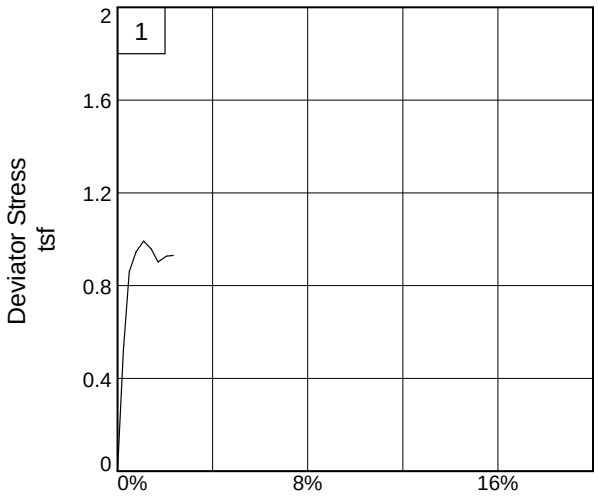
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

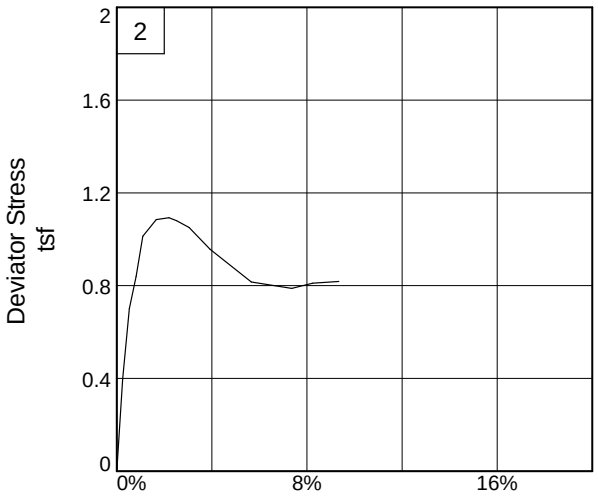
Source of Sample: GDRL-092 **Depth:** 7-9'

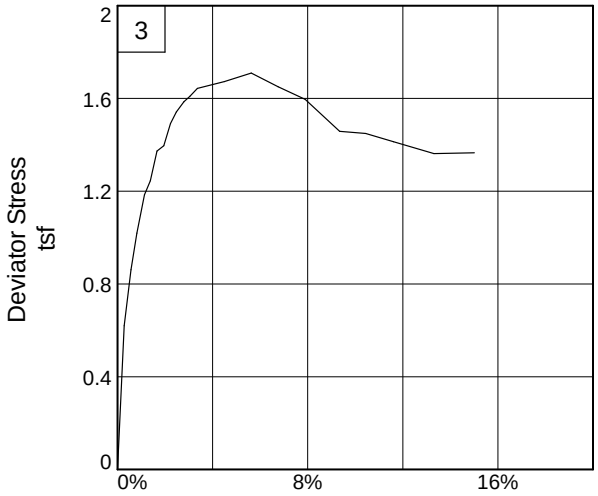
Sample Number: TW-1214

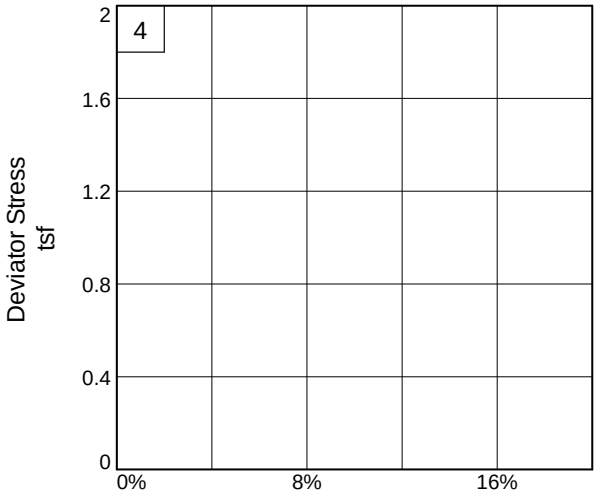
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

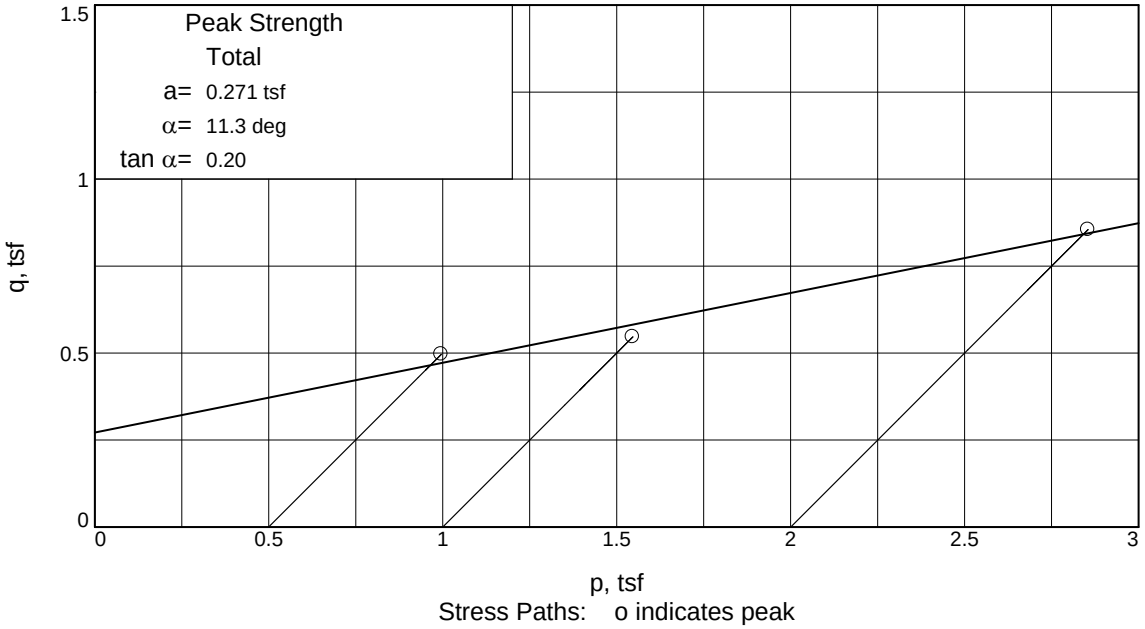
BRAUN INTERTEC











Stress Paths: o indicates peak

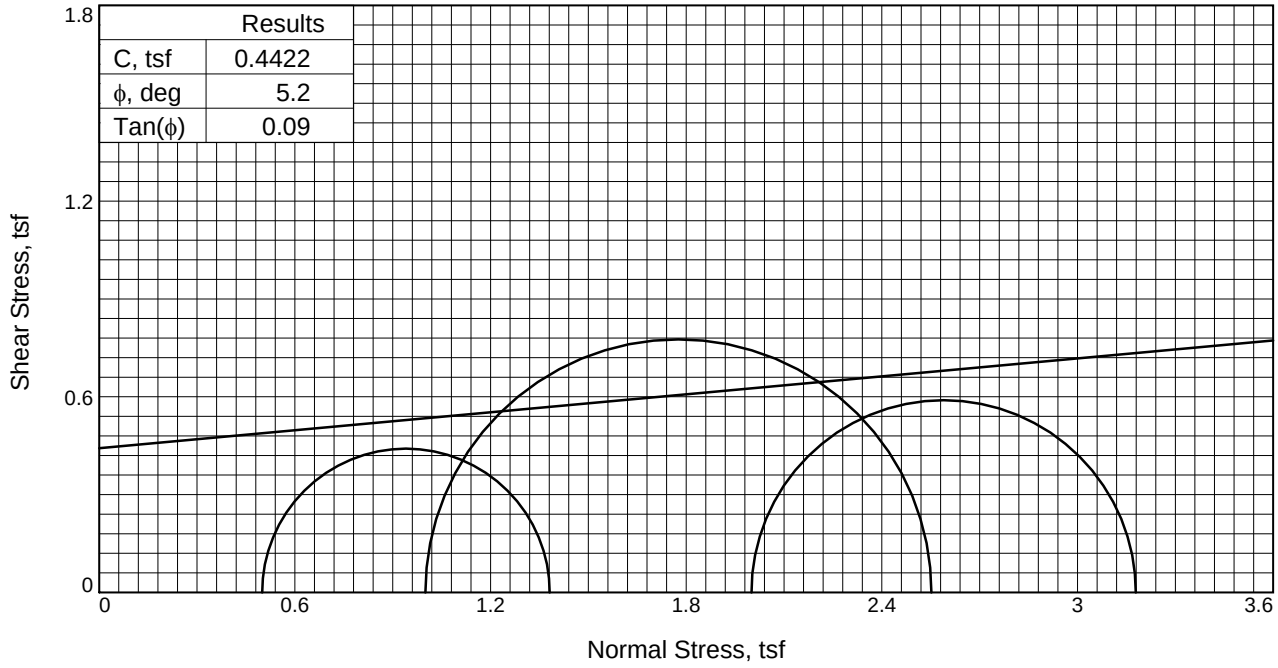
Client: KLJ Engineering LLC

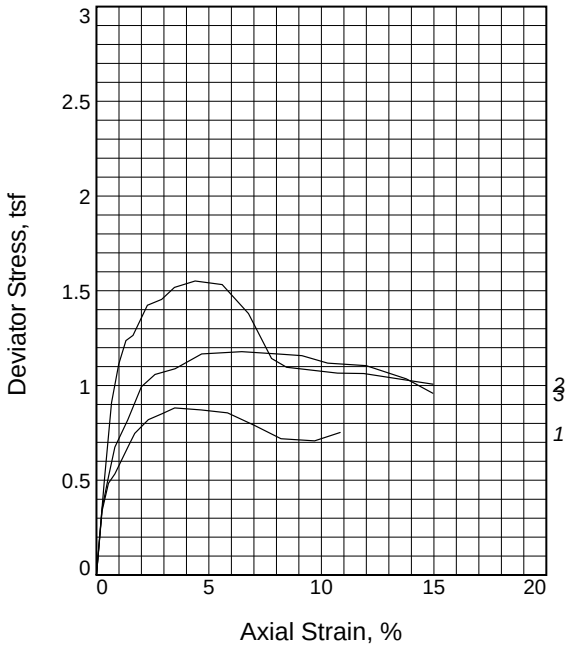
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-092 **Depth:** 7-9' **Sample Number:** TW-1214

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.4	45.6	45.2
	Dry Density, pcf	78.6	75.5	74.9
	Saturation, %	99.8	99.8	97.7
	Void Ratio	1.1456	1.2338	1.2490
	Diameter, in.	1.406	1.408	1.417
	Height, in.	2.815	2.827	2.802
At Test	Water Content, %	42.4	45.6	45.2
	Dry Density, pcf	78.6	75.5	74.9
	Saturation, %	99.8	99.8	97.7
	Void Ratio	1.1456	1.2338	1.2490
	Diameter, in.	1.406	1.408	1.417
	Height, in.	2.815	2.827	2.802
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.882	1.552	1.179
Ult. Stress, tsf		0.708	1.007	0.959
σ_1 Failure, tsf		1.381	2.552	3.179
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

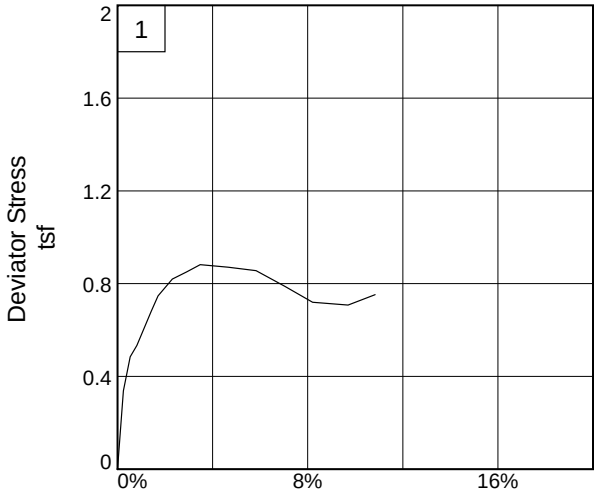
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

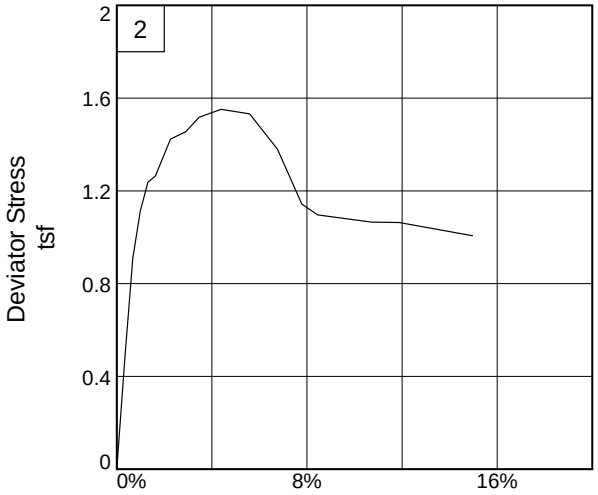
Source of Sample: GDRL-094 **Depth:** 7-9'

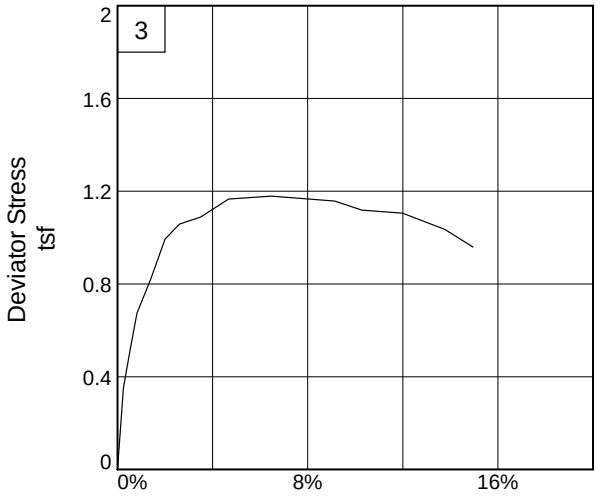
Sample Number: TW-1225

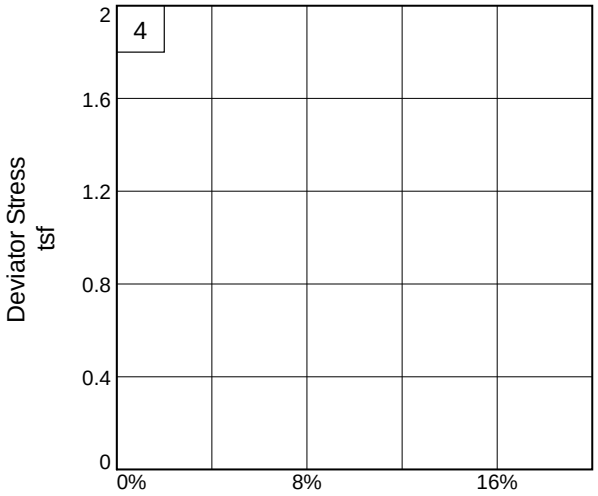
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

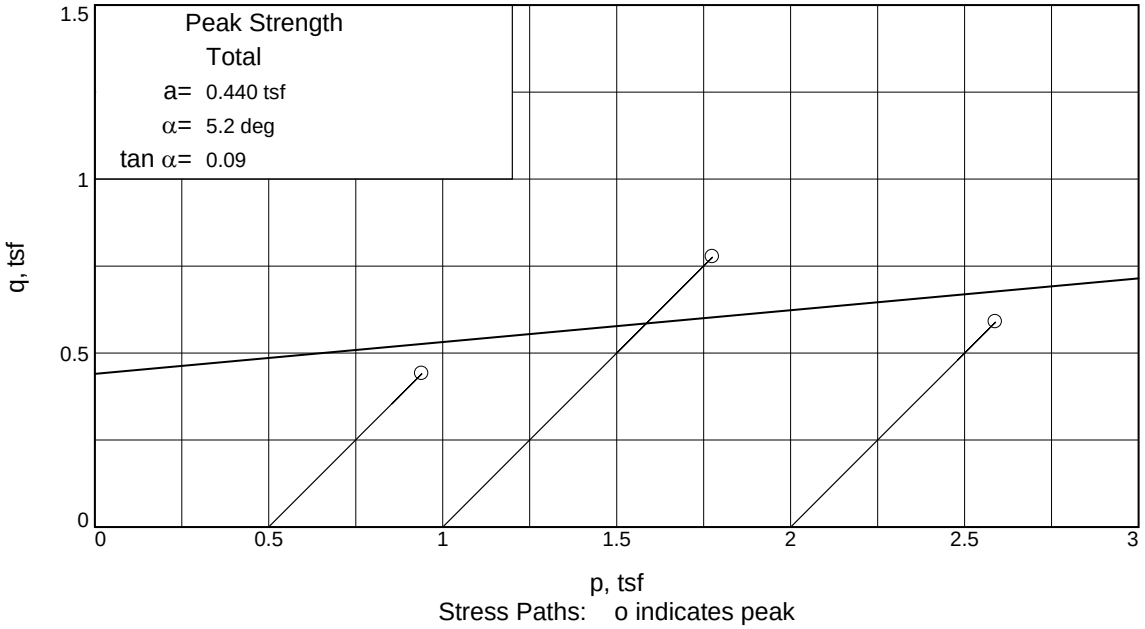
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

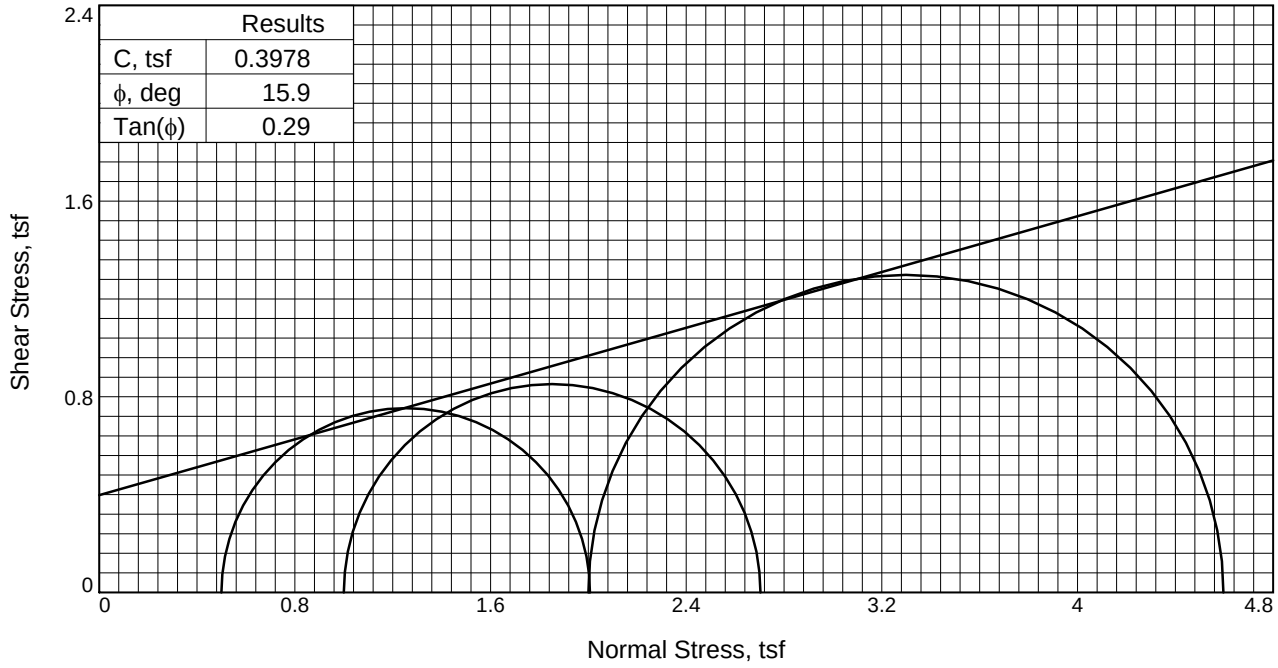
Client: KLJ Engineering LLC

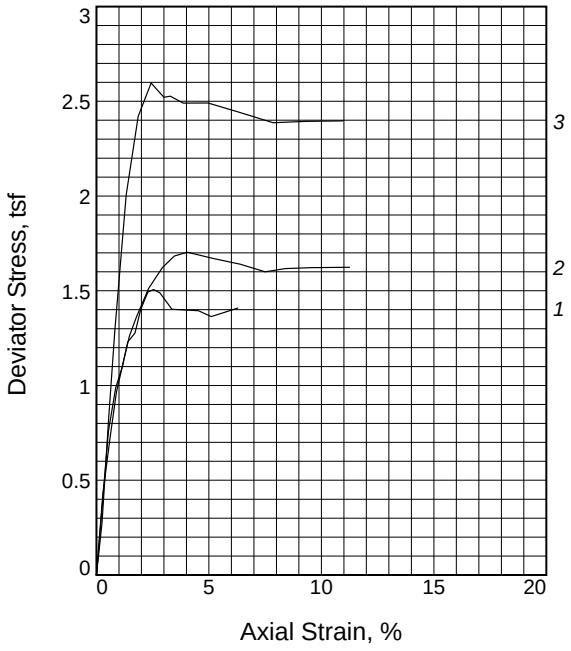
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-094 **Depth:** 7-9' **Sample Number:** TW-1225

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	41.4	43.0	43.6
	Dry Density, pcf	75.6	77.2	77.4
	Saturation, %	91.0	98.1	99.9
	Void Ratio	1.2283	1.1822	1.1791
	Diameter, in.	1.390	1.420	1.440
	Height, in.	2.800	2.800	2.800
At Test	Water Content, %	41.4	43.0	43.6
	Dry Density, pcf	75.6	77.2	77.4
	Saturation, %	91.0	98.1	99.9
	Void Ratio	1.2283	1.1822	1.1791
	Diameter, in.	1.390	1.420	1.440
	Height, in.	2.800	2.800	2.800
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.507	1.703	2.596
Ult. Stress, tsf		1.364	1.600	2.387
σ_1 Failure, tsf		2.007	2.704	4.597
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure_____

Client: KLJ Engineering LLC

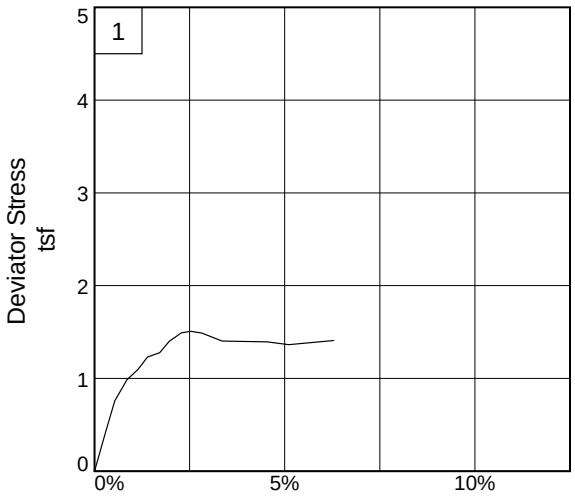
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

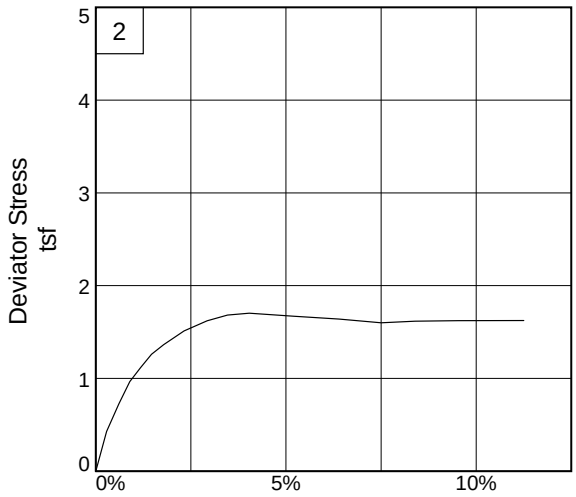
Source of Sample: CAA-095 **Depth:** 17-19'

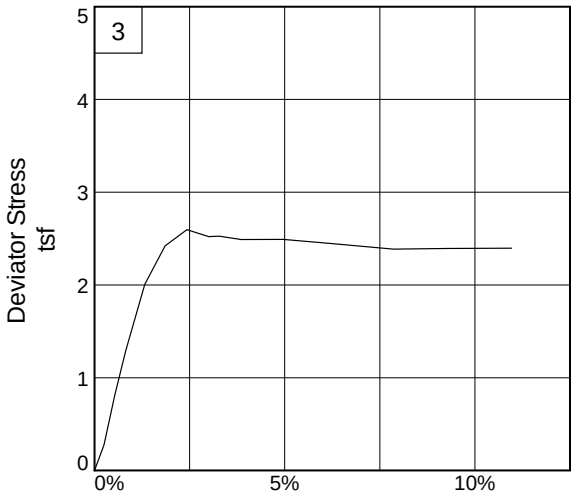
Sample Number: TW-1232

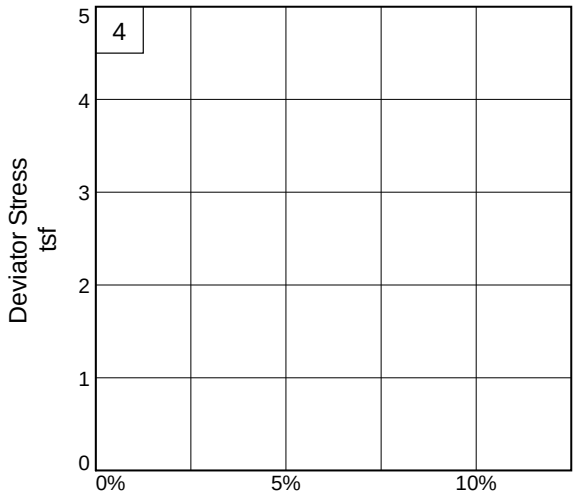
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

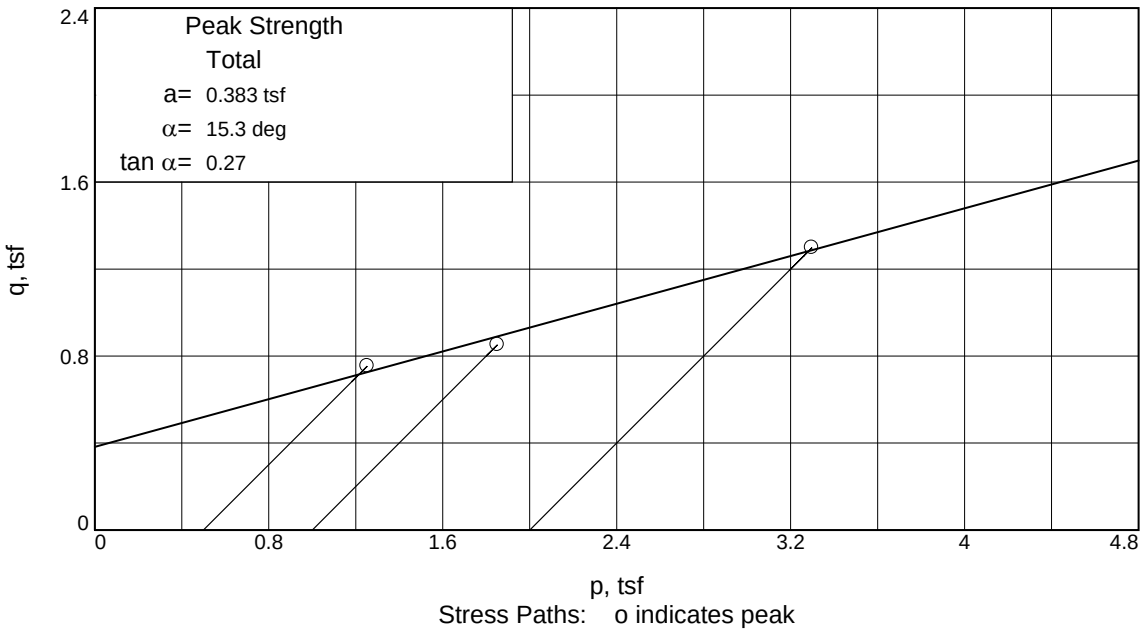
BRAUN INTERTEC











Stress Paths: o indicates peak

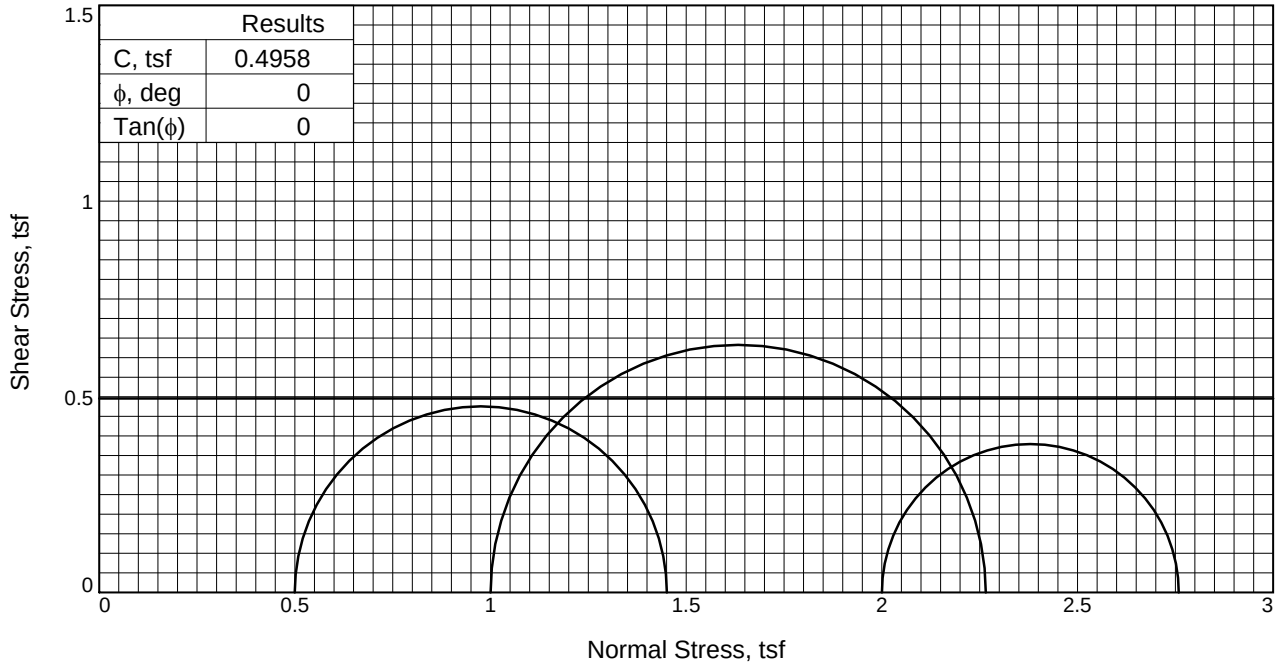
Client: KLJ Engineering LLC

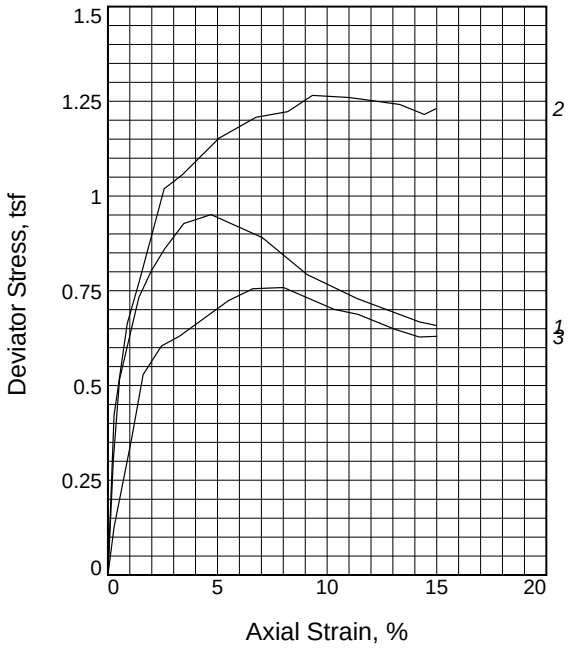
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-095 **Depth:** 17-19' **Sample Number:** TW-1232

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	47.4	40.2	42.8
	Dry Density, pcf	73.7	78.0	74.2
	Saturation, %	99.4	93.6	90.9
	Void Ratio	1.2877	1.1613	1.2704
	Diameter, in.	1.409	1.416	1.443
	Height, in.	2.829	2.841	2.858
At Test	Water Content, %	47.4	40.2	42.8
	Dry Density, pcf	73.7	78.0	74.2
	Saturation, %	99.4	93.6	90.9
	Void Ratio	1.2877	1.1613	1.2704
	Diameter, in.	1.409	1.416	1.443
	Height, in.	2.829	2.841	2.858
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.951	1.265	0.759
Ult. Stress, tsf		0.658	1.215	0.628
σ_1 Failure, tsf		1.451	2.266	2.759
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

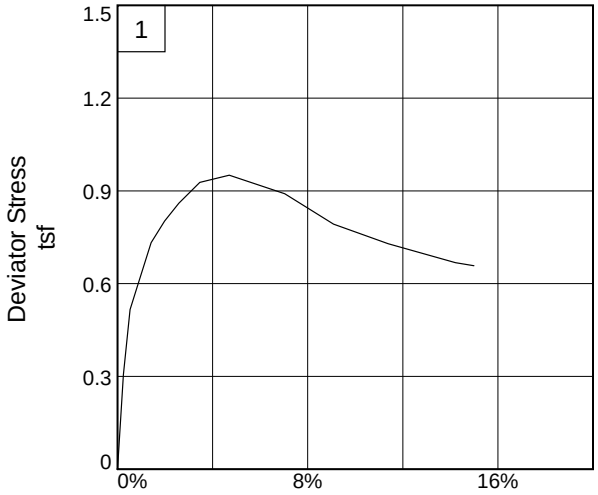
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

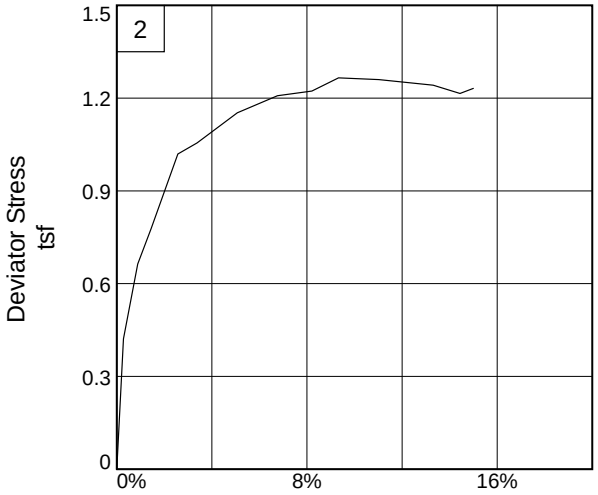
Source of Sample: CAA-097 **Depth:** 7-9'

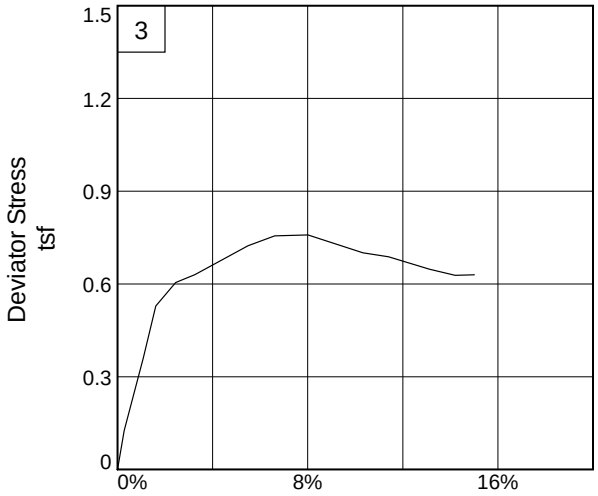
Sample Number: TW-700

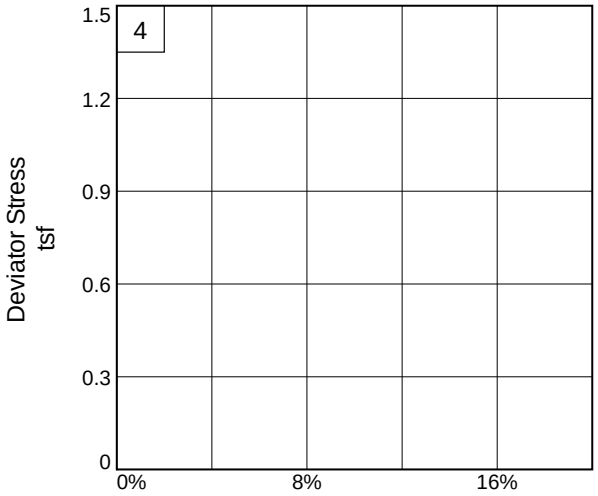
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

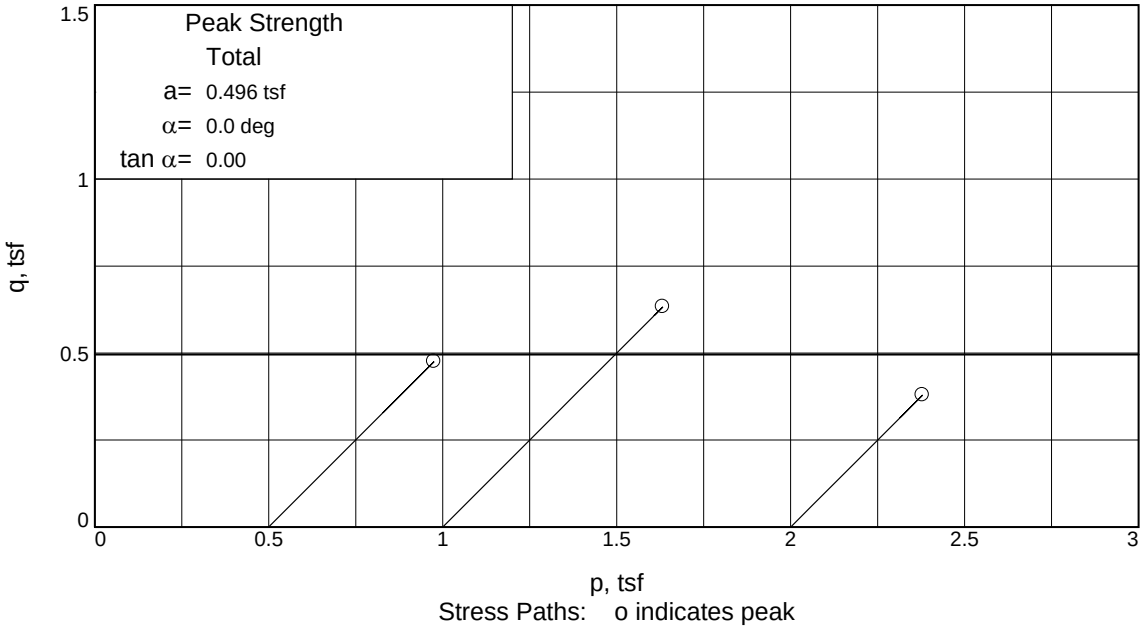
BRAUN INTERTEC











Stress Paths: o indicates peak

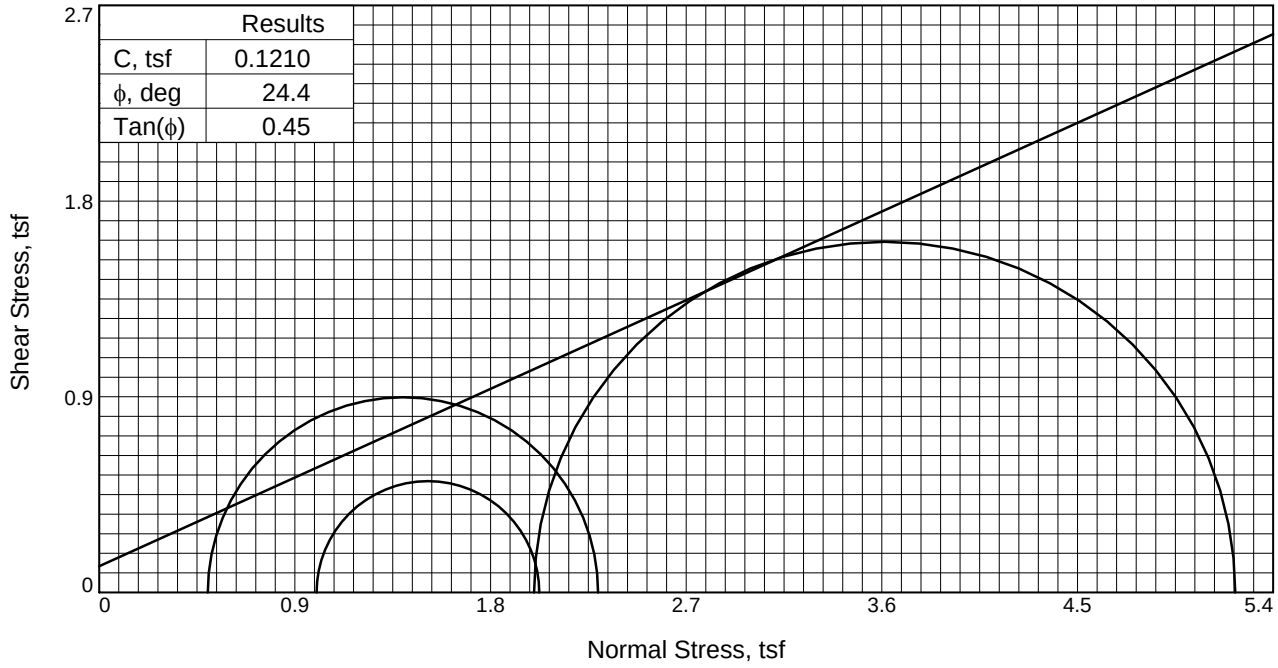
Client: KLJ Engineering LLC

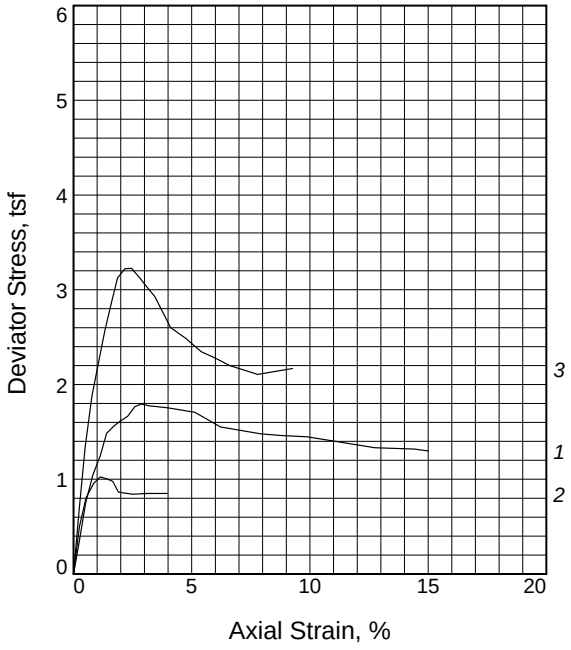
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-097 **Depth:** 7-9' **Sample Number:** TW-700

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	48.2	47.9	43.5
	Dry Density, pcf	73.3	72.2	77.5
	Saturation, %	100.0	96.9	99.9
	Void Ratio	1.3009	1.3341	1.1763
	Diameter, in.	1.446	1.420	1.470
	Height, in.	2.927	2.836	2.850
At Test	Water Content, %	48.2	47.9	43.5
	Dry Density, pcf	73.3	72.2	77.5
	Saturation, %	100.0	96.9	99.9
	Void Ratio	1.3009	1.3341	1.1763
	Diameter, in.	1.446	1.420	1.470
	Height, in.	2.927	2.836	2.850
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.795	1.024	3.225
Ult. Stress, tsf		1.299	0.841	2.106
σ_1 Failure, tsf		2.295	2.024	5.226
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

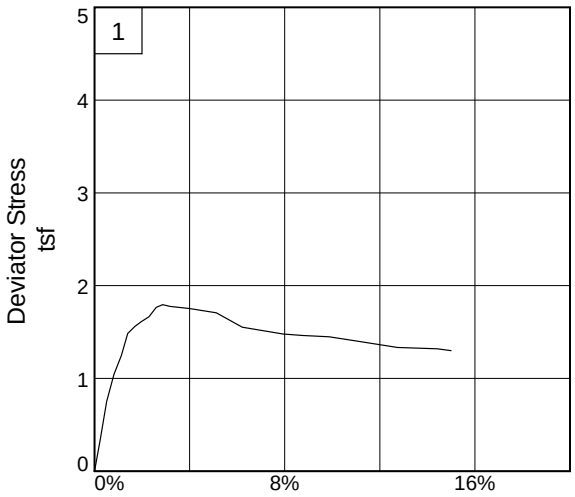
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

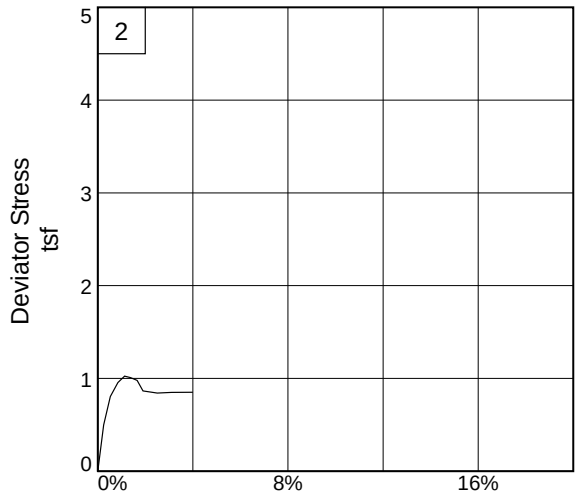
Source of Sample: CAA-097 **Depth:** 17-19'

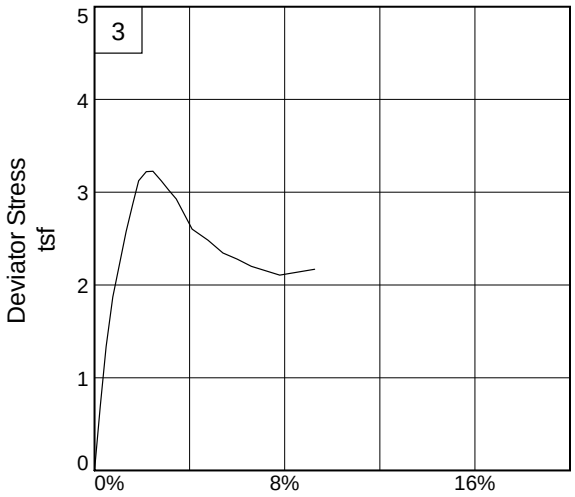
Sample Number: TW-703

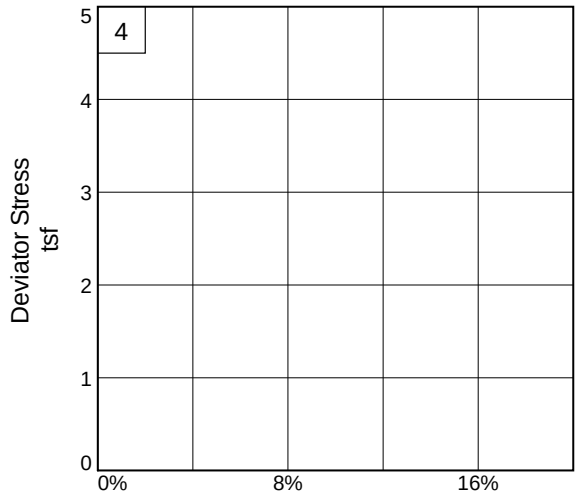
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

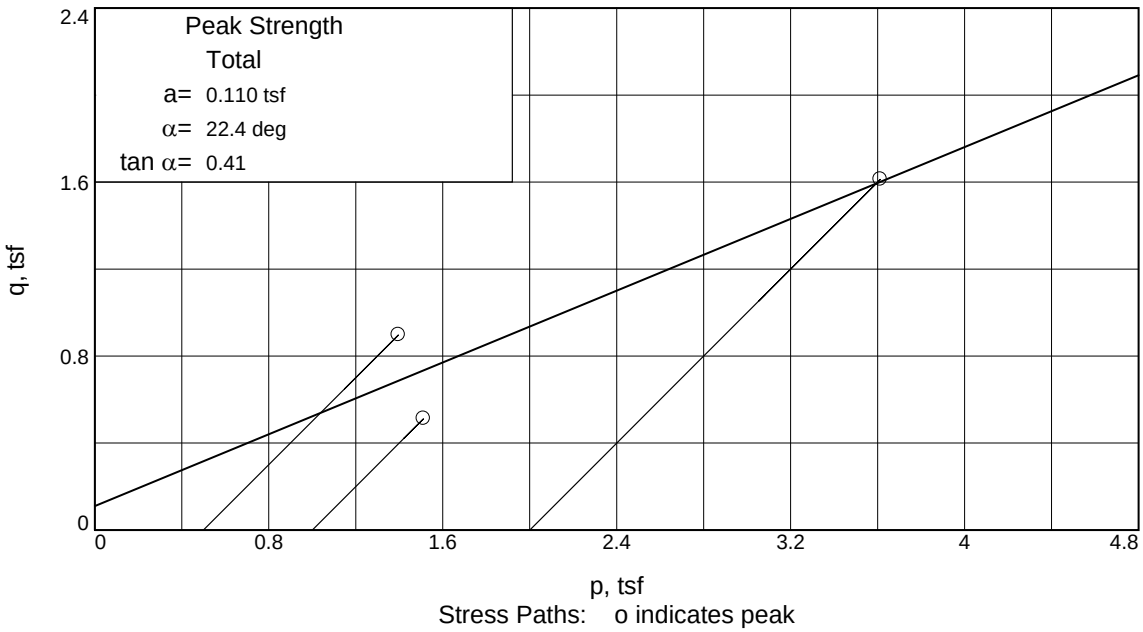
BRAUN INTERTEC











Stress Paths: o indicates peak

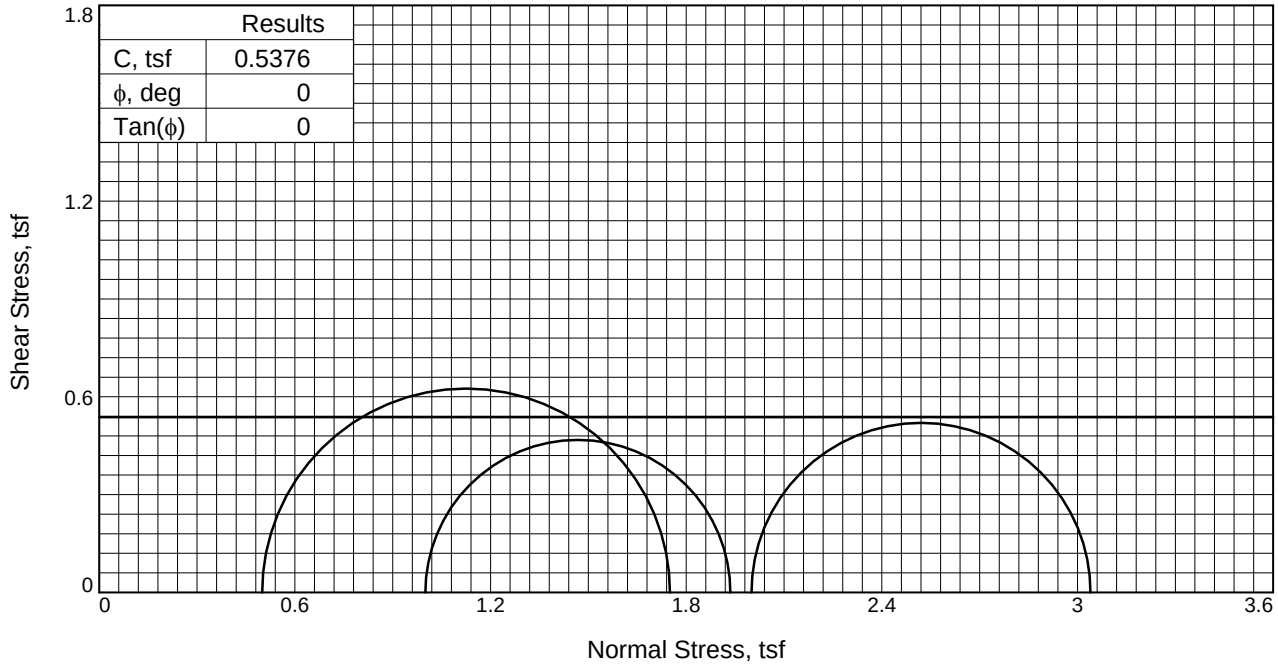
Client: KLJ Engineering LLC

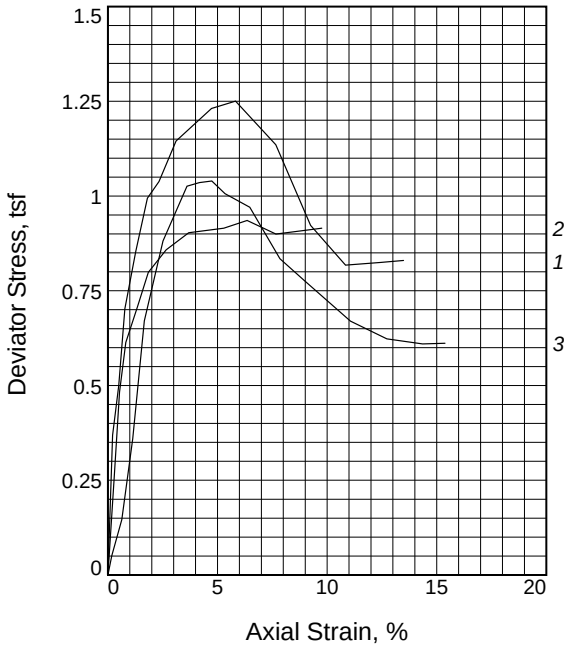
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-097 **Depth:** 17-19' **Sample Number:** TW-703

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	48.2	50.6	51.3
	Dry Density, pcf	73.3	71.1	70.3
	Saturation, %	99.8	99.5	98.9
	Void Ratio	1.3095	1.3780	1.4057
	Diameter, in.	1.411	1.412	1.420
	Height, in.	2.833	2.818	2.829
At Test	Water Content, %	48.3	50.8	51.9
	Dry Density, pcf	73.3	71.1	70.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3095	1.3780	1.4057
	Diameter, in.	1.411	1.412	1.420
	Height, in.	2.833	2.818	2.829
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.250	0.935	1.040
Ult. Stress, tsf		0.818	0.900	0.610
σ_1 Failure, tsf		1.750	1.936	3.040
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-5

Assumed Specific Gravity= 2.71

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

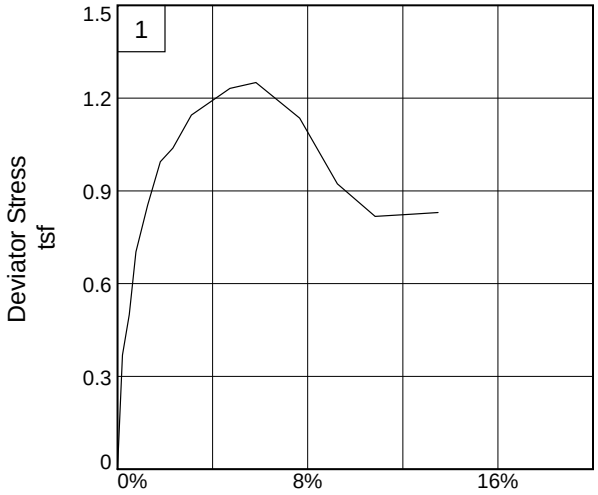
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

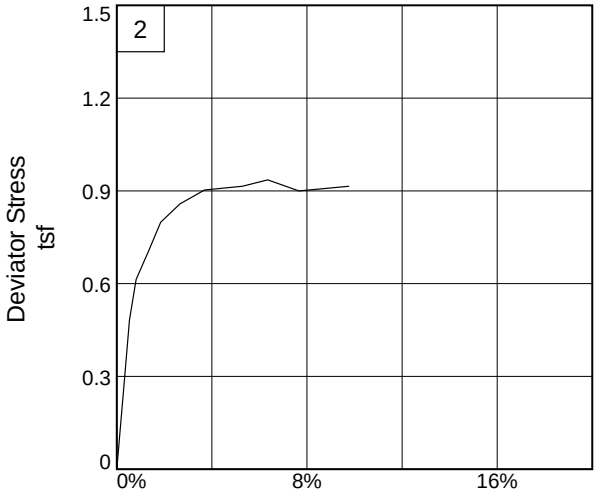
Source of Sample: CAA-099 **Depth:** 7-9'

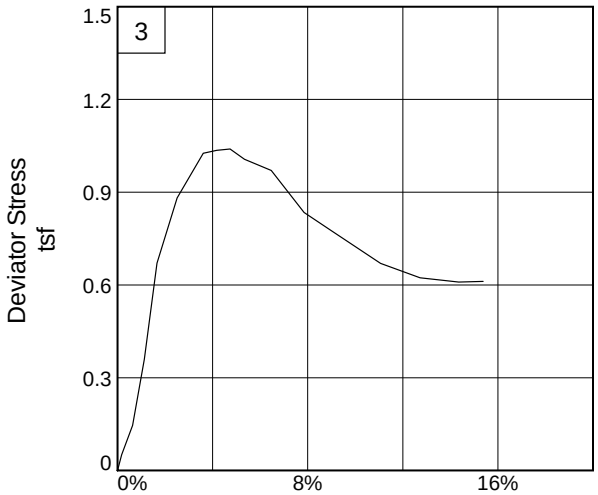
Sample Number: TW-689

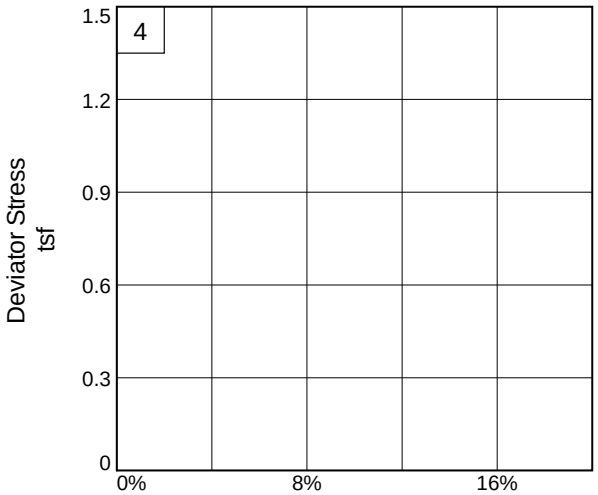
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

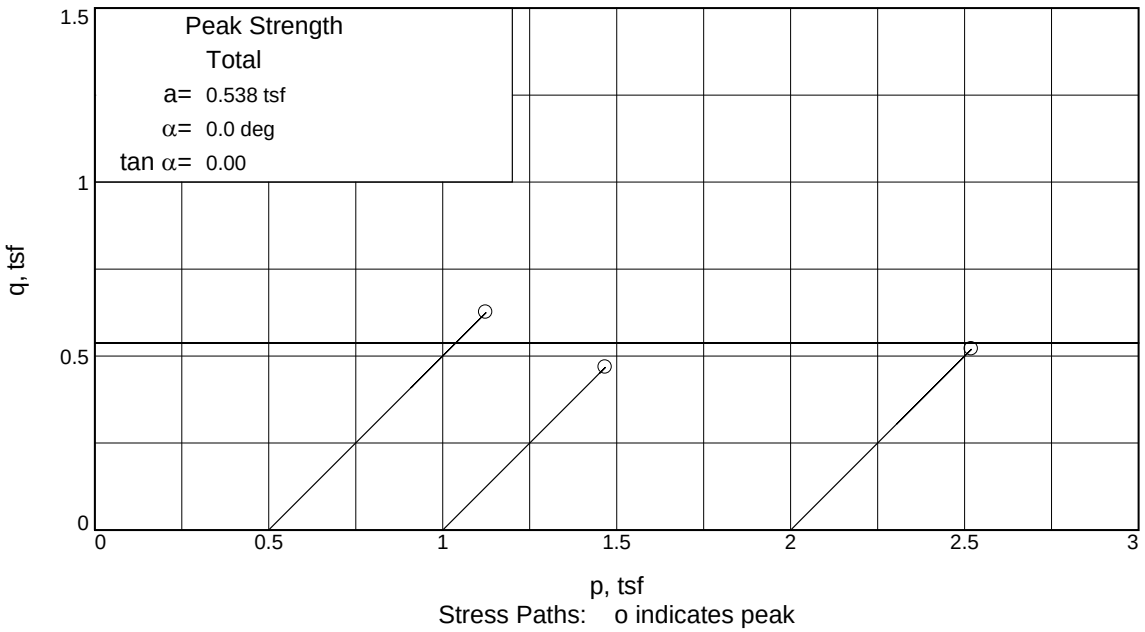
BRAUN INTERTEC











Stress Paths: o indicates peak

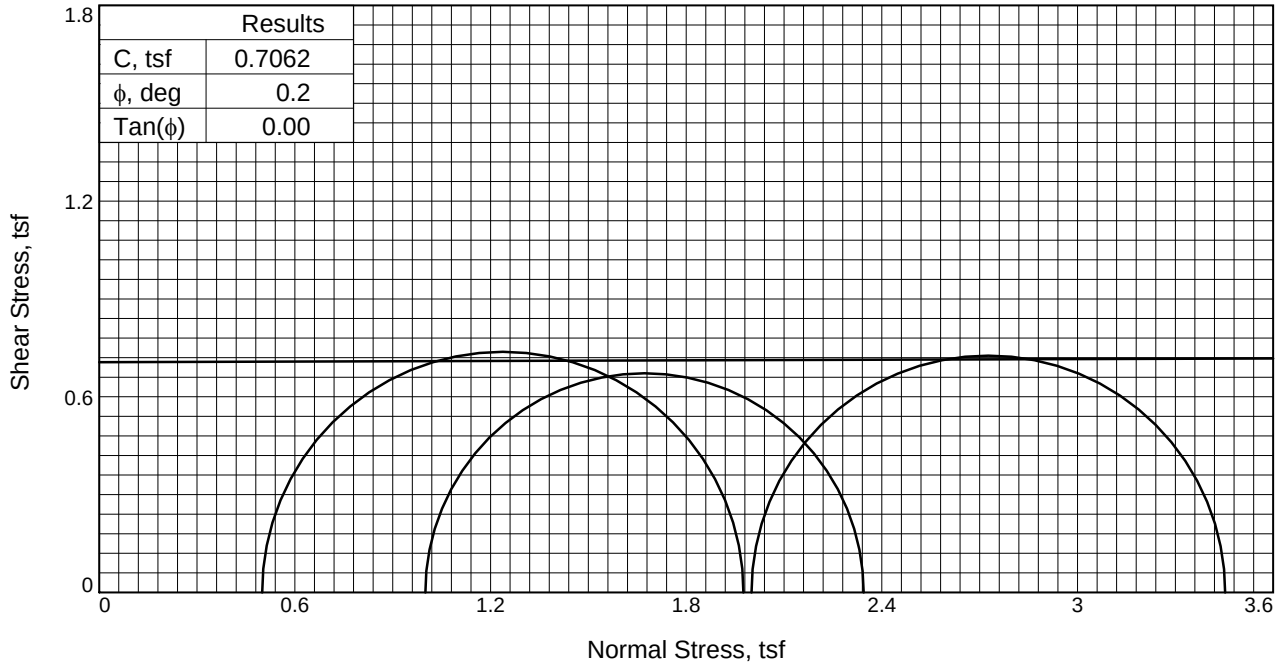
Client: KLJ Engineering LLC

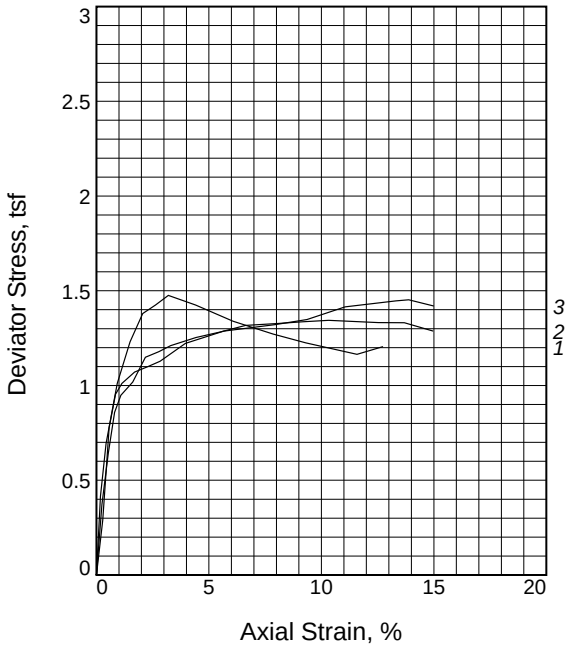
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-099 **Depth:** 7-9' **Sample Number:** TW-689

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.4	47.9	54.1
	Dry Density, pcf	78.2	73.7	68.6
	Saturation, %	99.3	99.8	99.7
	Void Ratio	1.1543	1.3050	1.4752
	Diameter, in.	1.399	1.394	1.407
	Height, in.	2.814	2.849	2.830
At Test	Water Content, %	42.4	47.9	54.1
	Dry Density, pcf	78.2	73.7	68.6
	Saturation, %	99.3	99.8	99.7
	Void Ratio	1.1543	1.3050	1.4752
	Diameter, in.	1.399	1.394	1.407
	Height, in.	2.814	2.849	2.830
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.476	1.344	1.453
Ult. Stress, tsf		1.165	1.288	1.420
σ_1 Failure, tsf		1.976	2.344	3.453
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

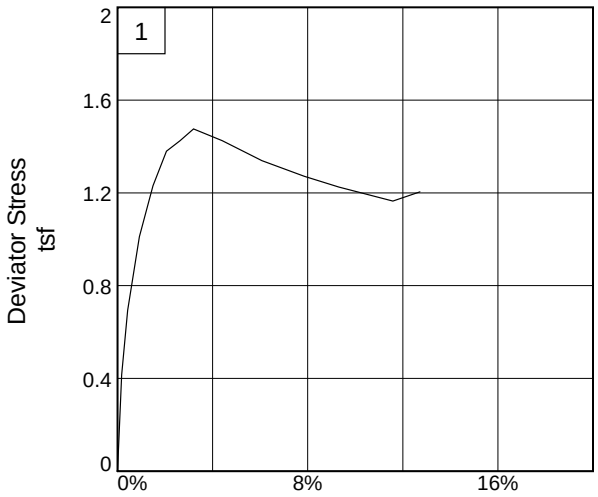
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

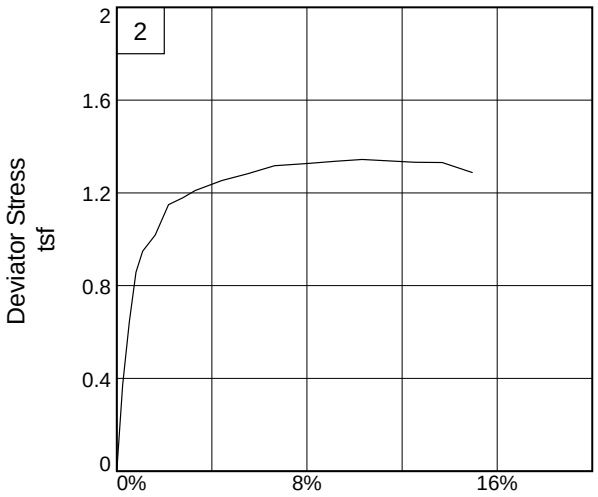
Source of Sample: CAA-099 **Depth:** 17-19'

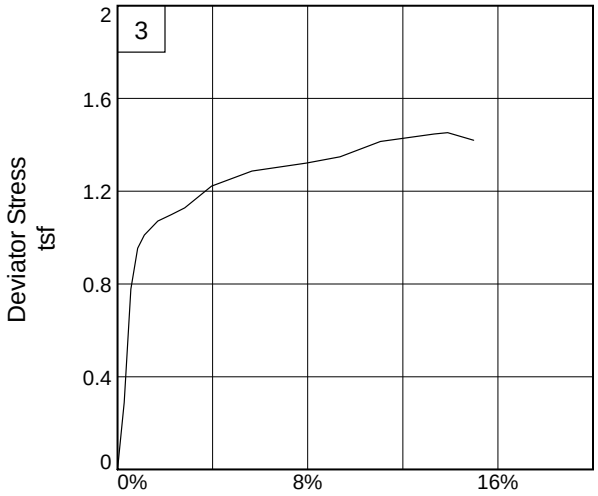
Sample Number: TW-692

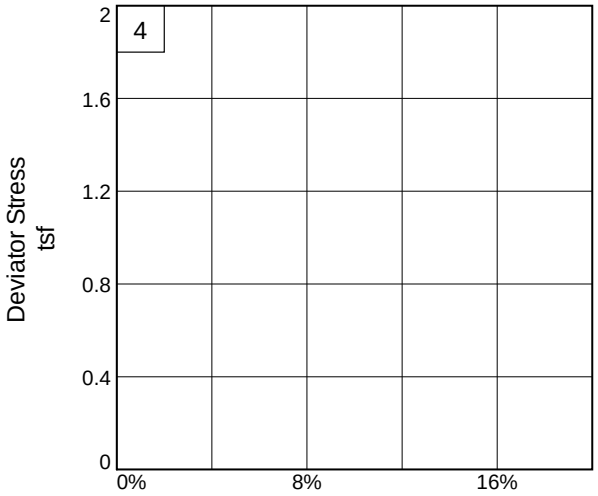
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

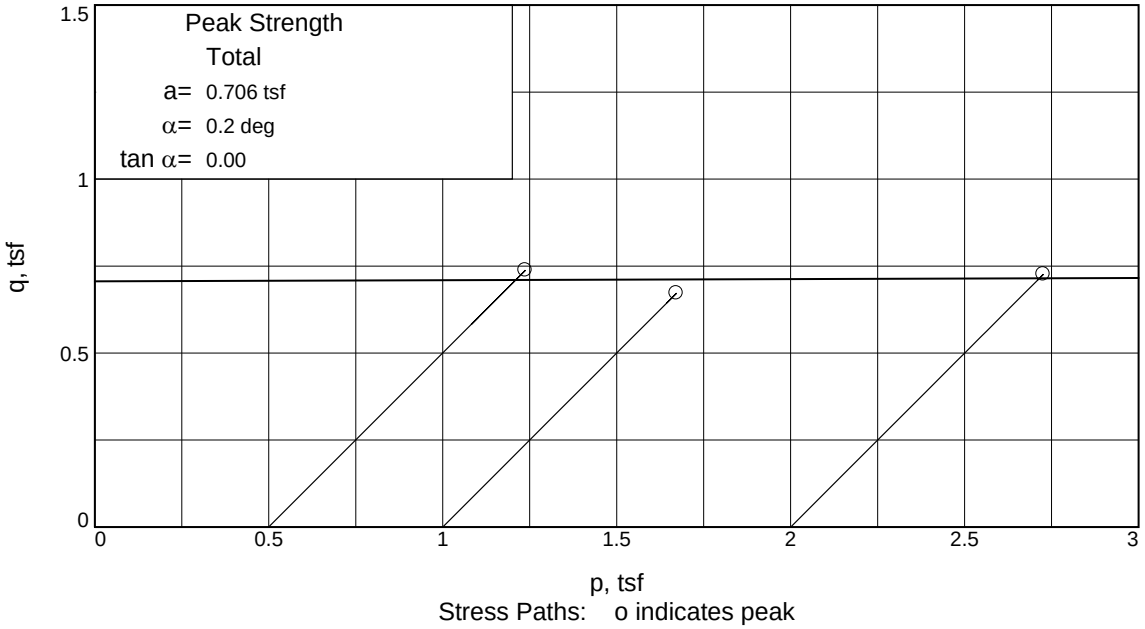
BRAUN INTERTEC











Stress Paths: o indicates peak

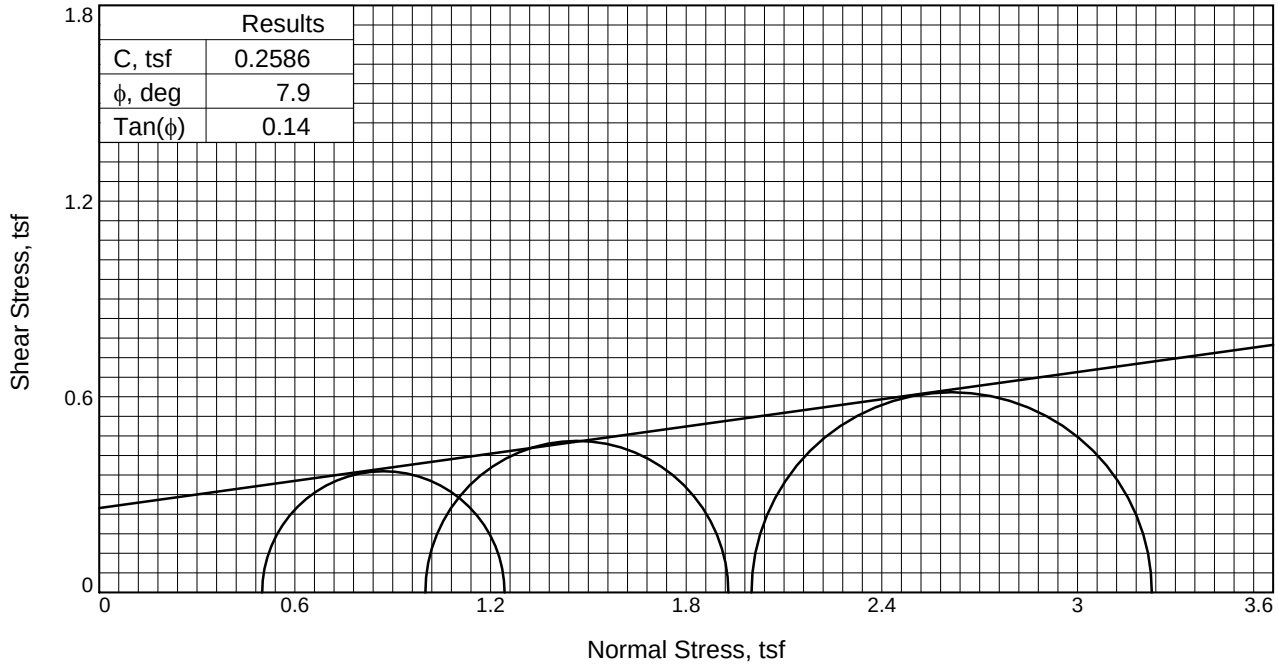
Client: KLJ Engineering LLC

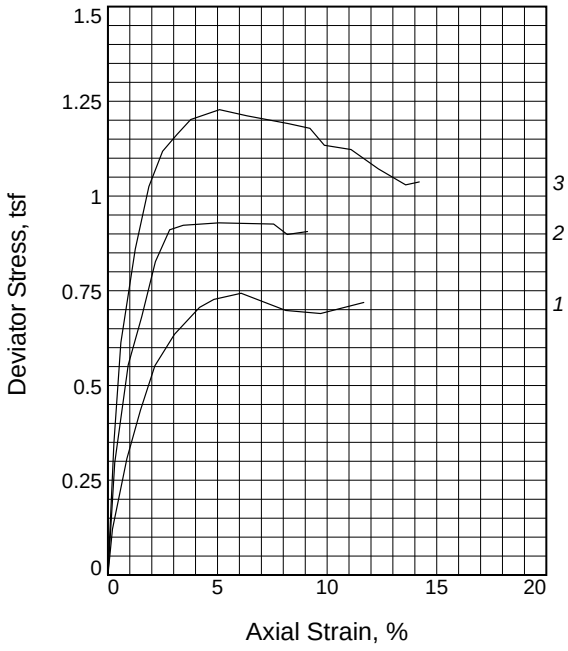
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-099 **Depth:** 17-19' **Sample Number:** TW-692

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	45.6	45.1	48.4
	Dry Density, pcf	75.3	75.8	72.6
	Saturation, %	99.3	99.5	98.8
	Void Ratio	1.2392	1.2230	1.3220
	Diameter, in.	1.420	1.411	1.435
	Height, in.	2.896	2.909	2.886
At Test	Water Content, %	45.6	45.1	48.4
	Dry Density, pcf	75.3	75.8	72.6
	Saturation, %	99.3	99.5	98.8
	Void Ratio	1.2392	1.2230	1.3220
	Diameter, in.	1.420	1.411	1.435
	Height, in.	2.896	2.909	2.886
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.743	0.929	1.228
Ult. Stress, tsf		0.690	0.899	1.029
σ_1 Failure, tsf		1.243	1.929	3.228
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

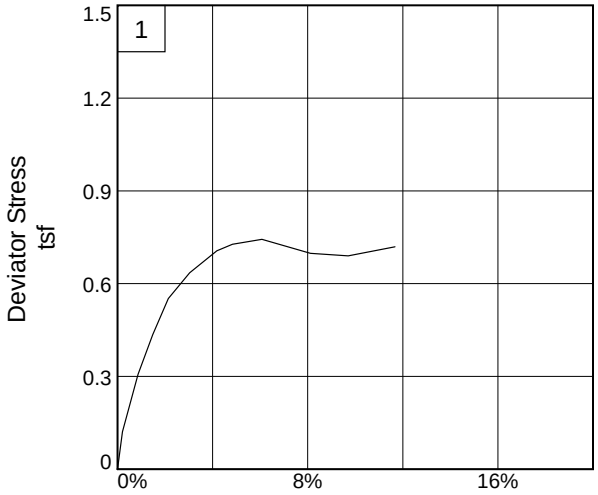
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

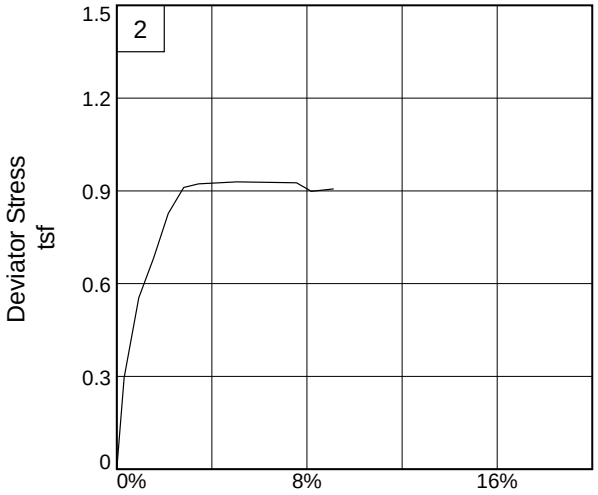
Source of Sample: GDRL-101 **Depth:** 7-9'

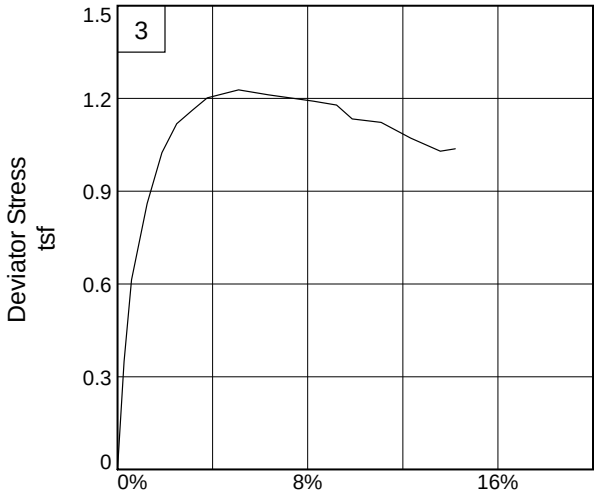
Sample Number: TW-681

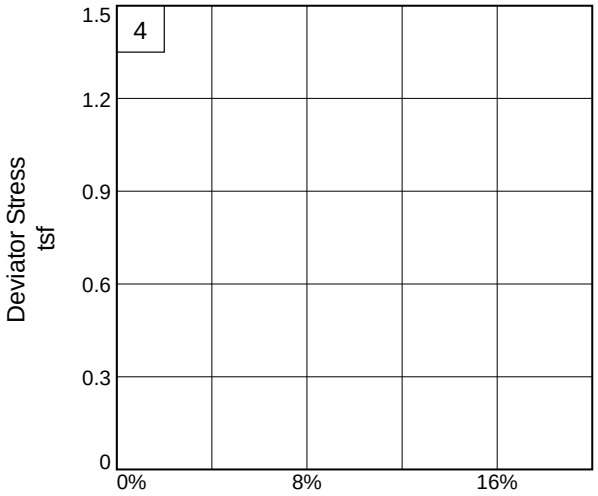
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

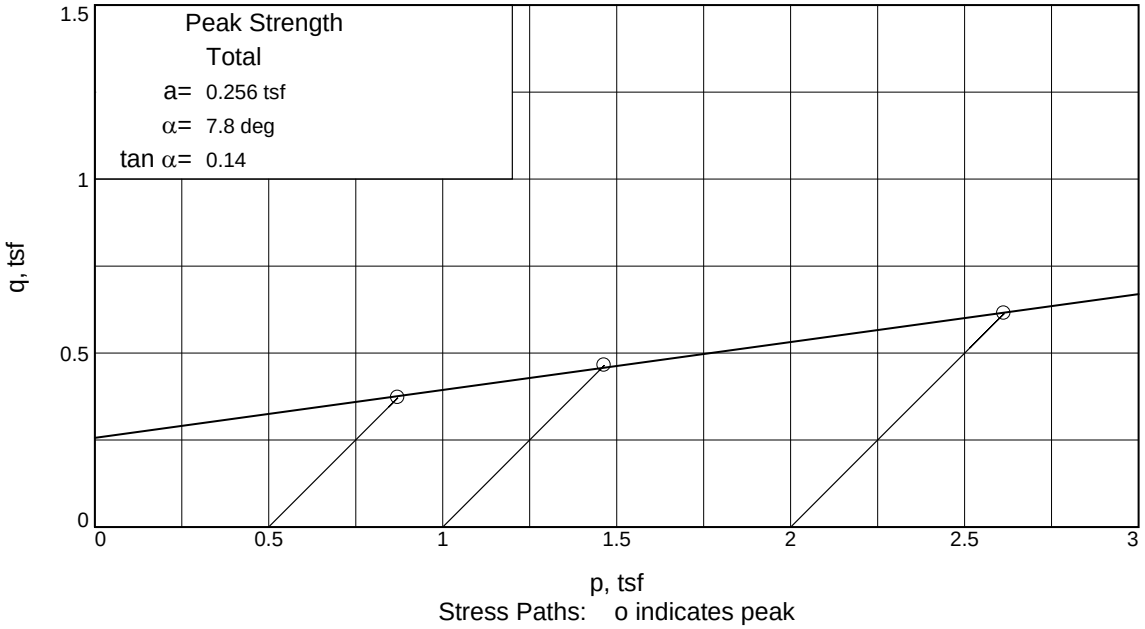
BRAUN INTERTEC











Stress Paths: o indicates peak

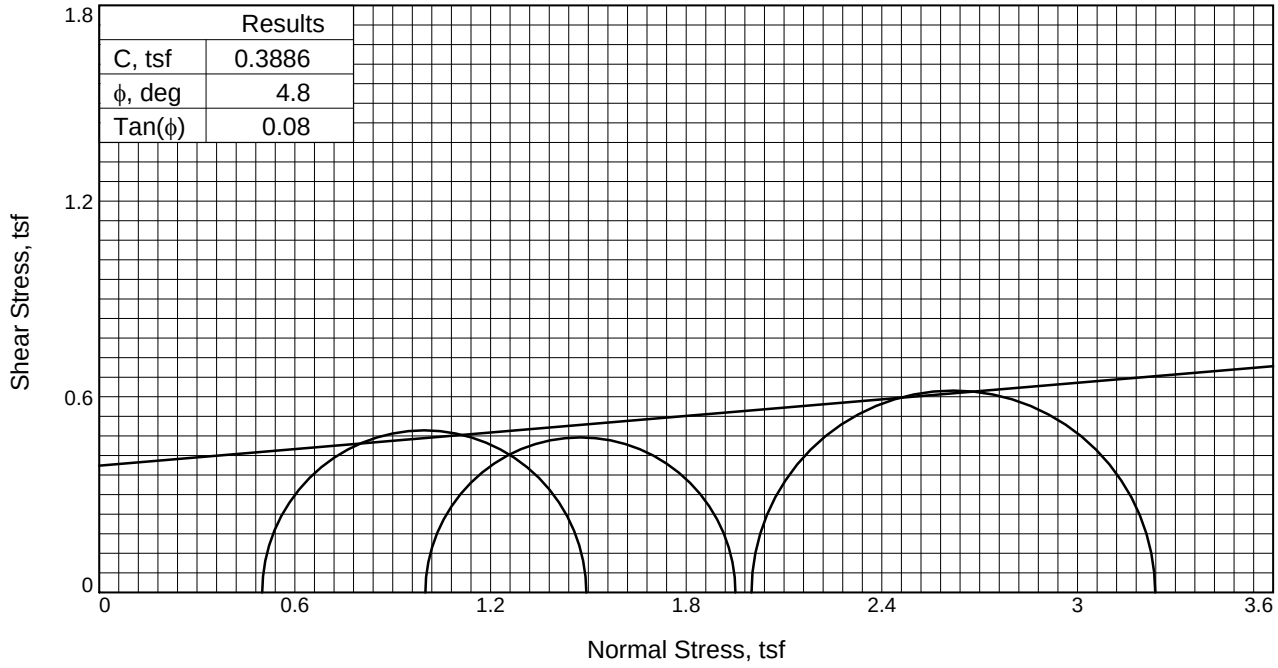
Client: KLJ Engineering LLC

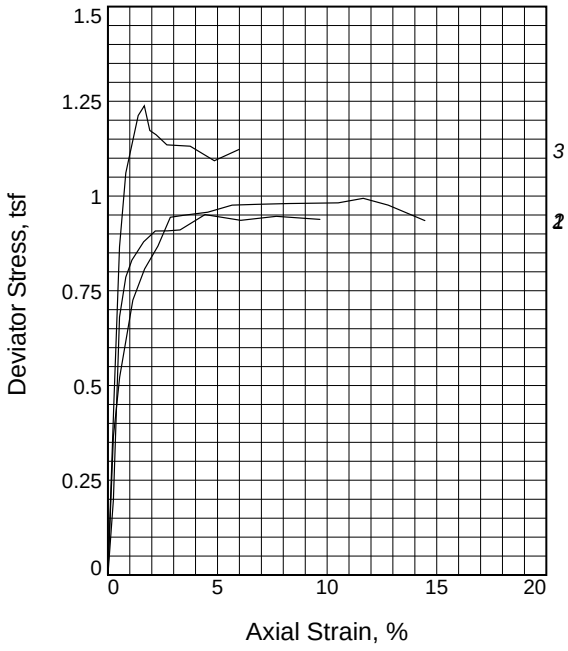
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-101 **Depth:** 7-9' **Sample Number:** TW-681

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	47.7	63.2	47.5
	Dry Density, pcf	73.1	62.7	74.5
	Saturation, %	98.5	100.0	99.9
	Void Ratio	1.3064	1.7459	1.3128
	Diameter, in.	1.410	1.409	1.422
	Height, in.	2.808	2.824	2.824
At Test	Water Content, %	47.7	63.2	47.5
	Dry Density, pcf	73.1	62.7	74.5
	Saturation, %	98.5	100.0	99.9
	Void Ratio	1.3064	1.7459	1.3128
	Diameter, in.	1.410	1.409	1.422
	Height, in.	2.808	2.824	2.824
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.994	0.951	1.238
Ult. Stress, tsf		0.935	0.936	1.093
σ_1 Failure, tsf		1.494	1.951	3.238
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

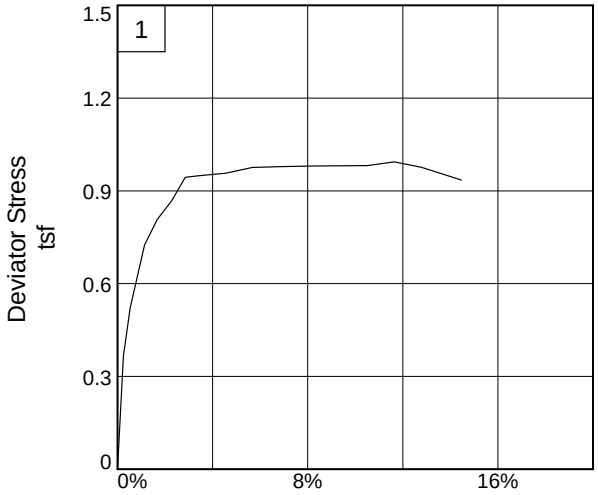
Source of Sample: CAA-102 **Depth:** 17-19'

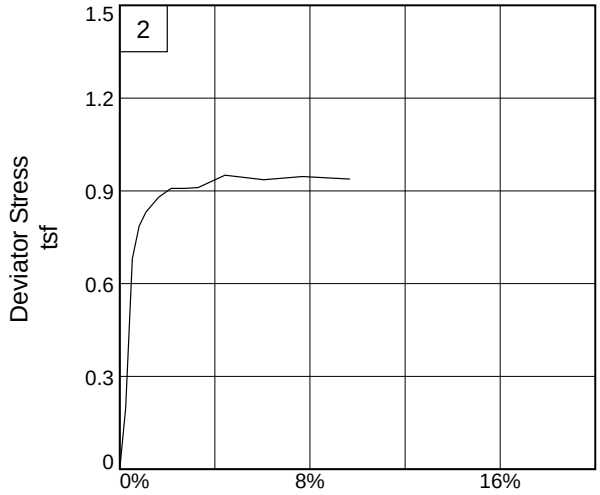
Sample Number: TW-677

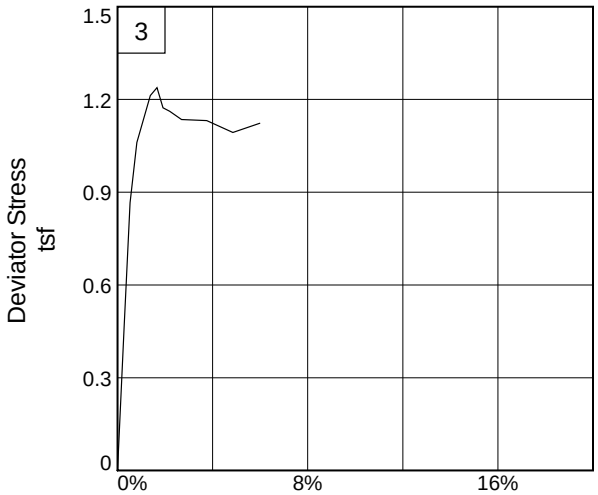
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

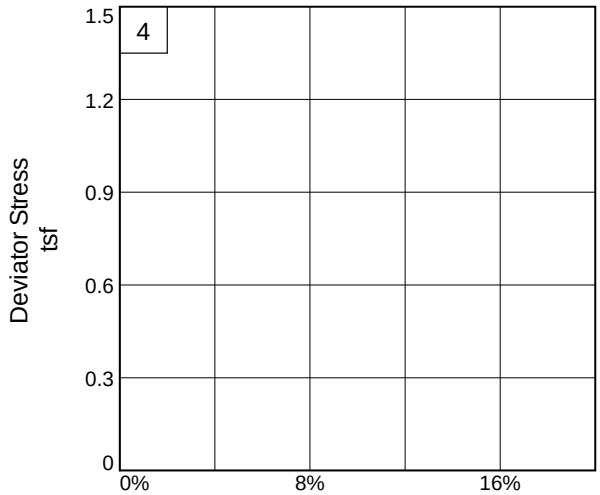
BRAUN INTERTEC

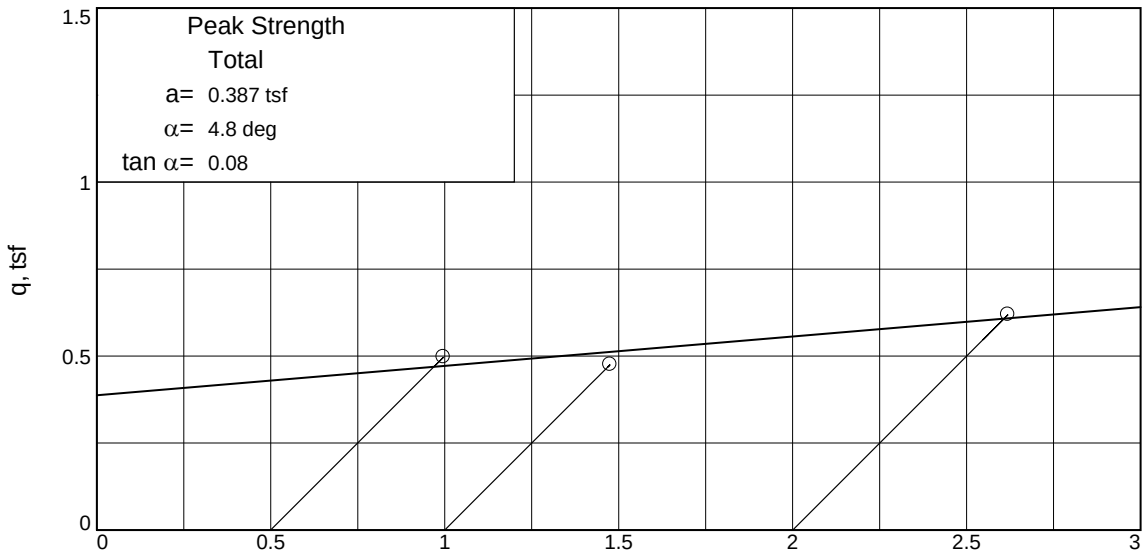
Figure _____











Stress Paths: o indicates peak

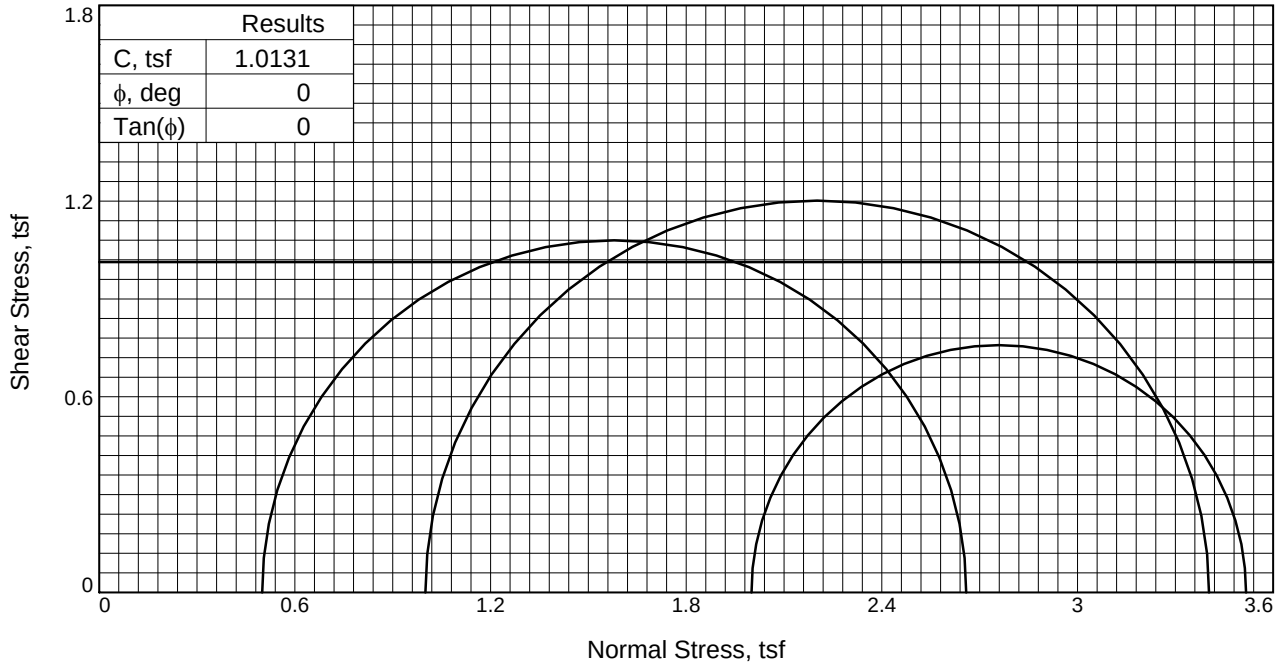
Client: KLJ Engineering LLC

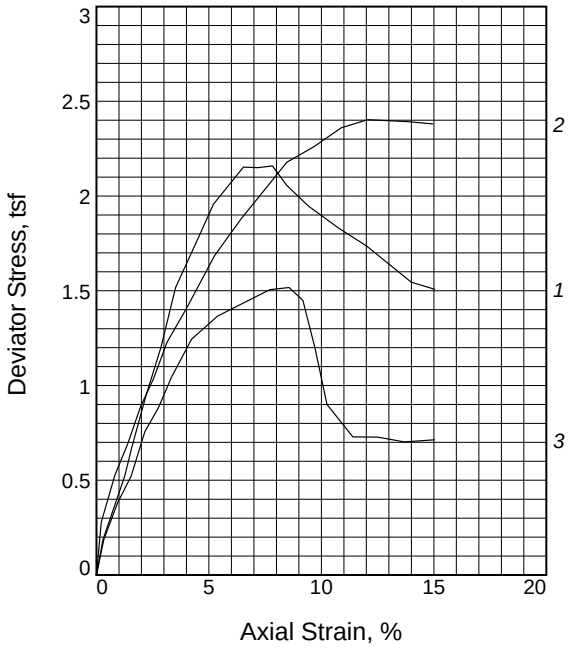
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-102 **Depth:** 17-19' **Sample Number:** TW-677

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	32.1	34.9	34.2
	Dry Density, pcf	90.3	86.1	87.4
	Saturation, %	99.9	98.3	99.5
	Void Ratio	0.8675	0.9588	0.9284
	Diameter, in.	1.443	1.440	1.428
	Height, in.	2.787	2.802	2.790
At Test	Water Content, %	32.1	34.9	34.2
	Dry Density, pcf	90.3	86.1	87.4
	Saturation, %	99.9	98.3	99.5
	Void Ratio	0.8675	0.9588	0.9284
	Diameter, in.	1.443	1.440	1.428
	Height, in.	2.787	2.802	2.790
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.159	2.403	1.517
Ult. Stress, tsf		1.508	2.380	0.702
σ_1 Failure, tsf		2.659	3.403	3.517
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: SILT (ML), gray and brown, A-4

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

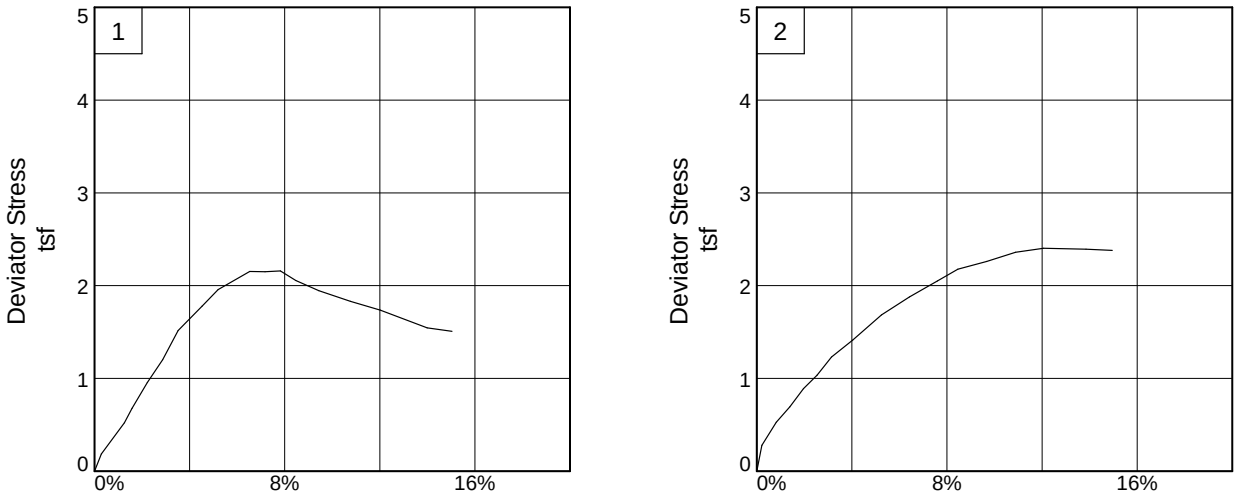
Source of Sample: GDRL-104 **Depth:** 7-9'

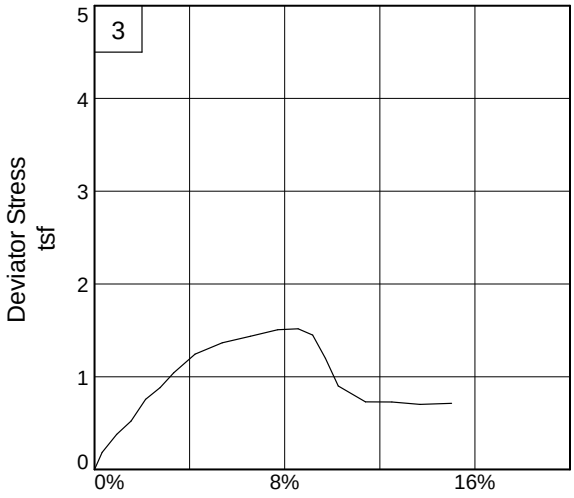
Sample Number: TW-666

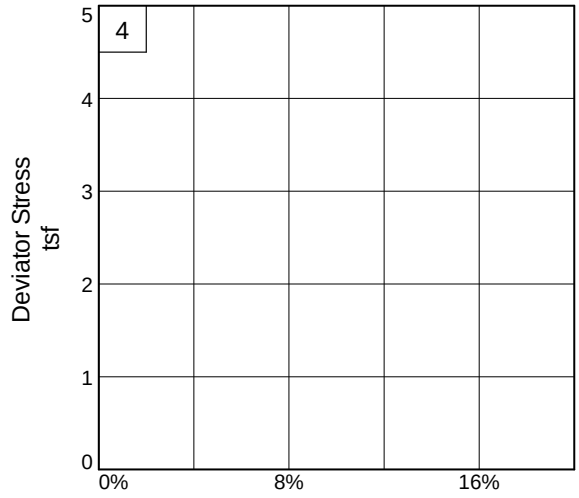
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

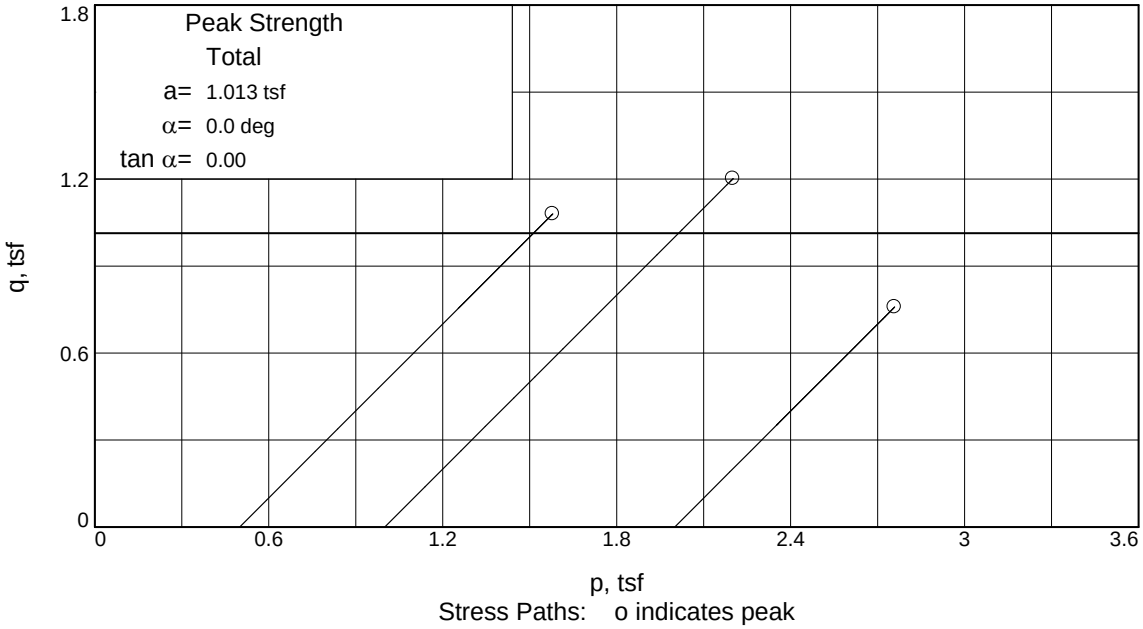
BRAUN INTERTEC

Figure _____









Stress Paths: o indicates peak

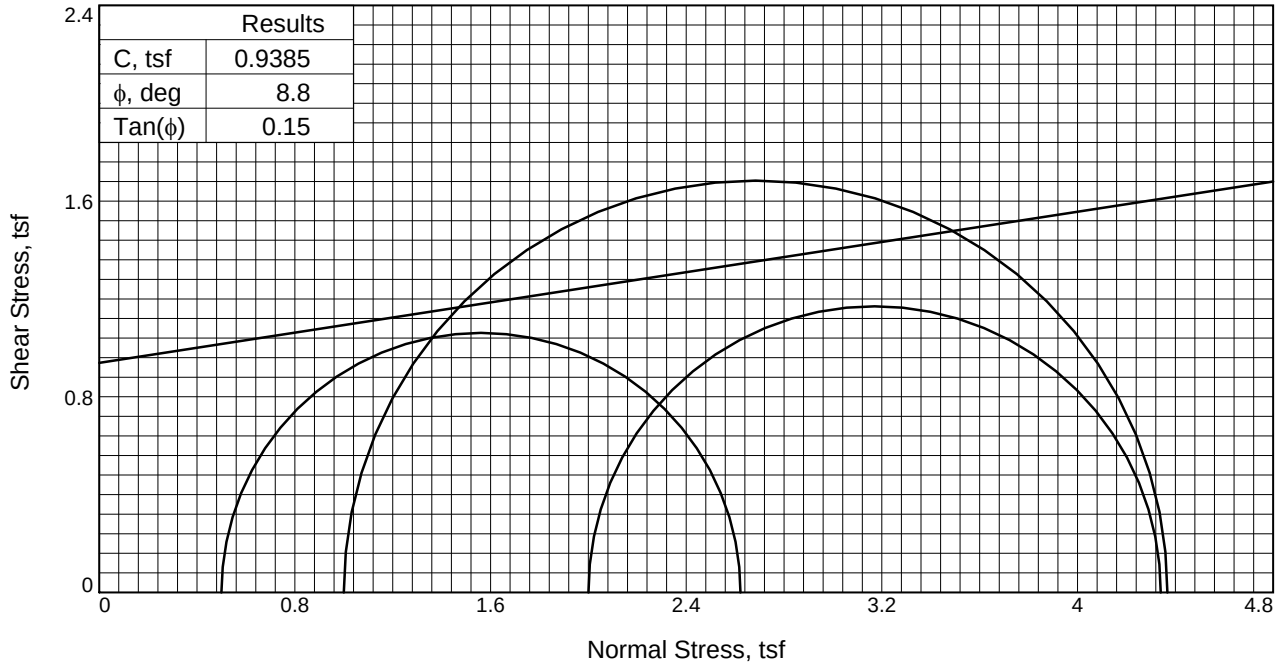
Client: KLJ Engineering LLC

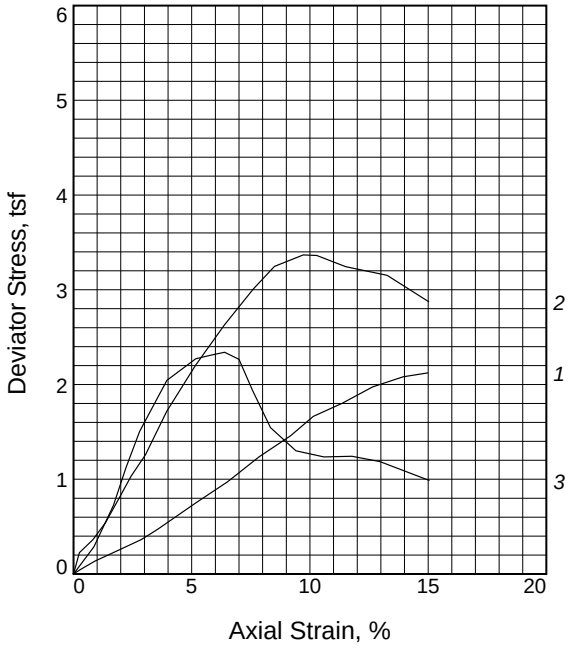
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-104 **Depth:** 7-9' **Sample Number:** TW-666

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	32.6	33.5	31.2
	Dry Density, pcf	89.4	88.5	91.3
	Saturation, %	99.3	99.8	99.6
	Void Ratio	0.8854	0.9050	0.8468
	Diameter, in.	1.420	1.423	1.420
	Height, in.	2.790	2.789	2.785
At Test	Water Content, %	32.6	33.5	31.2
	Dry Density, pcf	89.4	88.5	91.3
	Saturation, %	99.3	99.8	99.6
	Void Ratio	0.8854	0.9050	0.8468
	Diameter, in.	1.420	1.423	1.420
	Height, in.	2.790	2.789	2.785
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.122	3.367	2.340
Ult. Stress, tsf		2.122	2.873	0.988
σ_1 Failure, tsf		2.622	4.367	4.340
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown to gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

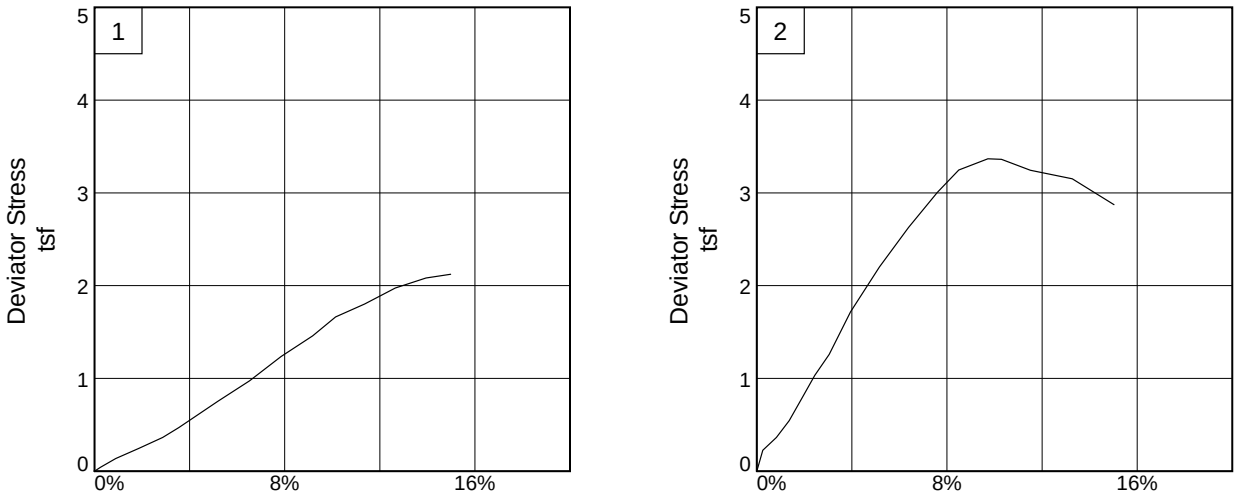
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

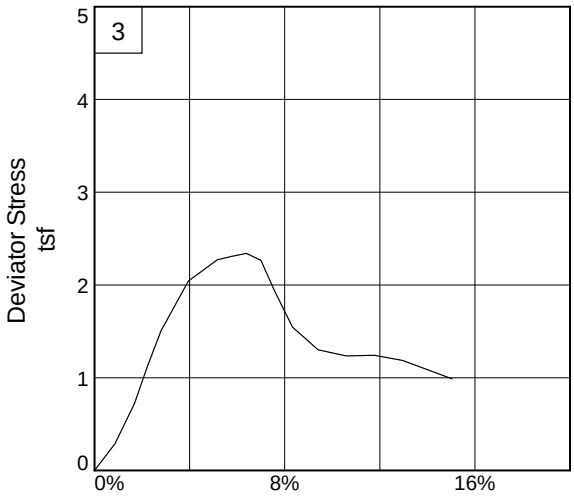
Source of Sample: CAA-106 **Depth:** 7-9'

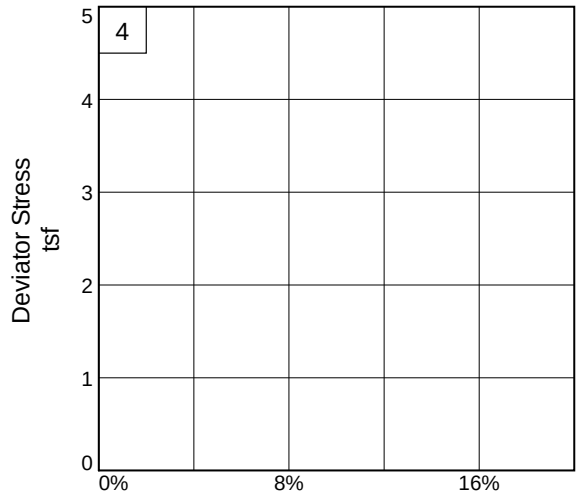
Sample Number: TW-655

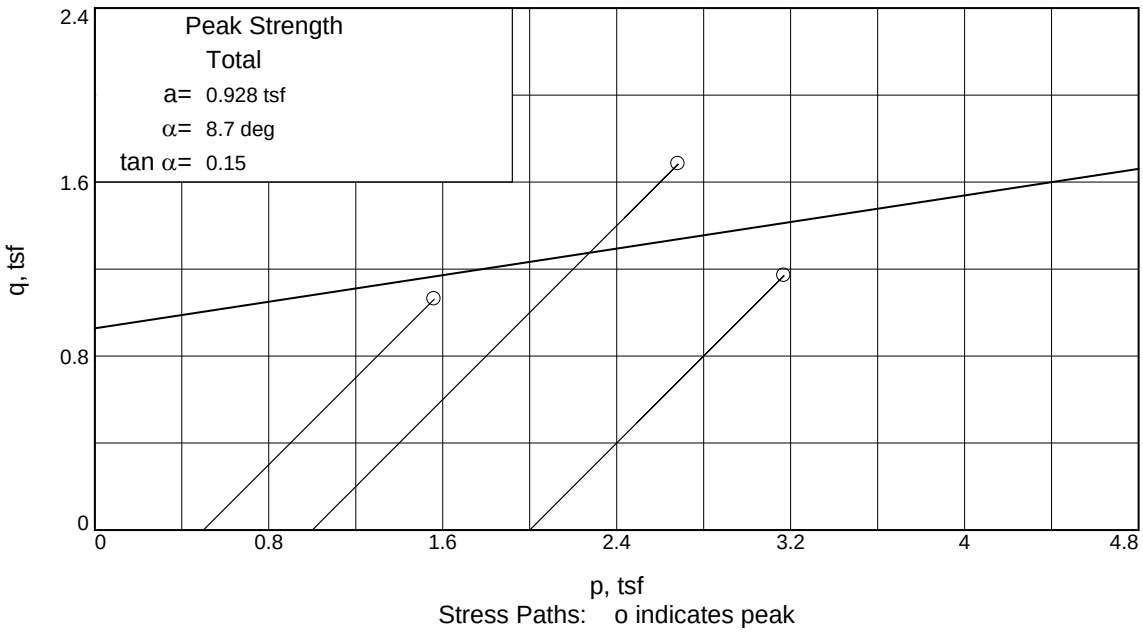
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

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Stress Paths: o indicates peak

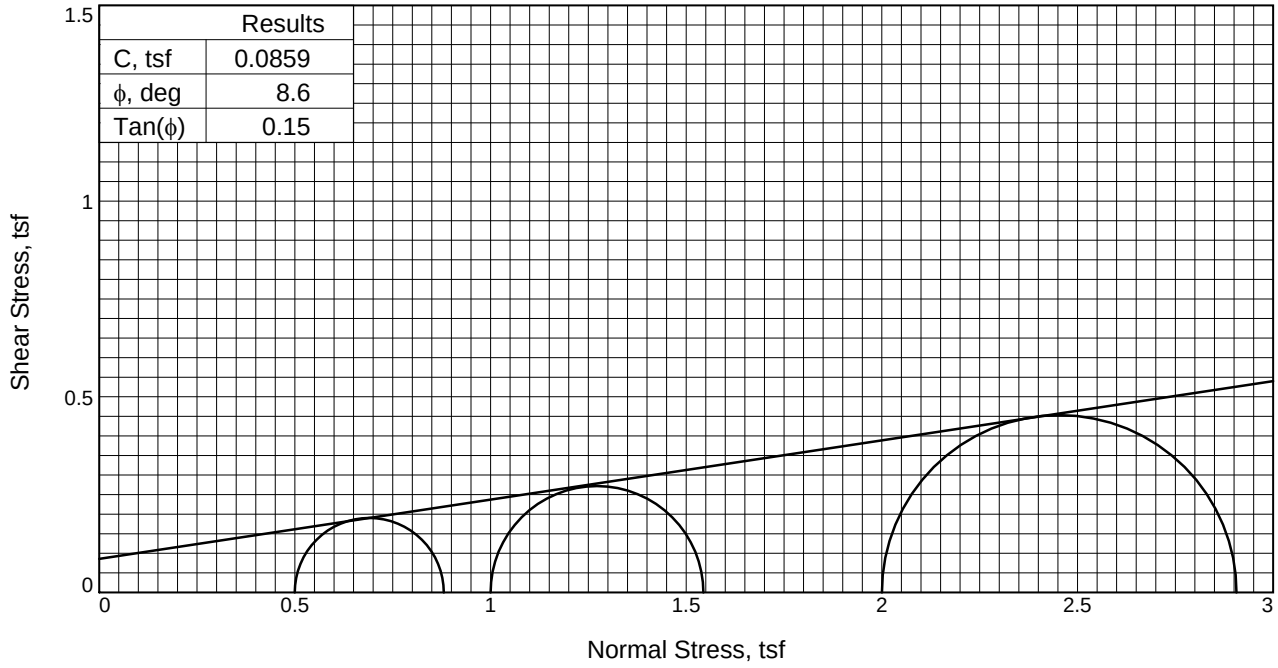
Client: KLJ Engineering LLC

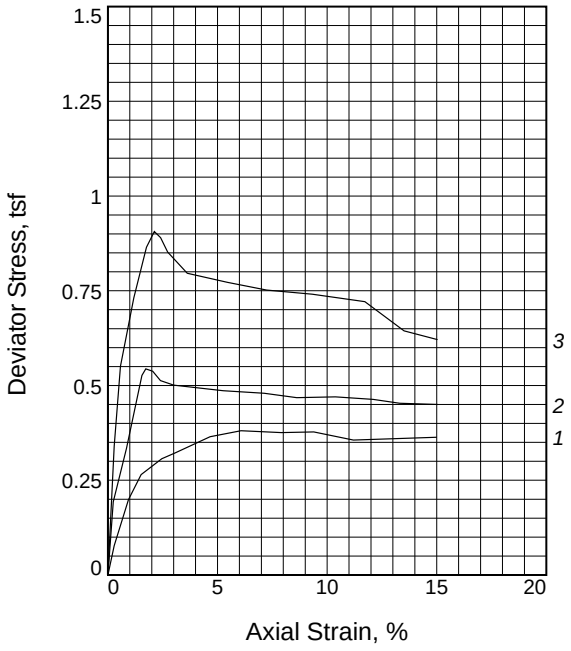
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-106 **Depth:** 7-9' **Sample Number:** TW-655

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	48.5	63.2	61.9
	Dry Density, pcf	73.0	61.9	63.0
	Saturation, %	100.0	99.1	99.7
	Void Ratio	1.3096	1.7237	1.6749
	Diameter, in.	1.419	1.410	1.422
	Height, in.	2.768	2.833	2.790
At Test	Water Content, %	48.5	63.2	61.9
	Dry Density, pcf	73.0	61.9	63.0
	Saturation, %	100.0	99.1	99.7
	Void Ratio	1.3096	1.7237	1.6749
	Diameter, in.	1.419	1.410	1.422
	Height, in.	2.768	2.833	2.790
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.381	0.544	0.906
Ult. Stress, tsf		0.356	0.450	0.621
σ_1 Failure, tsf		0.880	1.544	2.906
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown to gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

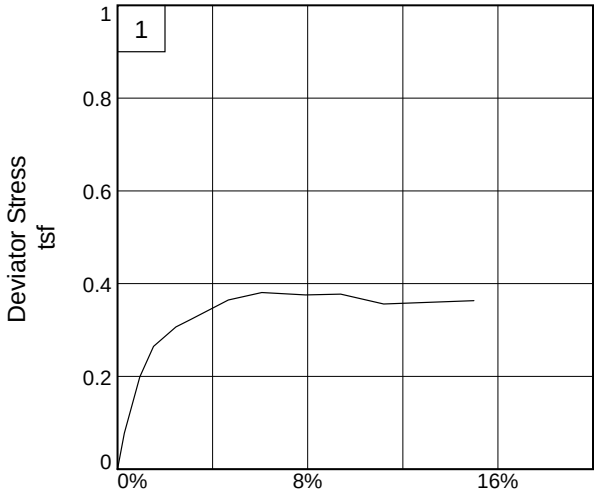
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

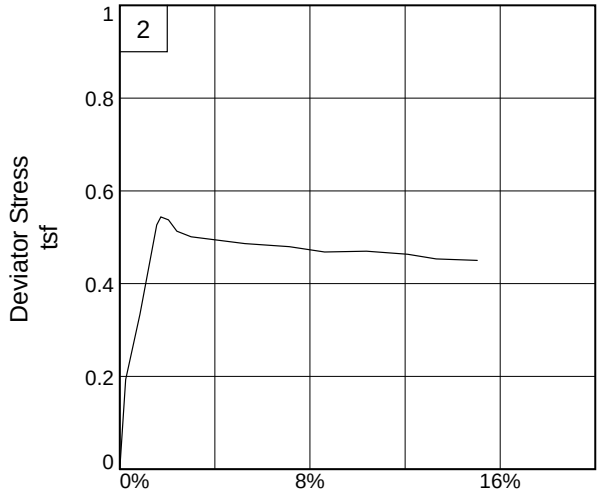
Source of Sample: CAA-106 **Depth:** 17-19'

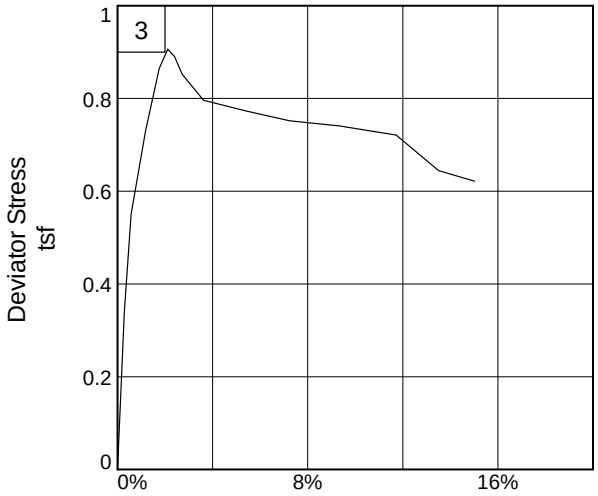
Sample Number: TW-658

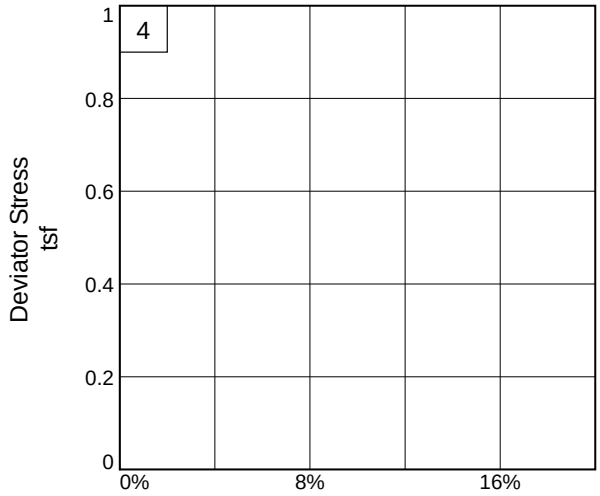
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

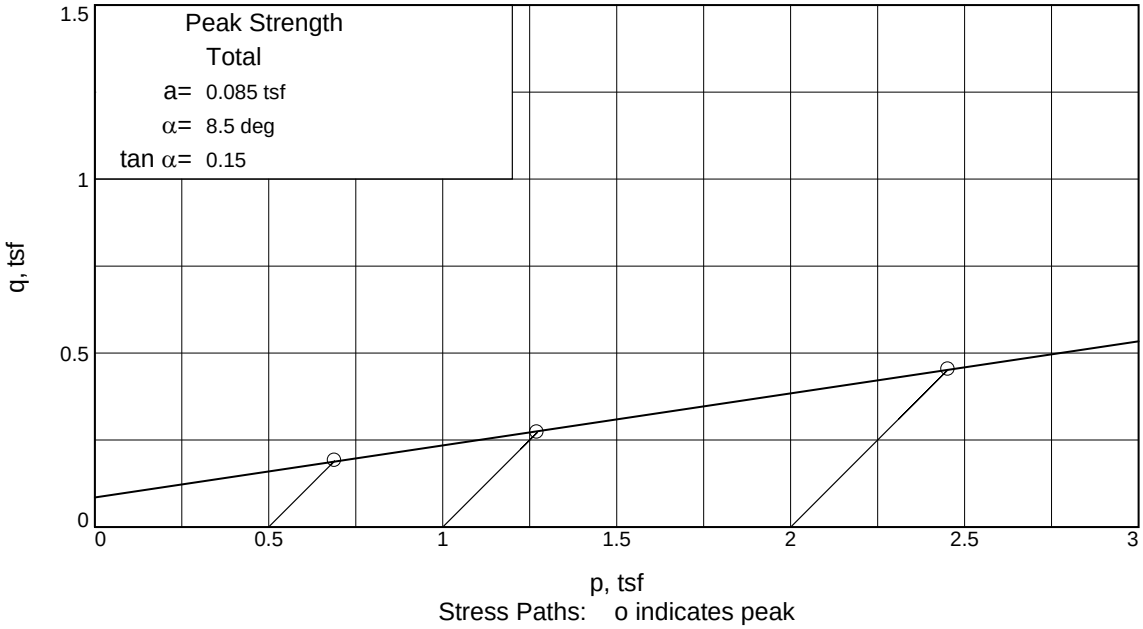
BRAUN INTERTEC











Stress Paths: o indicates peak

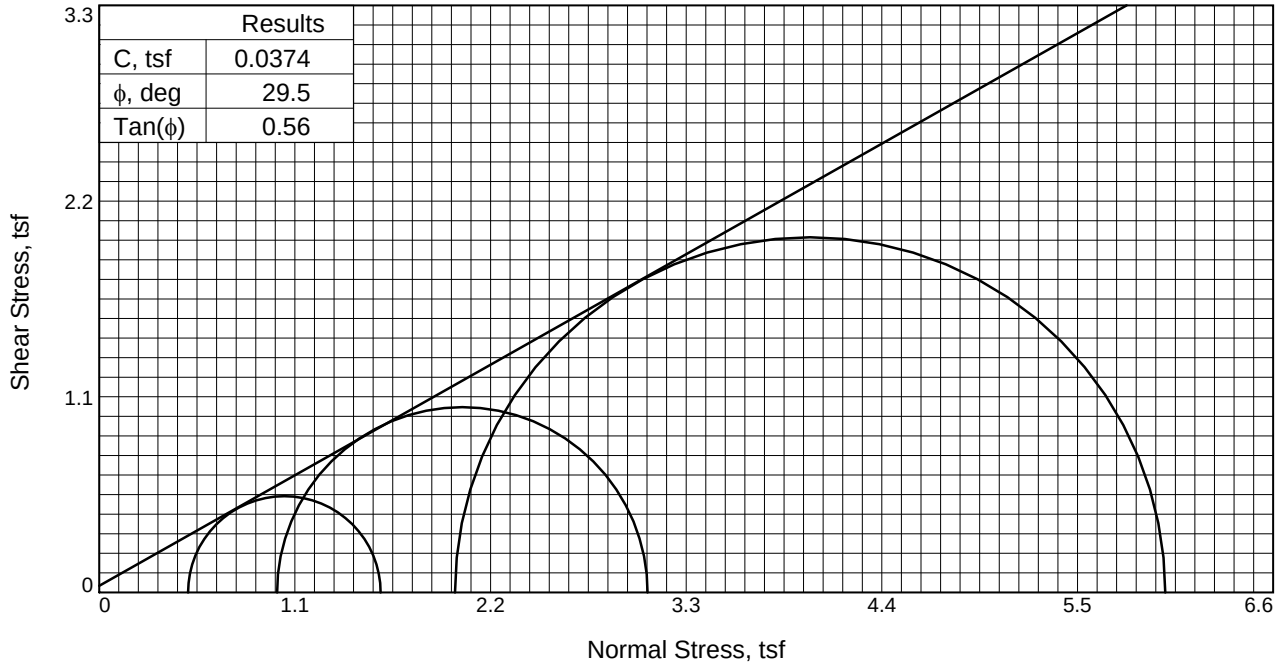
Client: KLJ Engineering LLC

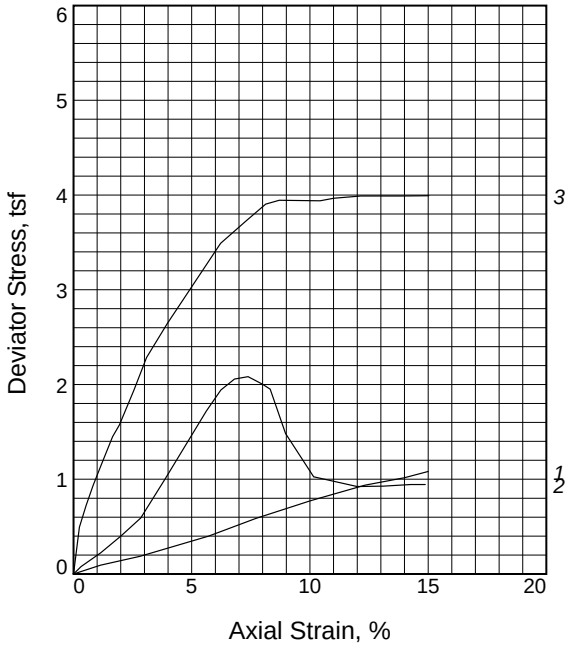
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-106 **Depth:** 17-19' **Sample Number:** TW-658

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	32.3	33.0	31.2
	Dry Density, pcf	91.8	90.6	92.3
	Saturation, %	99.9	99.5	97.8
	Void Ratio	0.9038	0.9300	0.8940
	Diameter, in.	1.401	1.420	1.400
	Height, in.	2.800	2.776	2.780
At Test	Water Content, %	32.3	33.0	31.2
	Dry Density, pcf	91.8	90.6	92.3
	Saturation, %	99.9	99.5	97.8
	Void Ratio	0.9038	0.9300	0.8940
	Diameter, in.	1.401	1.420	1.400
	Height, in.	2.800	2.776	2.780
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.082	2.083	3.993
Ult. Stress, tsf		1.082	0.924	3.993
σ_1 Failure, tsf		1.582	3.083	5.993
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-6

Assumed Specific Gravity= 2.8 **Remarks:**
UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

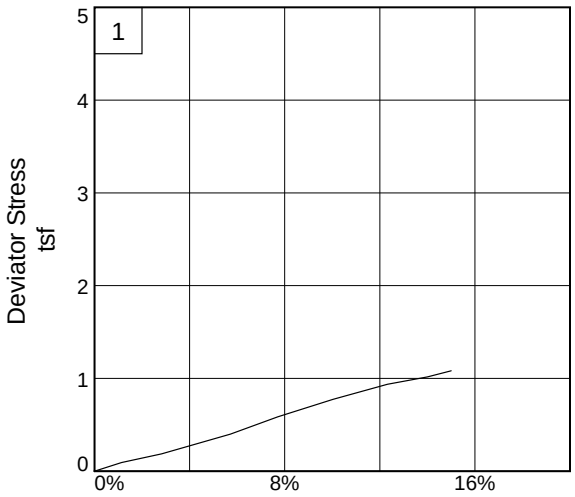
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

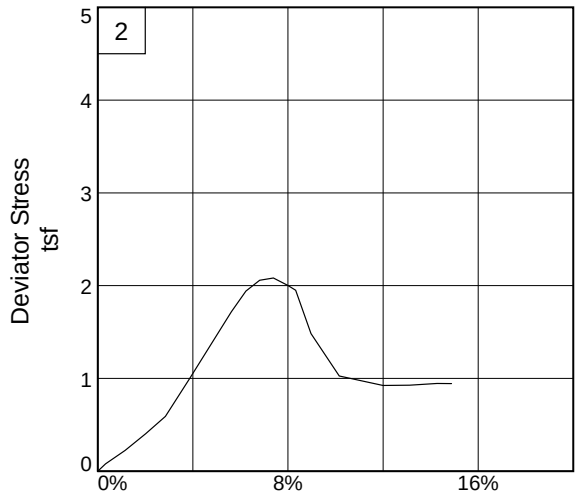
Source of Sample: GDRL-108 **Depth:** 7-9'

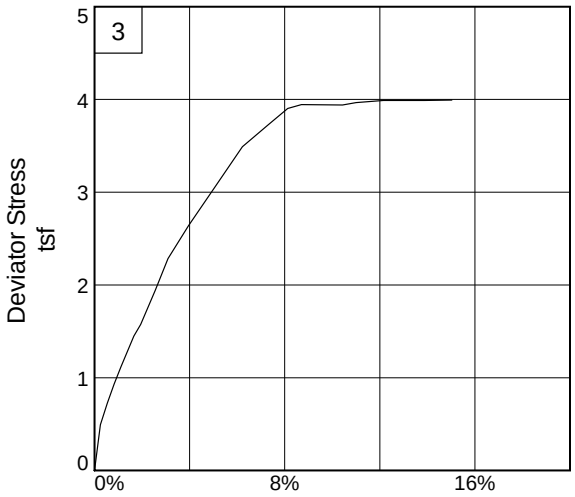
Sample Number: TW-647

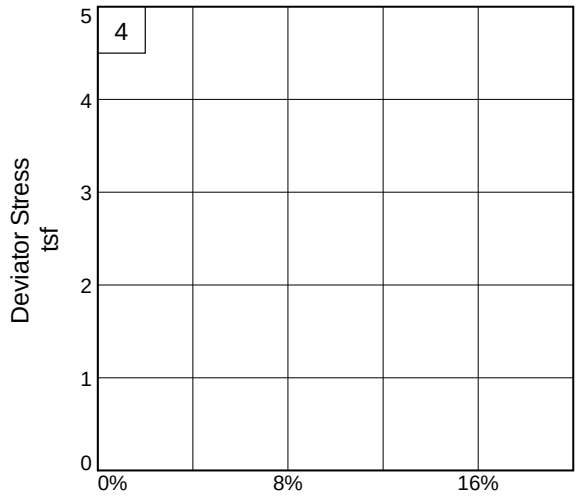
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

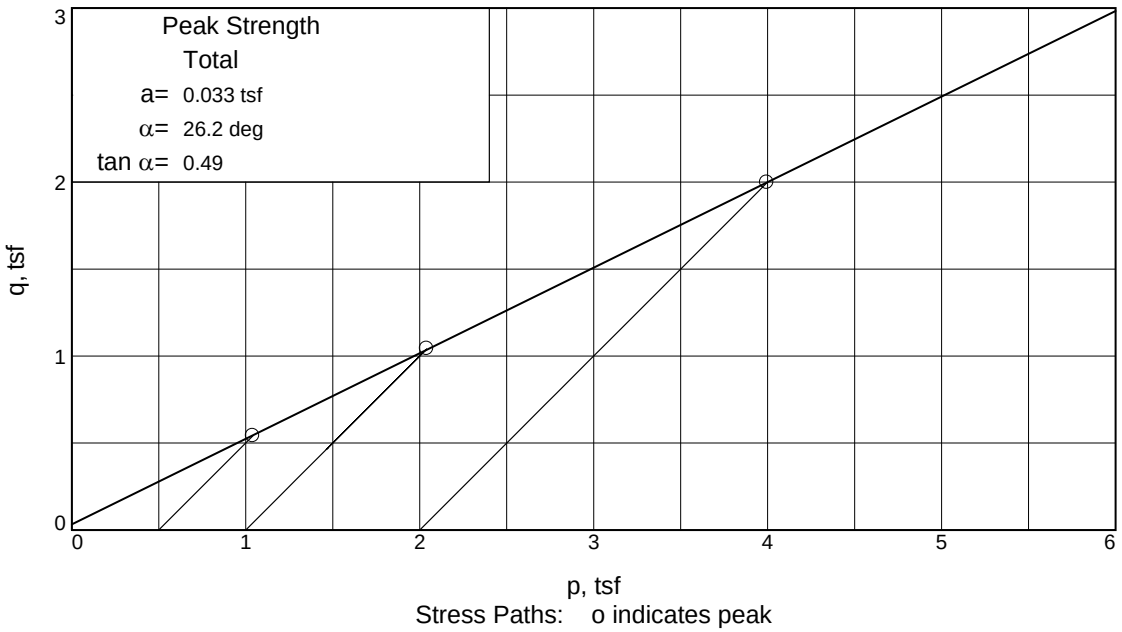
BRAUN INTERTEC











Stress Paths: o indicates peak

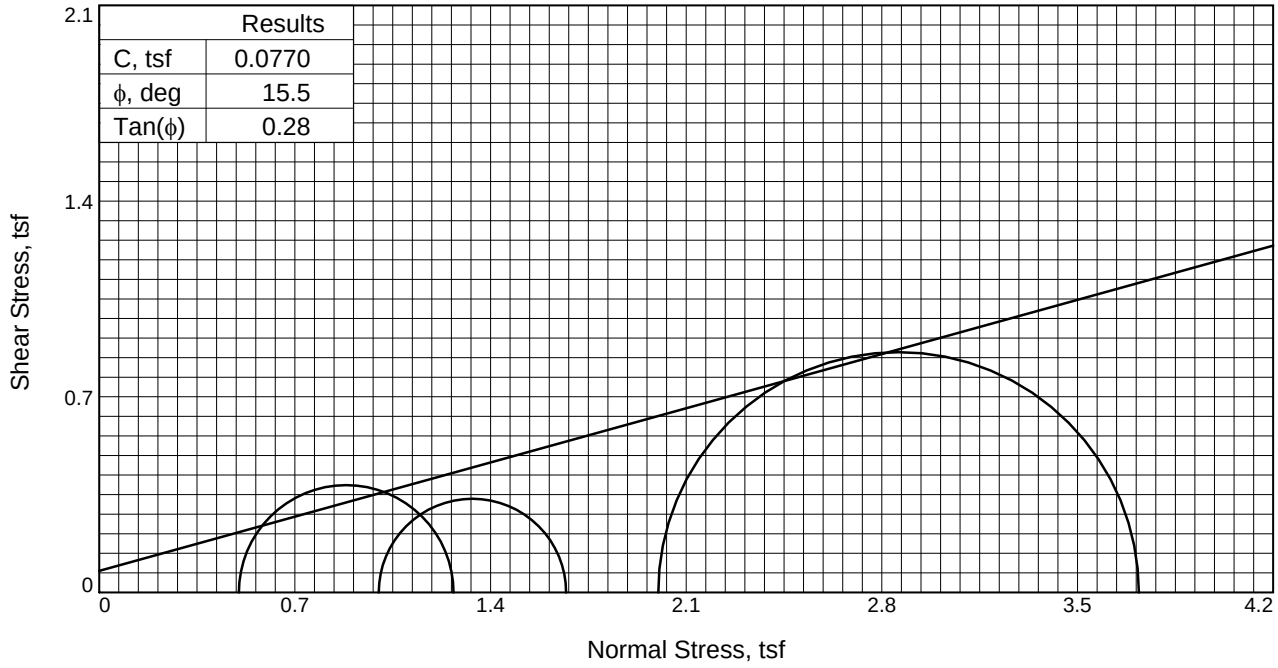
Client: KLJ Engineering LLC

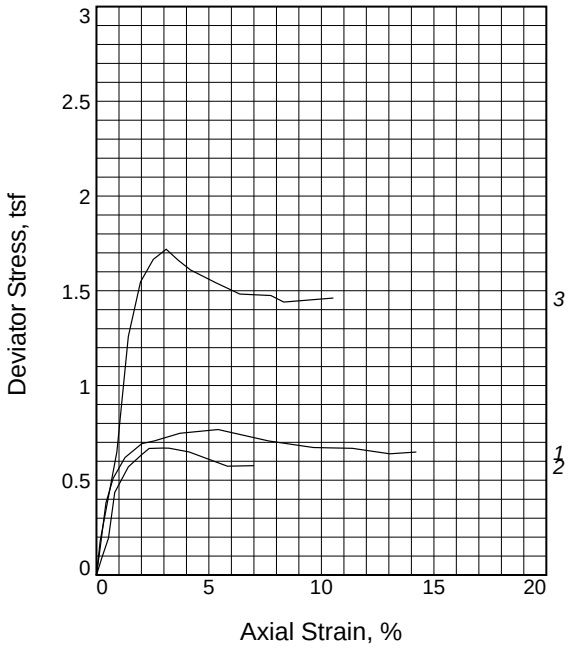
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-108 **Depth:** 7-9' **Sample Number:** TW-647

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.8	46.7	18.1
	Dry Density, pcf	81.5	75.4	113.6
	Saturation, %	99.8	99.3	93.9
	Void Ratio	1.1447	1.3171	0.5383
	Diameter, in.	1.397	1.429	1.441
	Height, in.	2.831	2.818	2.966
At Test	Water Content, %	40.8	46.7	18.1
	Dry Density, pcf	81.5	75.4	113.6
	Saturation, %	99.8	99.3	93.9
	Void Ratio	1.1447	1.3171	0.5383
	Diameter, in.	1.397	1.429	1.441
	Height, in.	2.831	2.818	2.966
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.768	0.670	1.719
Ult. Stress, tsf		0.640	0.574	1.441
σ_1 Failure, tsf		1.267	1.670	3.719
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.8 **Remarks:**
UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

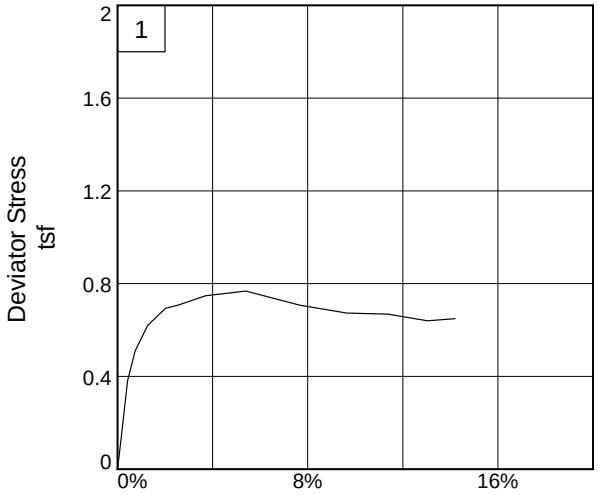
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

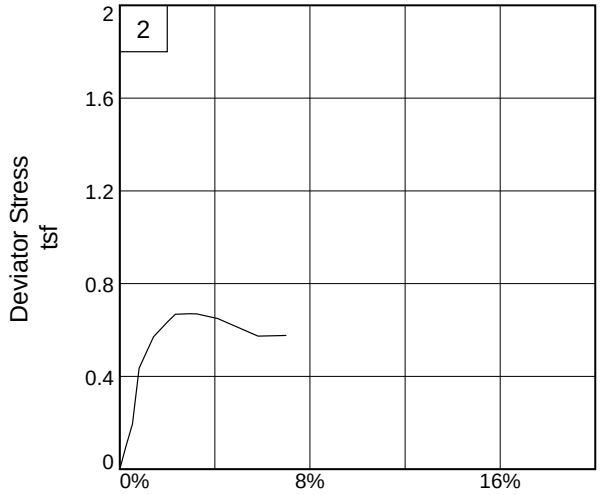
Source of Sample: GDRL-110 **Depth:** 7-9'

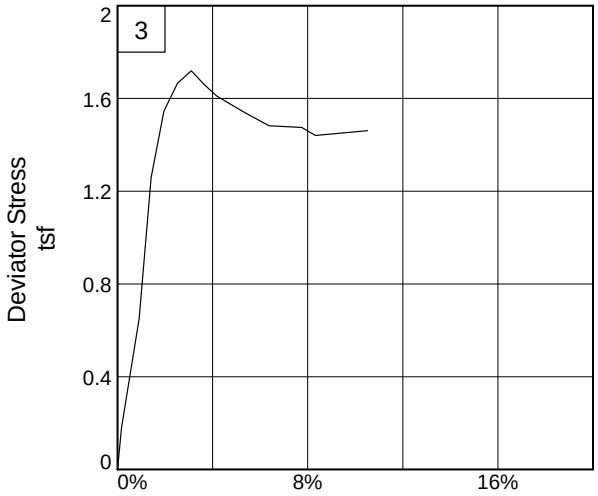
Sample Number: TW-639

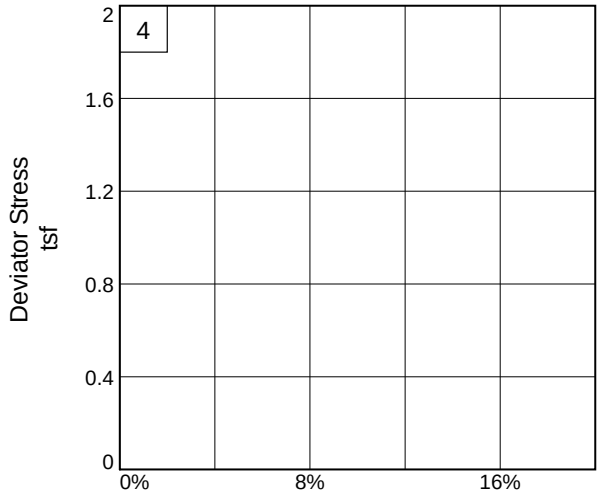
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

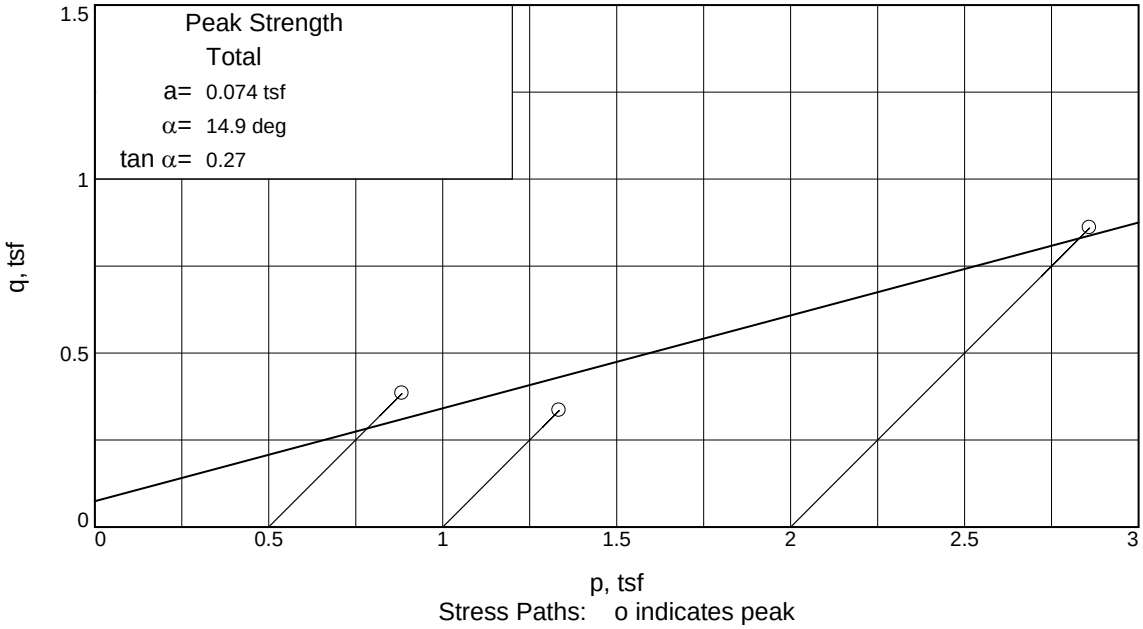
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

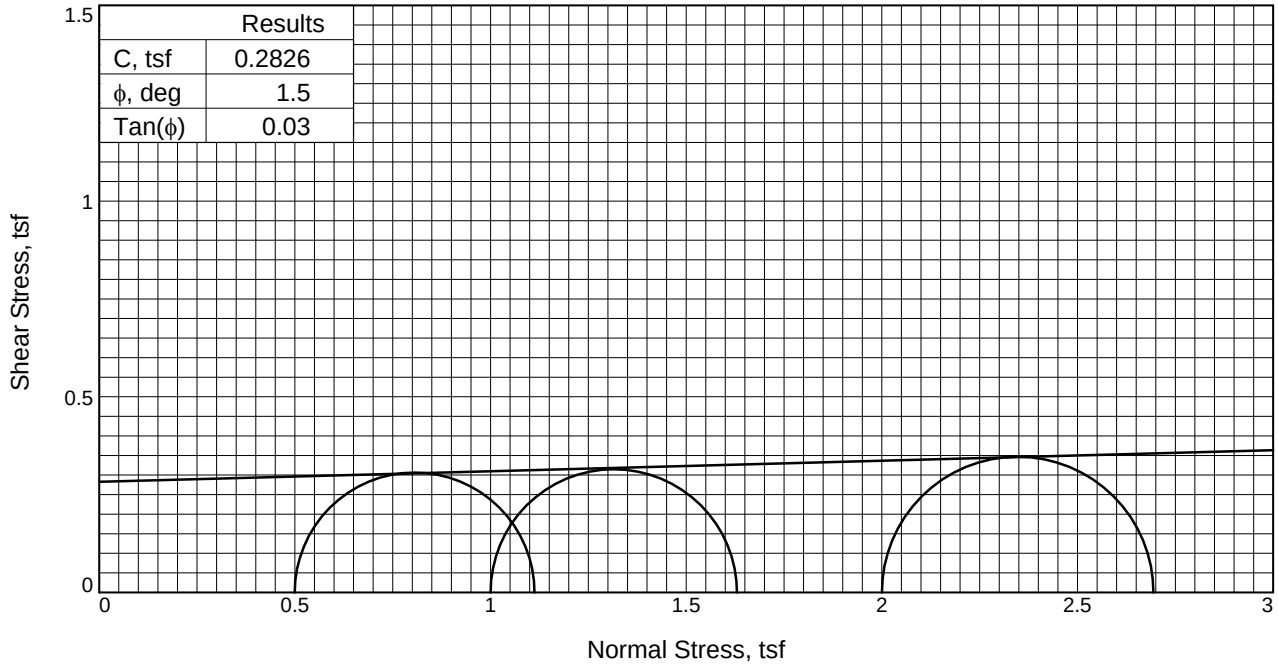
Client: KLJ Engineering LLC

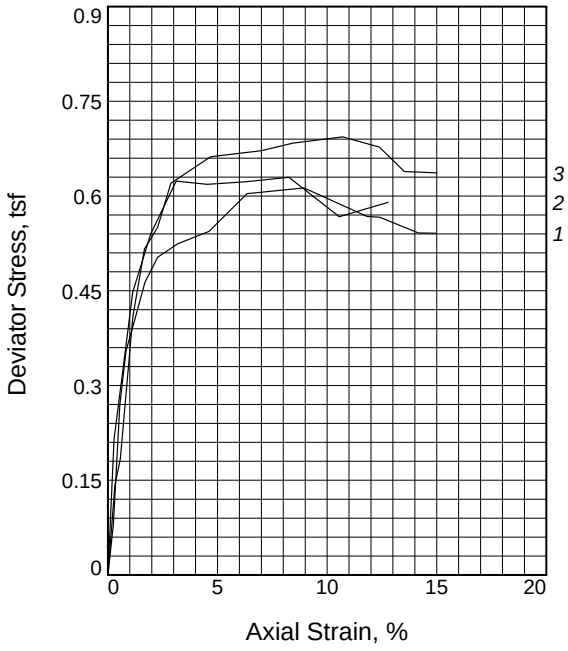
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-110 **Depth:** 7-9' **Sample Number:** TW-639

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	56.6	56.7	50.8
	Dry Density, pcf	67.3	66.8	71.8
	Saturation, %	100.0	98.8	99.8
	Void Ratio	1.5678	1.5887	1.4085
	Diameter, in.	1.418	1.407	1.408
	Height, in.	2.774	2.824	2.818
At Test	Water Content, %	56.6	56.7	50.8
	Dry Density, pcf	67.3	66.8	71.8
	Saturation, %	100.0	98.8	99.8
	Void Ratio	1.5678	1.5887	1.4085
	Diameter, in.	1.418	1.407	1.408
	Height, in.	2.774	2.824	2.818
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.613	0.630	0.694
Ult. Stress, tsf		0.541	0.567	0.637
σ_1 Failure, tsf		1.112	1.630	2.694
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), dark gray, A-7-6

Assumed Specific Gravity= 2.77

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

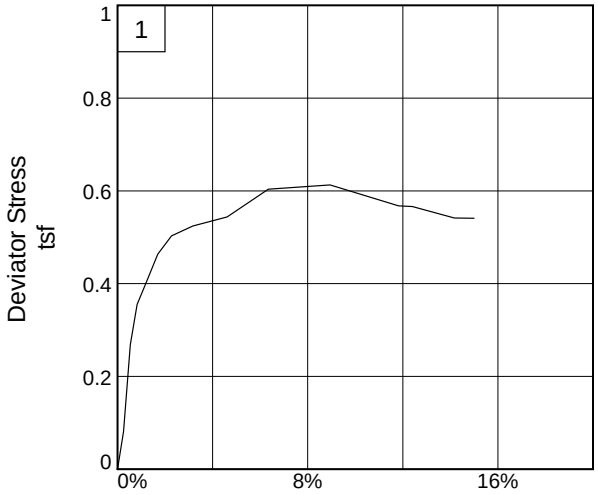
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

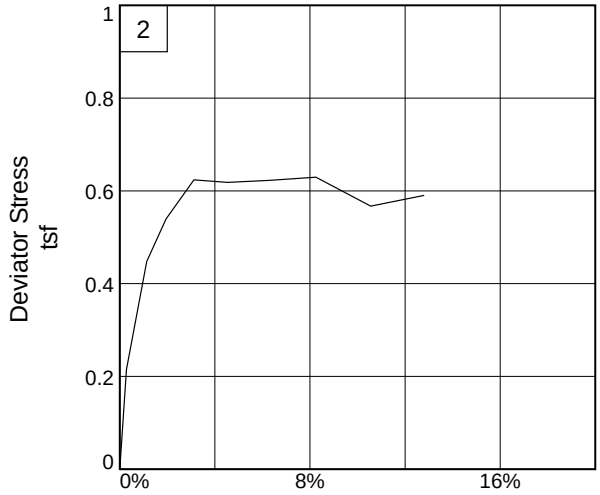
Source of Sample: CAA-111 **Depth:** 17-19'

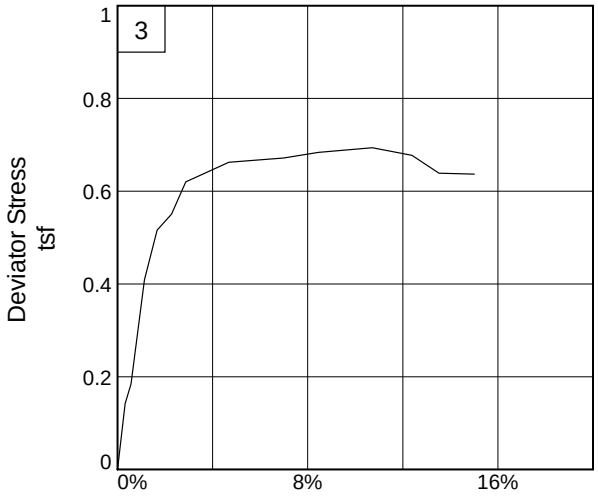
Sample Number: TW-635

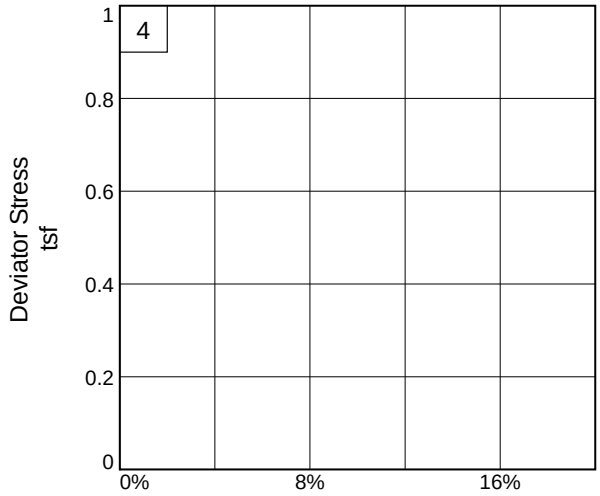
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

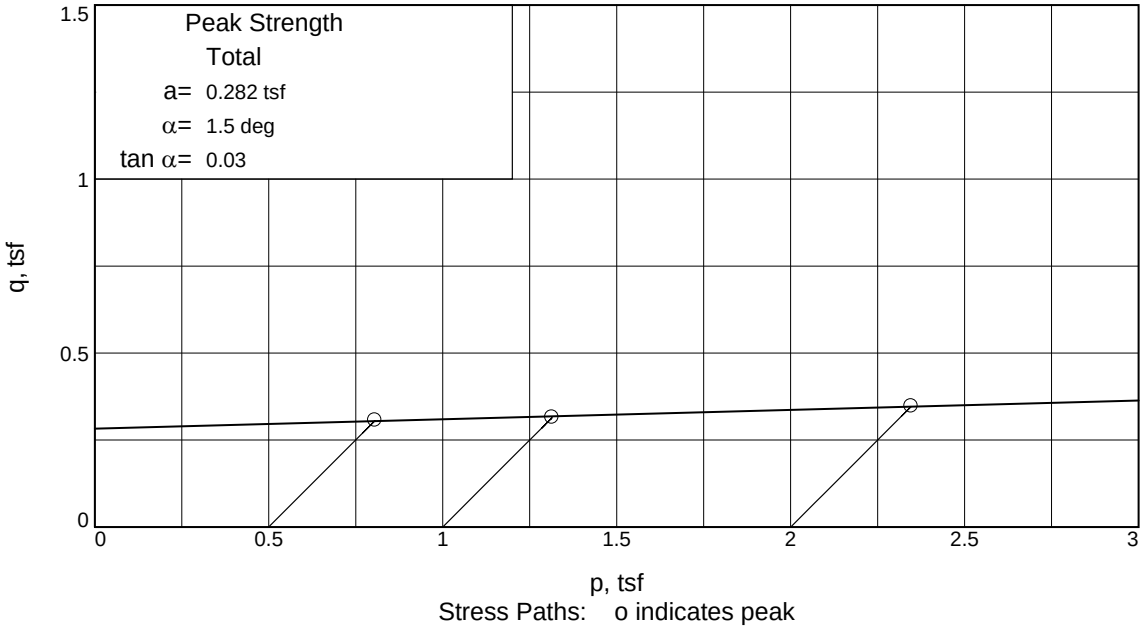
BRAUN INTERTEC











Stress Paths: o indicates peak

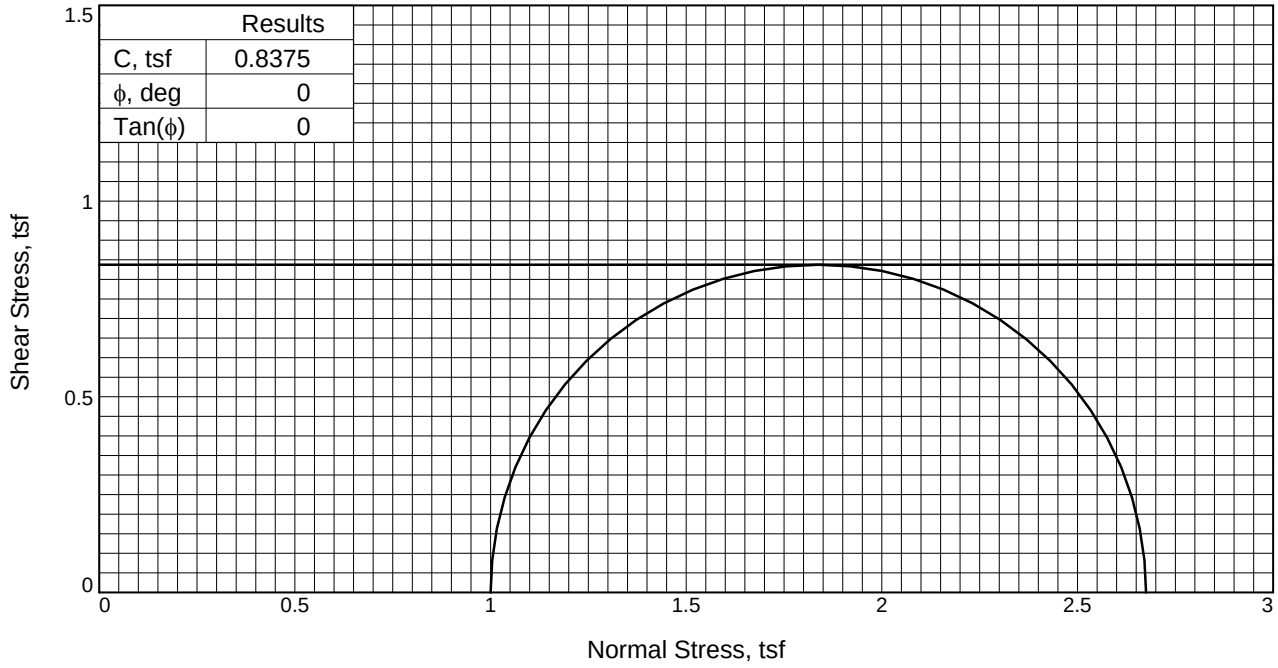
Client: KLJ Engineering LLC

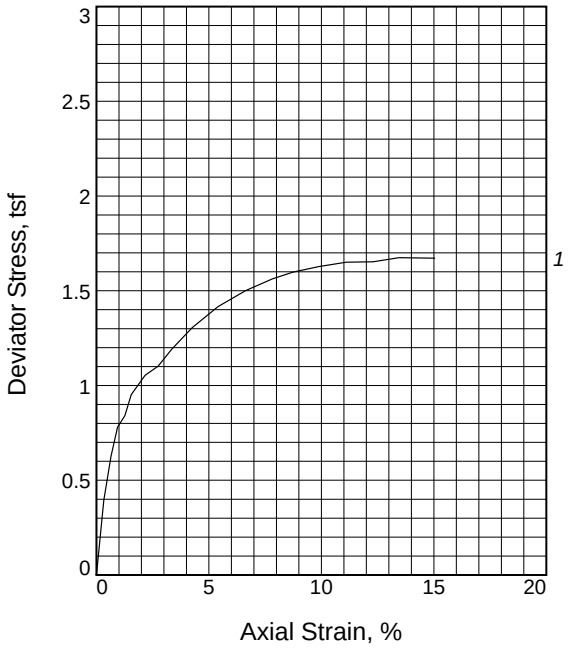
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-111 **Depth:** 17-19' **Sample Number:** TW-635

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1
Initial	Water Content, %	21.5
	Dry Density, pcf	106.5
	Saturation, %	99.7
	Void Ratio	0.5830
	Diameter, in.	1.410
	Height, in.	2.773
At Test	Water Content, %	21.5
	Dry Density, pcf	106.5
	Saturation, %	99.7
	Void Ratio	0.5830
	Diameter, in.	1.410
	Height, in.	2.773
Strain rate, %/min.		1.00
Back Pressure, tsf		0.000
Cell Pressure, tsf		1.000
Fail. Stress, tsf		1.675
Ult. Stress, tsf		1.672
σ_1 Failure, tsf		2.675
σ_3 Failure, tsf		1.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: SANDY LEAN CLAY (CL), brown, A-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

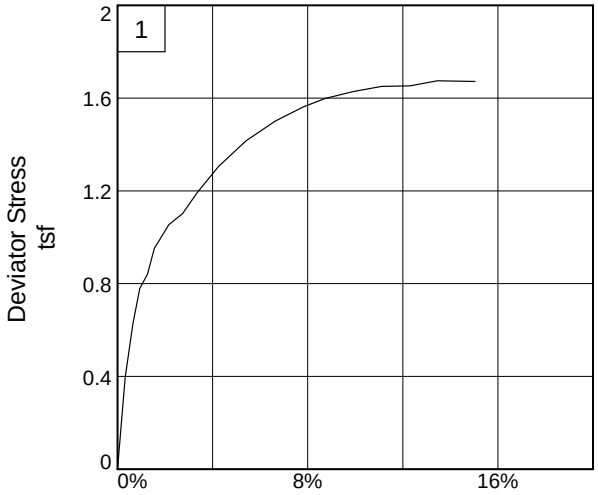
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

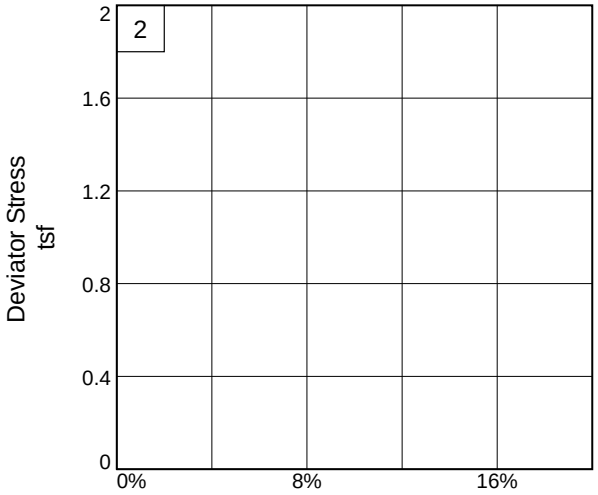
Source of Sample: CAA-113 **Depth:** 7-9'

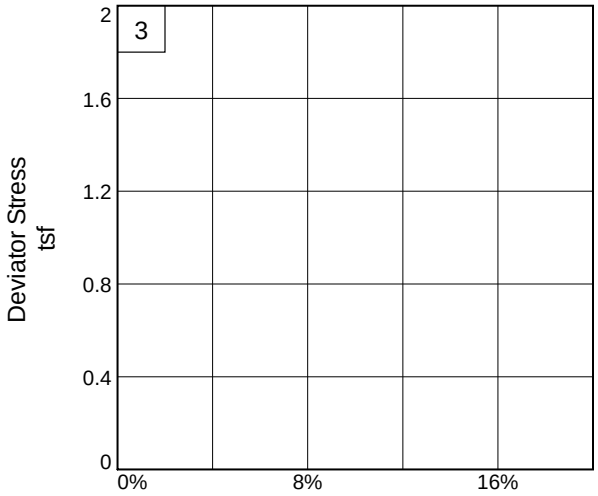
Sample Number: TW-1240

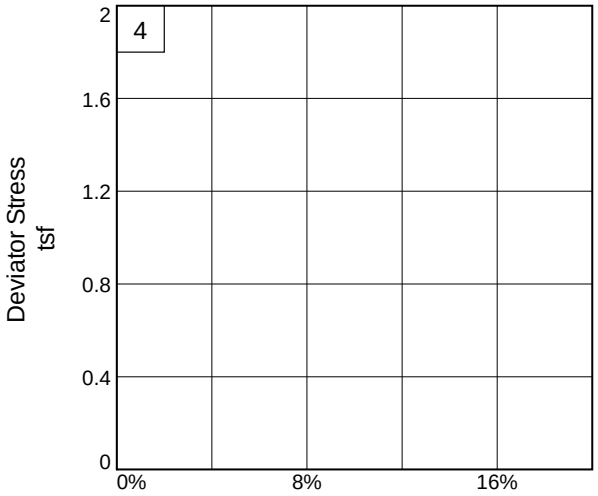
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

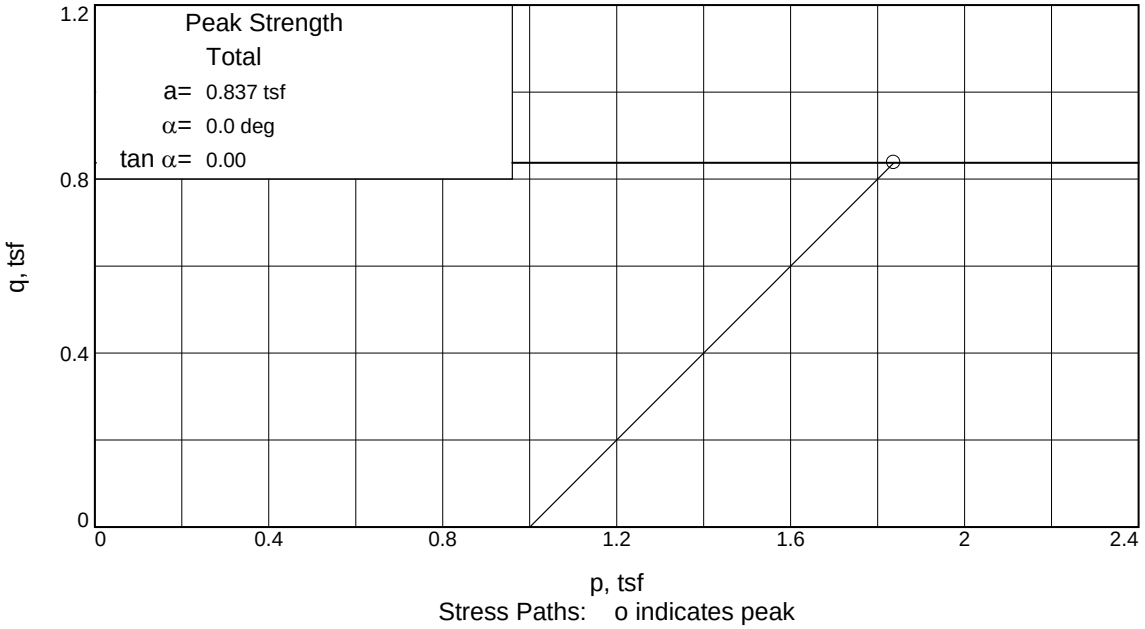
BRAUN INTERTEC











Stress Paths: o indicates peak

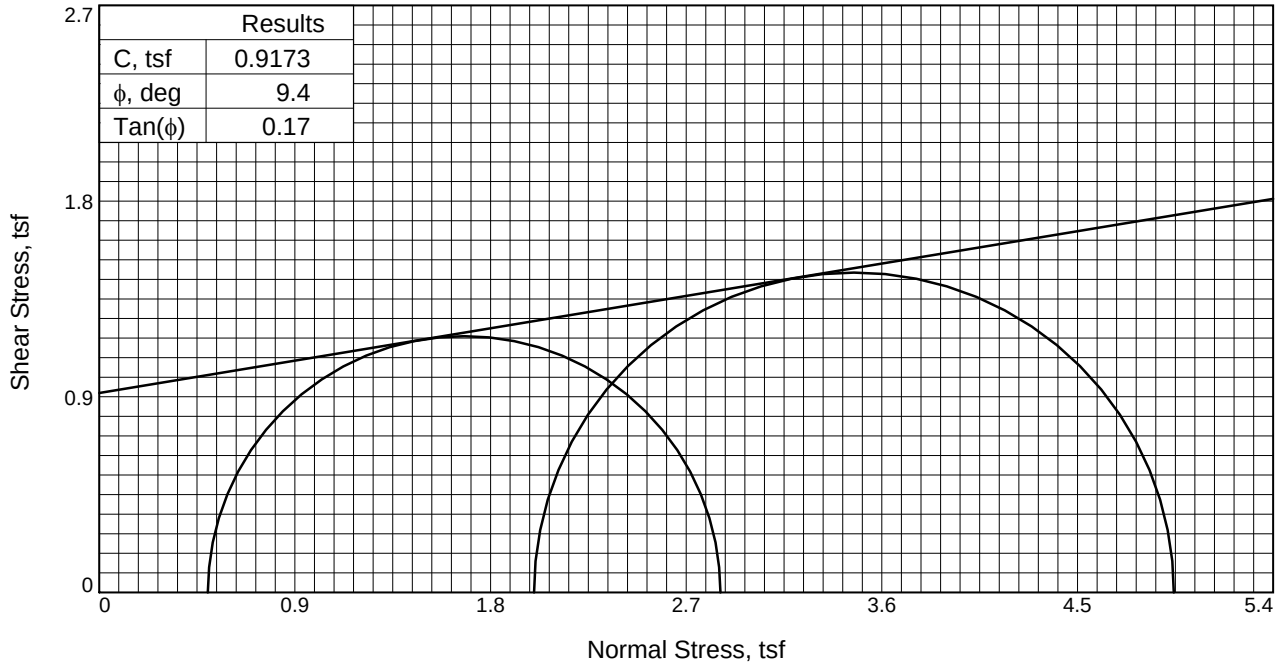
Client: KLJ Engineering LLC

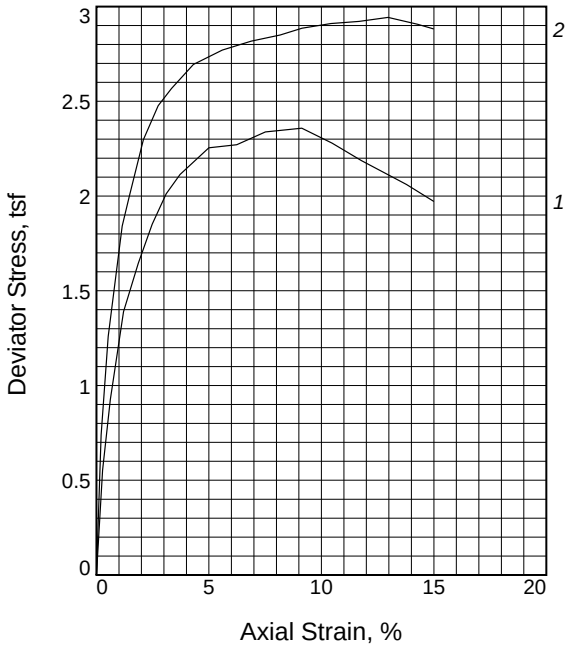
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-113 **Depth:** 7-9' **Sample Number:** TW-1240

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2
Initial	Water Content, %	31.7	29.3
	Dry Density, pcf	89.7	91.9
	Saturation, %	97.3	94.8
	Void Ratio	0.8788	0.8337
	Diameter, in.	1.438	1.418
	Height, in.	2.903	2.877
At Test	Water Content, %	31.7	29.3
	Dry Density, pcf	89.7	91.9
	Saturation, %	97.3	94.8
	Void Ratio	0.8788	0.8337
	Diameter, in.	1.438	1.418
	Height, in.	2.903	2.877
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		2.358	2.943
Ult. Stress, tsf		1.972	2.882
σ_1 Failure, tsf		2.857	4.943
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

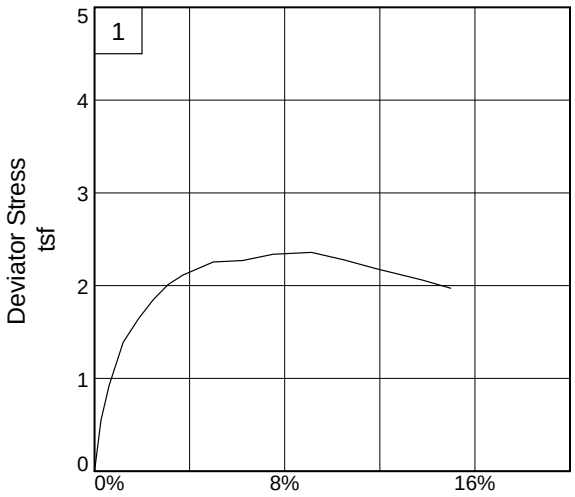
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

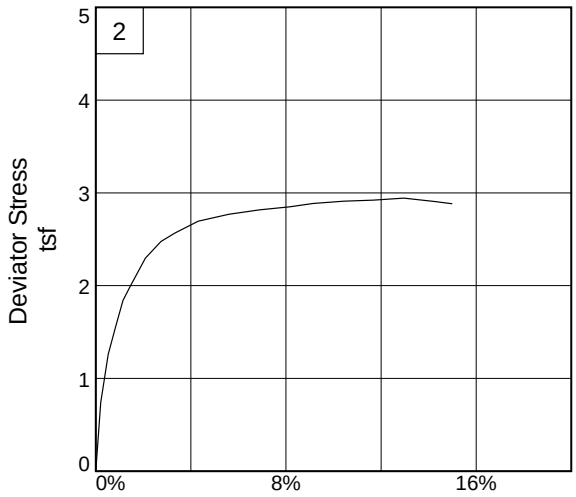
Source of Sample: GDRL-115 **Depth:** 7-9'

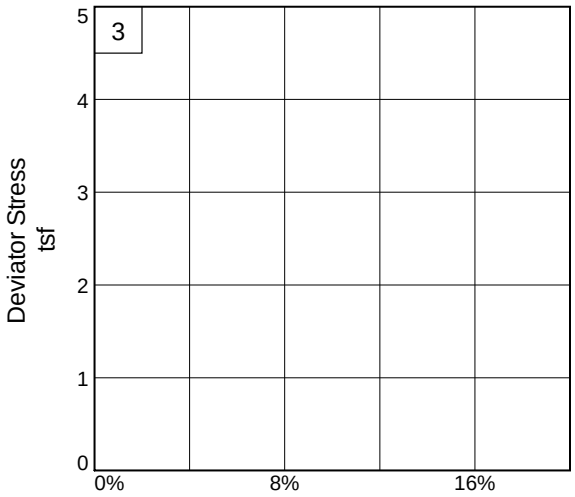
Sample Number: TW-610

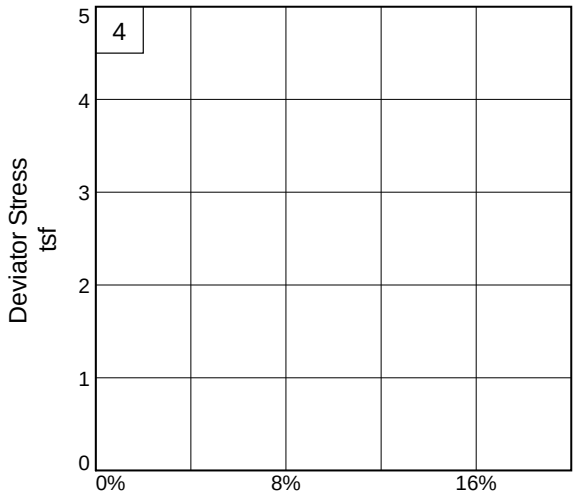
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

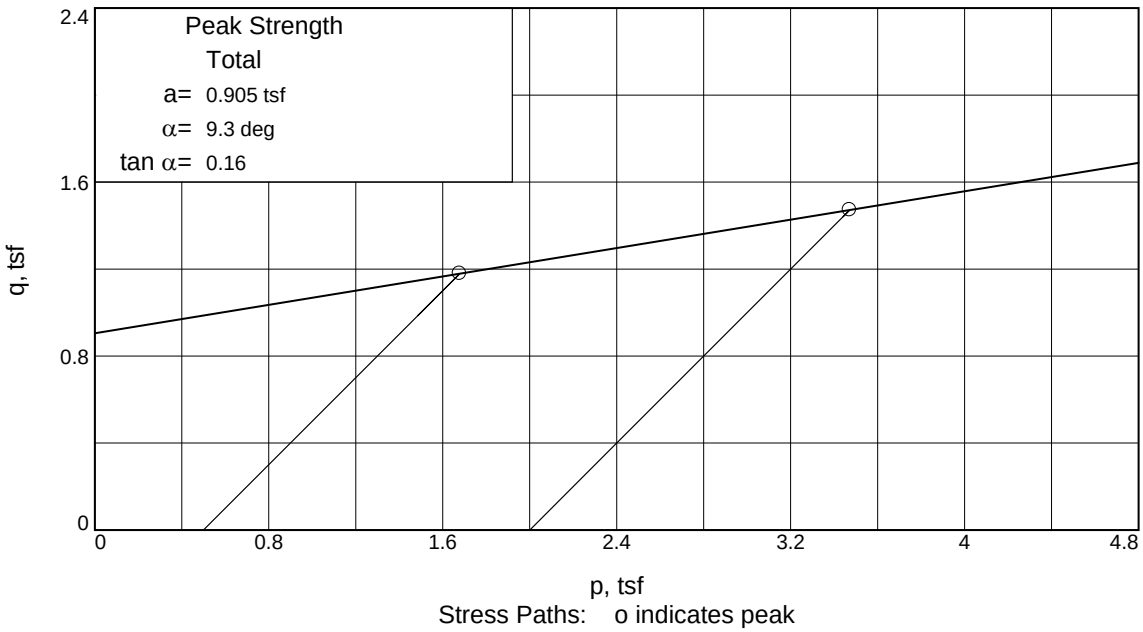
BRAUN INTERTEC











Stress Paths: o indicates peak

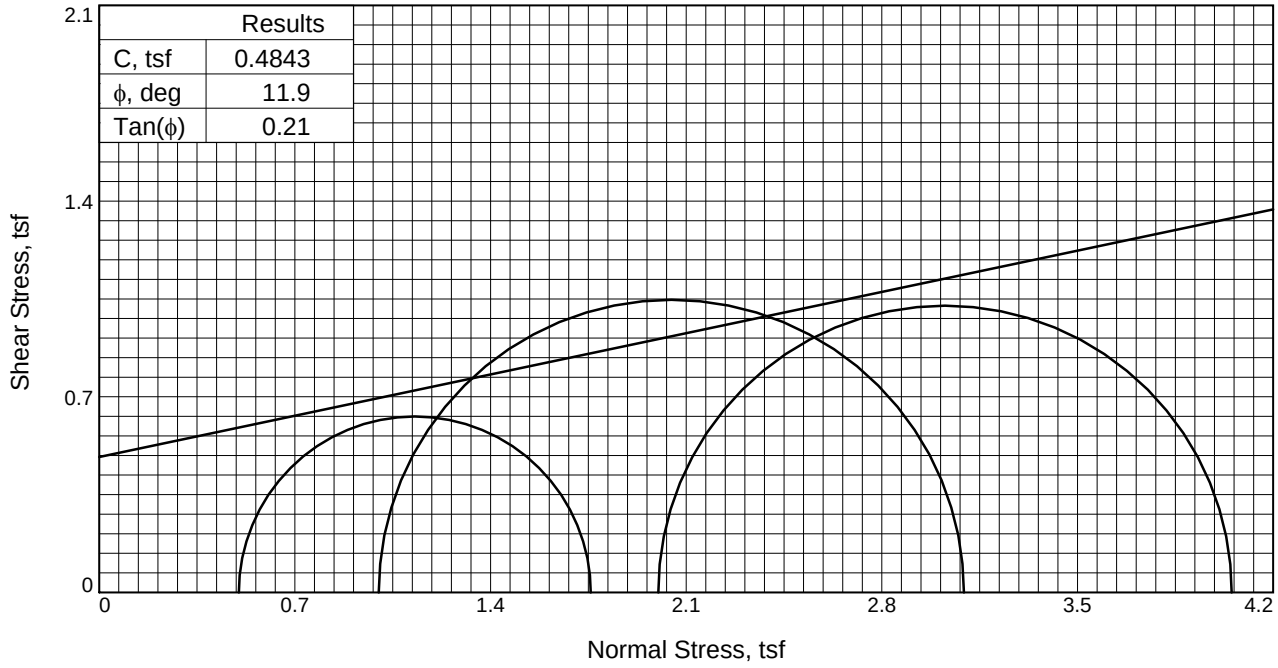
Client: KLJ Engineering LLC

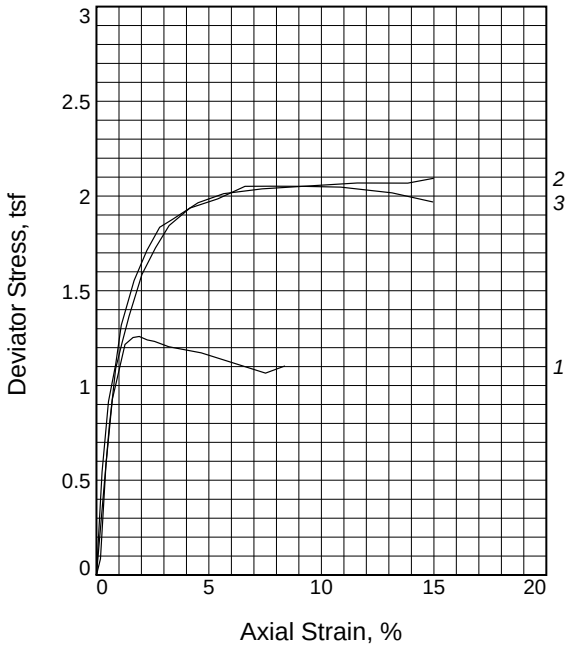
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-115 **Depth:** 7-9' **Sample Number:** TW-610

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	35.0	34.8	41.0
	Dry Density, pcf	87.0	87.2	81.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9527	0.9480	1.1656
	Diameter, in.	1.404	1.405	1.403
	Height, in.	2.833	2.811	2.816
At Test	Water Content, %	35.0	34.8	36.9
	Dry Density, pcf	87.0	87.2	81.9
	Saturation, %	100.0	100.0	89.8
	Void Ratio	0.9527	0.9480	1.1656
	Diameter, in.	1.404	1.405	1.403
	Height, in.	2.833	2.811	2.816
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.259	2.094	2.052
Ult. Stress, tsf		1.066	2.094	1.969
σ_1 Failure, tsf		1.758	3.094	4.052
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY with SAND (CH), gray, A-7-6

Assumed Specific Gravity= 2.72

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

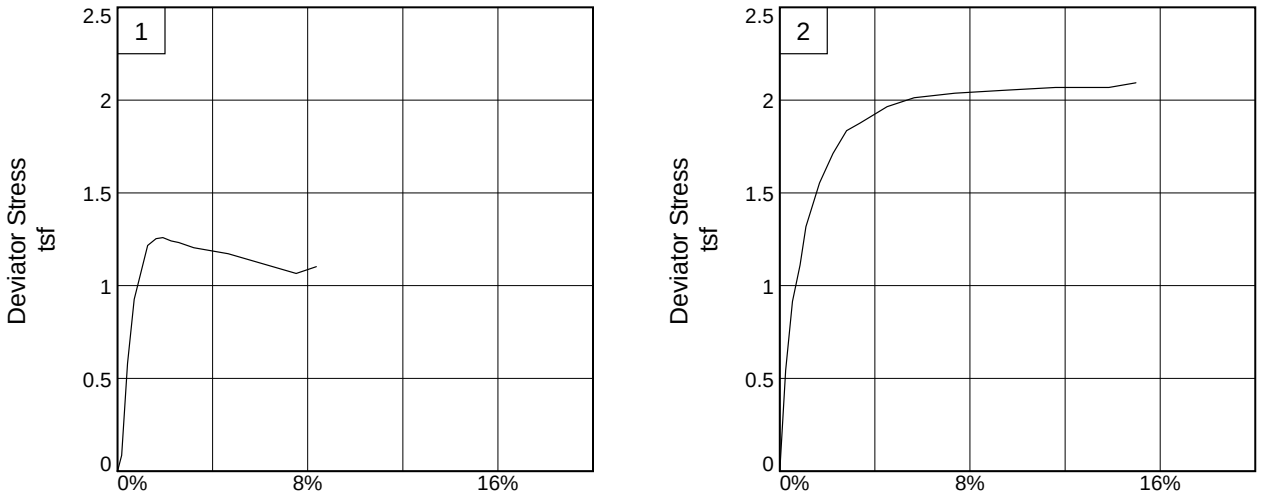
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

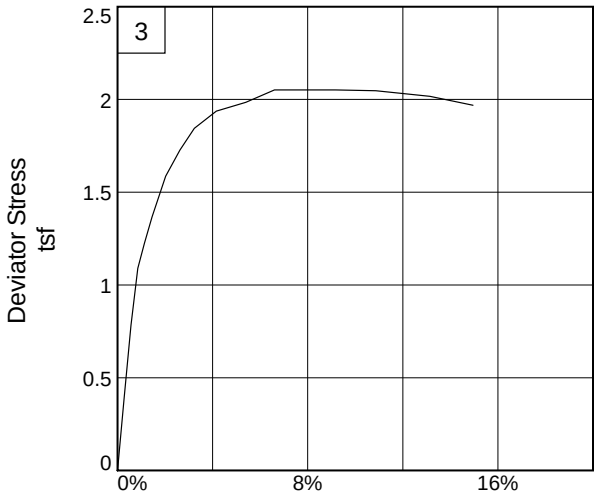
Source of Sample: CAA-116 **Depth:** 17-19'

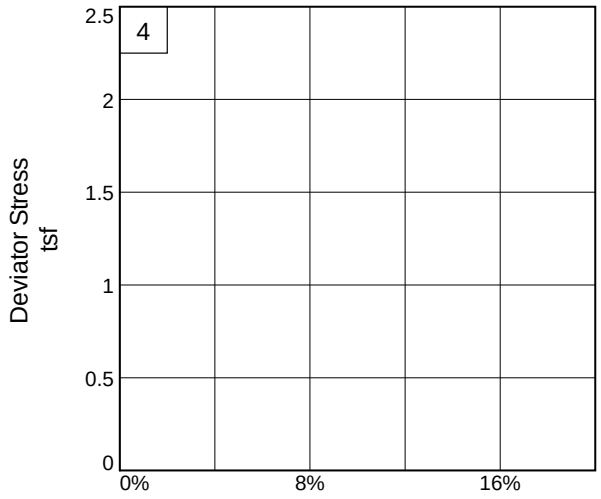
Sample Number: TW-606

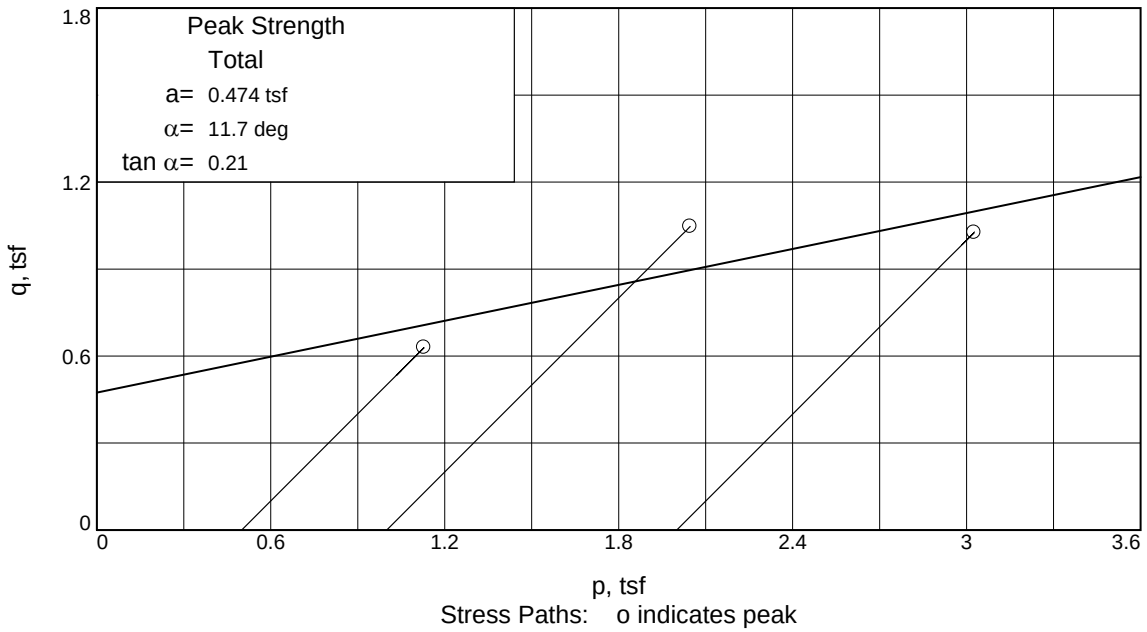
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

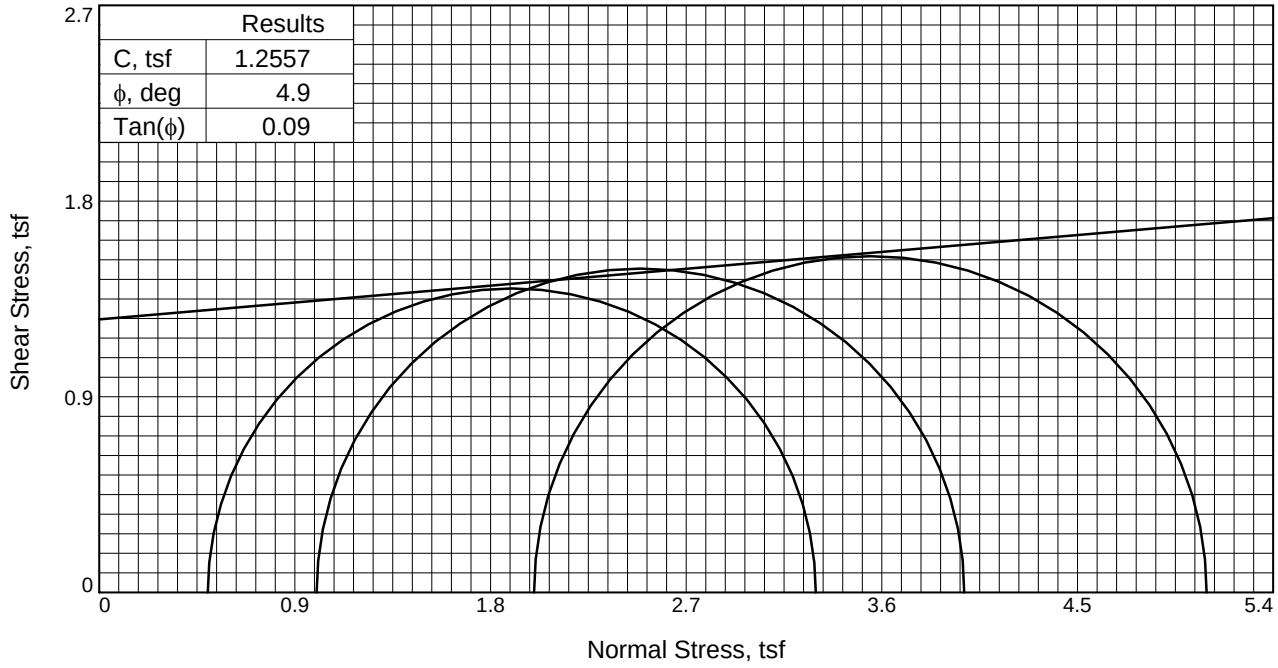
Client: KLJ Engineering LLC

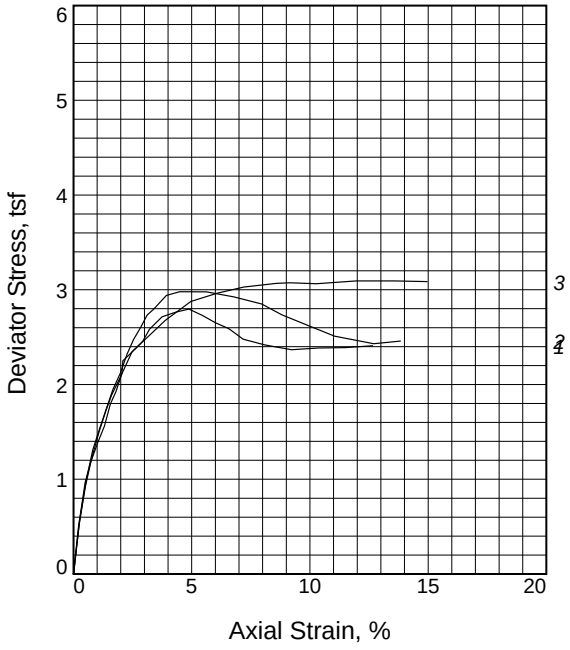
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-116 **Depth:** 17-19' **Sample Number:** TW-606

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	28.3	28.4	29.4
	Dry Density, pcf	93.1	95.1	93.7
	Saturation, %	94.4	99.1	99.6
	Void Ratio	0.8109	0.7731	0.7987
	Diameter, in.	1.440	1.415	1.432
	Height, in.	2.829	2.827	2.861
At Test	Water Content, %	28.3	28.4	29.4
	Dry Density, pcf	93.1	95.1	93.7
	Saturation, %	94.4	99.1	99.6
	Void Ratio	0.8109	0.7731	0.7987
	Diameter, in.	1.440	1.415	1.432
	Height, in.	2.829	2.827	2.861
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.797	2.979	3.094
Ult. Stress, tsf		2.368	2.431	3.087
σ_1 Failure, tsf		3.296	3.979	5.094
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

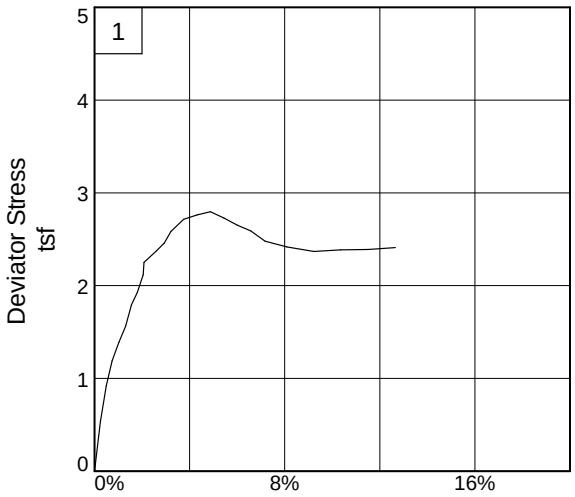
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

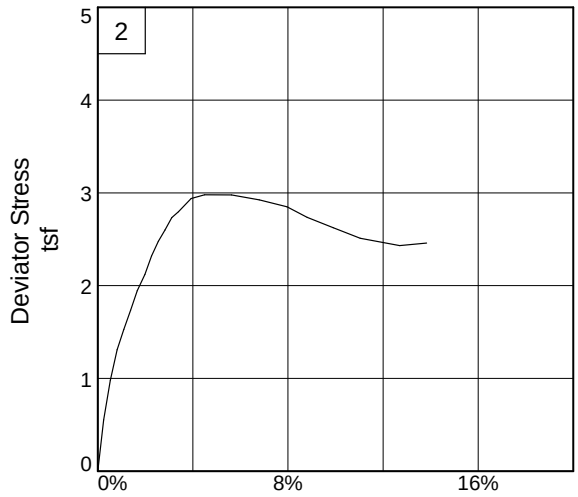
Source of Sample: GDRL-118 **Depth:** 7-9'

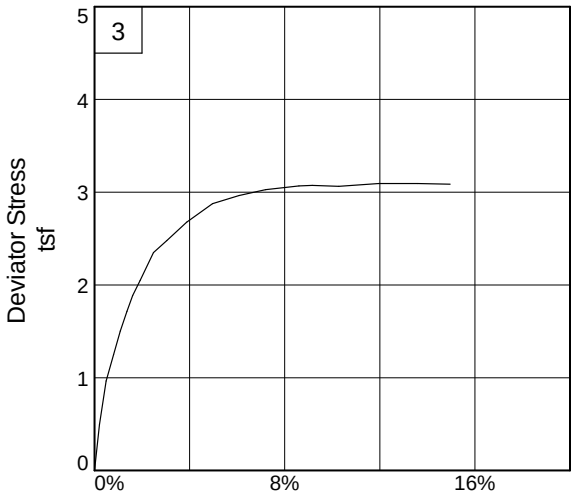
Sample Number: TW-531

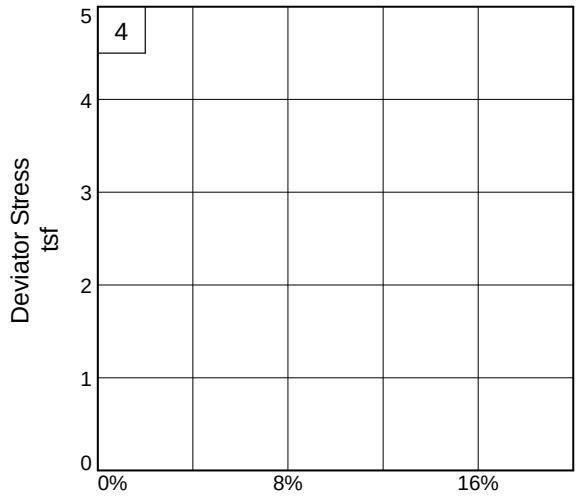
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

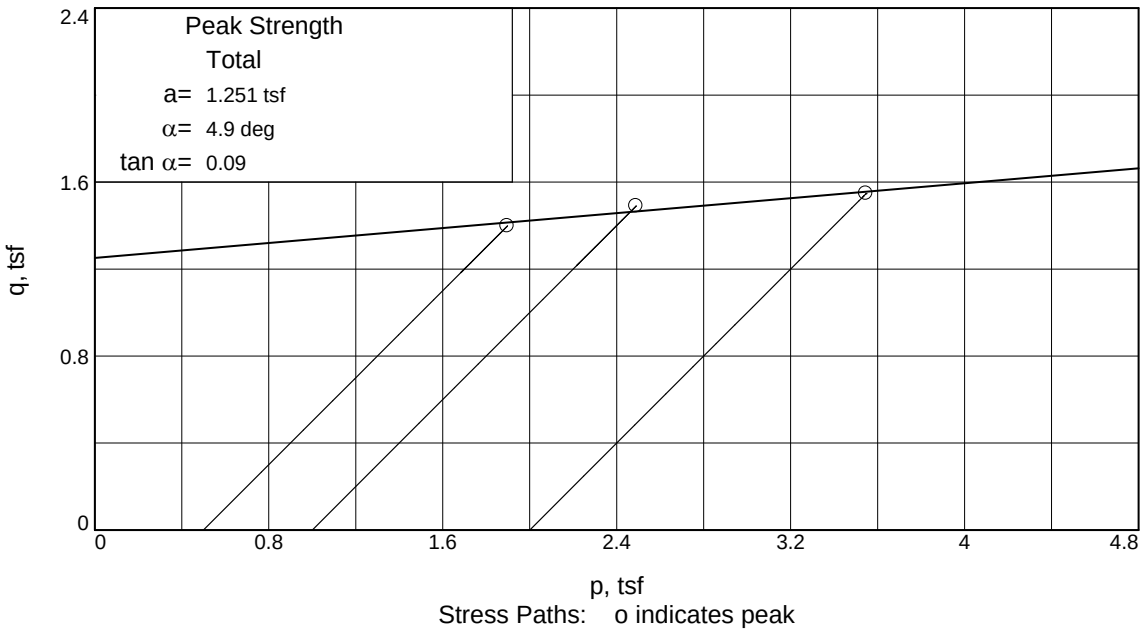
BRAUN INTERTEC











Stress Paths: o indicates peak

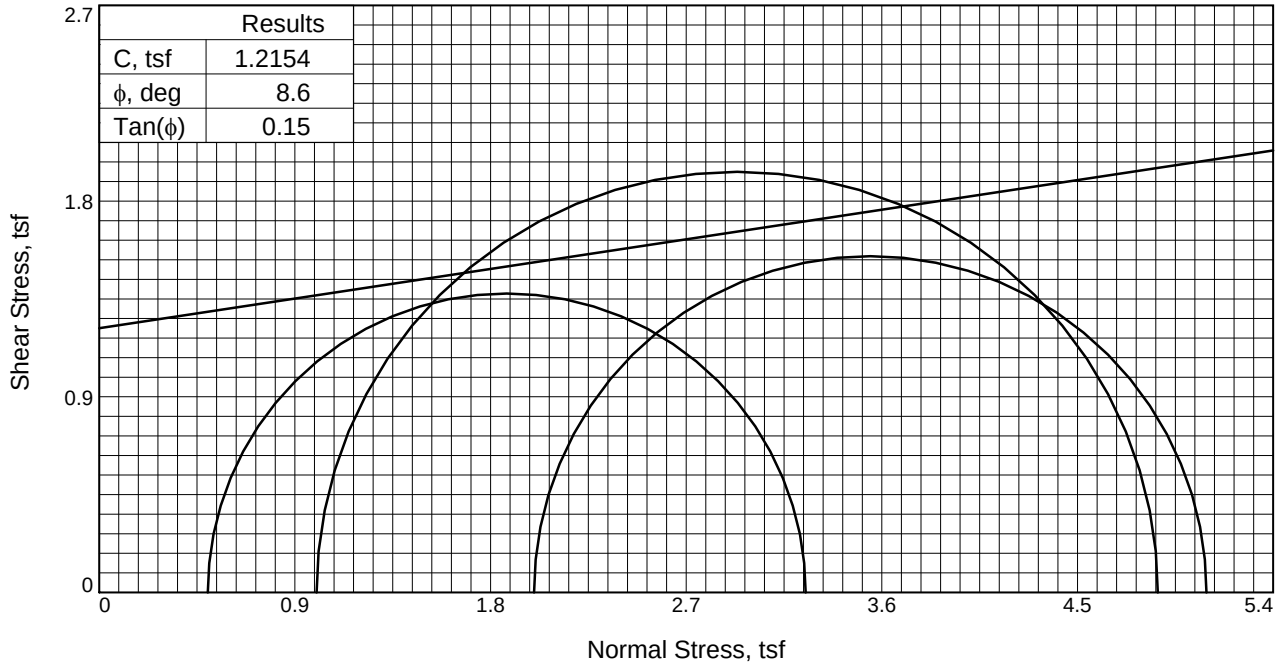
Client: KLJ Engineering LLC

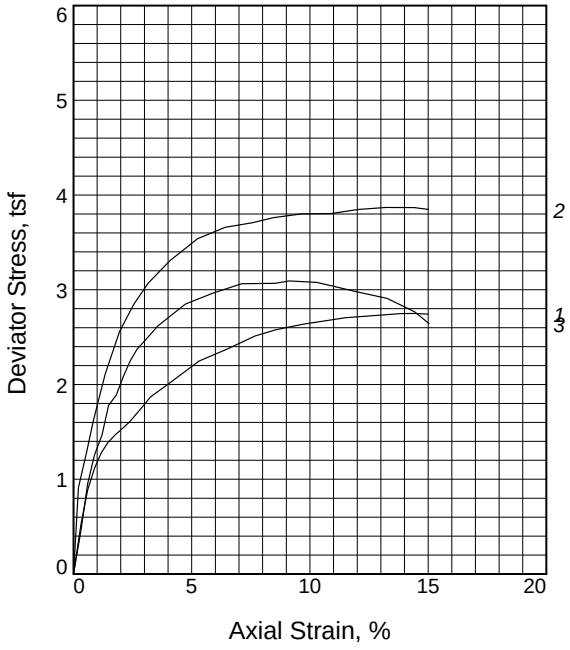
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-118 **Depth:** 7-9' **Sample Number:** TW-531

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	24.0	25.7	28.4
	Dry Density, pcf	101.5	99.3	94.9
	Saturation, %	98.2	99.4	99.0
	Void Ratio	0.6611	0.6980	0.7753
	Diameter, in.	1.405	1.405	1.414
	Height, in.	2.826	2.823	2.826
At Test	Water Content, %	24.0	25.7	28.4
	Dry Density, pcf	101.5	99.3	94.9
	Saturation, %	98.2	99.4	99.0
	Void Ratio	0.6611	0.6980	0.7753
	Diameter, in.	1.405	1.405	1.414
	Height, in.	2.826	2.823	2.826
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.750	3.869	3.093
Ult. Stress, tsf		2.743	3.848	2.643
σ_1 Failure, tsf		3.249	4.869	5.093
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

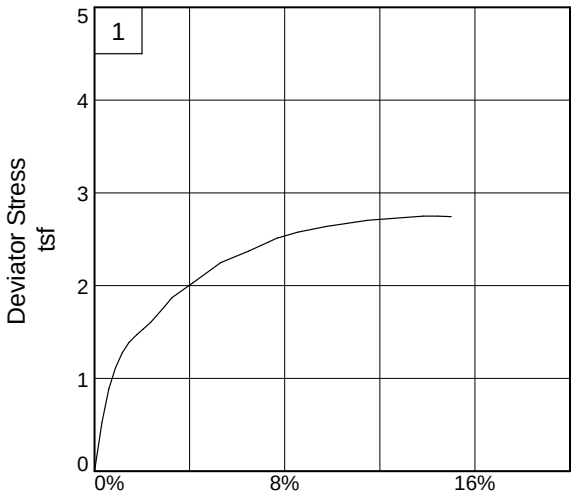
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

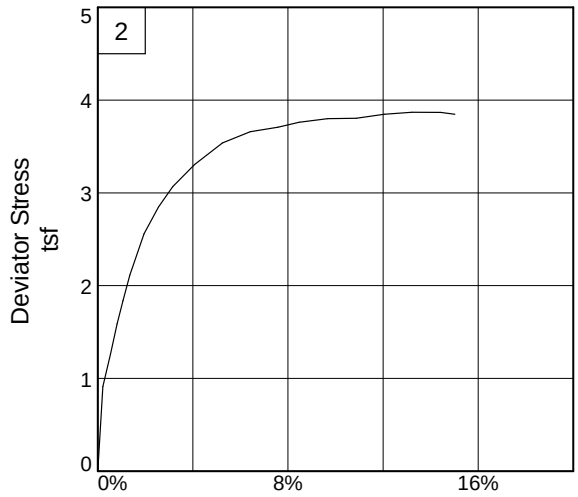
Source of Sample: CAA-120 **Depth:** 7-9'

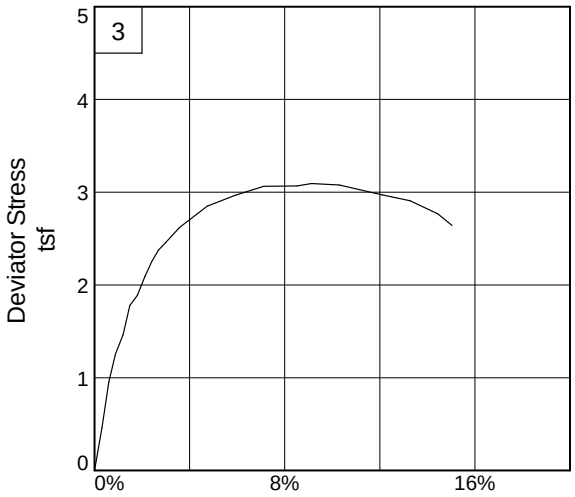
Sample Number: TW-519

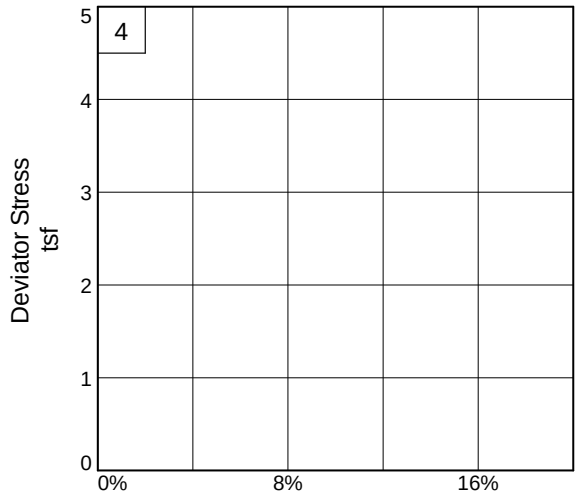
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

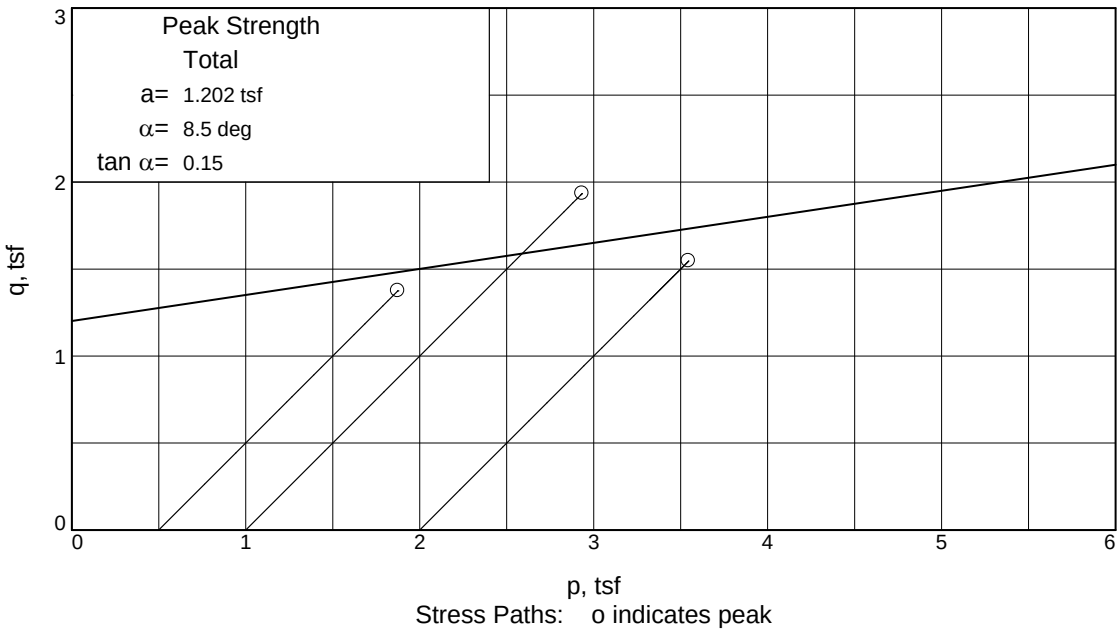
BRAUN INTERTEC











Stress Paths: o indicates peak

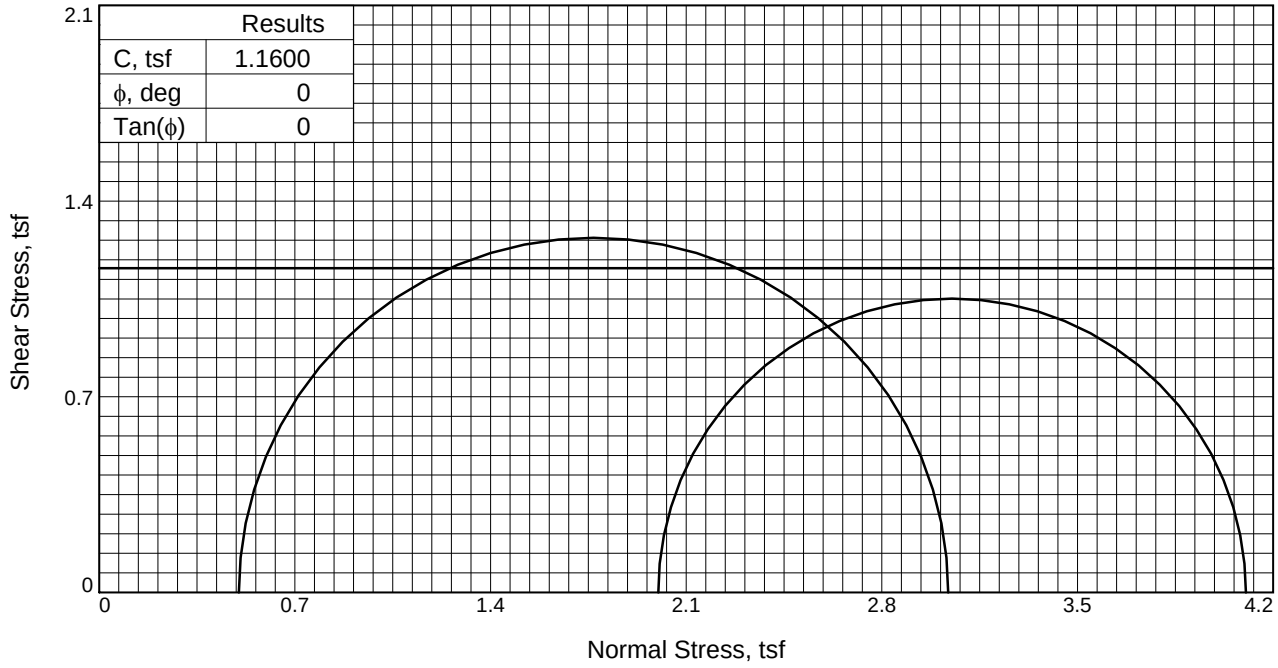
Client: KLJ Engineering LLC

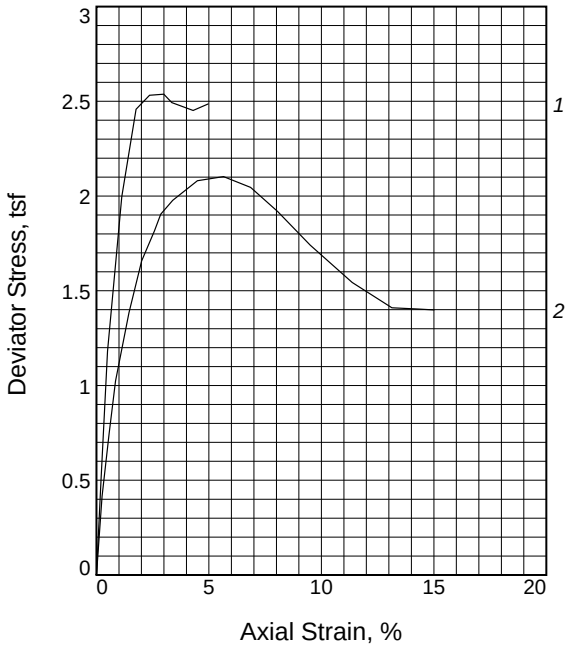
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-120 **Depth:** 7-9' **Sample Number:** TW-519

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2
Initial	Water Content, %	31.3	31.5
	Dry Density, pcf	89.8	90.0
	Saturation, %	96.3	97.5
	Void Ratio	0.8773	0.8727
	Diameter, in.	1.419	1.420
	Height, in.	2.837	2.832
At Test	Water Content, %	31.3	31.5
	Dry Density, pcf	89.8	90.0
	Saturation, %	96.3	97.5
	Void Ratio	0.8773	0.8727
	Diameter, in.	1.419	1.420
	Height, in.	2.837	2.832
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		2.538	2.102
Ult. Stress, tsf		2.451	1.399
σ_1 Failure, tsf		3.037	4.102
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

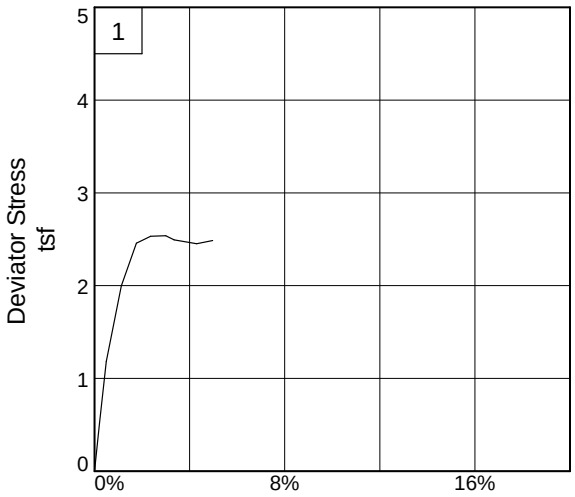
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

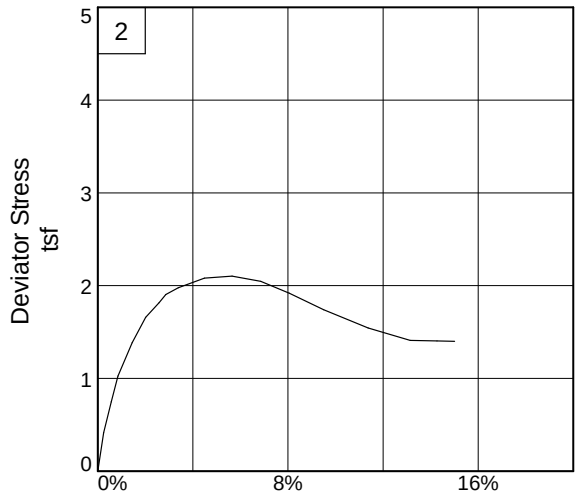
Source of Sample: CAA-120 **Depth:** 17-19'

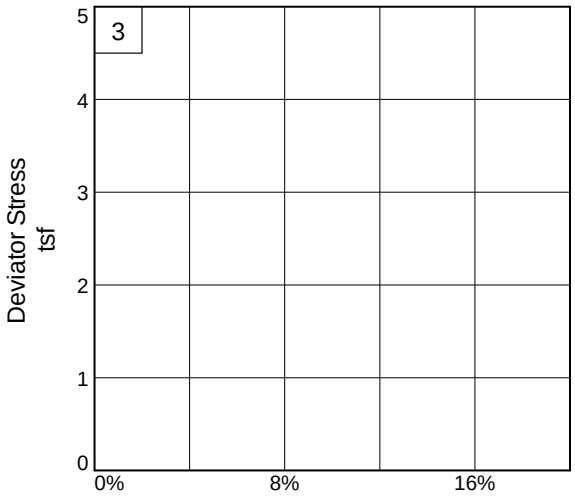
Sample Number: TW-523

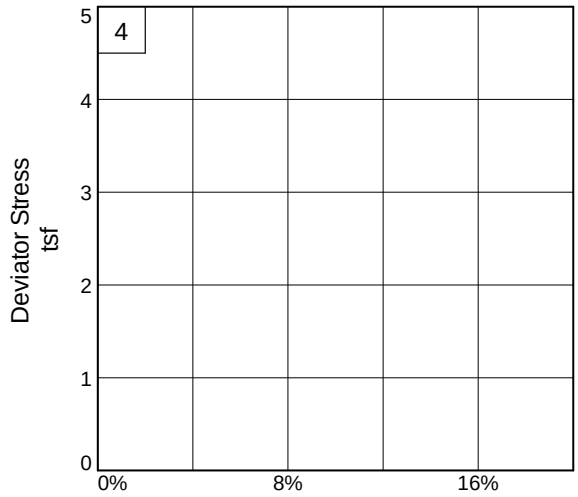
Proj. No.: B2009724 **Date Sampled:** 12/31/2020

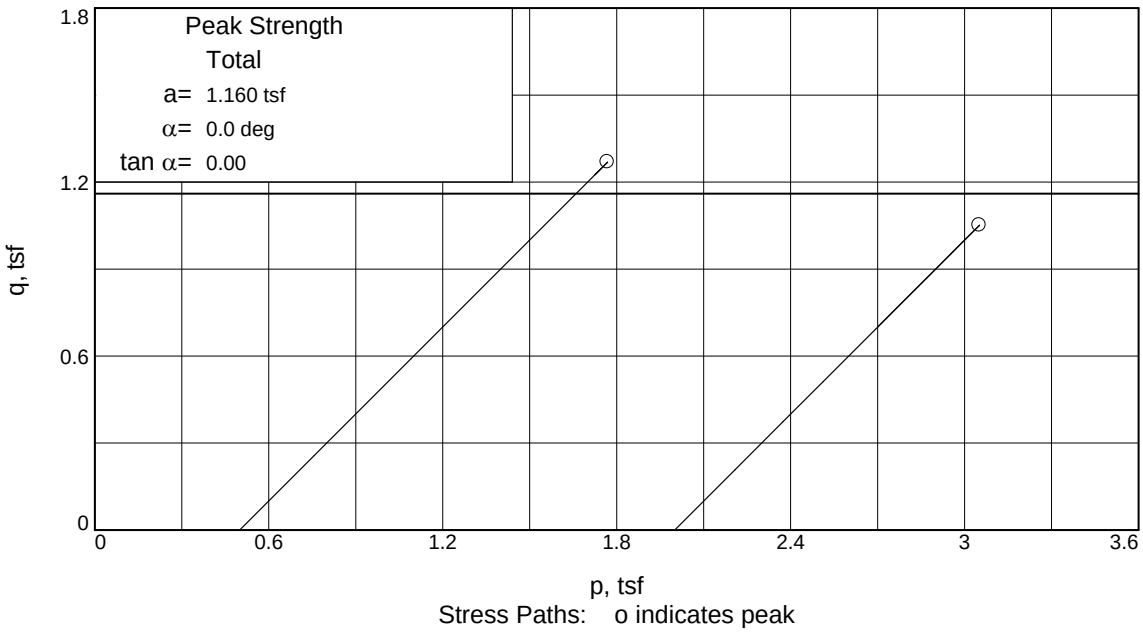
BRAUN INTERTEC











Stress Paths: o indicates peak

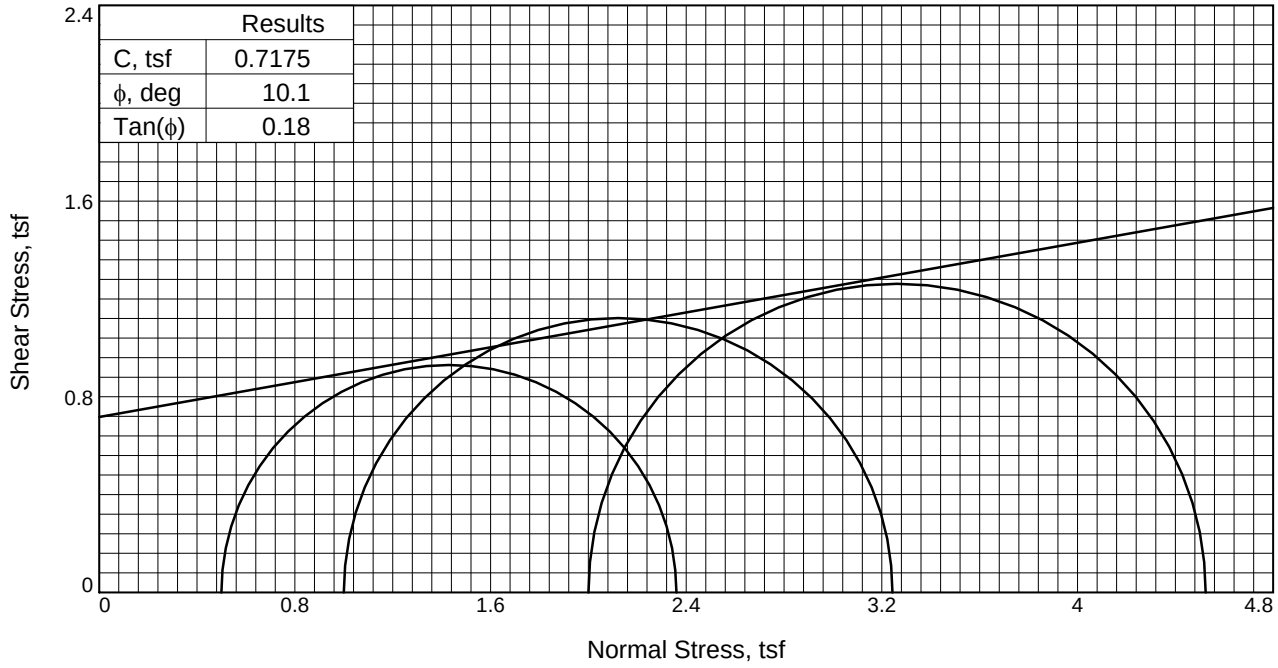
Client: KLJ Engineering LLC

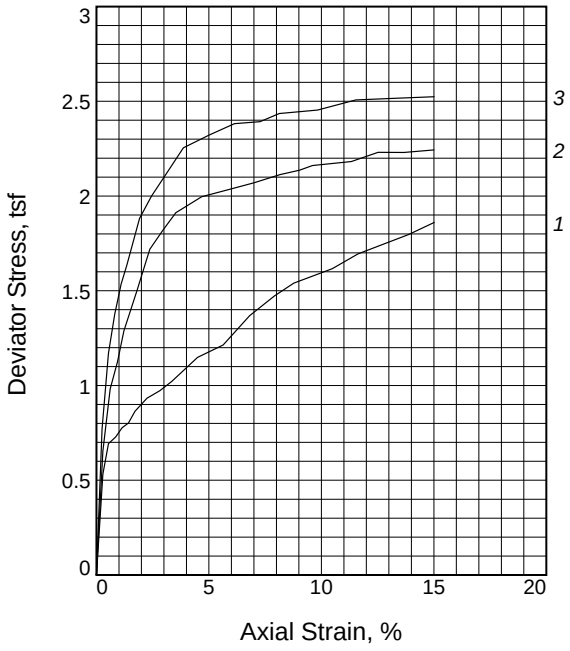
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-120 **Depth:** 17-19' **Sample Number:** TW-523

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	24.2	28.7	31.5
	Dry Density, pcf	101.0	94.9	90.7
	Saturation, %	97.9	99.9	99.3
	Void Ratio	0.6687	0.7758	0.8576
	Diameter, in.	1.400	1.397	1.397
	Height, in.	2.804	2.780	2.818
At Test	Water Content, %	24.2	28.7	31.5
	Dry Density, pcf	101.0	94.9	90.7
	Saturation, %	97.9	99.9	99.3
	Void Ratio	0.6687	0.7758	0.8576
	Diameter, in.	1.400	1.397	1.397
	Height, in.	2.804	2.780	2.818
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.860	2.243	2.524
Ult. Stress, tsf		1.860	2.243	2.524
σ_1 Failure, tsf		2.360	3.244	4.524
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY with SAND(CH), gray and brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

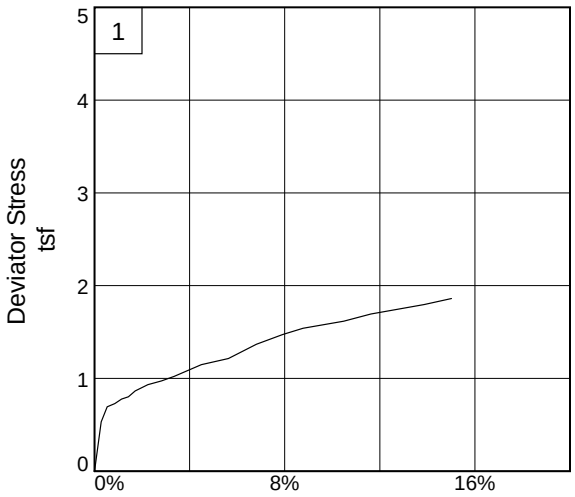
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

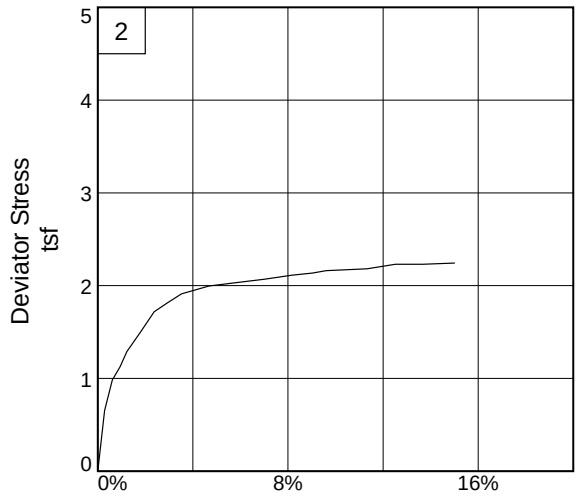
Source of Sample: CAA-122 **Depth:** 7-9'

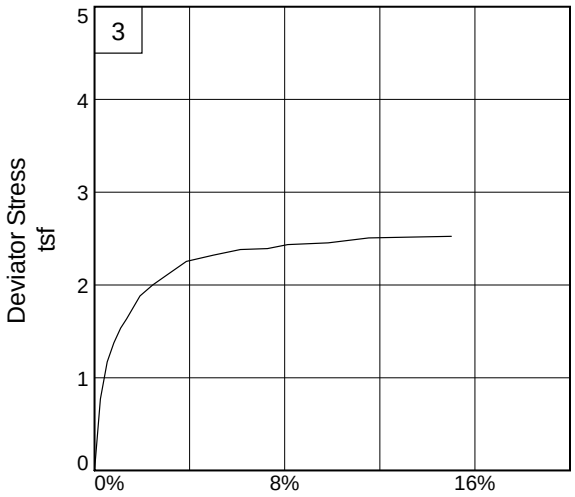
Sample Number: TW-507

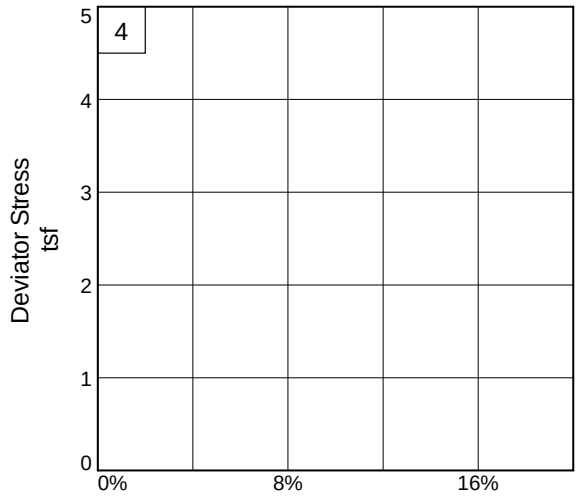
Proj. No.: B2009724 **Date Sampled:** 12/29/2020

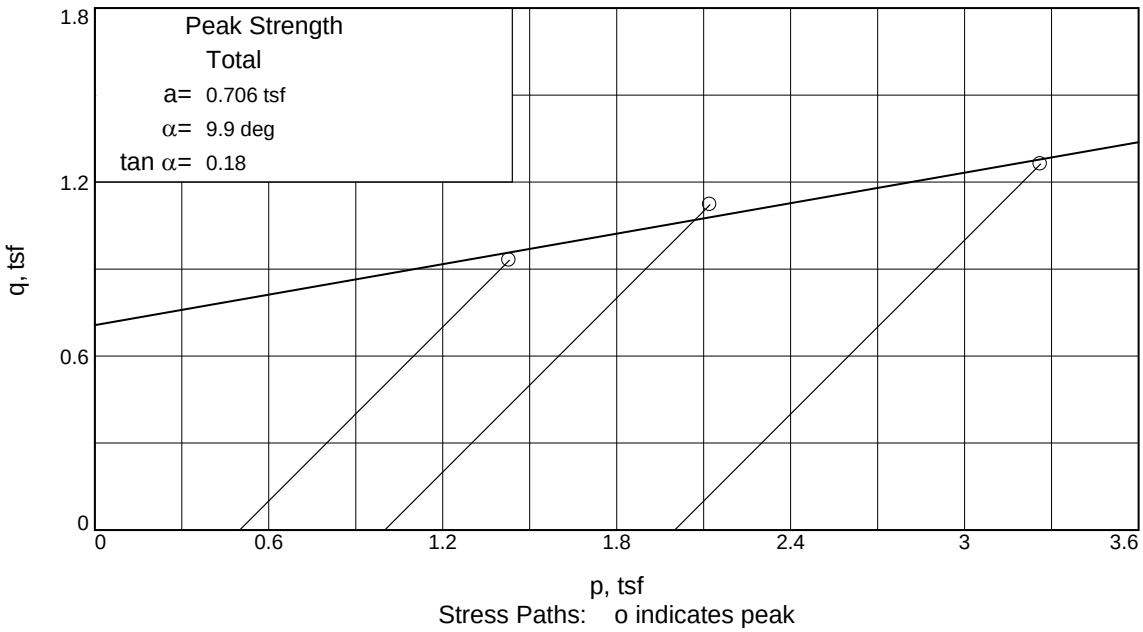
BRAUN INTERTEC











Stress Paths: o indicates peak

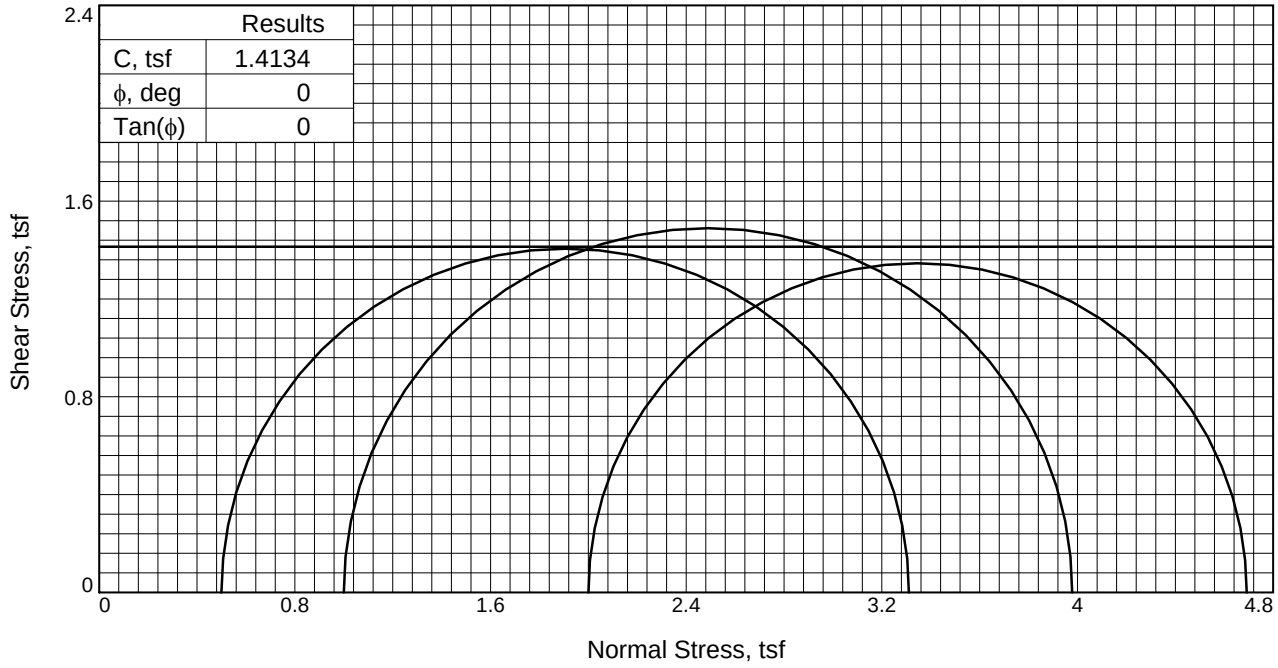
Client: KLJ Engineering LLC

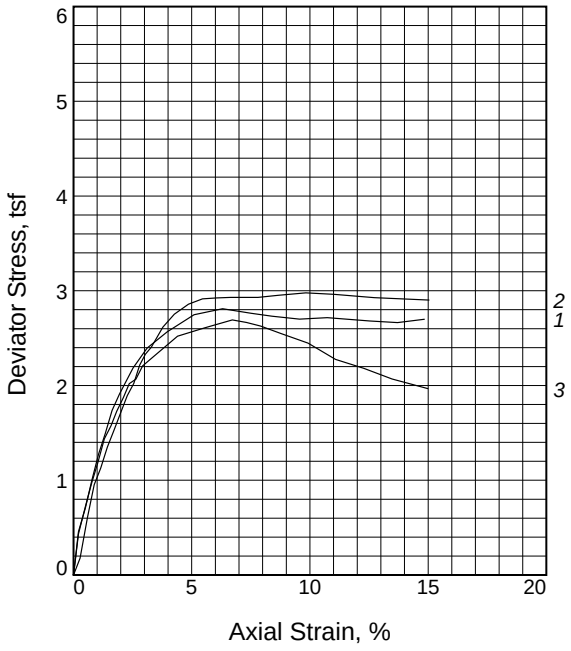
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-122 **Depth:** 7-9' **Sample Number:** TW-507

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	23.8	22.8	23.6
	Dry Density, pcf	99.3	100.8	99.5
	Saturation, %	92.0	91.6	92.1
	Void Ratio	0.6973	0.6719	0.6936
	Diameter, in.	1.450	1.456	1.421
	Height, in.	2.824	2.860	2.842
At Test	Water Content, %	23.8	22.8	23.6
	Dry Density, pcf	99.3	100.8	99.5
	Saturation, %	92.0	91.6	92.1
	Void Ratio	0.6973	0.6719	0.6936
	Diameter, in.	1.450	1.456	1.421
	Height, in.	2.824	2.860	2.842
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.811	2.978	2.692
Ult. Stress, tsf		2.664	2.902	1.967
σ_1 Failure, tsf		3.310	3.978	4.692
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY with SAND (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

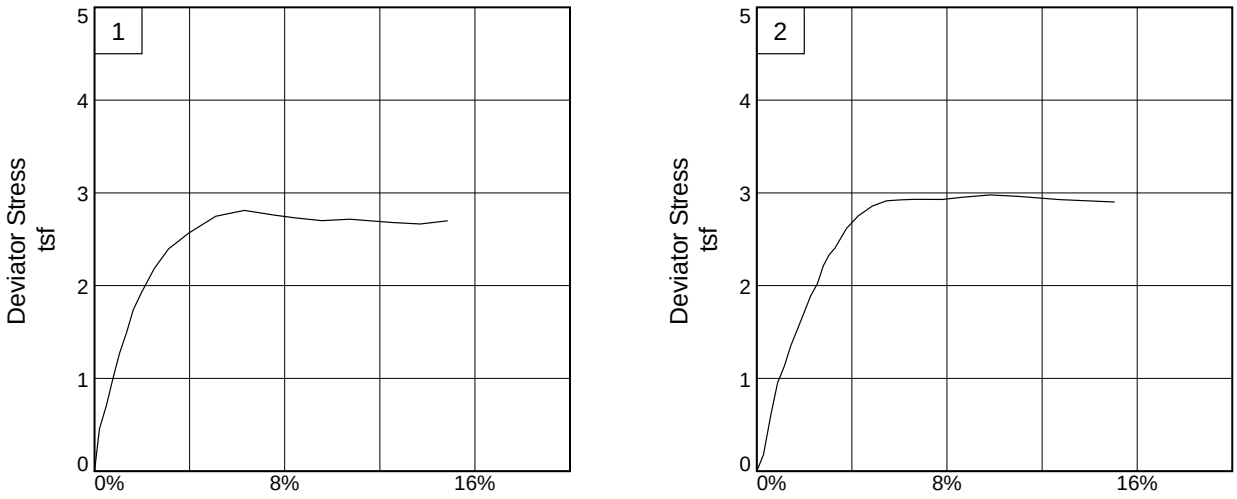
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

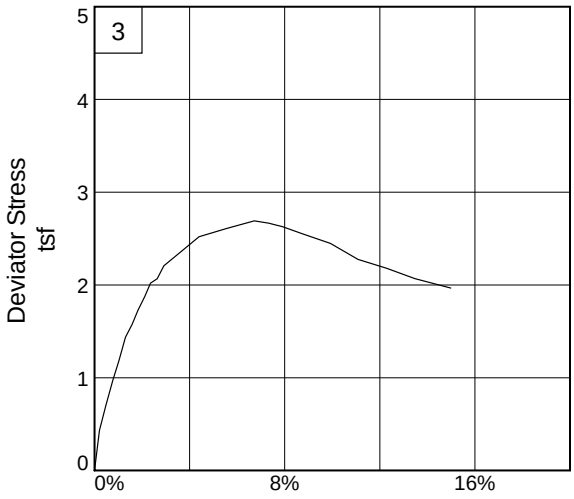
Source of Sample: GDRL-124 **Depth:** 7-9'

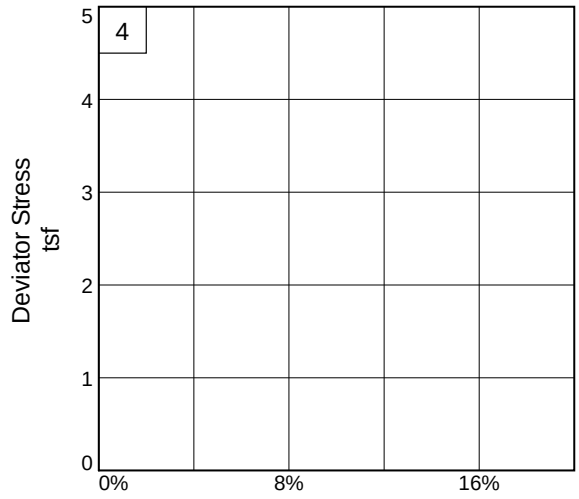
Sample Number: TW-5003

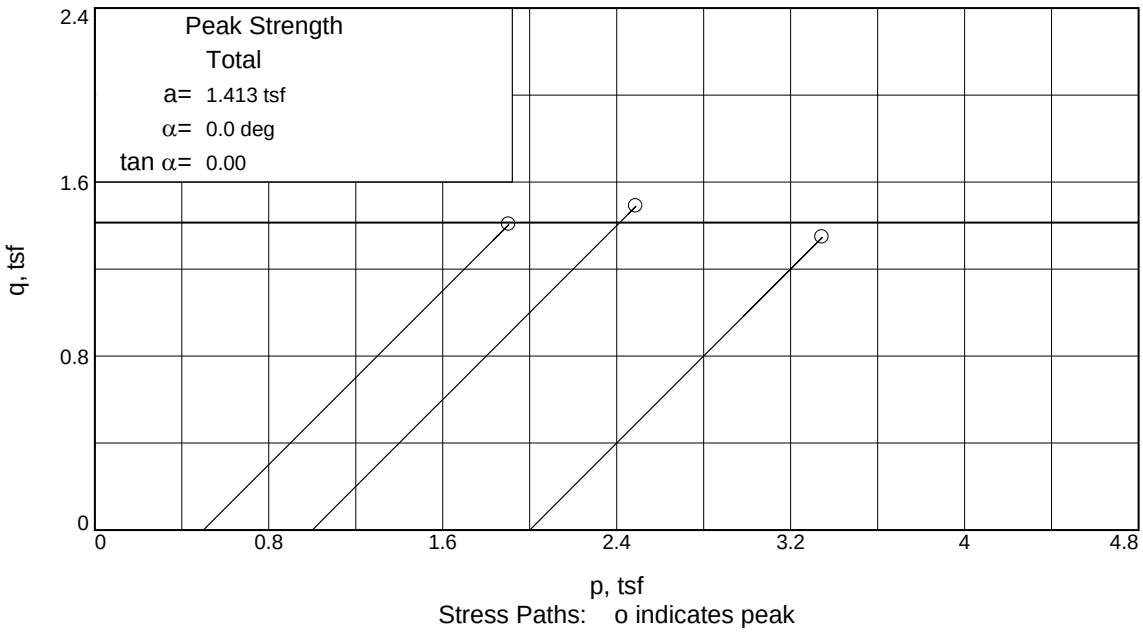
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

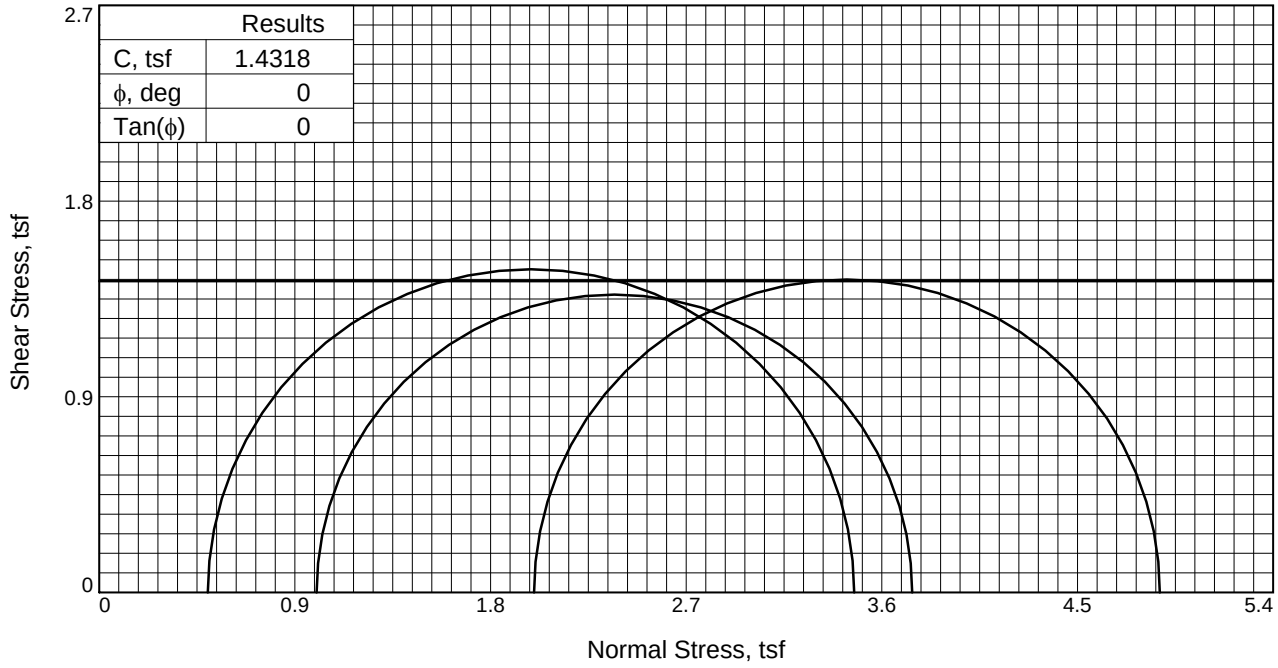
Client: KLJ Engineering LLC

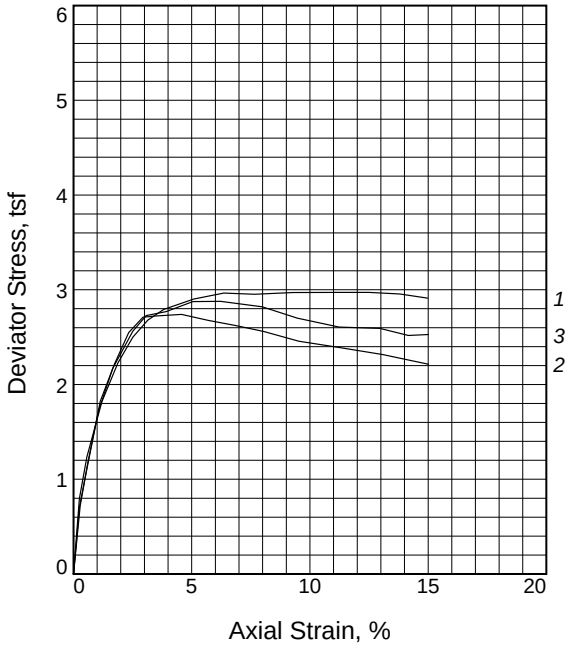
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-124 **Depth:** 7-9' **Sample Number:** TW-5003

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	32.2	31.3	31.5
	Dry Density, pcf	88.2	90.1	88.4
	Saturation, %	95.3	97.3	93.7
	Void Ratio	0.9120	0.8699	0.9066
	Diameter, in.	1.421	1.416	1.418
	Height, in.	2.832	2.823	2.832
At Test	Water Content, %	32.2	31.3	31.5
	Dry Density, pcf	88.2	90.1	88.4
	Saturation, %	95.3	97.3	93.7
	Void Ratio	0.9120	0.8699	0.9066
	Diameter, in.	1.421	1.416	1.418
	Height, in.	2.832	2.823	2.832
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.973	2.740	2.878
Ult. Stress, tsf		2.912	2.214	2.517
σ_1 Failure, tsf		3.473	3.740	4.878
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY with SAND (CH), brown to gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

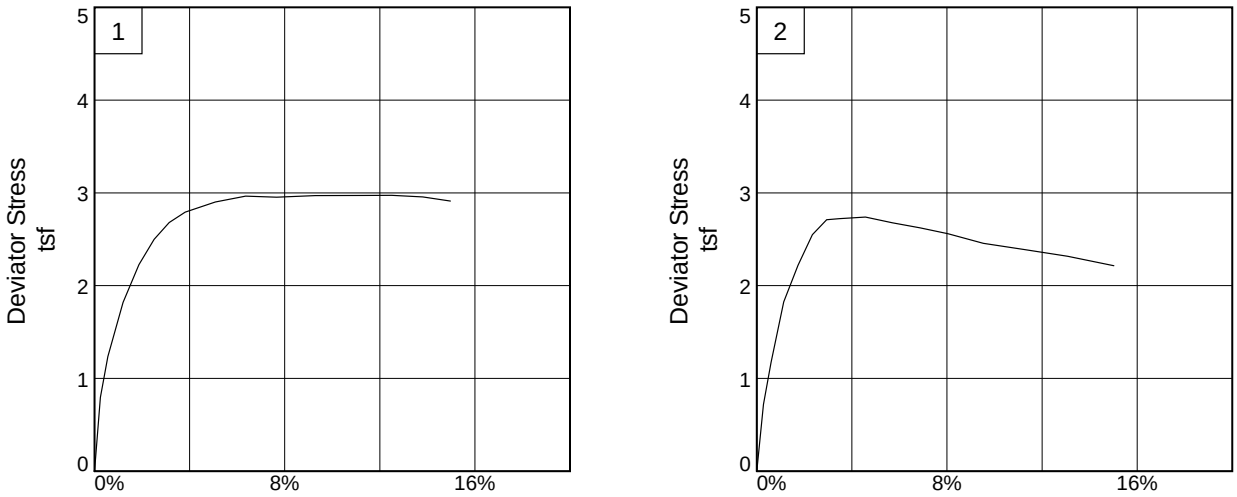
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

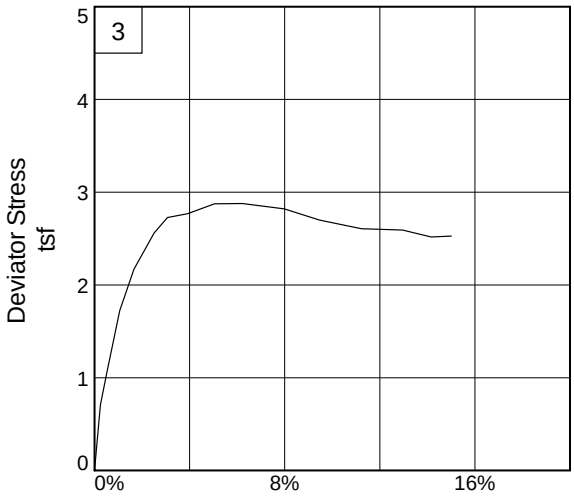
Source of Sample: CAA-125 **Depth:** 17-19'

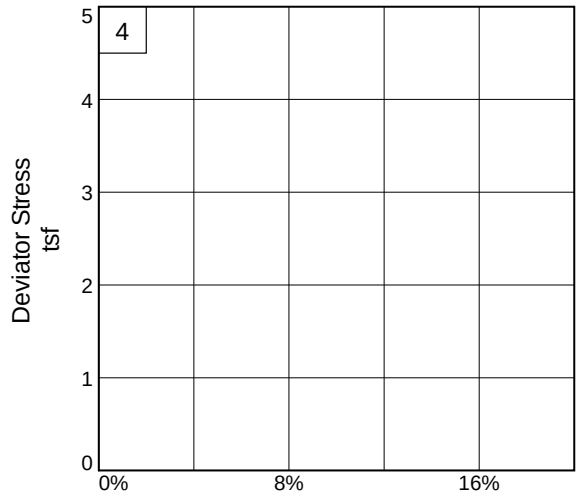
Sample Number: TW-5010

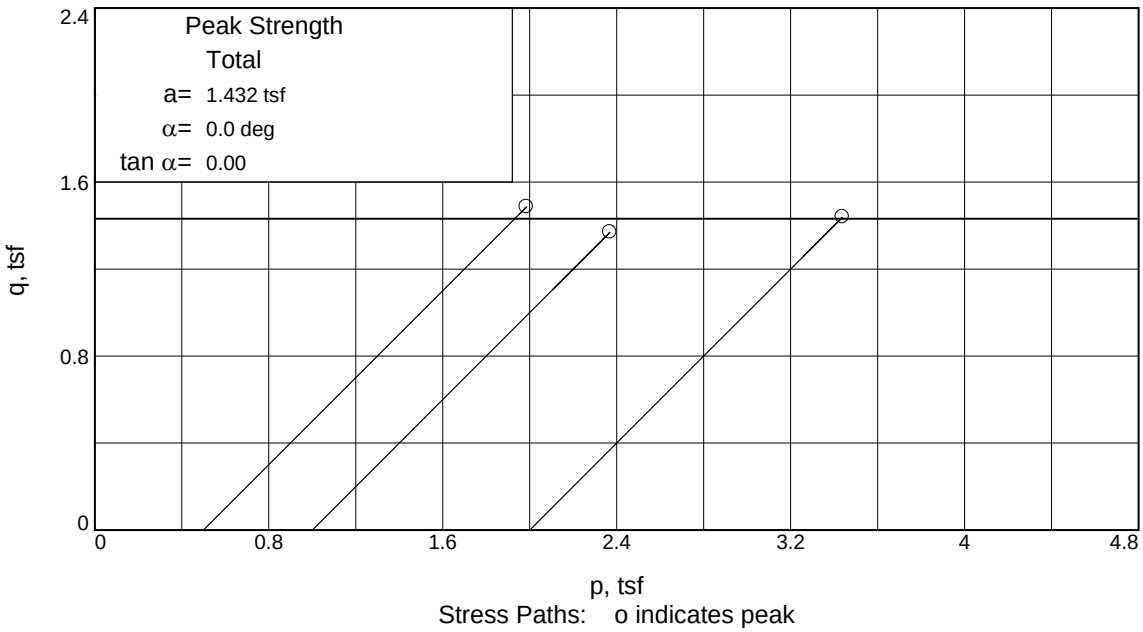
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

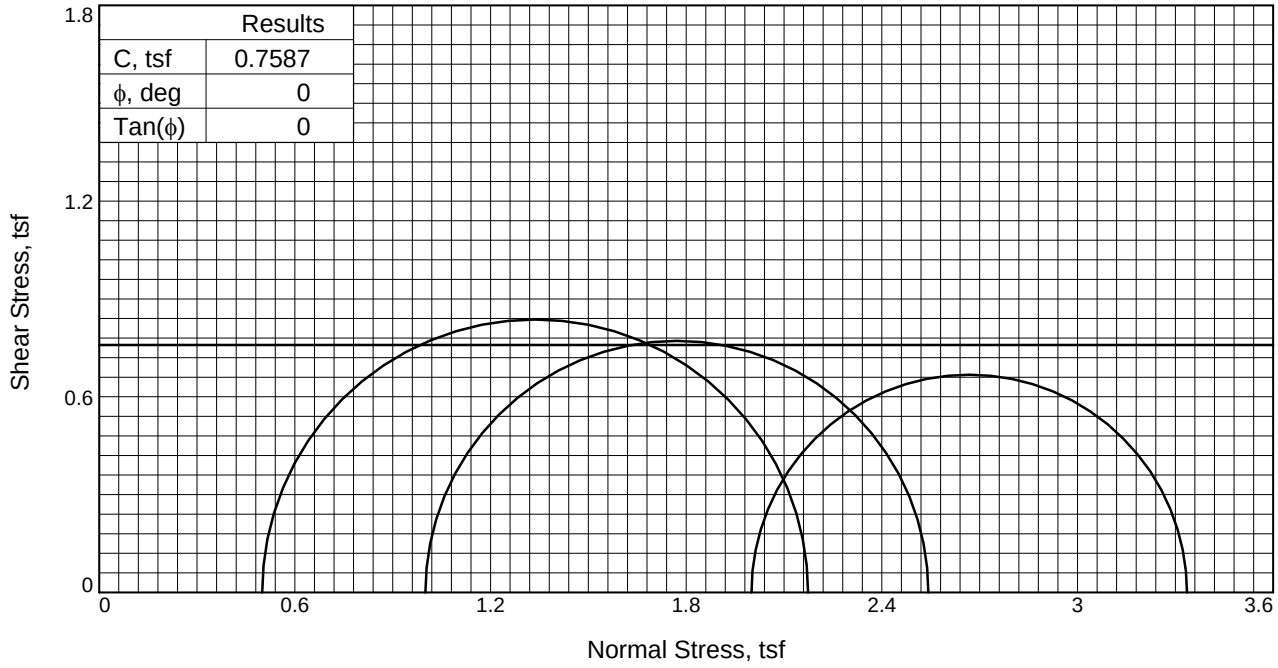
Client: KLJ Engineering LLC

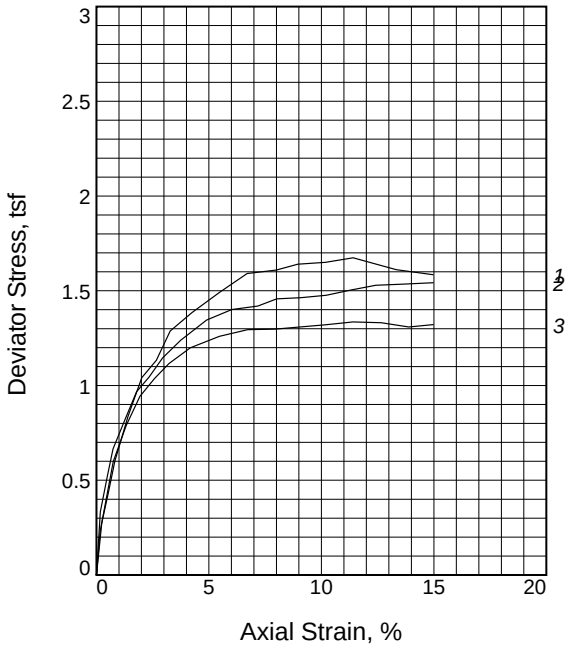
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-125 **Depth:** 17-19' **Sample Number:** TW-5010

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	31.5	32.4	33.9
	Dry Density, pcf	90.8	86.5	85.1
	Saturation, %	99.5	92.3	93.3
	Void Ratio	0.8554	0.9496	0.9803
	Diameter, in.	1.444	1.468	1.466
	Height, in.	2.926	2.858	2.946
At Test	Water Content, %	31.5	32.4	33.9
	Dry Density, pcf	90.8	86.5	85.1
	Saturation, %	99.5	92.3	93.3
	Void Ratio	0.8554	0.9496	0.9803
	Diameter, in.	1.444	1.468	1.466
	Height, in.	2.926	2.858	2.946
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.674	1.543	1.335
Ult. Stress, tsf		1.584	1.543	1.309
σ_1 Failure, tsf		2.174	2.543	3.336
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown to gray

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

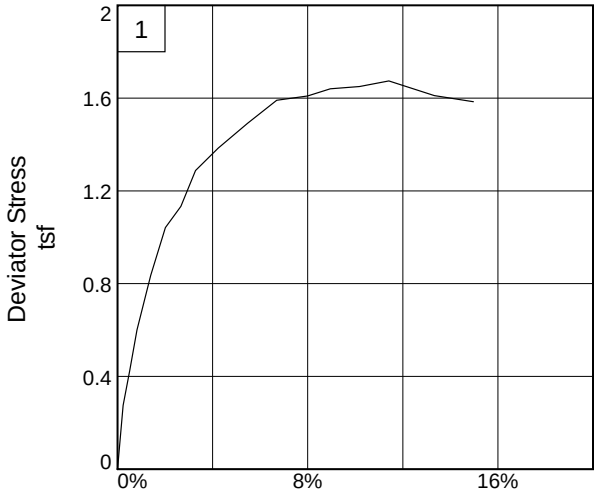
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

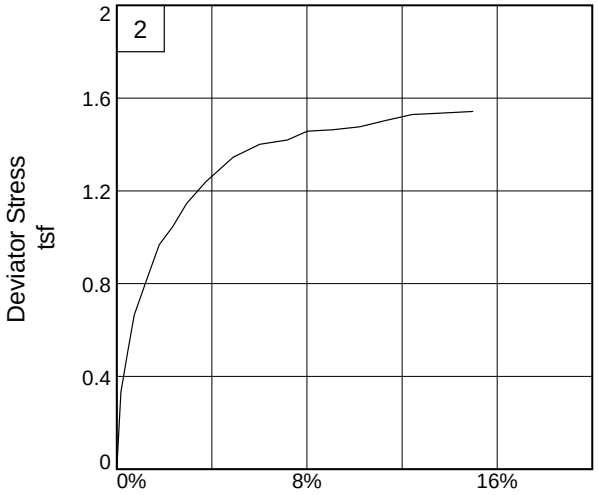
Source of Sample: GDRL-127 **Depth:** 7-9'

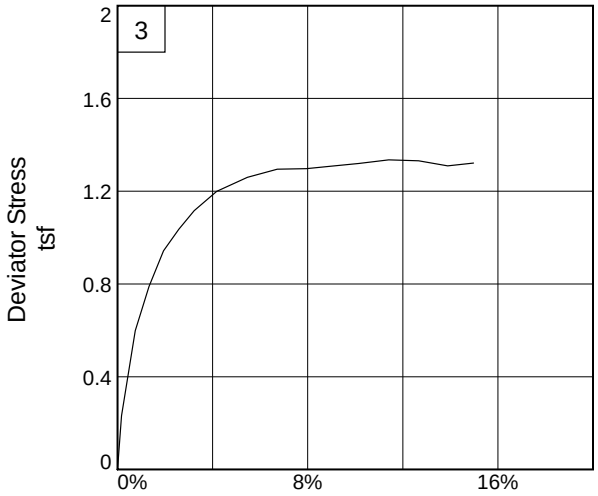
Sample Number: TW-5018

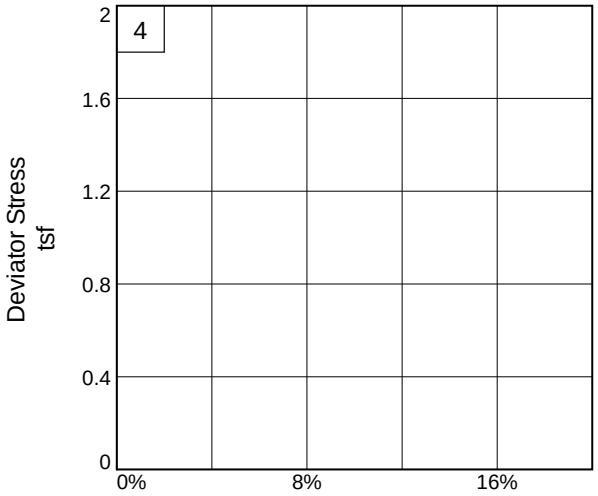
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

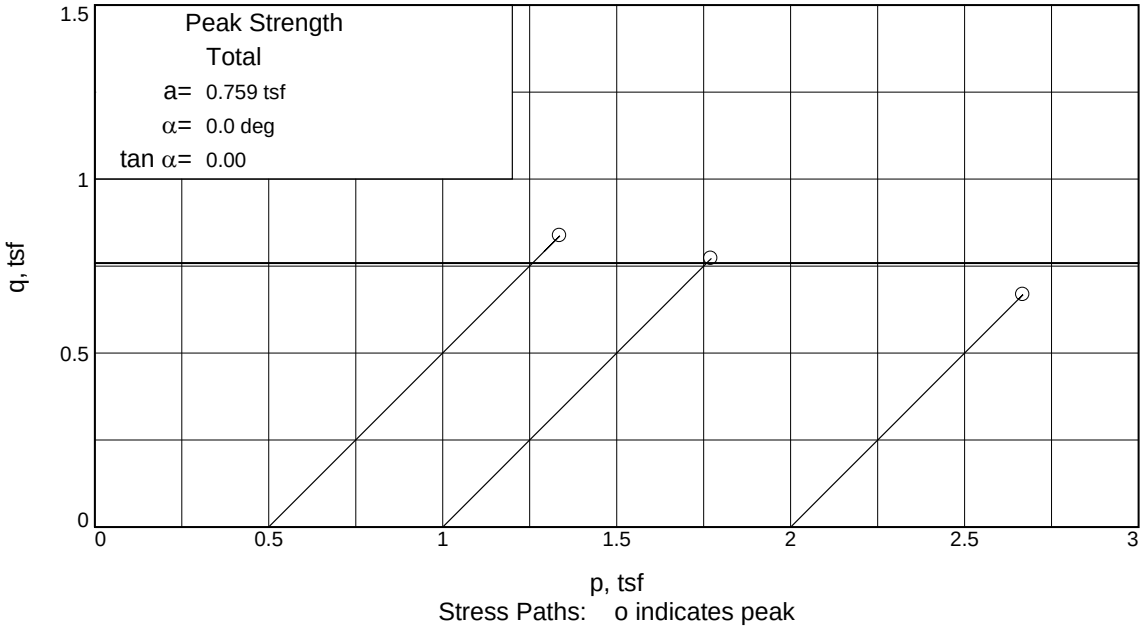
BRAUN INTERTEC











Stress Paths: o indicates peak

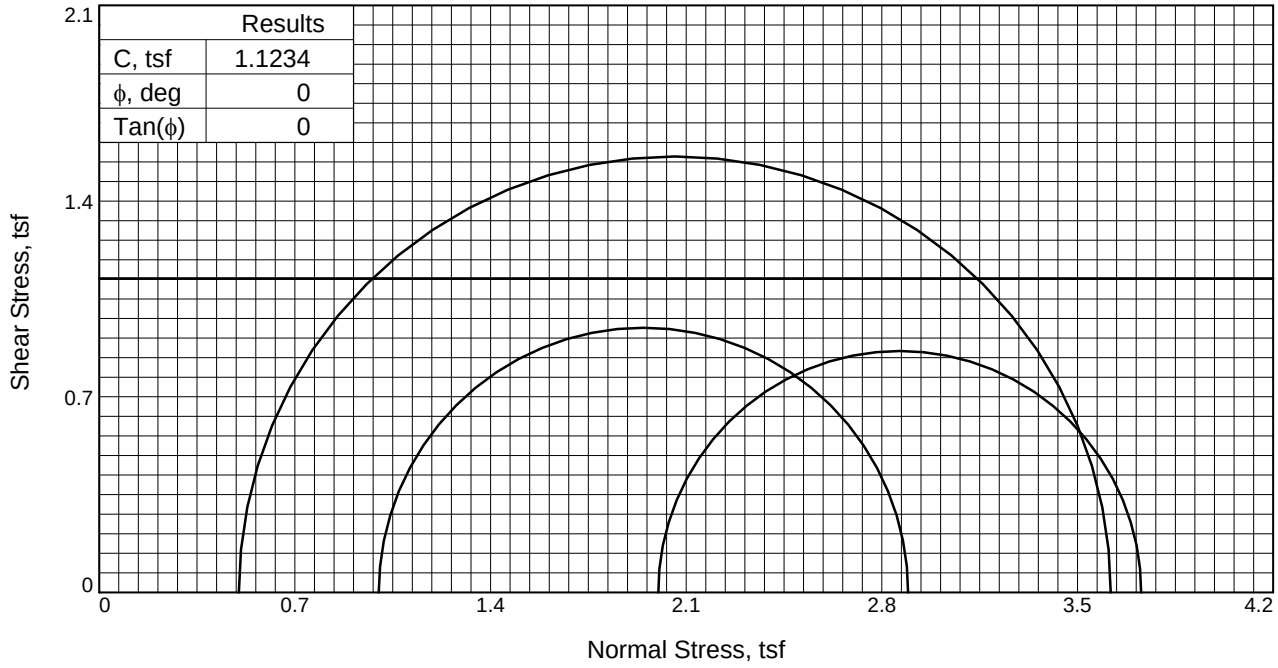
Client: KLJ Engineering LLC

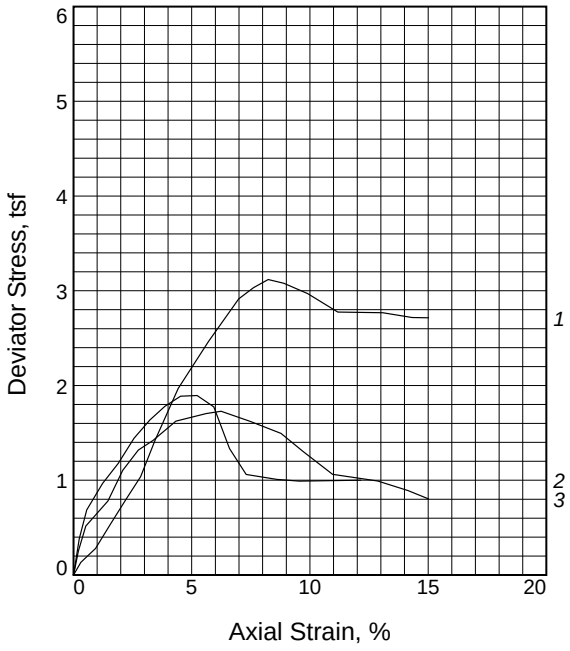
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-127 **Depth:** 7-9' **Sample Number:** TW-5018

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	29.1	15.9	36.9
	Dry Density, pcf	91.0	103.3	83.5
	Saturation, %	92.0	68.0	97.7
	Void Ratio	0.8522	0.6324	1.0190
	Diameter, in.	1.404	1.436	1.420
	Height, in.	2.890	2.848	2.884
At Test	Water Content, %	29.1	15.9	36.9
	Dry Density, pcf	91.0	103.3	83.5
	Saturation, %	92.0	68.0	97.7
	Void Ratio	0.8522	0.6324	1.0190
	Diameter, in.	1.404	1.436	1.420
	Height, in.	2.890	2.848	2.884
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		3.119	1.894	1.728
Ult. Stress, tsf		2.715	0.991	0.804
σ_1 Failure, tsf		3.619	2.894	3.728
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

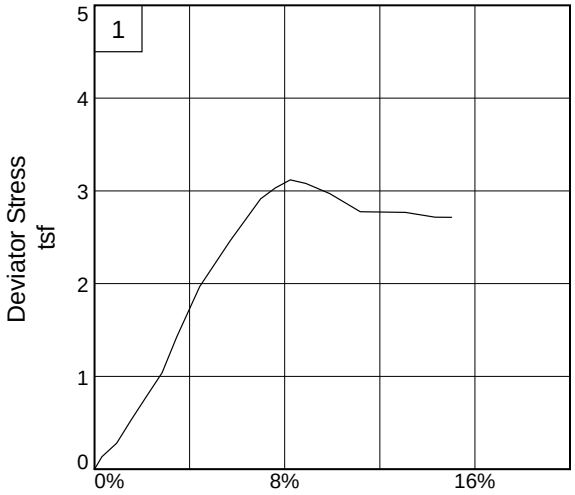
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

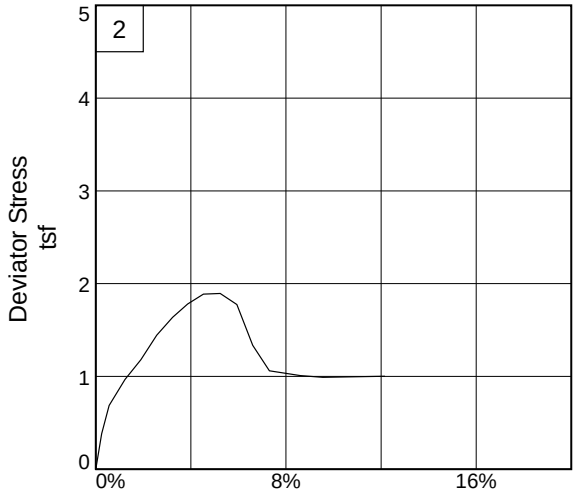
Source of Sample: GDRL-129 **Depth:** 7-9'

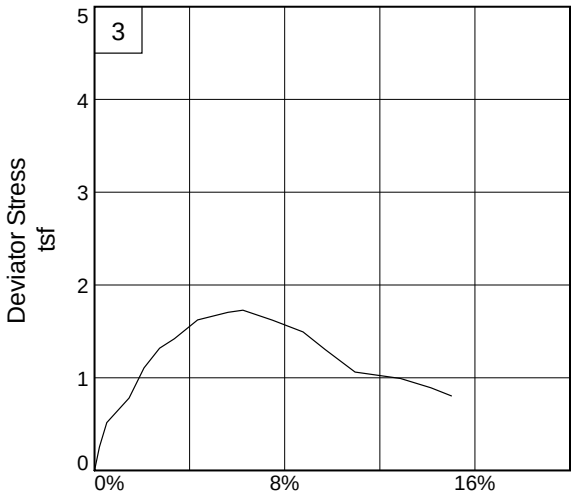
Sample Number: TW-5026

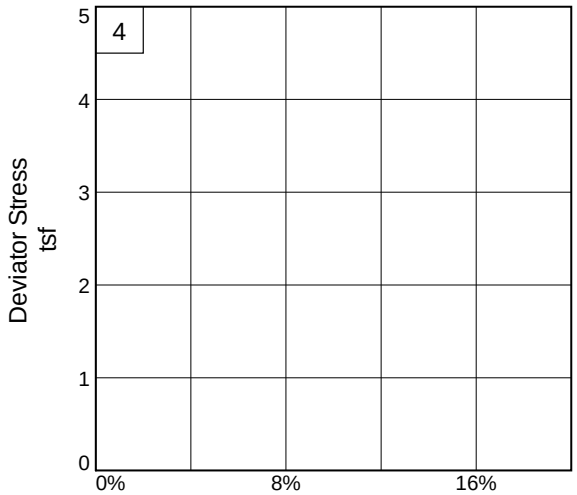
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

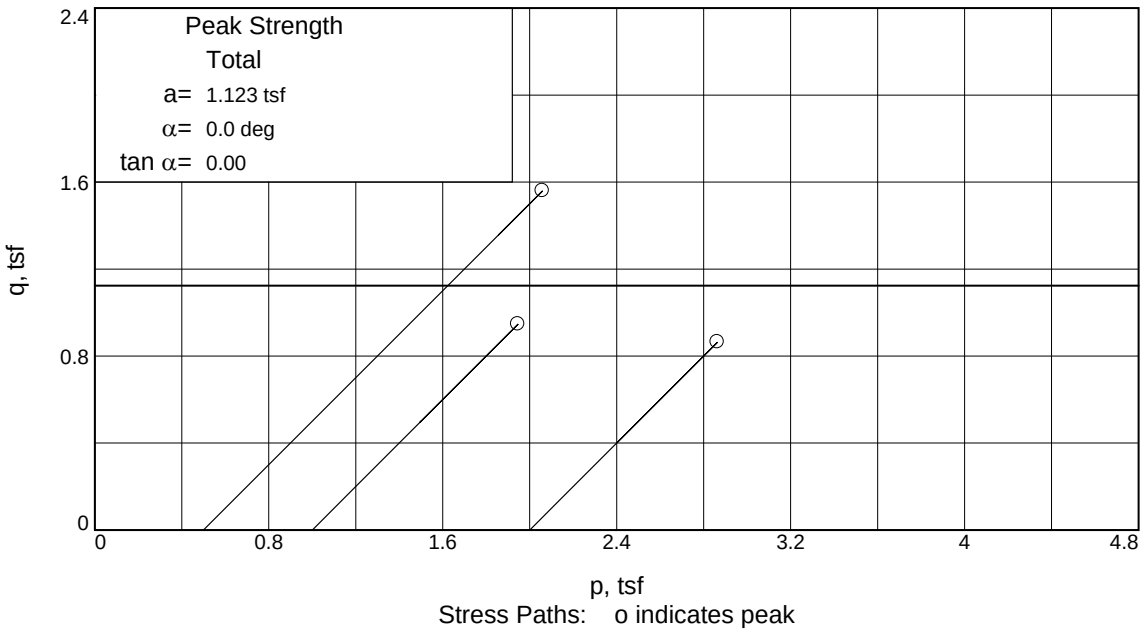
BRAUN INTERTEC











Stress Paths: o indicates peak

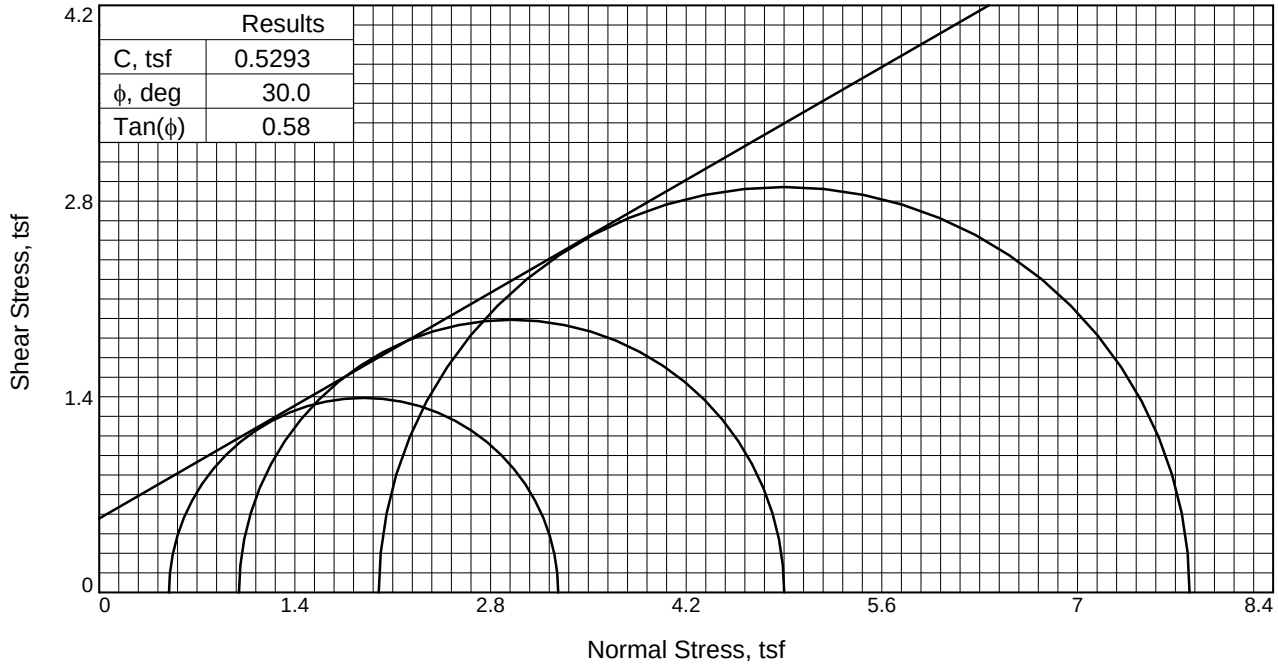
Client: KLJ Engineering LLC

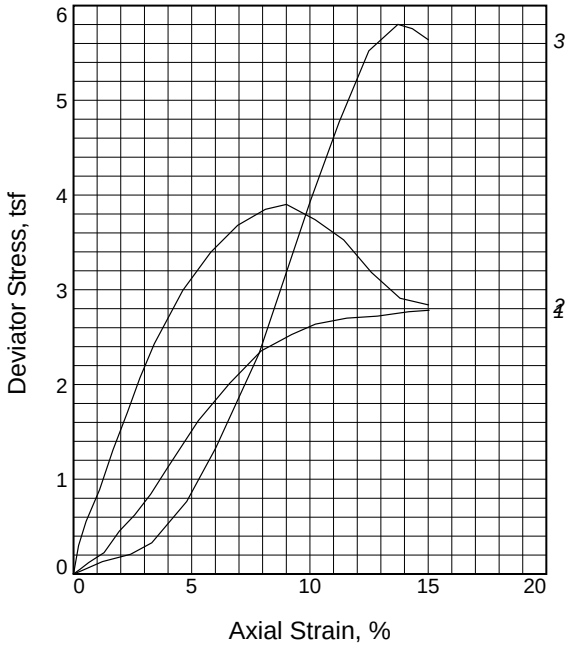
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-129 **Depth:** 7-9' **Sample Number:** TW-5026

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	30.9	31.5	29.1
	Dry Density, pcf	90.4	91.0	93.1
	Saturation, %	96.4	99.8	96.9
	Void Ratio	0.8652	0.8514	0.8098
	Diameter, in.	1.403	1.430	1.420
	Height, in.	2.785	2.809	2.777
At Test	Water Content, %	30.9	31.5	29.1
	Dry Density, pcf	90.4	91.0	93.1
	Saturation, %	96.4	99.8	96.9
	Void Ratio	0.8652	0.8514	0.8098
	Diameter, in.	1.403	1.430	1.420
	Height, in.	2.785	2.809	2.777
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.784	3.901	5.802
Ult. Stress, tsf		2.784	2.839	5.637
σ_1 Failure, tsf		3.284	4.901	7.802
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: SILT (ML), gray, A-4

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

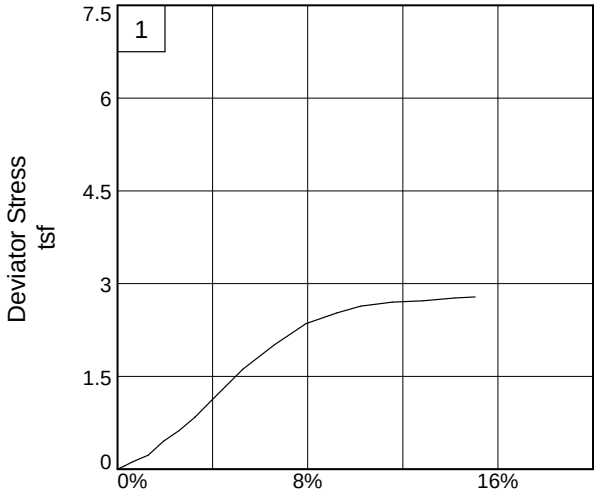
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

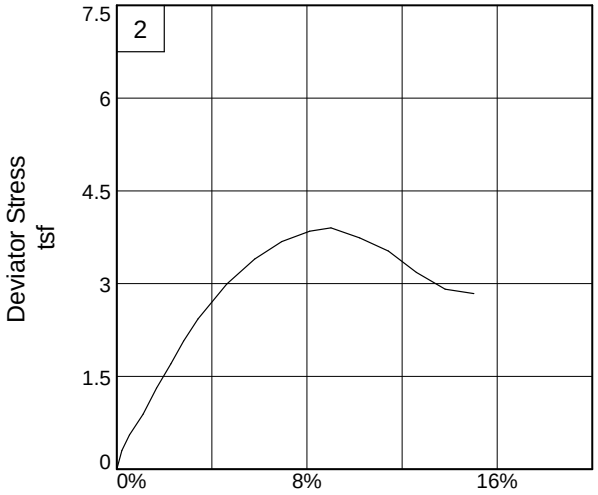
Source of Sample: CAA-131 **Depth:** 7-9'

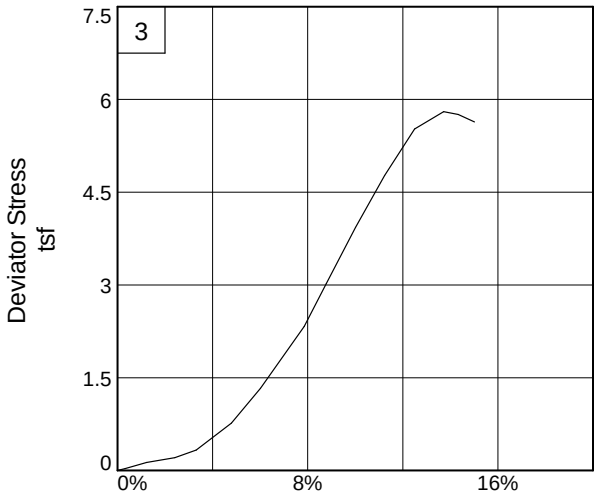
Sample Number: TW-5034

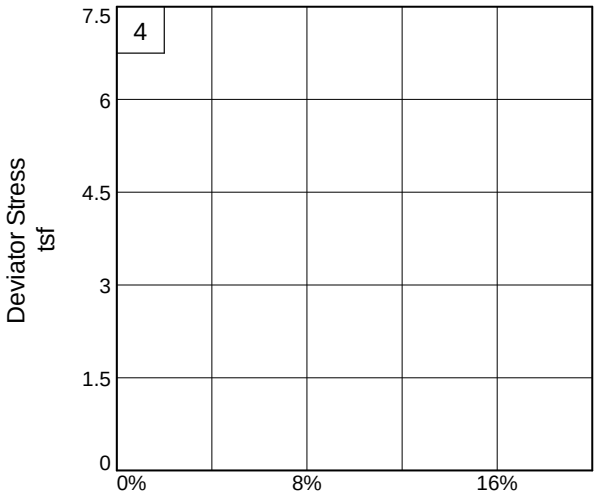
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

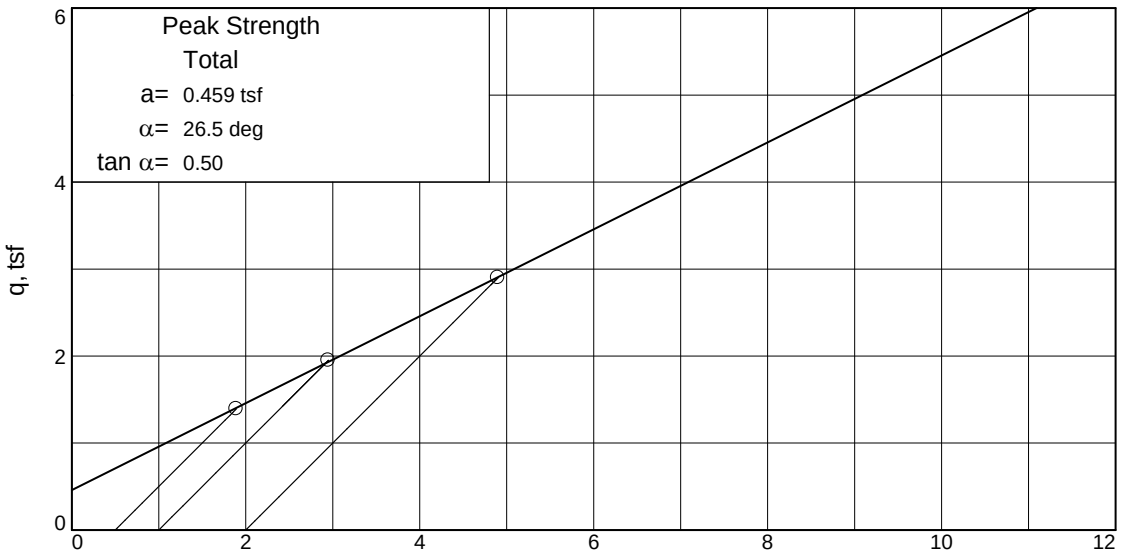
BRAUN INTERTEC











Stress Paths: o indicates peak

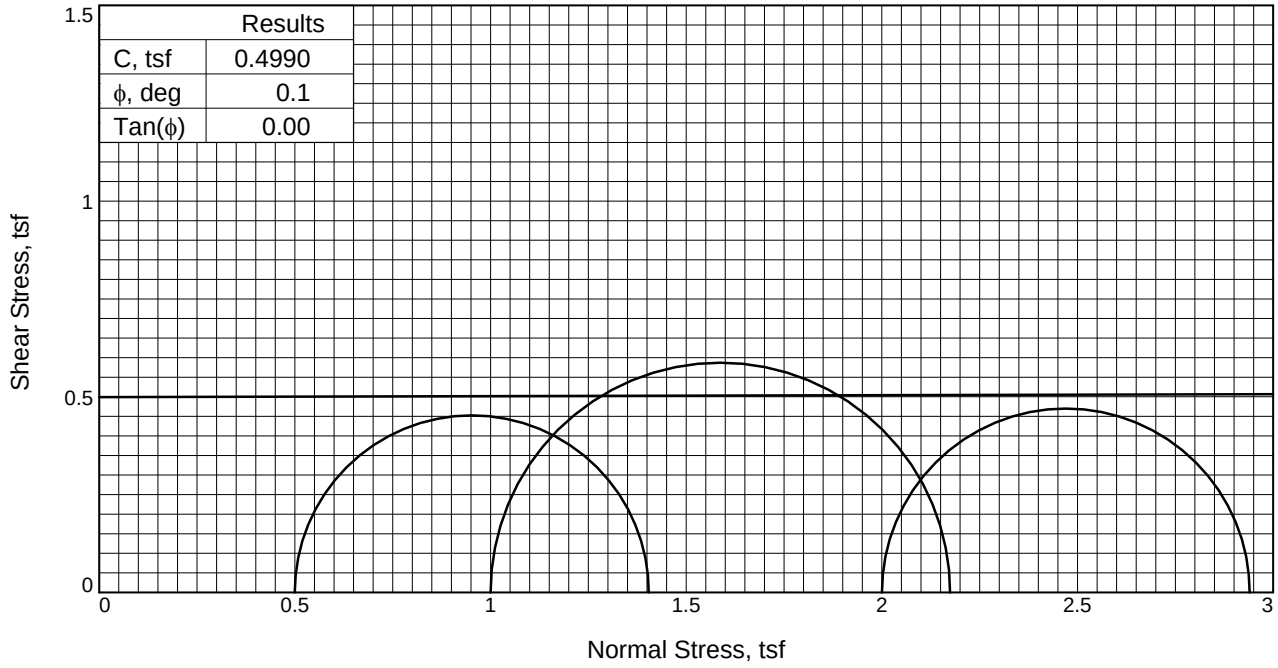
Client: KLJ Engineering LLC

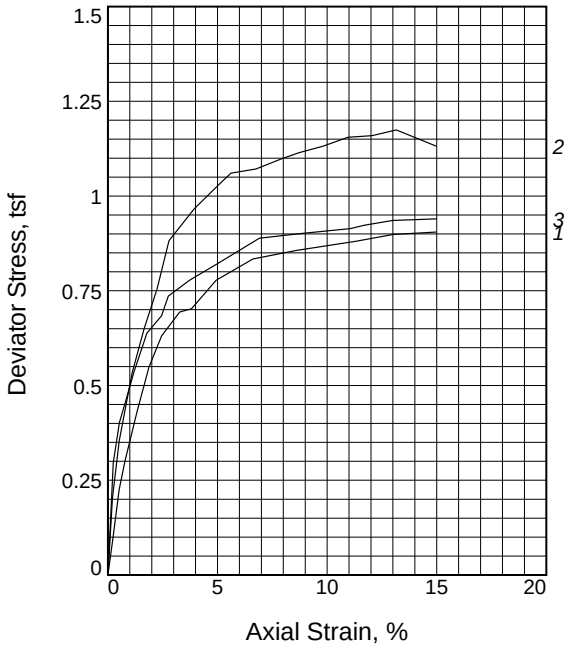
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-131 **Depth:** 7-9' **Sample Number:** TW-5034

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	31.5	30.9	31.7
	Dry Density, pcf	90.7	91.8	89.4
	Saturation, %	99.1	99.8	96.6
	Void Ratio	0.8574	0.8355	0.8854
	Diameter, in.	1.446	1.471	1.460
	Height, in.	2.934	2.904	2.865
At Test	Water Content, %	31.5	30.9	31.7
	Dry Density, pcf	90.7	91.8	89.4
	Saturation, %	99.1	99.8	96.6
	Void Ratio	0.8574	0.8355	0.8854
	Diameter, in.	1.446	1.471	1.460
	Height, in.	2.934	2.904	2.865
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.905	1.174	0.940
Ult. Stress, tsf		0.905	1.132	0.940
σ_1 Failure, tsf		1.404	2.174	2.940
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

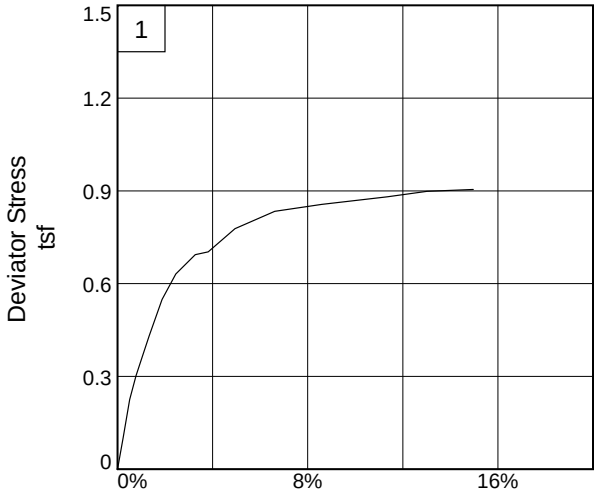
Source of Sample: CAA-131 **Depth:** 17-19'

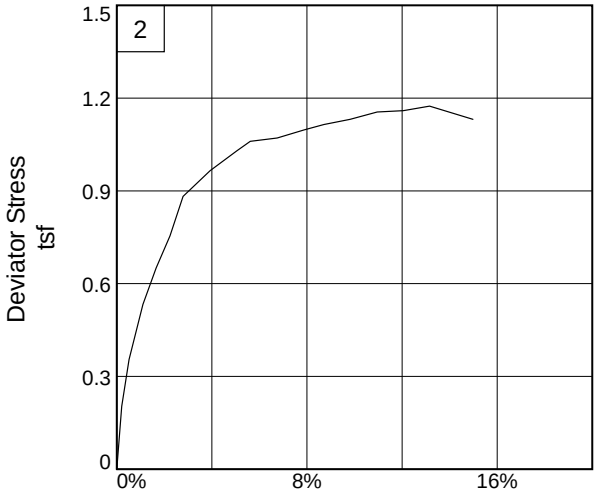
Sample Number: TW-5037

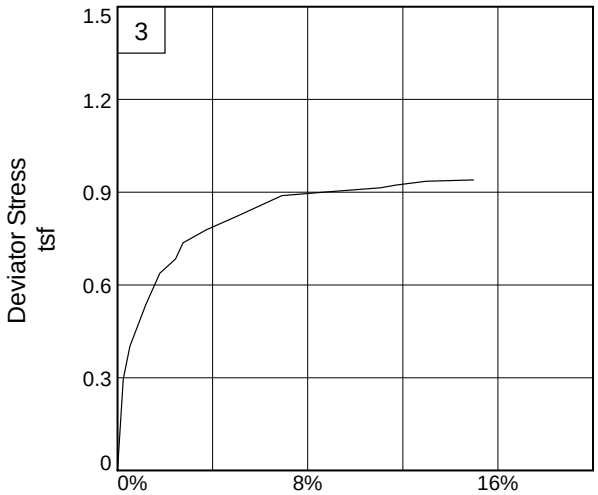
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

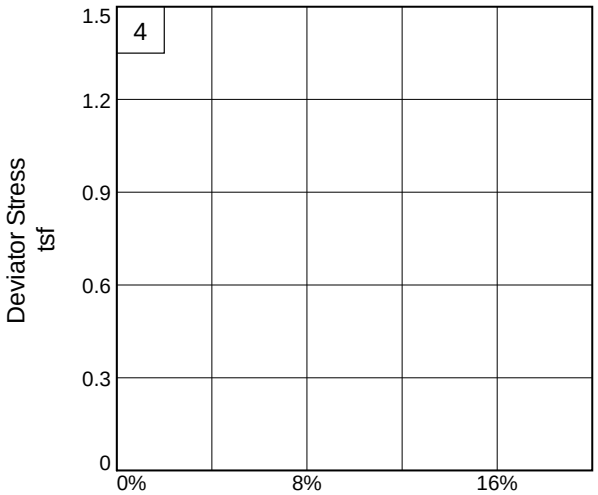
BRAUN INTERTEC

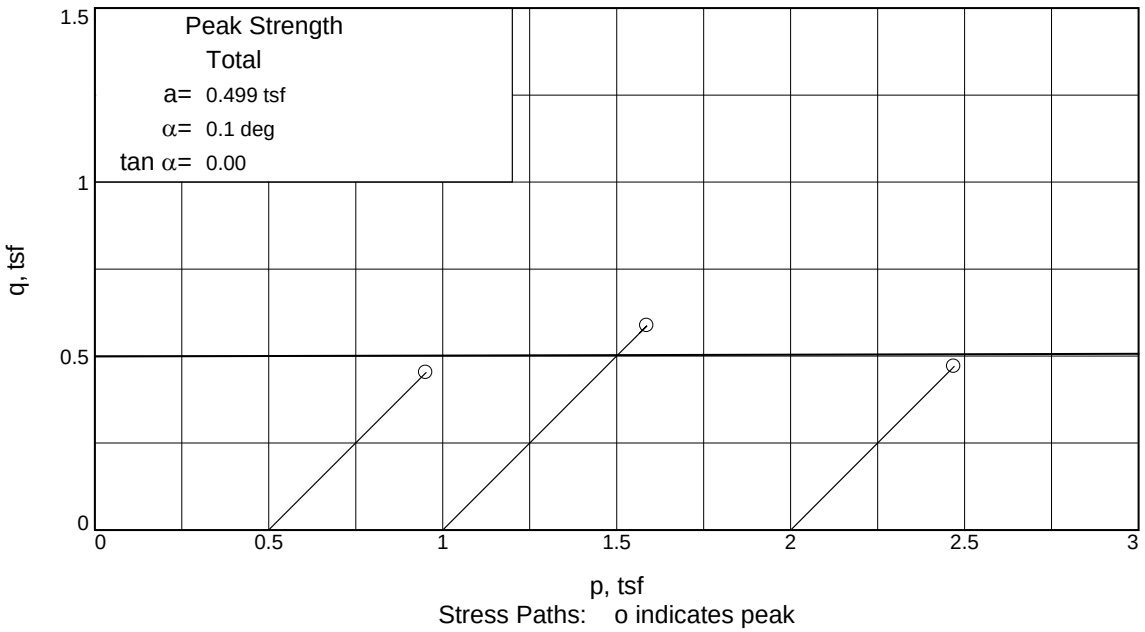
Figure _____











Stress Paths: o indicates peak

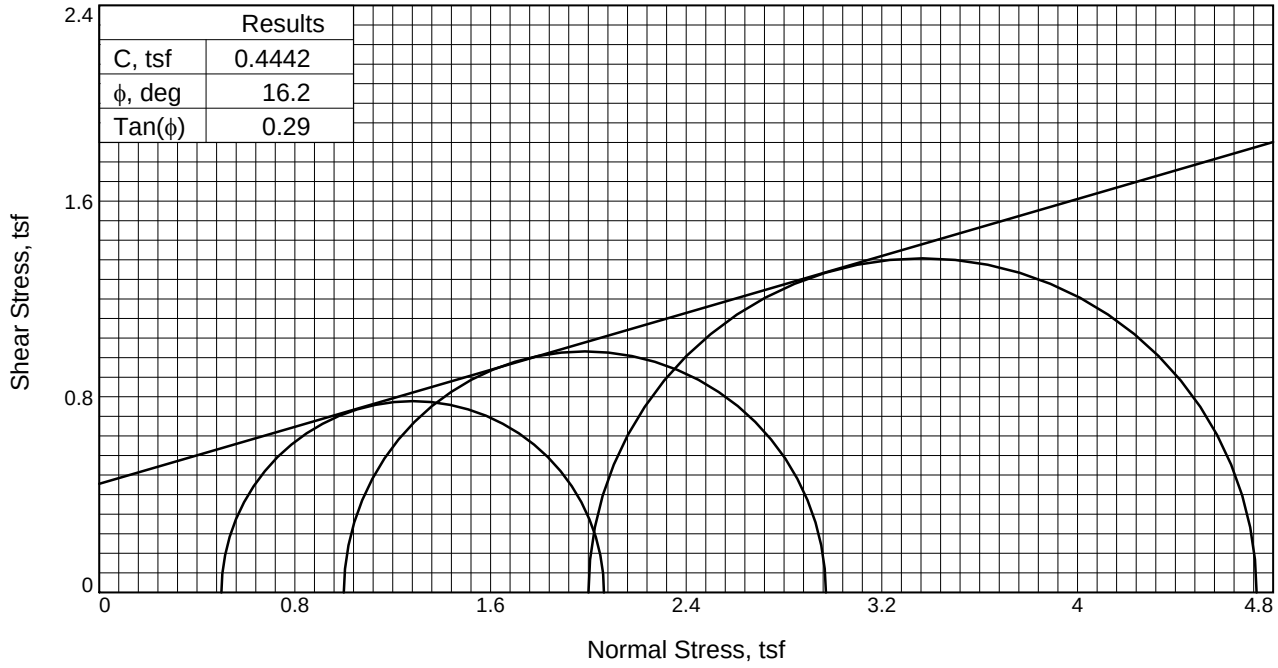
Client: KLJ Engineering LLC

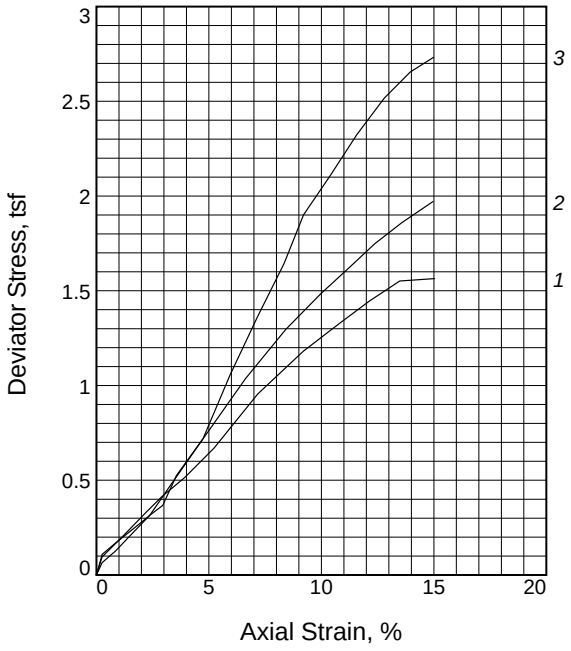
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-131 **Depth:** 17-19' **Sample Number:** TW-5037

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	36.6	29.8	36.4
	Dry Density, pcf	84.0	93.3	84.1
	Saturation, %	98.3	99.9	97.7
	Void Ratio	1.0063	0.8064	1.0047
	Diameter, in.	1.390	1.410	1.410
	Height, in.	2.774	2.747	2.781
At Test	Water Content, %	36.6	29.8	36.4
	Dry Density, pcf	84.0	93.3	84.1
	Saturation, %	98.3	99.9	97.7
	Void Ratio	1.0063	0.8064	1.0047
	Diameter, in.	1.390	1.410	1.410
	Height, in.	2.774	2.747	2.781
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.564	1.971	2.732
Ult. Stress, tsf		1.564	1.971	2.732
σ_1 Failure, tsf		2.064	2.971	4.732
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: SILT (ML), brown, A-4

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

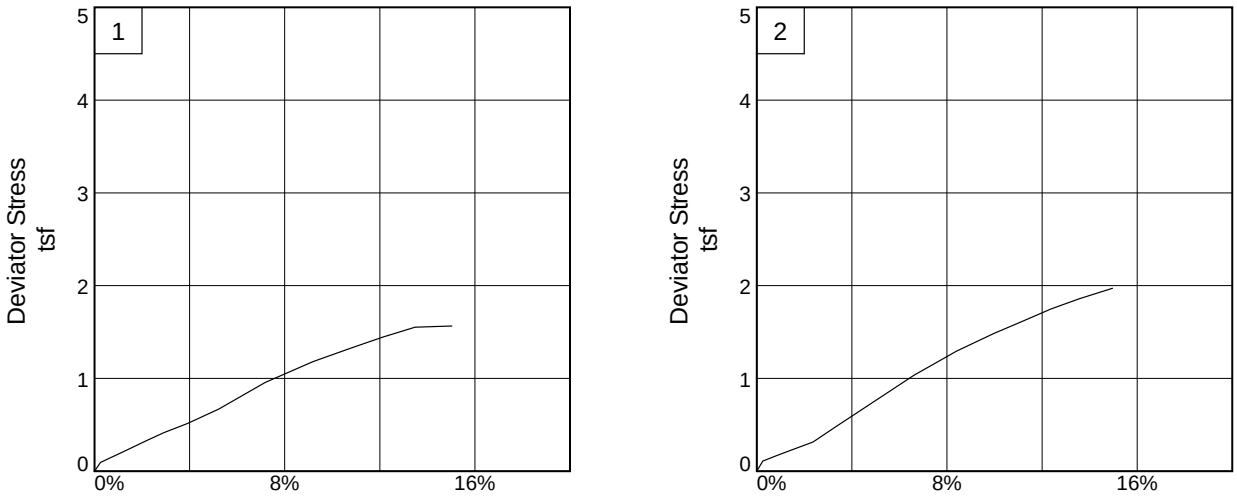
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

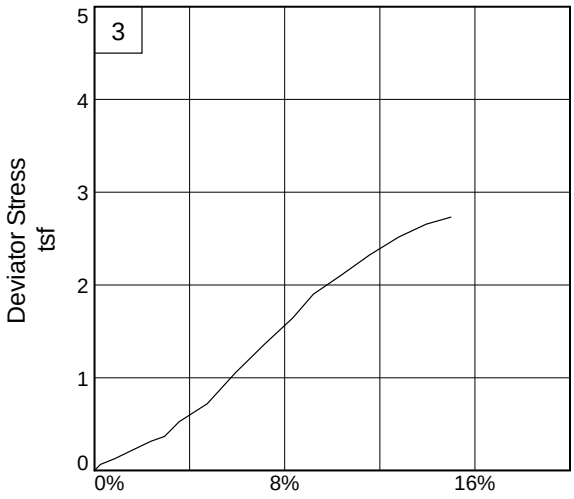
Source of Sample: GDRL-133 **Depth:** 7-9'

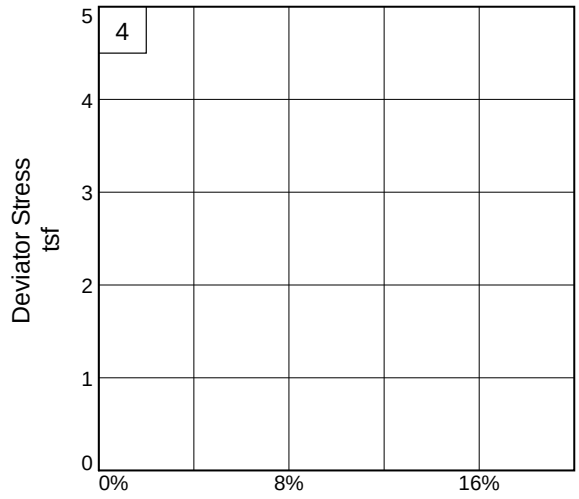
Sample Number: TW-5045

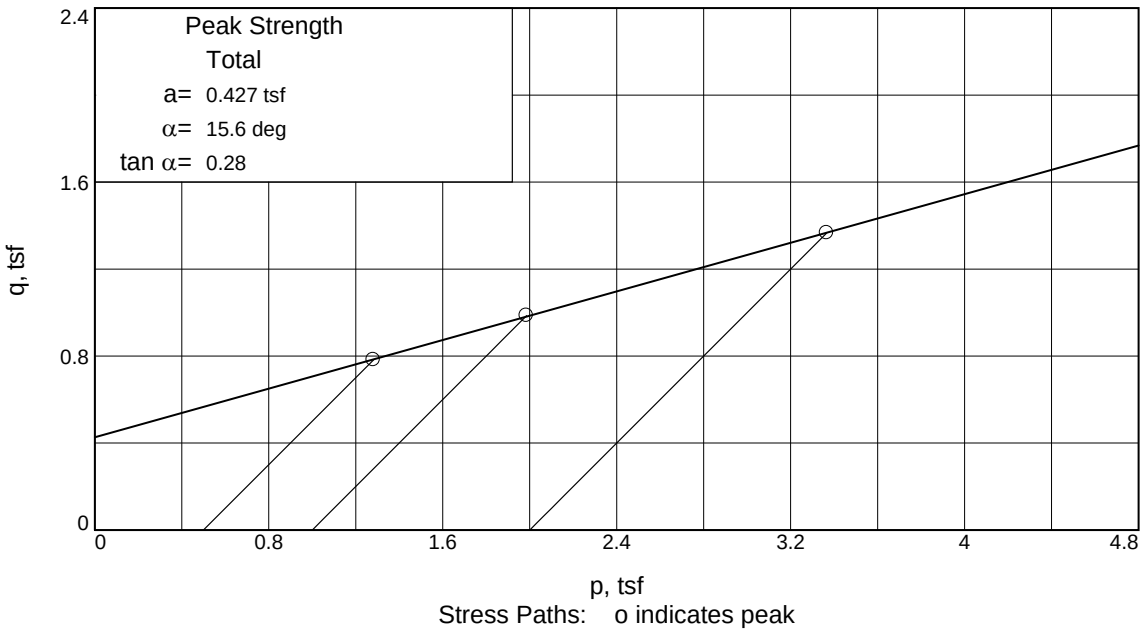
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

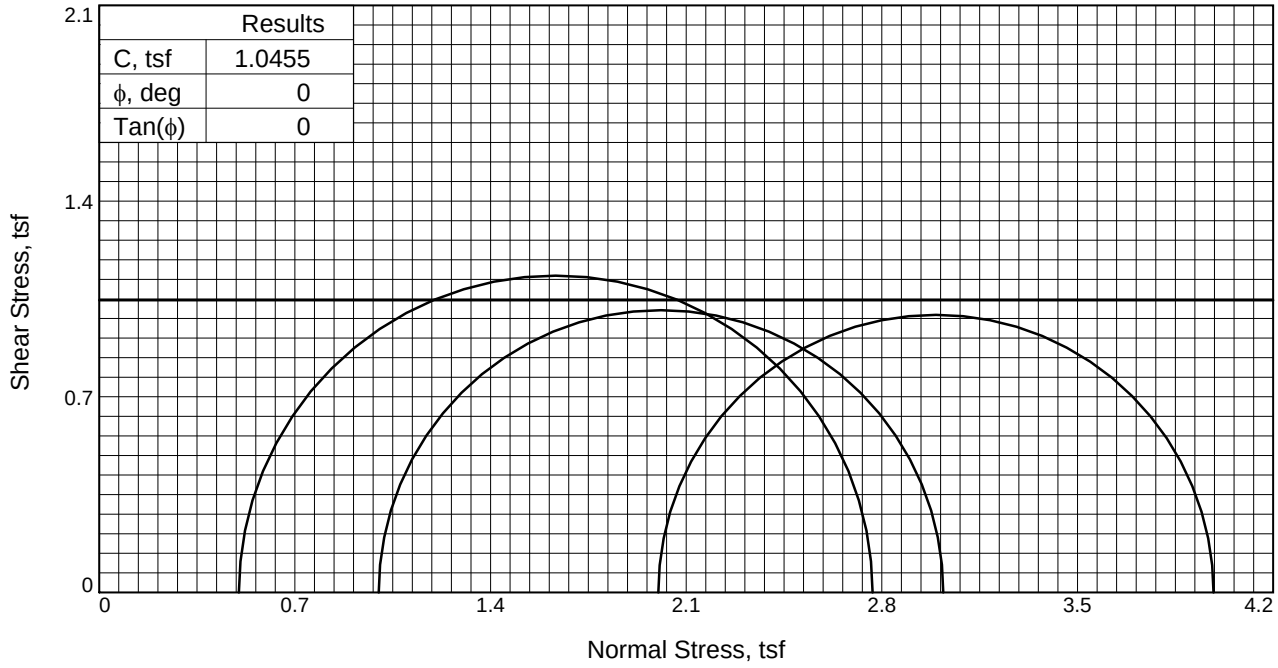
Client: KLJ Engineering LLC

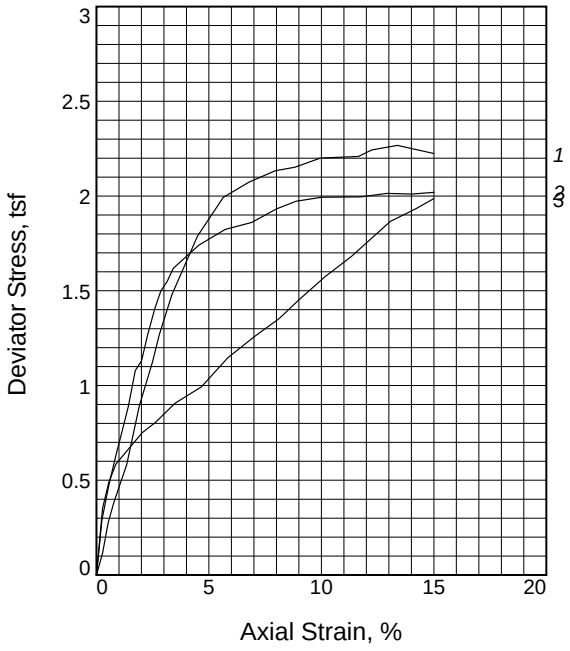
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-133 **Depth:** 7-9' **Sample Number:** TW-5045

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	26.4	26.4	27.8
	Dry Density, pcf	94.2	96.4	96.2
	Saturation, %	90.4	95.2	99.8
	Void Ratio	0.7885	0.7483	0.7527
	Diameter, in.	1.399	1.469	1.405
	Height, in.	2.893	2.897	2.894
At Test	Water Content, %	26.4	26.4	27.8
	Dry Density, pcf	94.2	96.4	96.2
	Saturation, %	90.4	95.2	99.8
	Void Ratio	0.7885	0.7483	0.7527
	Diameter, in.	1.399	1.469	1.405
	Height, in.	2.893	2.897	2.894
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.267	2.020	1.986
Ult. Stress, tsf		2.224	2.020	1.986
σ_1 Failure, tsf		2.767	3.020	3.987
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), gray, A-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

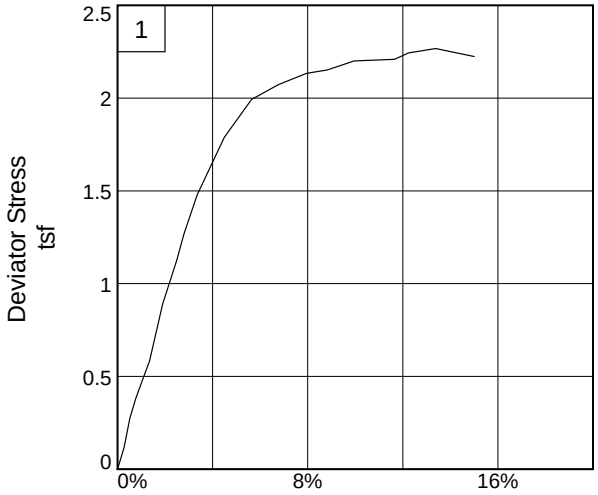
Source of Sample: CAA-134 **Depth:** 17-19'

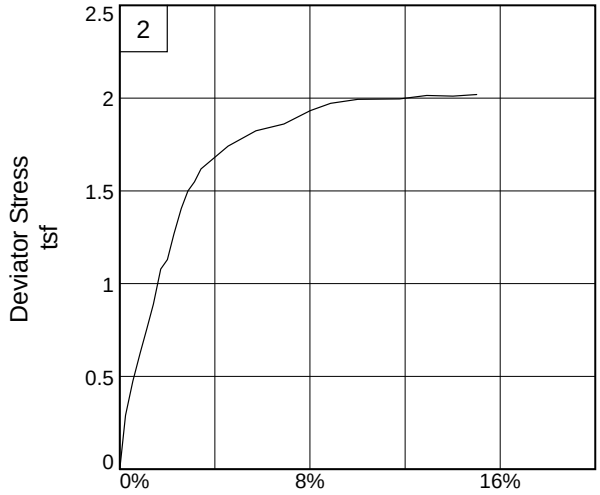
Sample Number: TW-5052

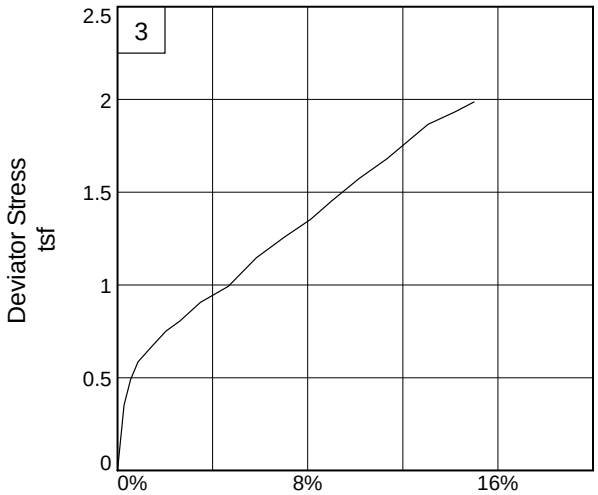
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

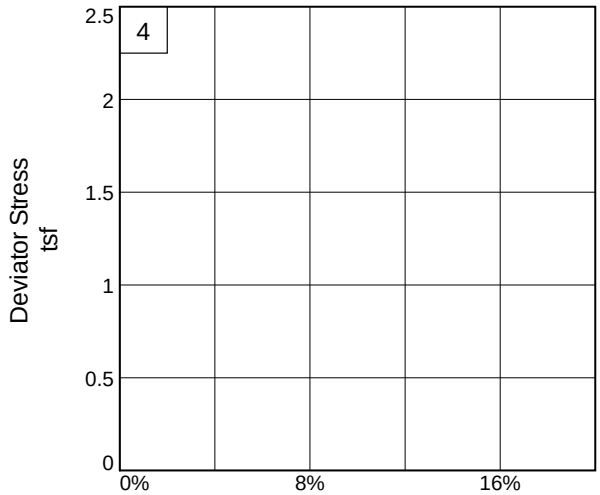
BRAUN INTERTEC

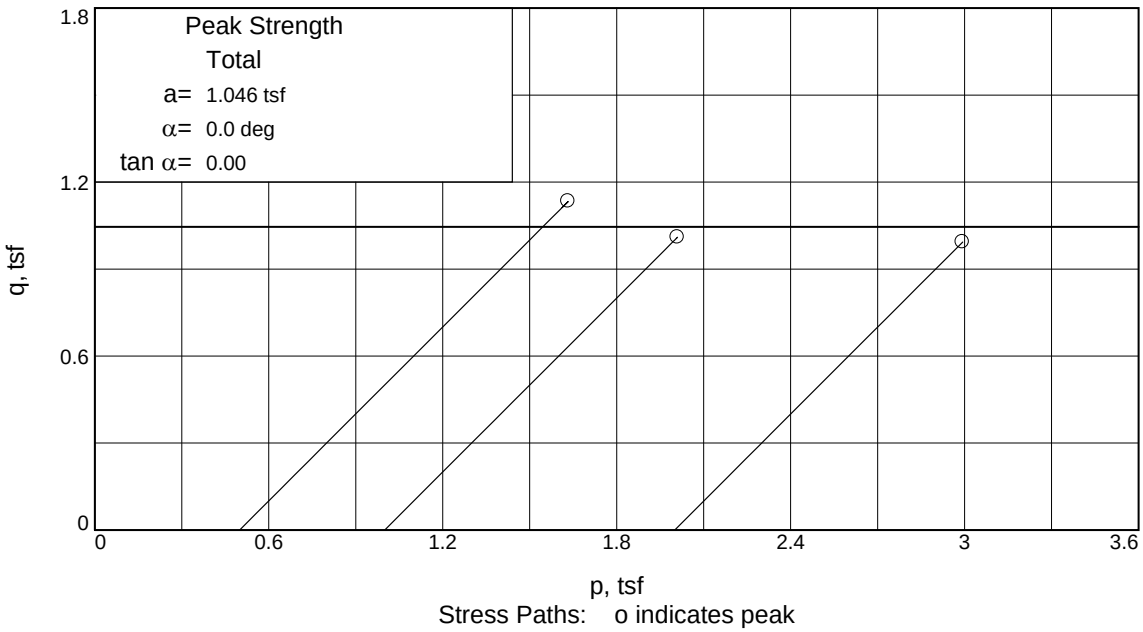
Figure _____











Stress Paths: o indicates peak

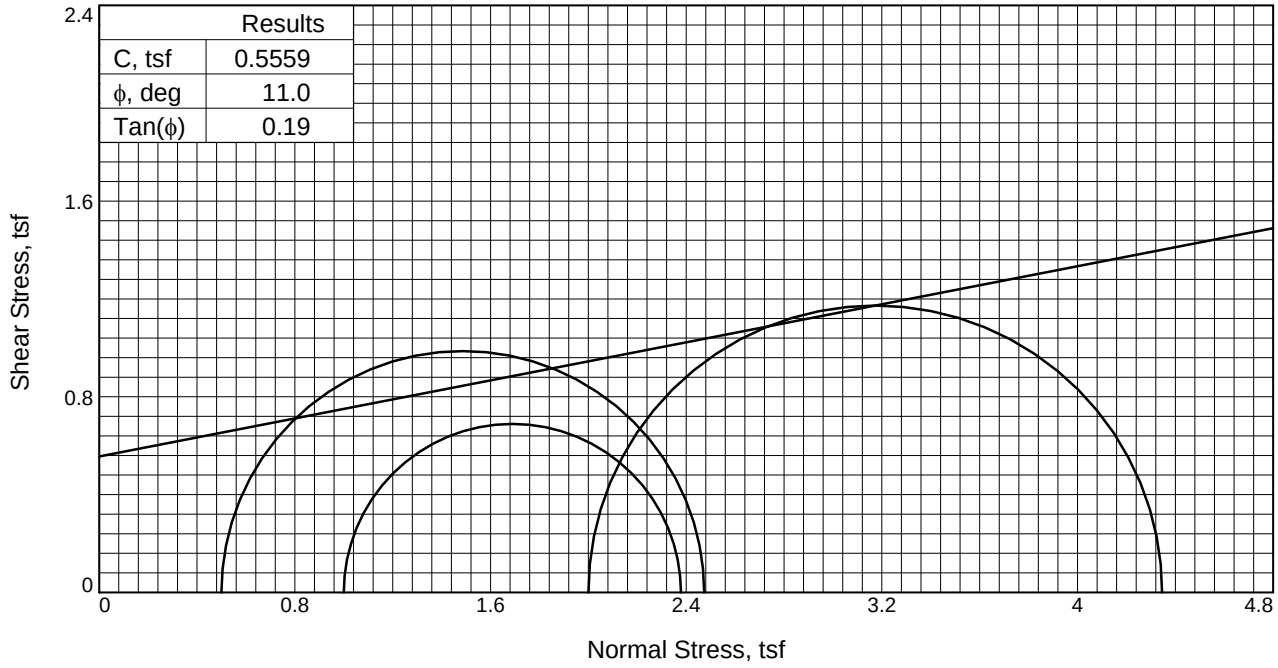
Client: KLJ Engineering LLC

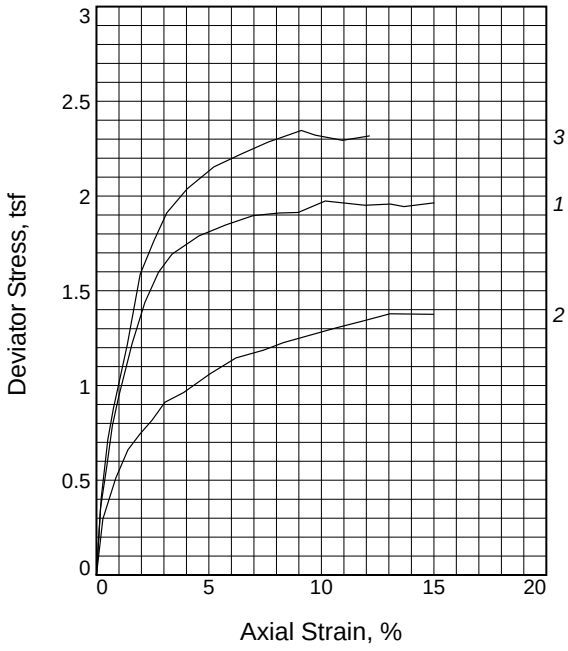
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-134 **Depth:** 17-19' **Sample Number:** TW-5052

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	29.1	27.8	28.6
	Dry Density, pcf	91.8	96.1	93.2
	Saturation, %	93.9	99.6	95.6
	Void Ratio	0.8370	0.7532	0.8088
	Diameter, in.	1.420	1.401	1.401
	Height, in.	2.832	2.790	2.777
At Test	Water Content, %	29.1	27.8	28.6
	Dry Density, pcf	91.8	96.1	93.2
	Saturation, %	93.9	99.6	95.6
	Void Ratio	0.8370	0.7532	0.8088
	Diameter, in.	1.420	1.401	1.401
	Height, in.	2.832	2.790	2.777
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.974	1.378	2.346
Ult. Stress, tsf		1.944	1.376	2.294
σ_1 Failure, tsf		2.473	2.378	4.346
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY with SAND (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

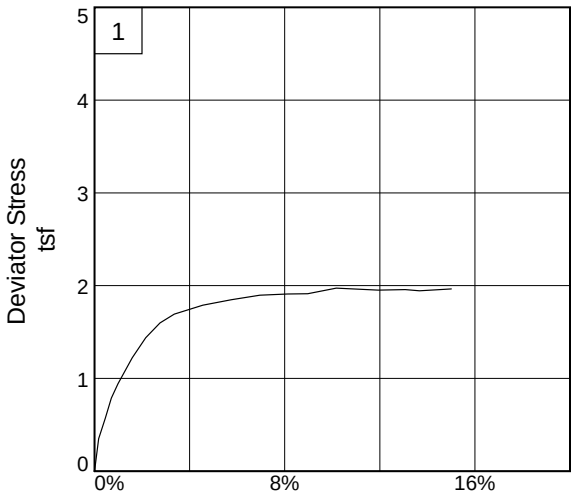
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

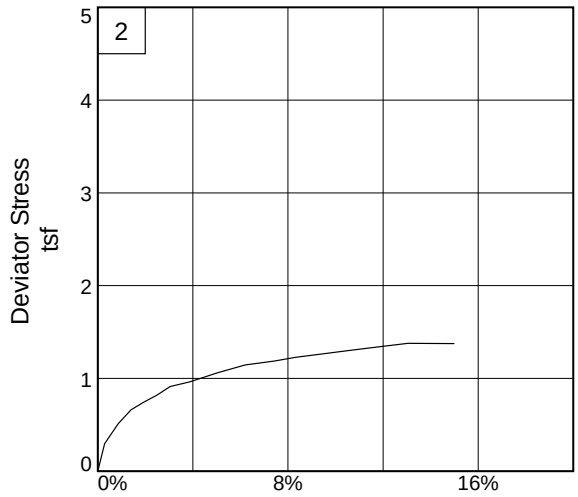
Source of Sample: CAA-136 **Depth:** 7-9'

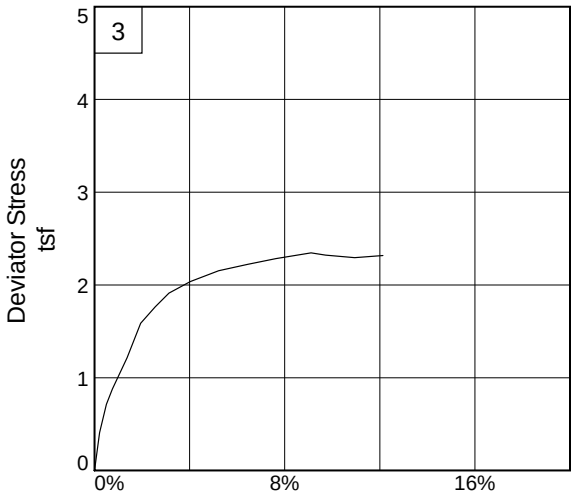
Sample Number: TW-5060

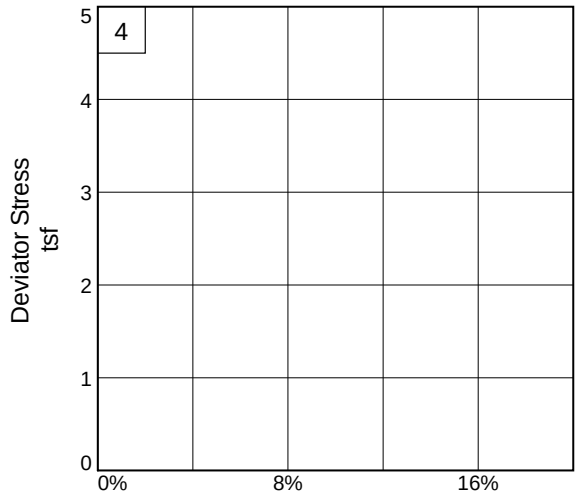
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

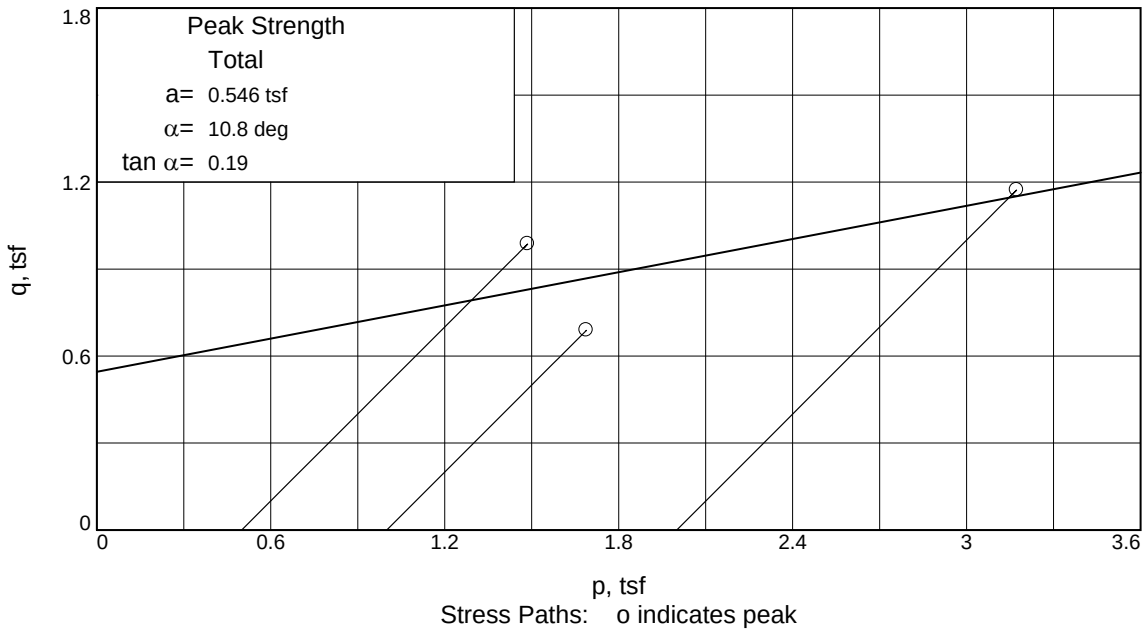
BRAUN INTERTEC











Stress Paths: o indicates peak

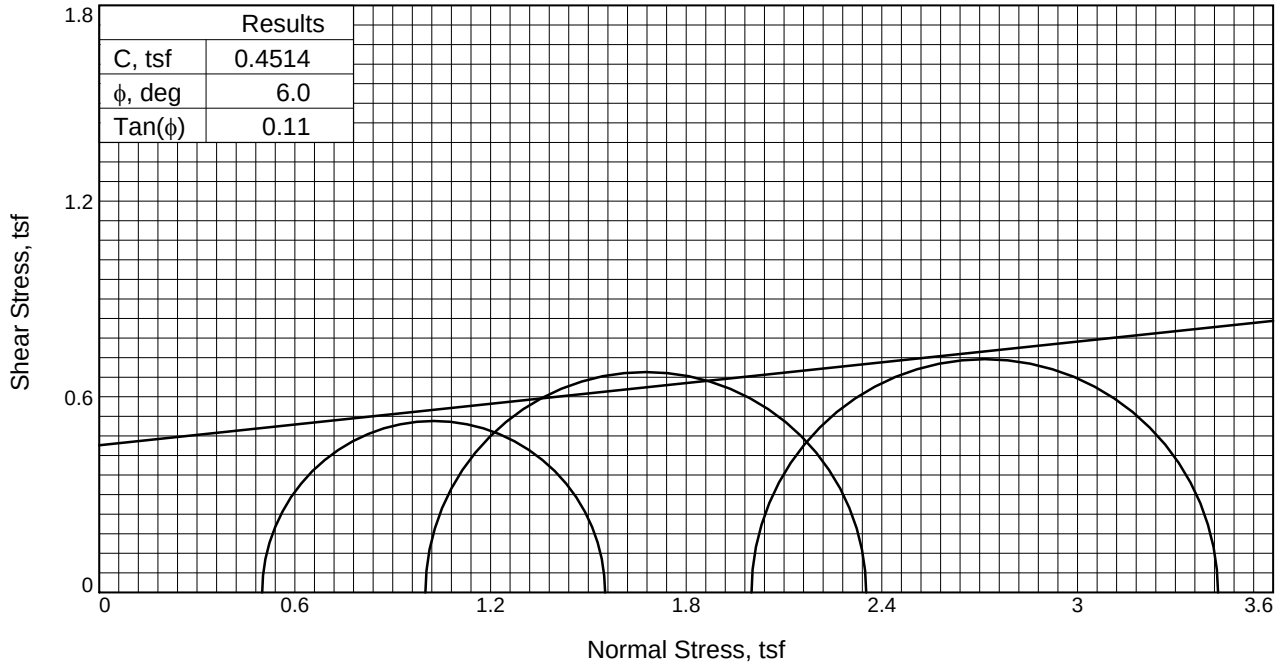
Client: KLJ Engineering LLC

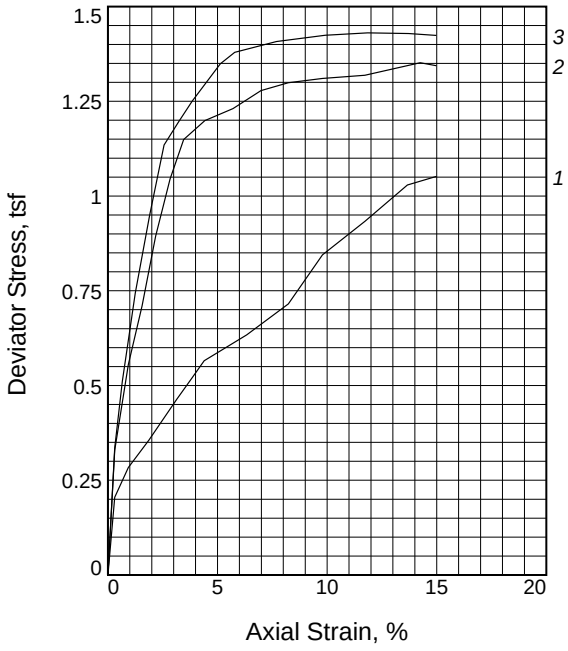
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-136 **Depth:** 7-9' **Sample Number:** TW-5060

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	28.8	28.6	29.1
	Dry Density, pcf	93.8	94.9	94.3
	Saturation, %	97.8	99.5	99.8
	Void Ratio	0.7964	0.7770	0.7870
	Diameter, in.	1.430	1.412	1.400
	Height, in.	2.891	2.893	2.887
At Test	Water Content, %	28.8	28.6	29.1
	Dry Density, pcf	93.8	94.9	94.3
	Saturation, %	97.8	99.5	99.8
	Void Ratio	0.7964	0.7770	0.7870
	Diameter, in.	1.430	1.412	1.400
	Height, in.	2.891	2.893	2.887
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.052	1.352	1.431
Ult. Stress, tsf		1.052	1.344	1.424
σ_1 Failure, tsf		1.551	2.352	3.431
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY with SAND(CL), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

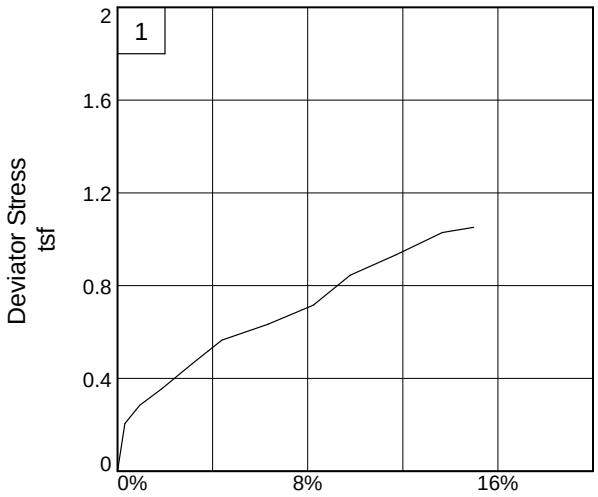
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

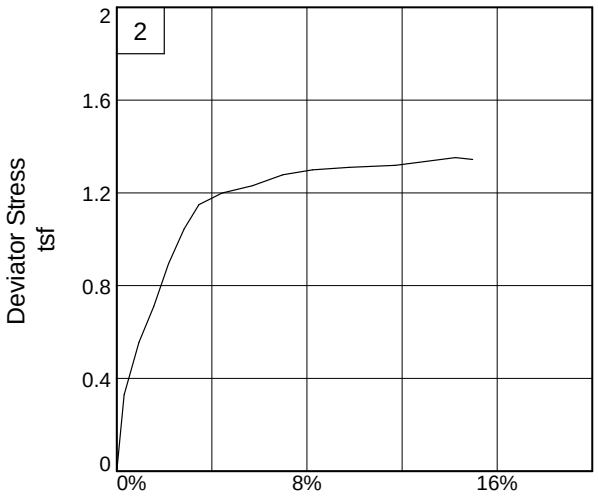
Source of Sample: CAA-136 **Depth:** 17-19'

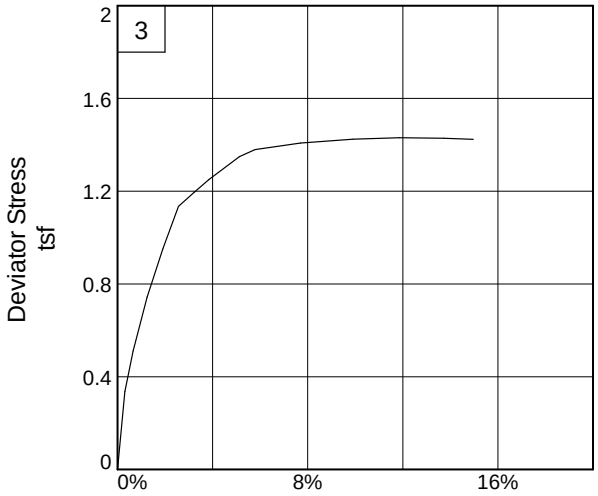
Sample Number: TW-5063

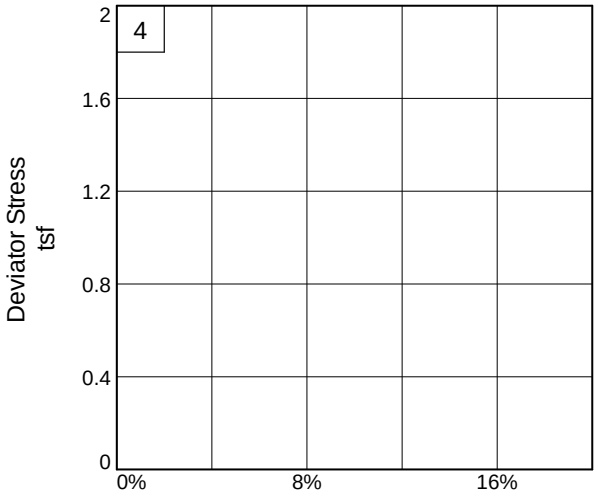
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

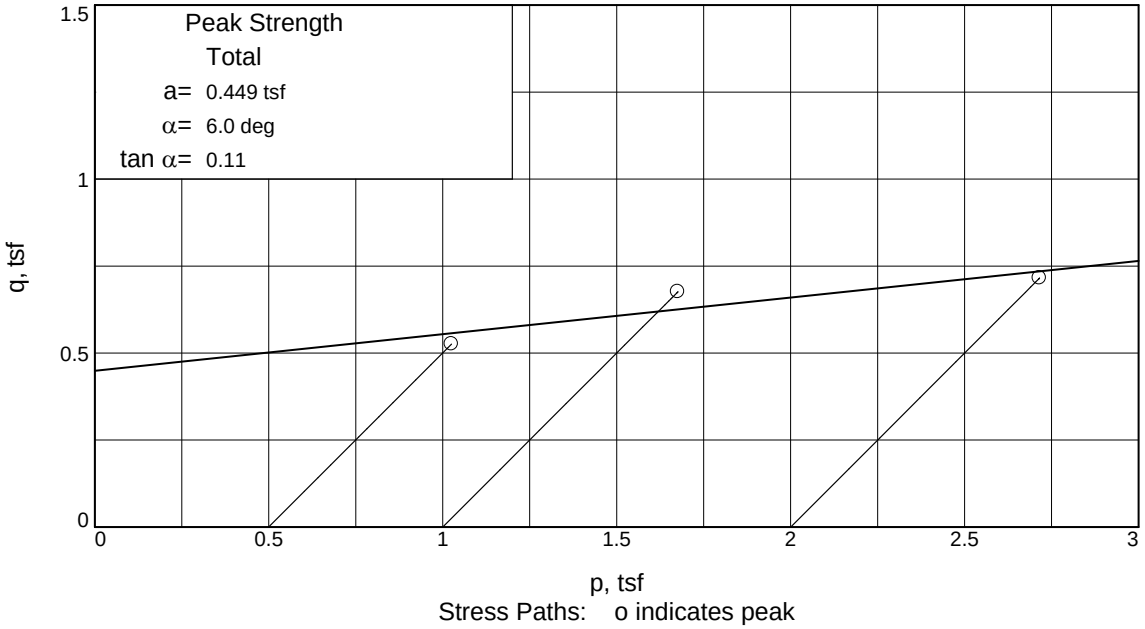
BRAUN INTERTEC











Stress Paths: o indicates peak

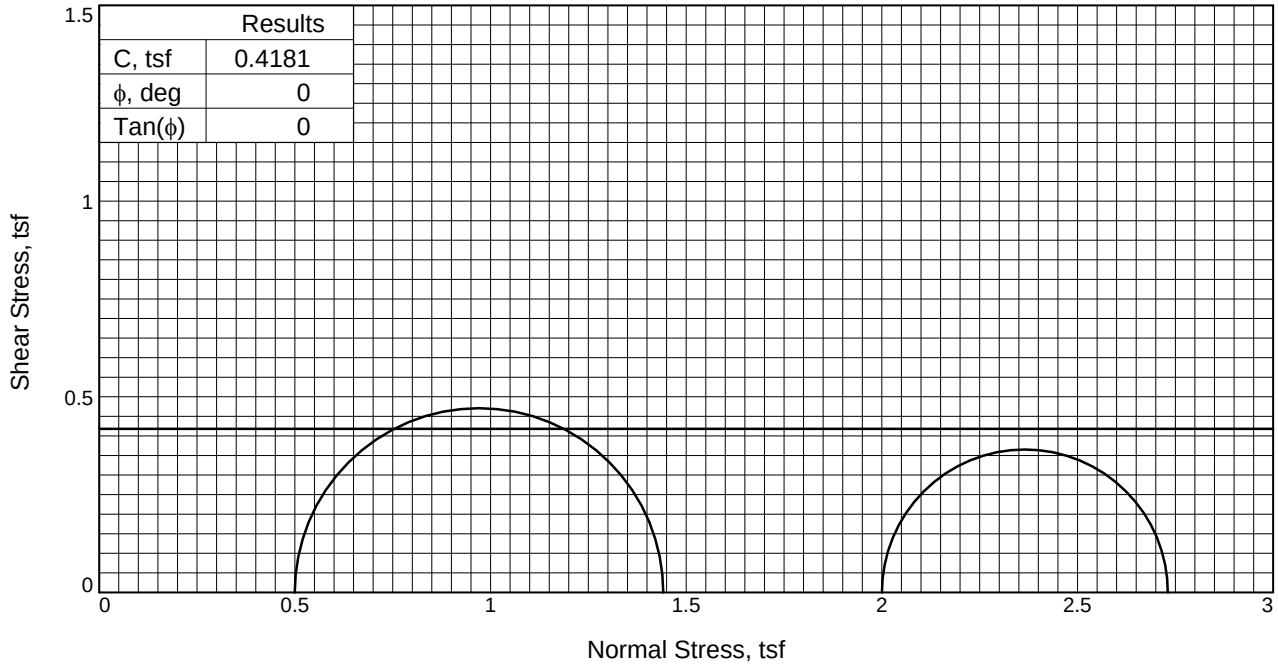
Client: KLJ Engineering LLC

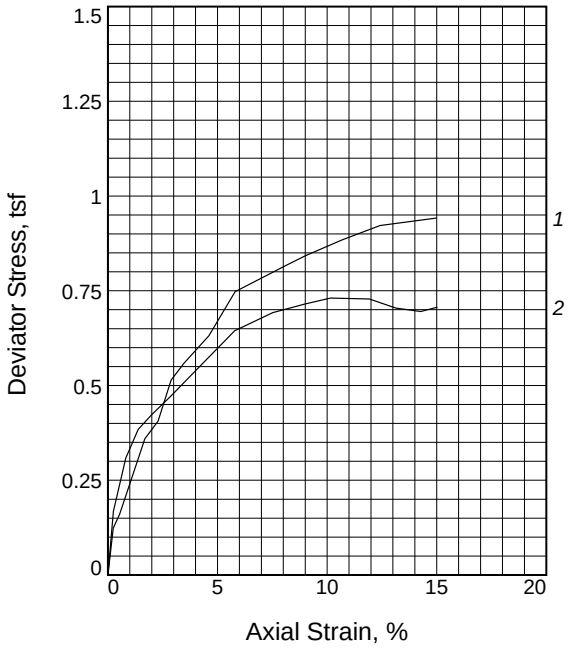
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-136 **Depth:** 17-19' **Sample Number:** TW-5063

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2
Initial	Water Content, %	25.1	31.1
	Dry Density, pcf	100.2	91.5
	Saturation, %	99.2	99.7
	Void Ratio	0.6828	0.8425
	Diameter, in.	1.419	1.411
	Height, in.	2.843	2.817
At Test	Water Content, %	25.1	31.1
	Dry Density, pcf	100.2	91.5
	Saturation, %	99.2	99.7
	Void Ratio	0.6828	0.8425
	Diameter, in.	1.419	1.411
	Height, in.	2.843	2.817
Strain rate, %/min.		1.00	1.00
Back Pressure, tsf		0.000	0.000
Cell Pressure, tsf		0.500	2.000
Fail. Stress, tsf		0.942	0.731
Ult. Stress, tsf		0.942	0.695
σ_1 Failure, tsf		1.441	2.731
σ_3 Failure, tsf		0.500	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

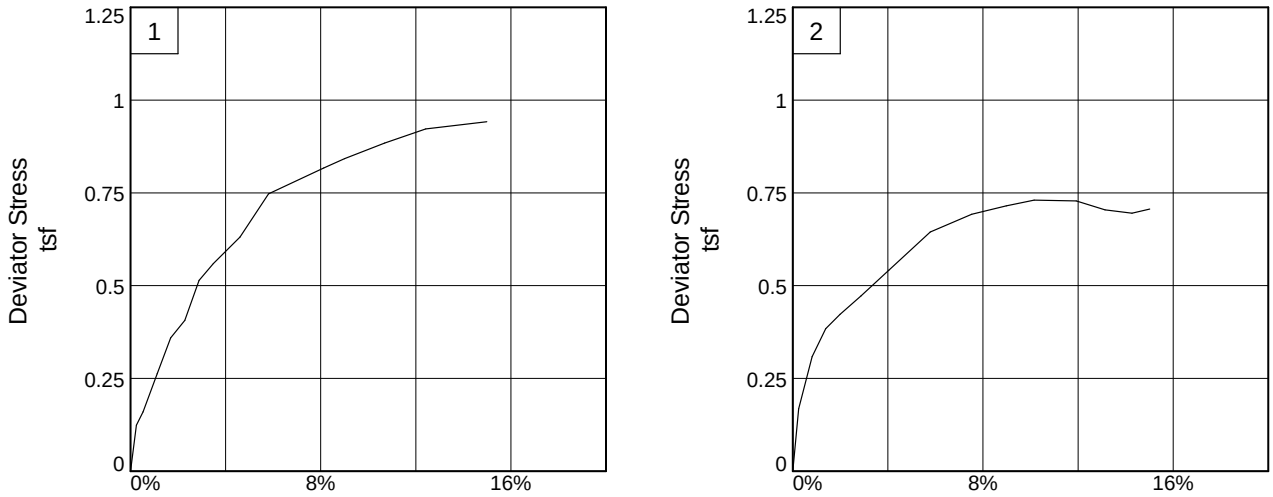
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

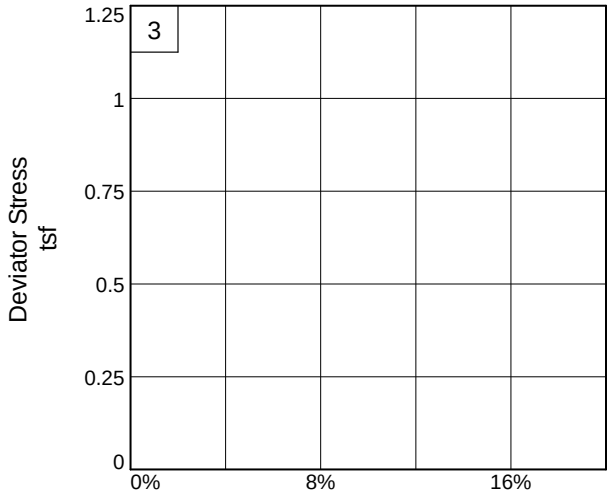
Source of Sample: CAA-138 **Depth:** 17-19'

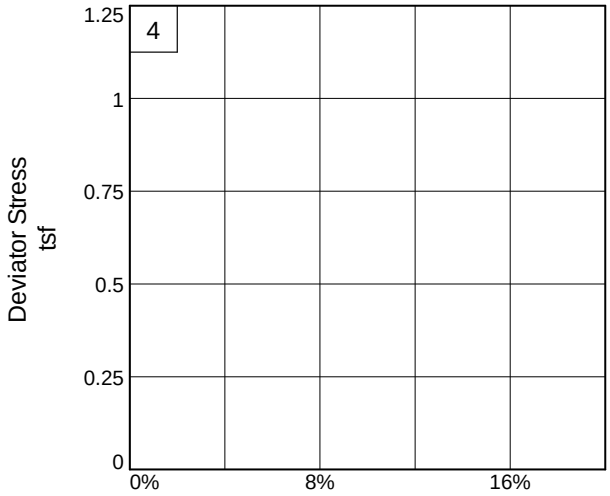
Sample Number: TW-5081

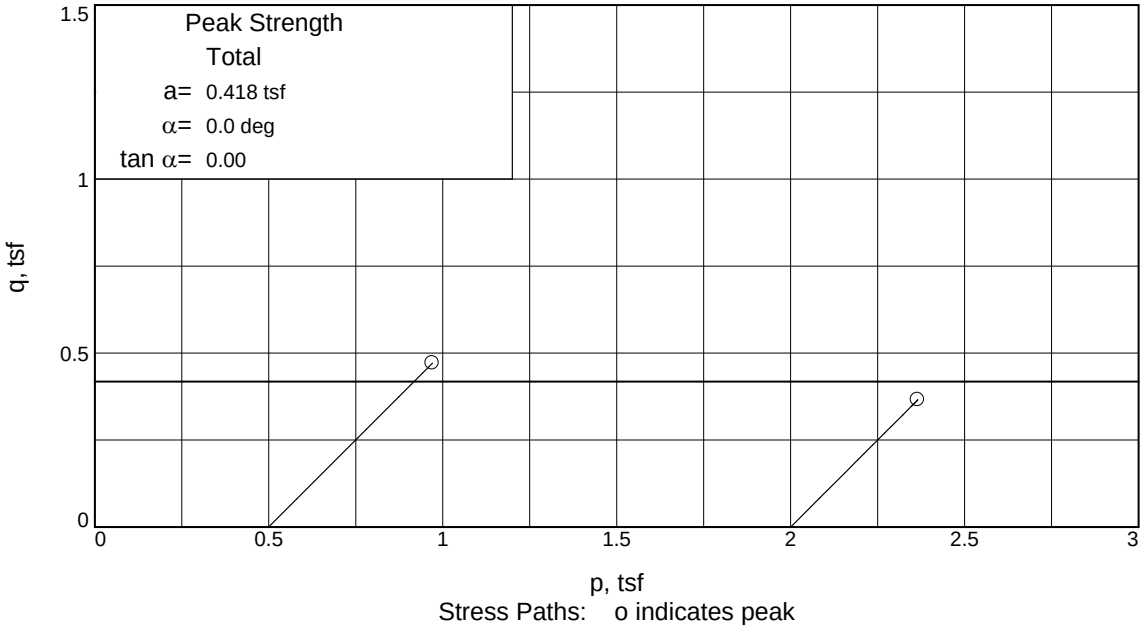
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

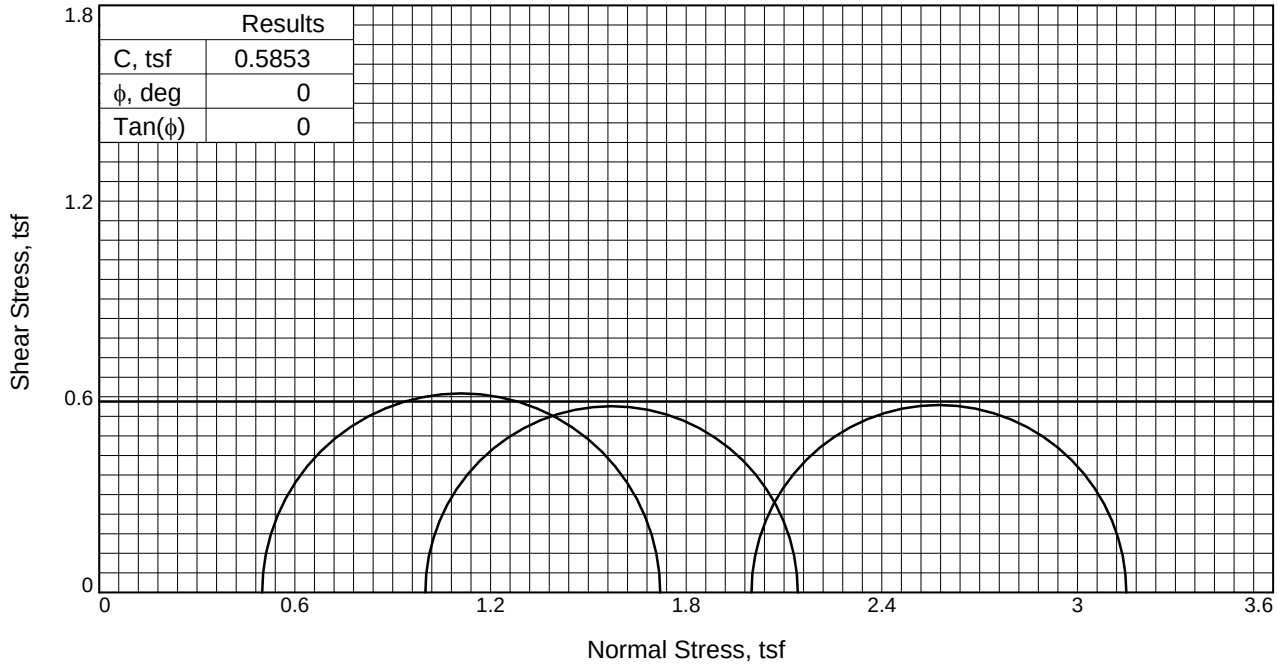
Client: KLJ Engineering LLC

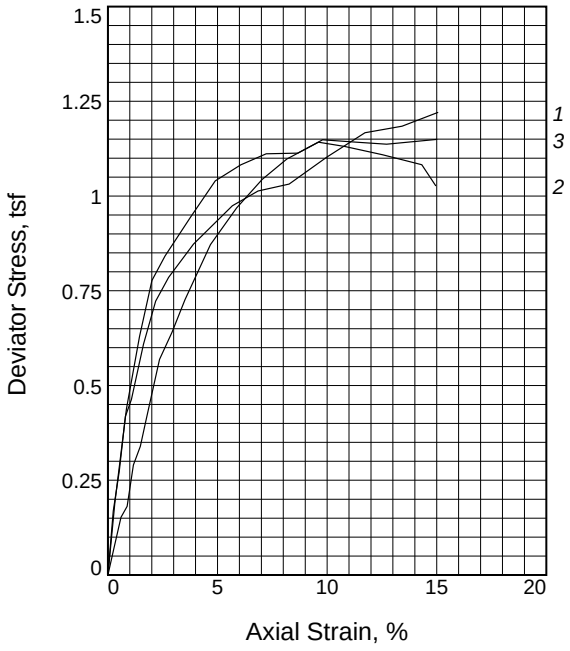
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-138 **Depth:** 17-19' **Sample Number:** TW-5081

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	37.5	39.8	40.9
	Dry Density, pcf	80.0	80.9	78.3
	Saturation, %	91.7	99.0	95.7
	Void Ratio	1.1058	1.0845	1.1533
	Diameter, in.	1.413	1.468	1.482
	Height, in.	2.891	2.842	2.839
At Test	Water Content, %	37.5	39.8	40.9
	Dry Density, pcf	80.0	80.9	78.3
	Saturation, %	91.7	99.0	95.7
	Void Ratio	1.1058	1.0845	1.1533
	Diameter, in.	1.413	1.468	1.482
	Height, in.	2.891	2.842	2.839
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.221	1.142	1.149
Ult. Stress, tsf		1.221	1.027	1.137
σ_1 Failure, tsf		1.720	2.142	3.150
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

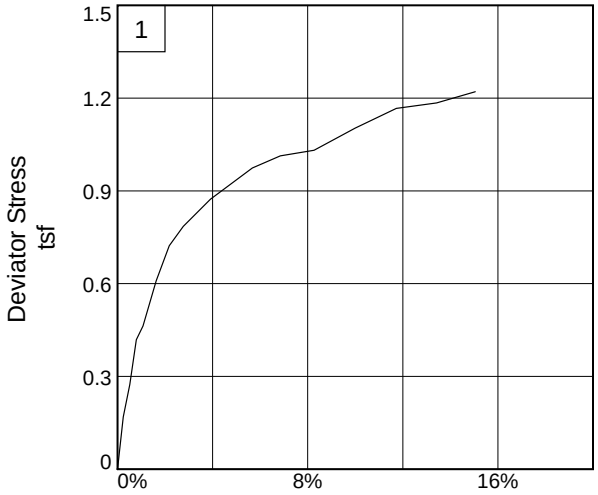
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

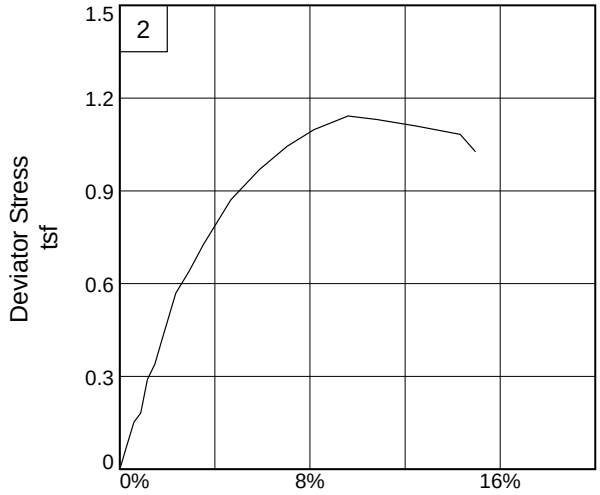
Source of Sample: GDRL-141 **Depth:** 7-9'

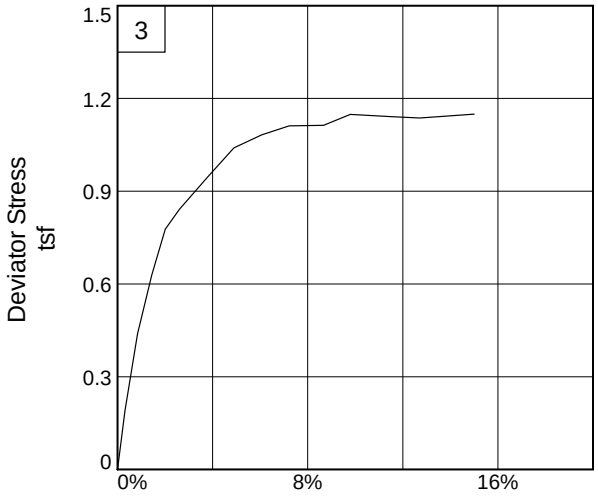
Sample Number: TW-5093

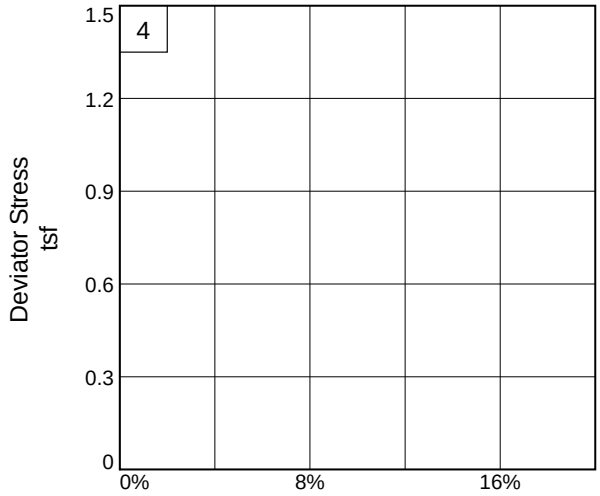
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

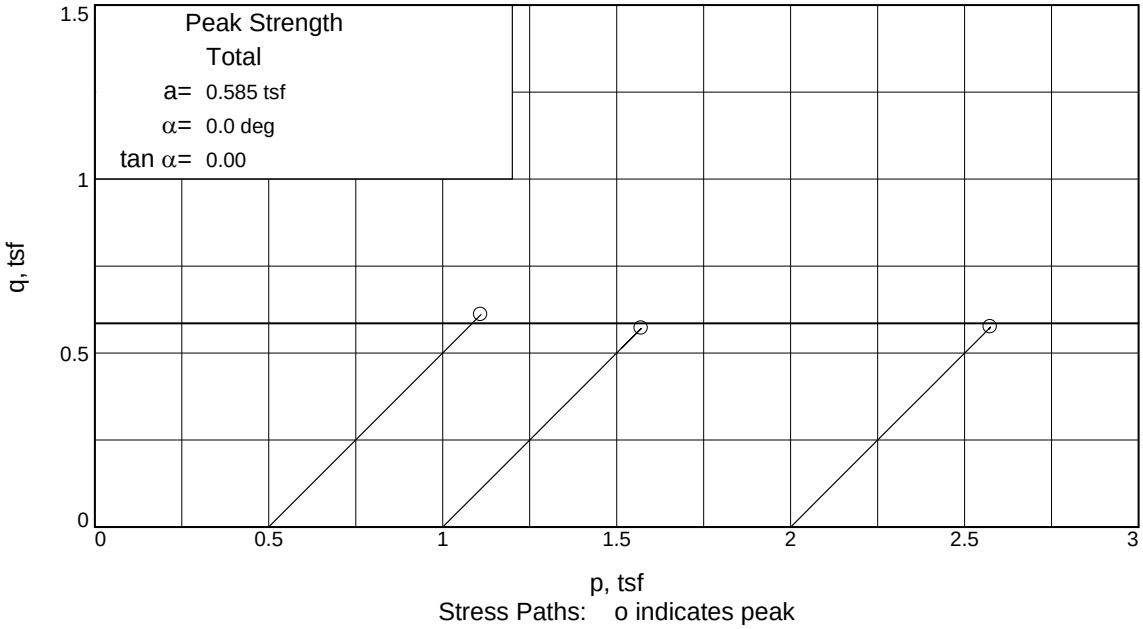
BRAUN INTERTEC











Stress Paths: o indicates peak

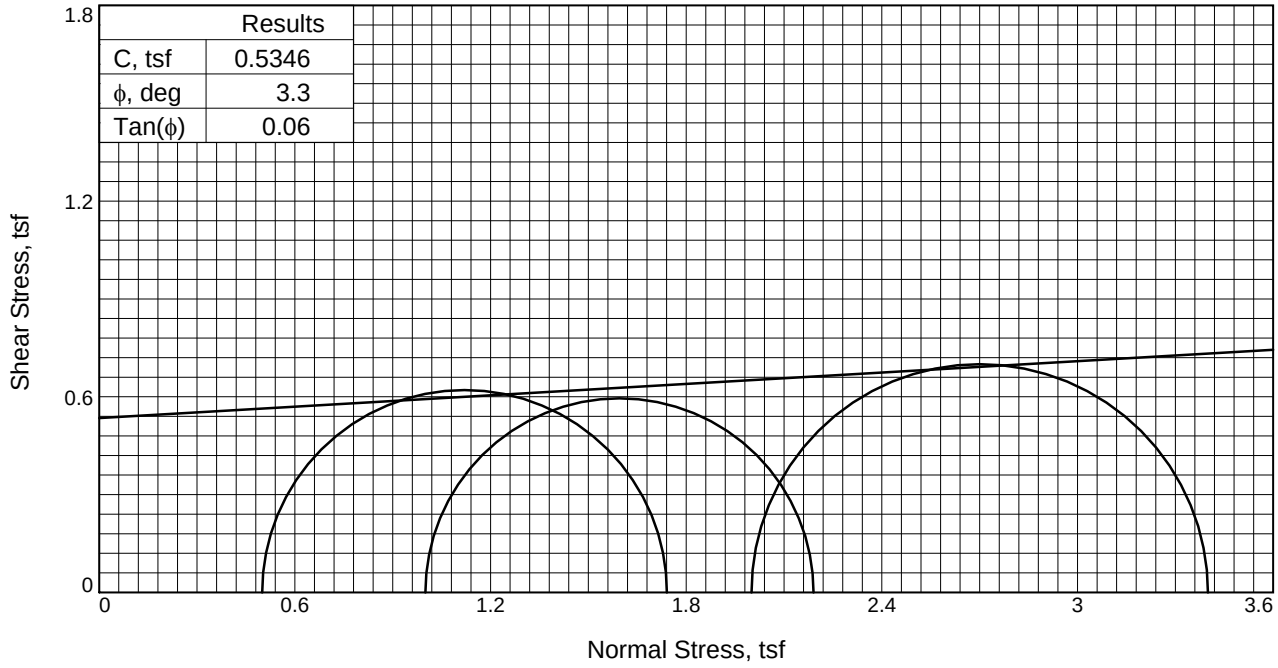
Client: KLJ Engineering LLC

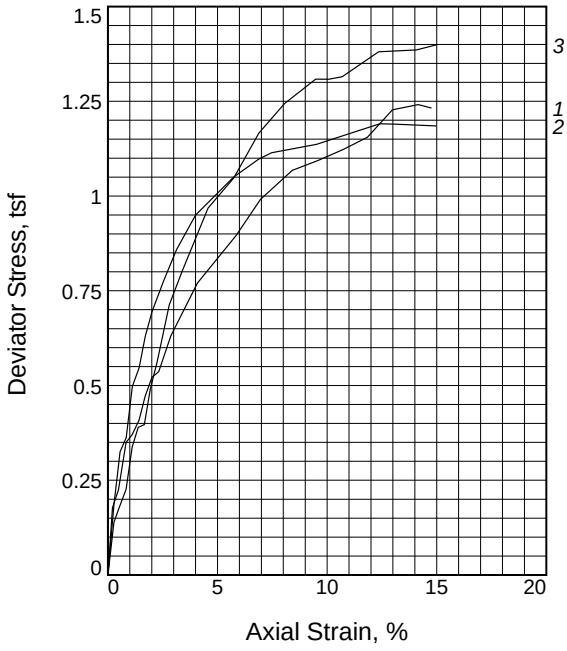
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-141 **Depth:** 7-9' **Sample Number:** TW-5093

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.1	40.8	41.7
	Dry Density, pcf	77.7	77.9	78.7
	Saturation, %	99.5	94.8	98.6
	Void Ratio	1.1703	1.1628	1.1413
	Diameter, in.	1.448	1.460	1.444
	Height, in.	2.889	2.879	2.891
At Test	Water Content, %	43.1	40.8	41.7
	Dry Density, pcf	77.7	77.9	78.7
	Saturation, %	99.5	94.8	98.6
	Void Ratio	1.1703	1.1628	1.1413
	Diameter, in.	1.448	1.460	1.444
	Height, in.	2.889	2.879	2.891
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.241	1.190	1.400
Ult. Stress, tsf		1.233	1.185	1.400
σ_1 Failure, tsf		1.741	2.191	3.400
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

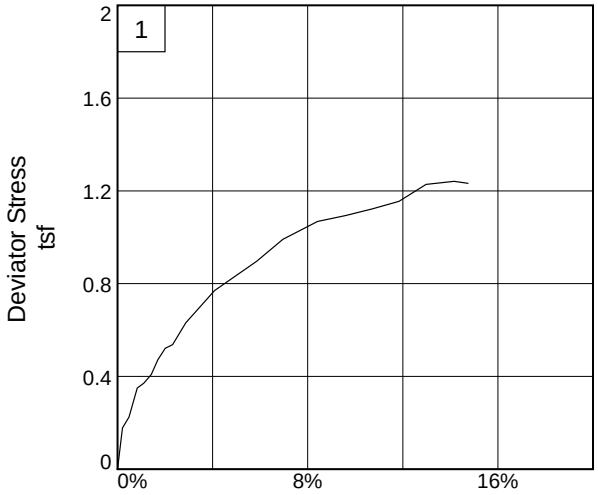
Source of Sample: GDRL-142 **Depth:** 7-9'

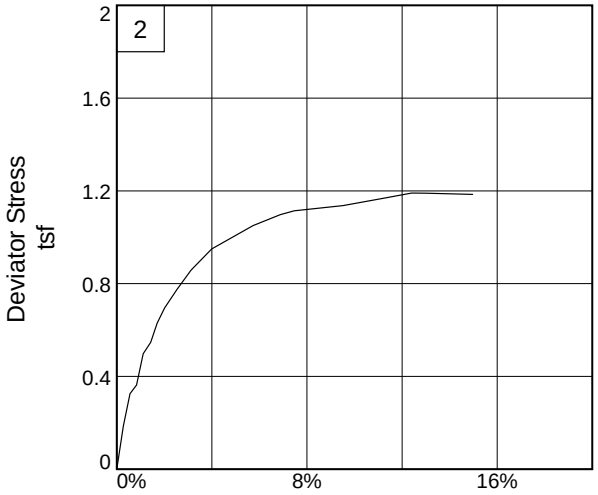
Sample Number: TW-5097

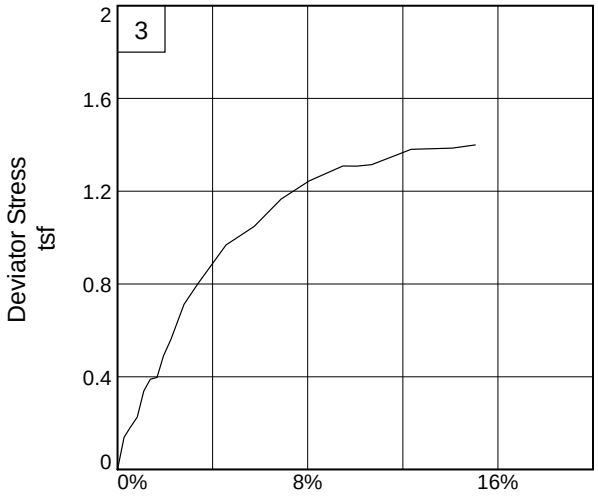
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

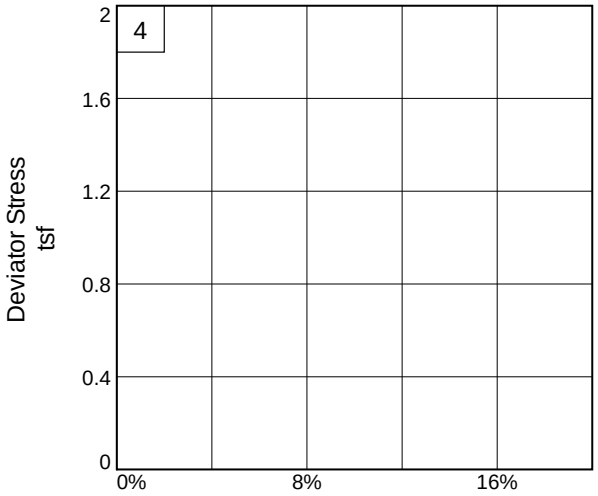
BRAUN INTERTEC

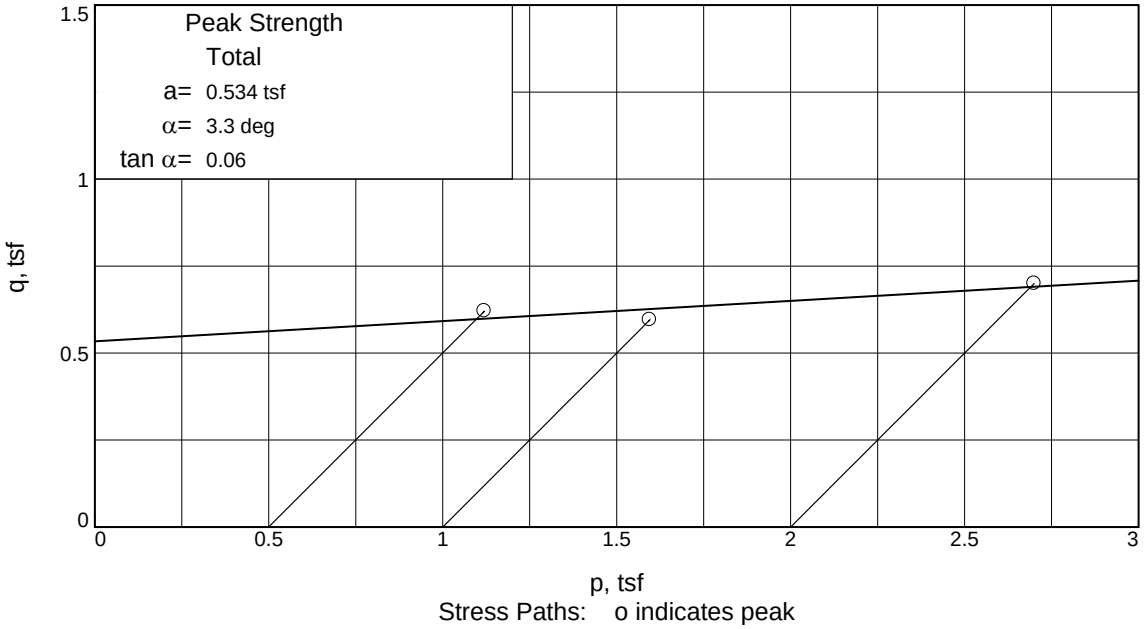
Figure _____











Stress Paths: o indicates peak

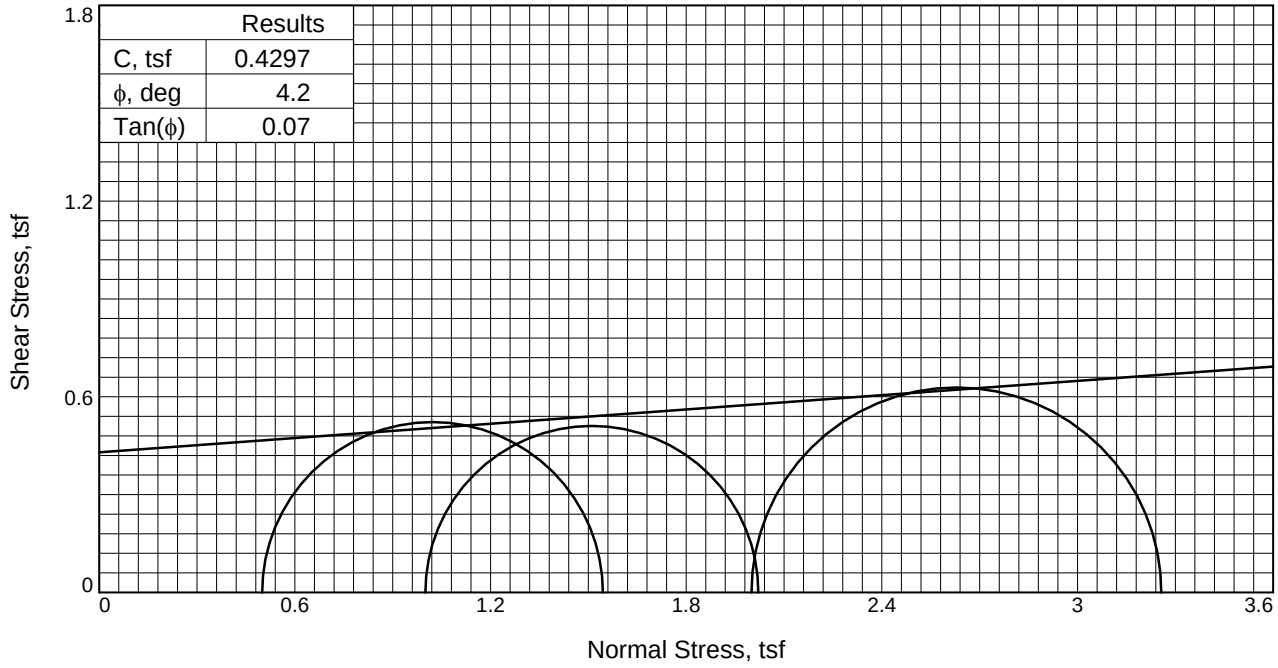
Client: KLJ Engineering LLC

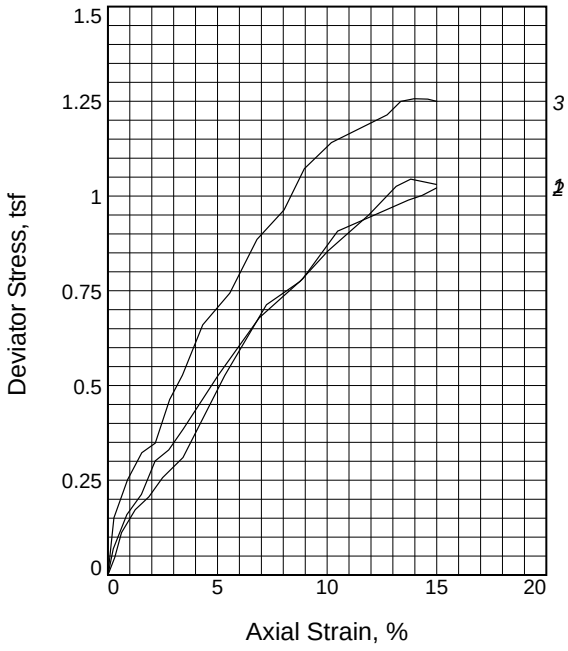
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-142 **Depth:** 7-9' **Sample Number:** TW-5097

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	44.7	42.8	44.2
	Dry Density, pcf	76.1	78.1	76.6
	Saturation, %	99.4	99.8	99.3
	Void Ratio	1.2153	1.1593	1.2012
	Diameter, in.	1.438	1.414	1.405
	Height, in.	2.889	2.881	2.913
At Test	Water Content, %	44.7	42.8	44.2
	Dry Density, pcf	76.1	78.1	76.6
	Saturation, %	99.4	99.8	99.3
	Void Ratio	1.2153	1.1593	1.2012
	Diameter, in.	1.438	1.414	1.405
	Height, in.	2.889	2.881	2.913
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.045	1.021	1.257
Ult. Stress, tsf		1.030	1.021	1.250
σ_1 Failure, tsf		1.544	2.021	3.257
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown and gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

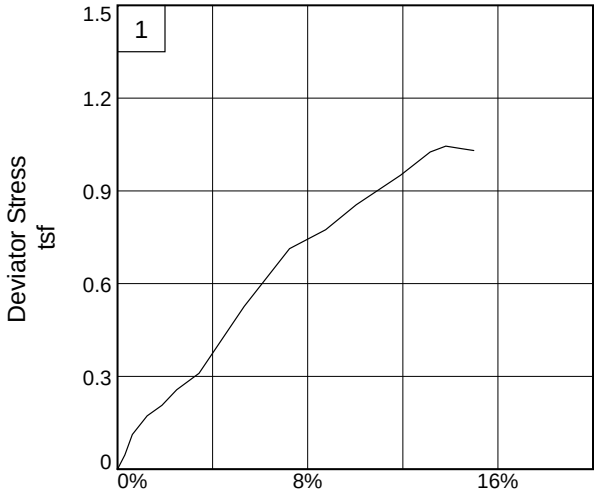
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

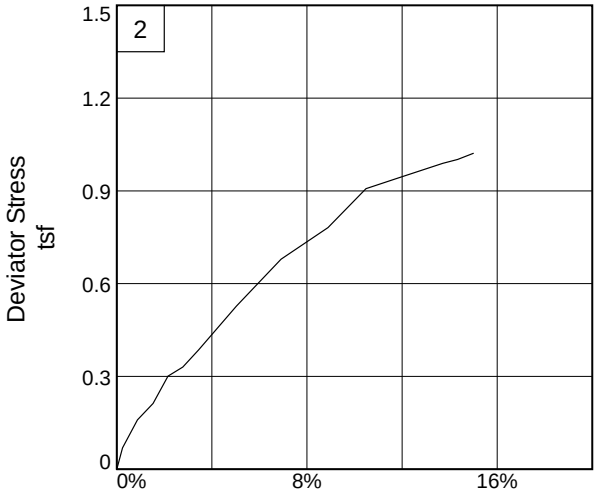
Source of Sample: CAA-143 **Depth:** 7-9'

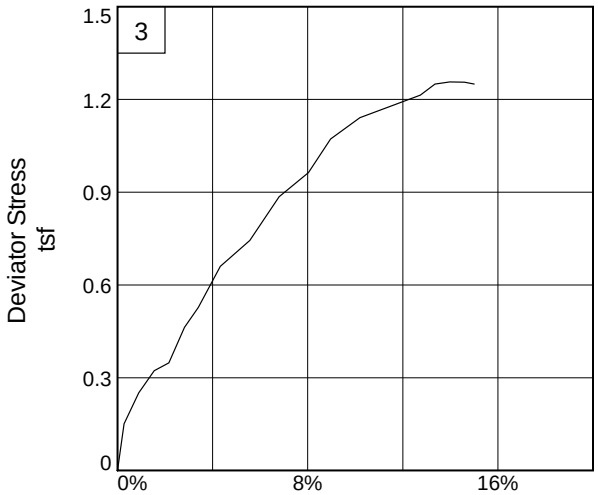
Sample Number: TW-2169

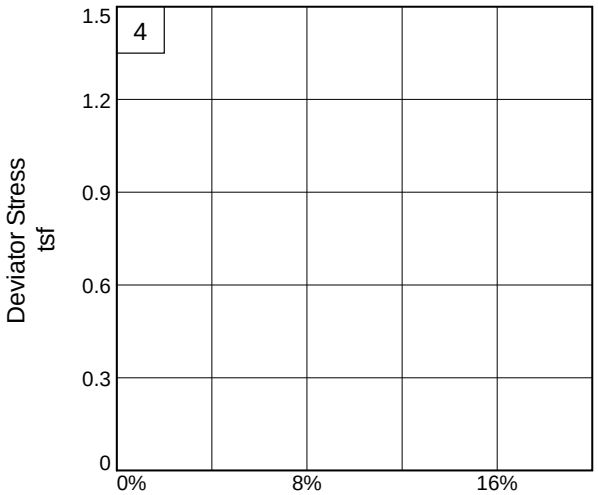
Proj. No.: B2009724 **Date Sampled:** 1/7/2021

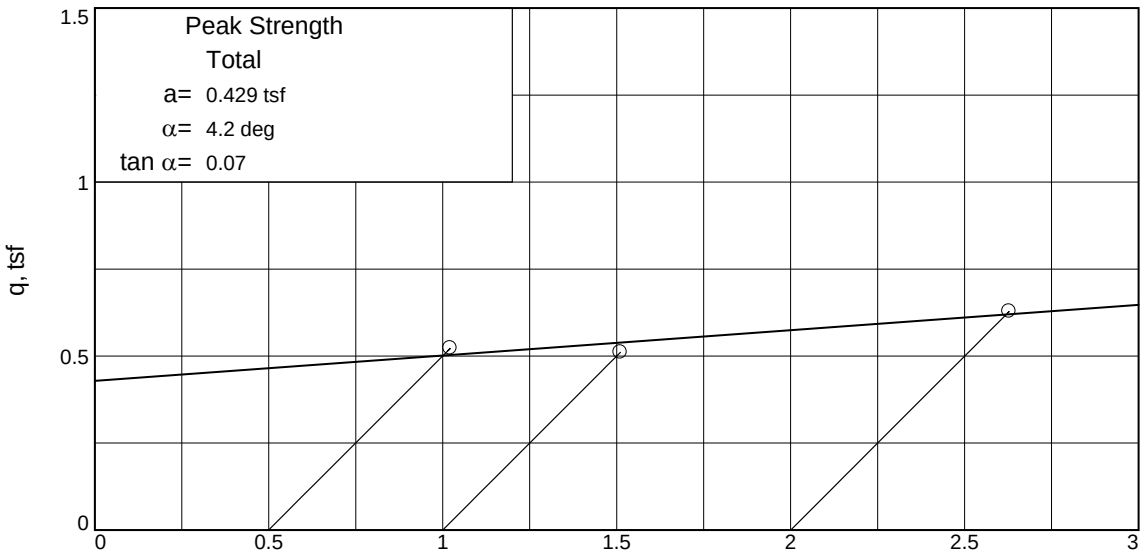
BRAUN INTERTEC











Stress Paths: o indicates peak

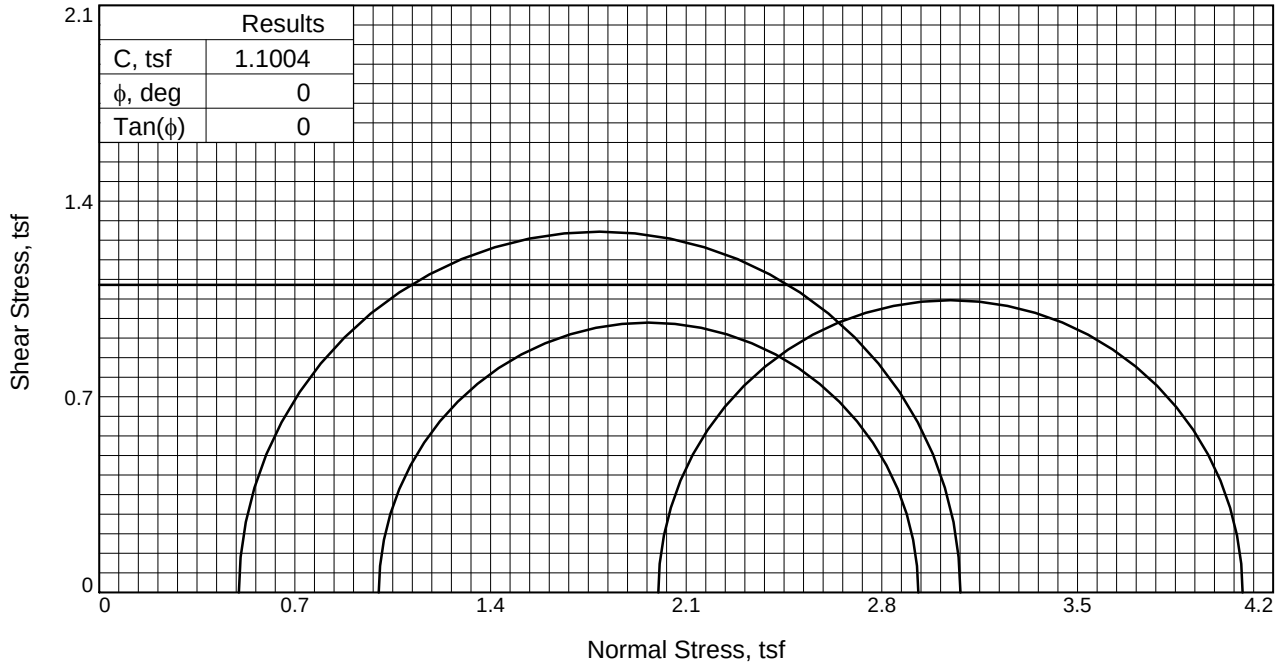
Client: KLJ Engineering LLC

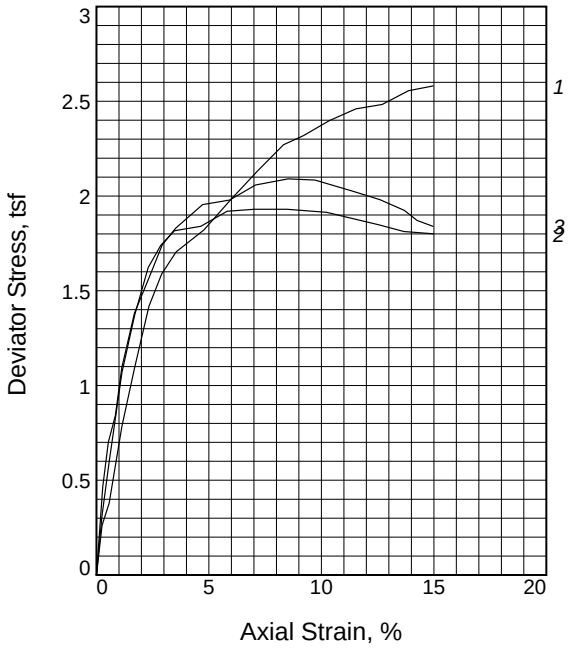
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-143 **Depth:** 7-9' **Sample Number:** TW-2169

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	23.1	25.2	24.3
	Dry Density, pcf	103.4	100.2	100.9
	Saturation, %	99.0	99.9	97.9
	Void Ratio	0.6304	0.6814	0.6705
	Diameter, in.	1.420	1.394	1.400
	Height, in.	2.826	2.824	2.841
At Test	Water Content, %	23.1	25.2	24.3
	Dry Density, pcf	103.4	100.2	100.9
	Saturation, %	99.0	99.9	97.9
	Void Ratio	0.6304	0.6814	0.6705
	Diameter, in.	1.420	1.394	1.400
	Height, in.	2.826	2.824	2.841
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.581	1.930	2.091
Ult. Stress, tsf		2.581	1.801	1.840
σ_1 Failure, tsf		3.081	2.930	4.091
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown and gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

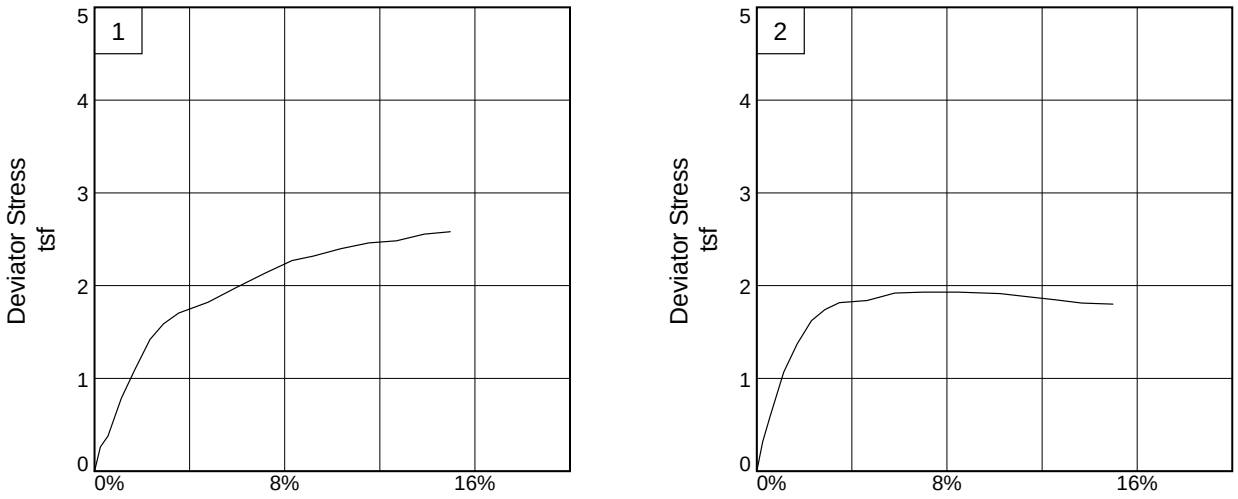
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

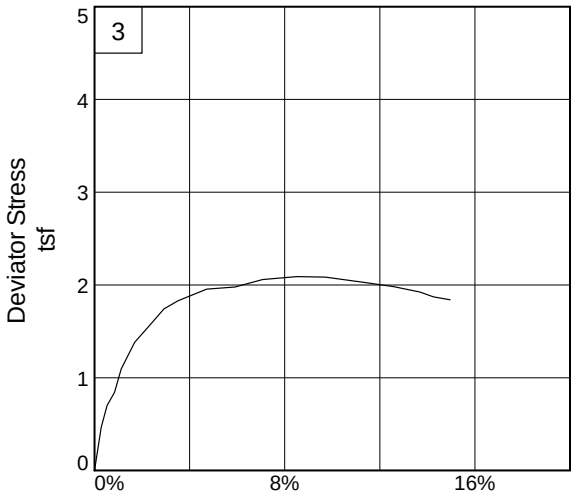
Source of Sample: CAA-145 **Depth:** 7-9'

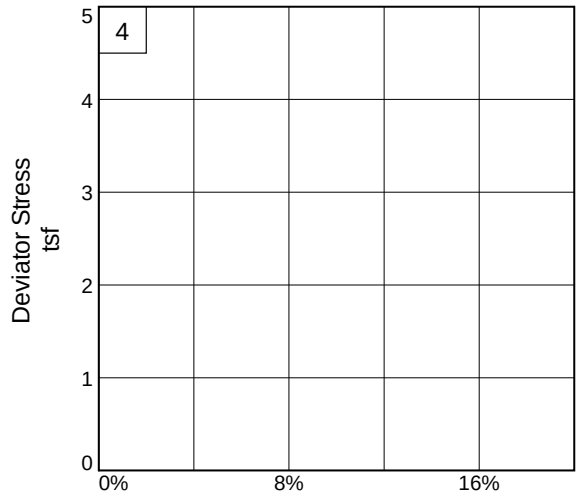
Sample Number: TW-2158

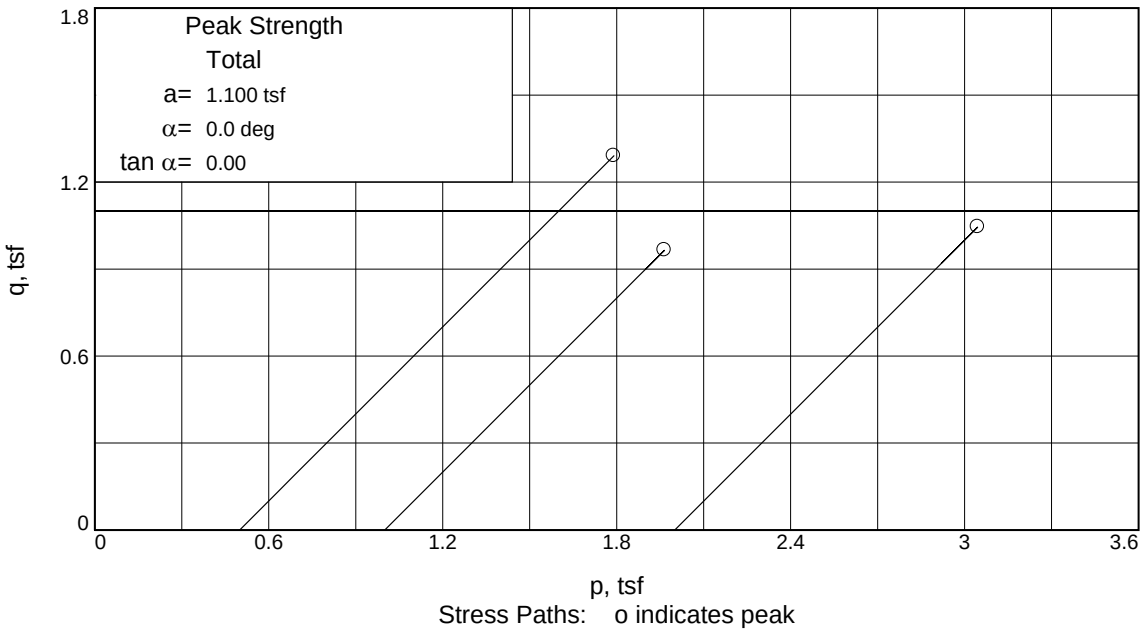
Proj. No.: B2009724 **Date Sampled:** 1/7/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

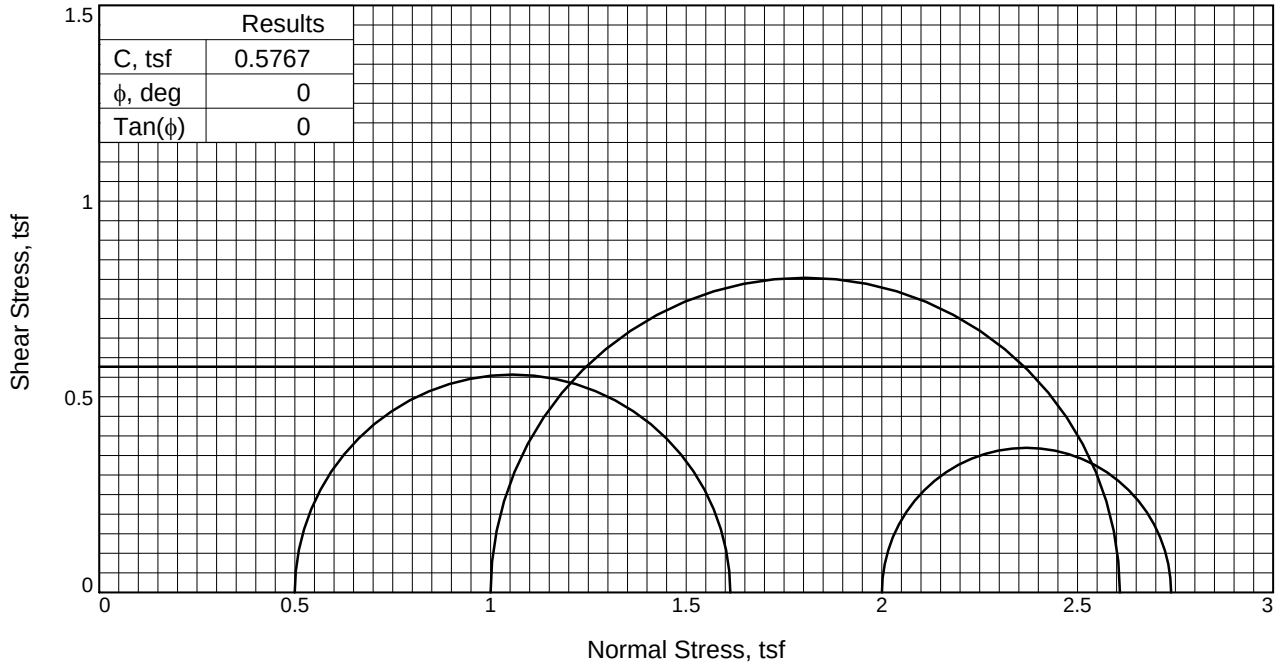
Client: KLJ Engineering LLC

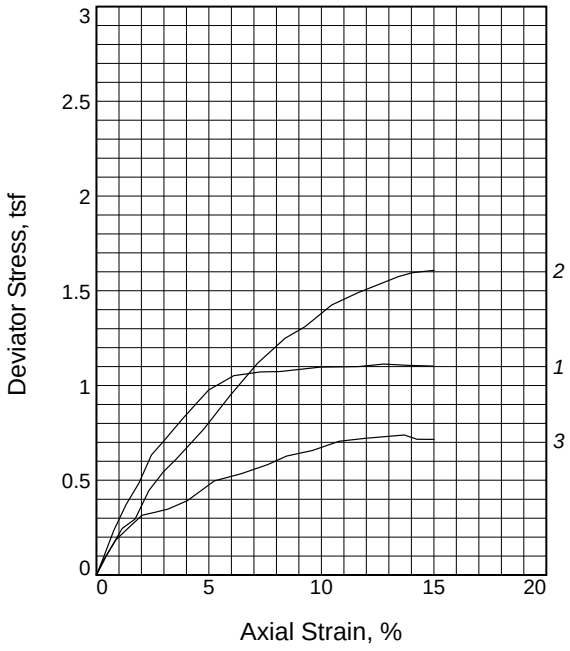
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-145 **Depth:** 7-9' **Sample Number:** TW-2158

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.4	36.0	43.4
	Dry Density, pcf	80.6	85.5	77.5
	Saturation, %	99.8	100.0	99.8
	Void Ratio	1.0913	0.9704	1.1742
	Diameter, in.	1.436	1.418	1.411
	Height, in.	2.867	2.792	2.864
At Test	Water Content, %	40.4	36.0	43.4
	Dry Density, pcf	80.6	85.5	77.5
	Saturation, %	99.8	100.0	99.8
	Void Ratio	1.0913	0.9704	1.1742
	Diameter, in.	1.436	1.418	1.411
	Height, in.	2.867	2.792	2.864
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.113	1.608	0.739
Ult. Stress, tsf		1.102	1.608	0.715
σ_1 Failure, tsf		1.613	2.608	2.739
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown and gray, A-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

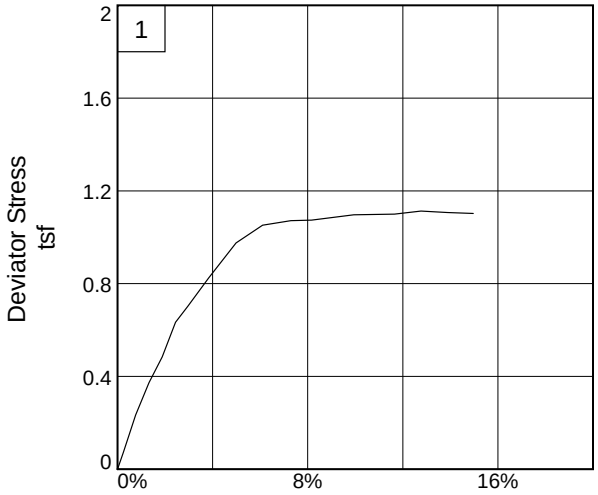
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

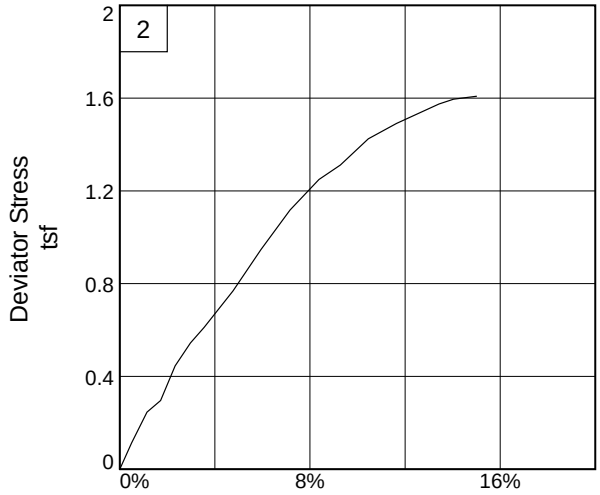
Source of Sample: CAA-145 **Depth:** 17-19'

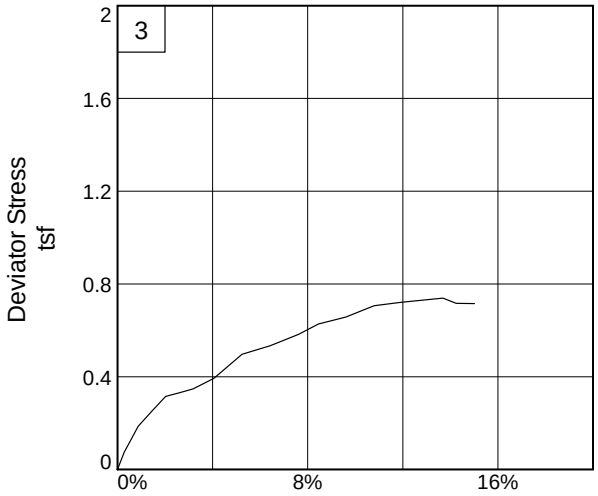
Sample Number: TW-2161

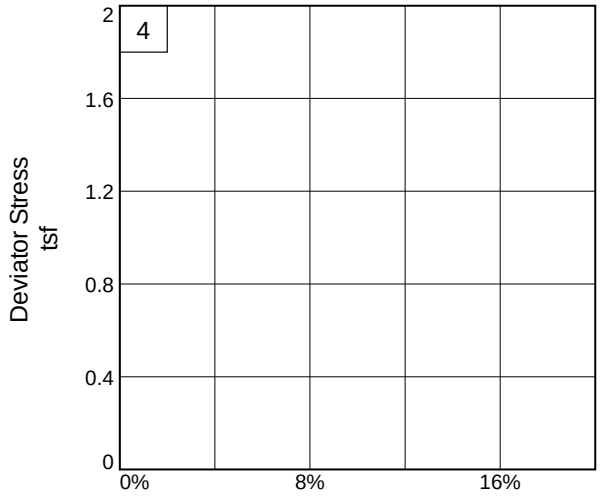
Proj. No.: B2009724 **Date Sampled:** 1/7/2021

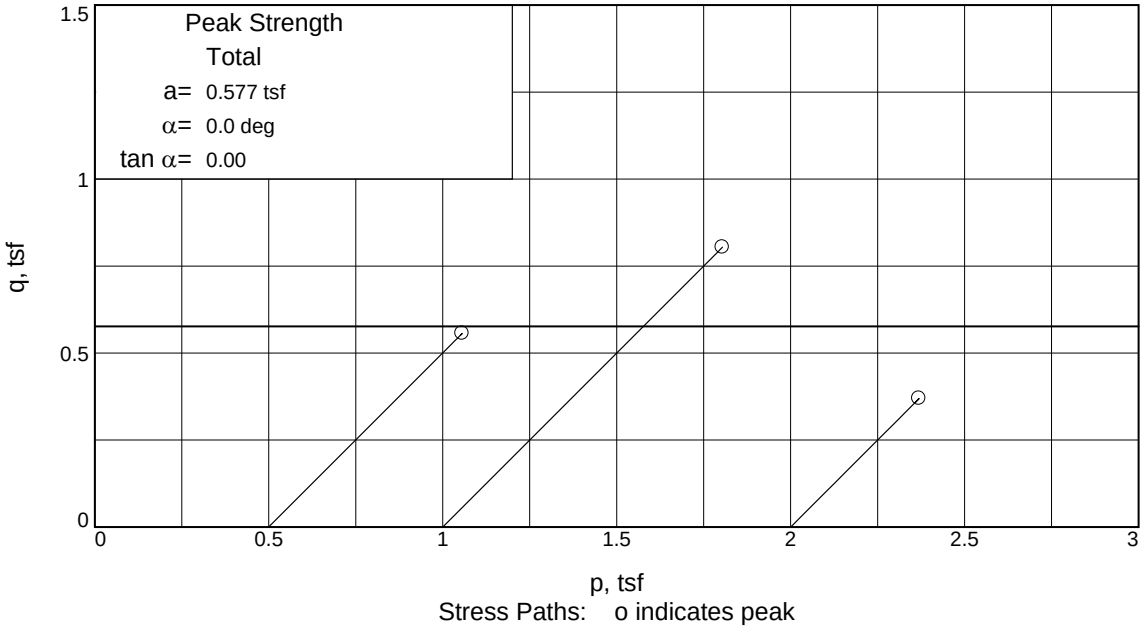
BRAUN INTERTEC











Stress Paths: o indicates peak

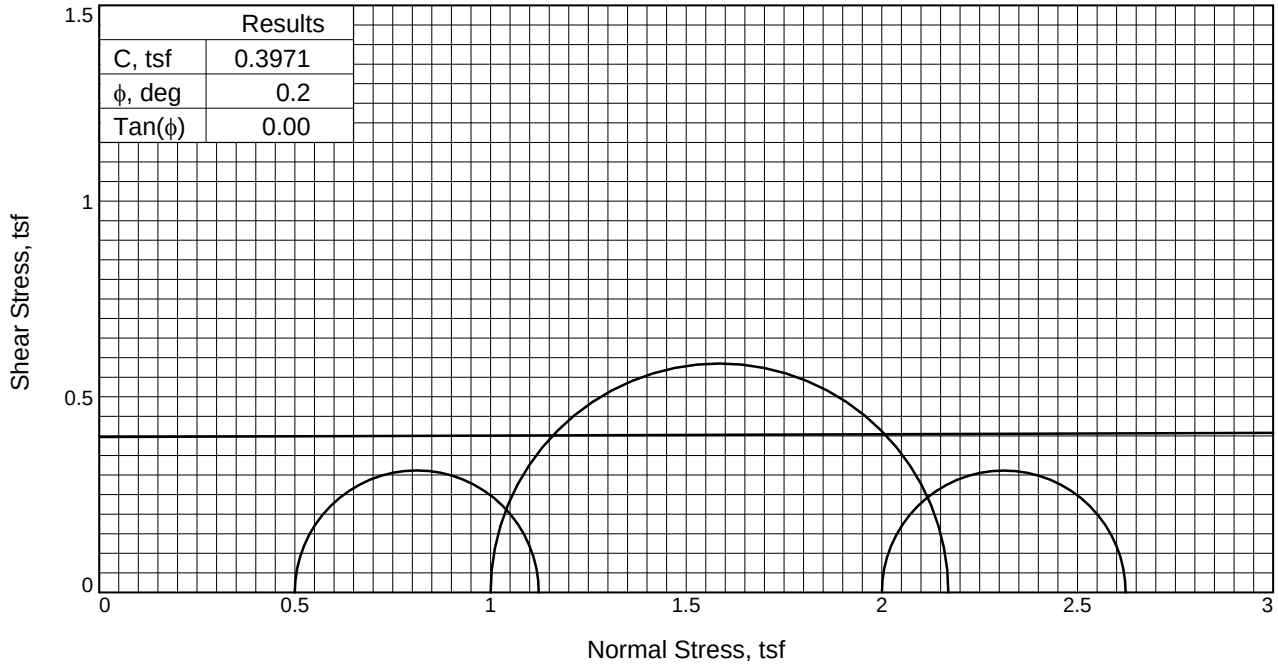
Client: KLJ Engineering LLC

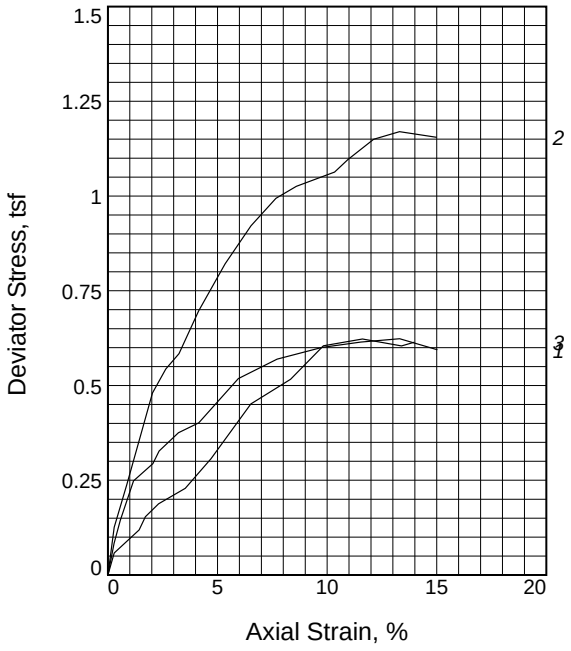
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-145 **Depth:** 17-19' **Sample Number:** TW-2161

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	47.7	41.0	38.9
	Dry Density, pcf	73.6	80.0	82.2
	Saturation, %	99.8	99.8	99.9
	Void Ratio	1.2899	1.1080	1.0513
	Diameter, in.	1.442	1.420	1.432
	Height, in.	2.825	2.804	2.808
At Test	Water Content, %	47.7	41.0	38.9
	Dry Density, pcf	73.6	80.0	82.2
	Saturation, %	99.8	99.8	99.9
	Void Ratio	1.2899	1.1080	1.0513
	Diameter, in.	1.442	1.420	1.432
	Height, in.	2.825	2.804	2.808
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.624	1.170	0.623
Ult. Stress, tsf		0.595	1.155	0.614
σ_1 Failure, tsf		1.123	2.170	2.623
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown and gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

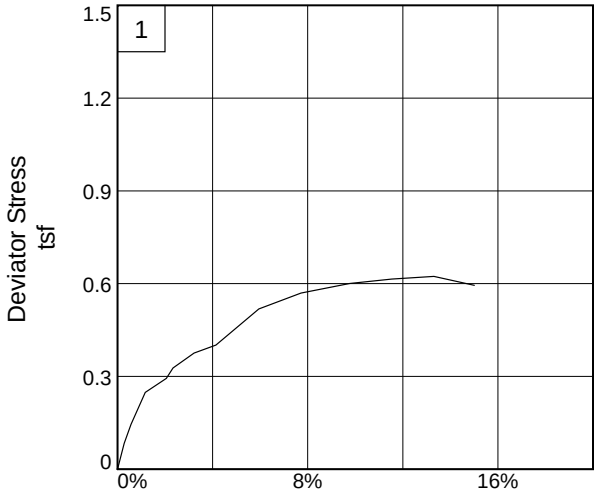
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

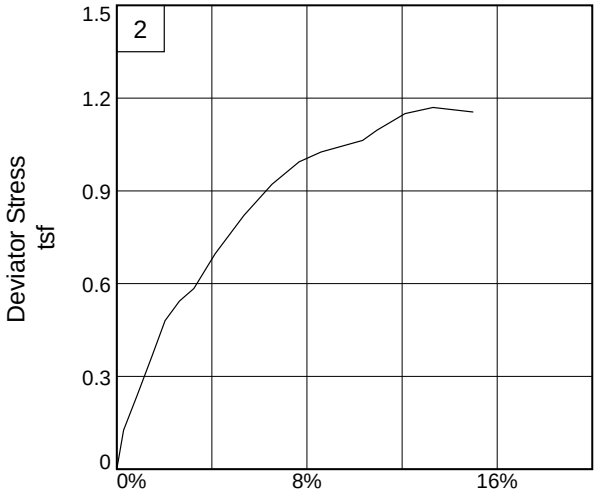
Source of Sample: CAA-147 **Depth:** 7-9'

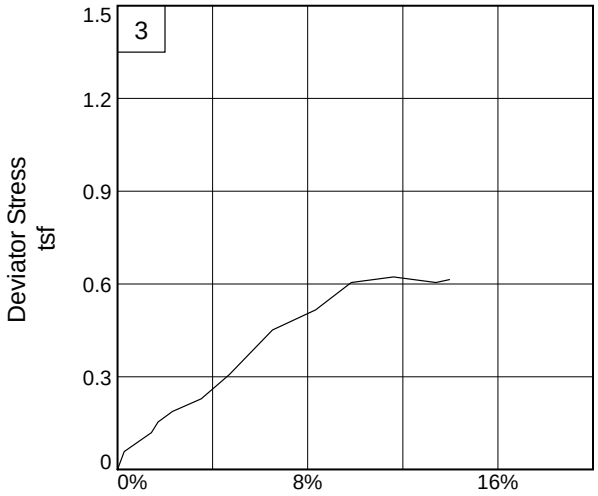
Sample Number: TW-2147

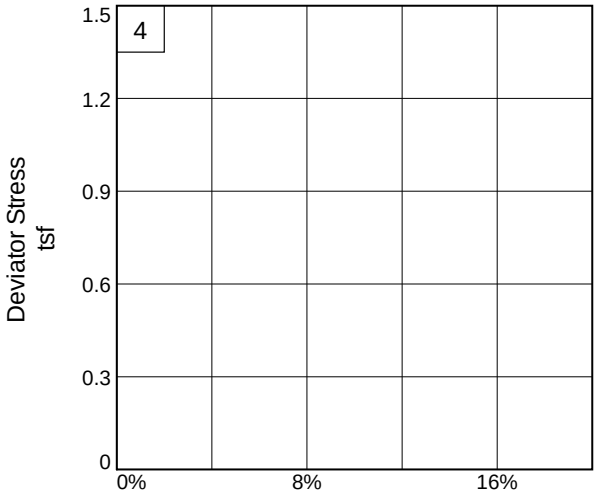
Proj. No.: B2009724 **Date Sampled:** 1/7/2021

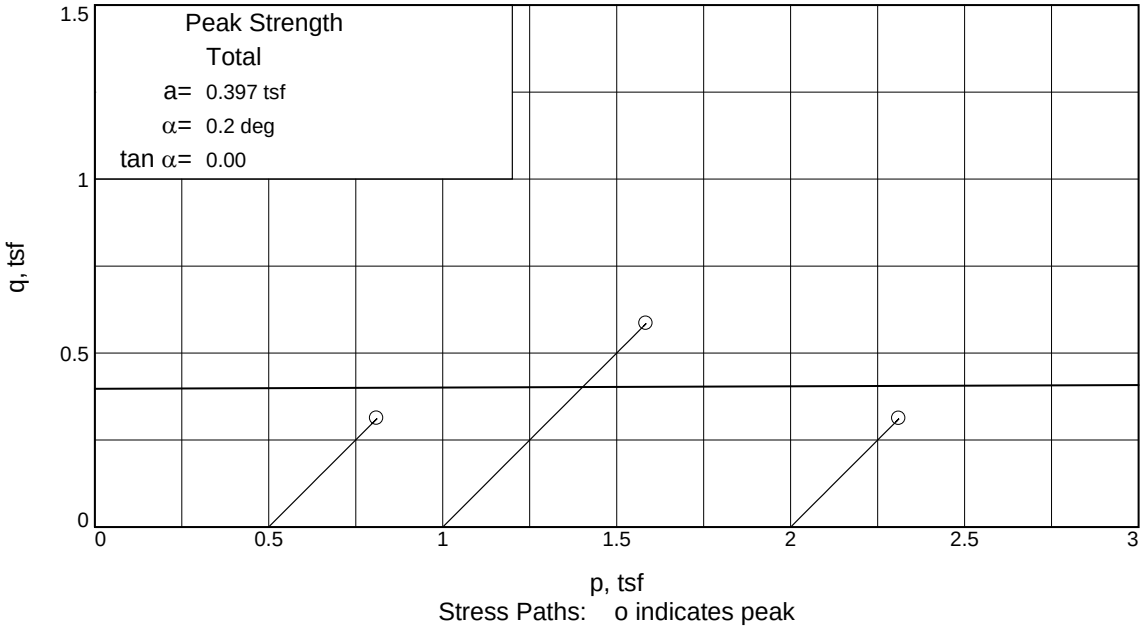
BRAUN INTERTEC











Stress Paths: o indicates peak

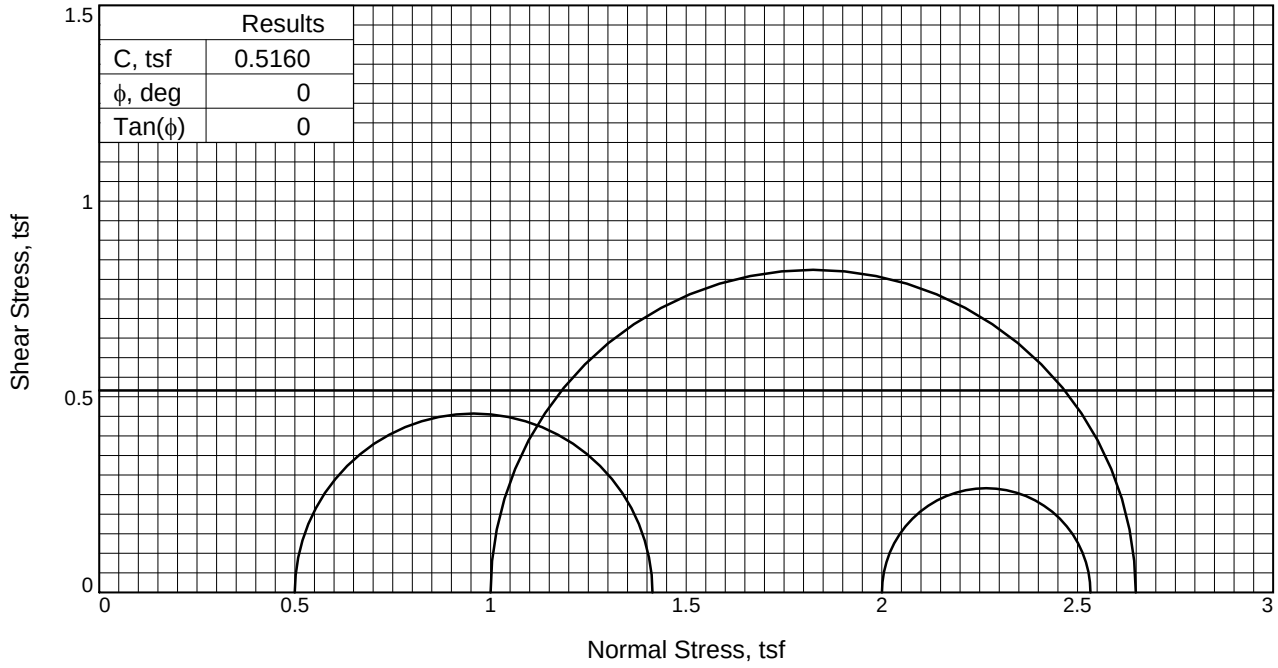
Client: KLJ Engineering LLC

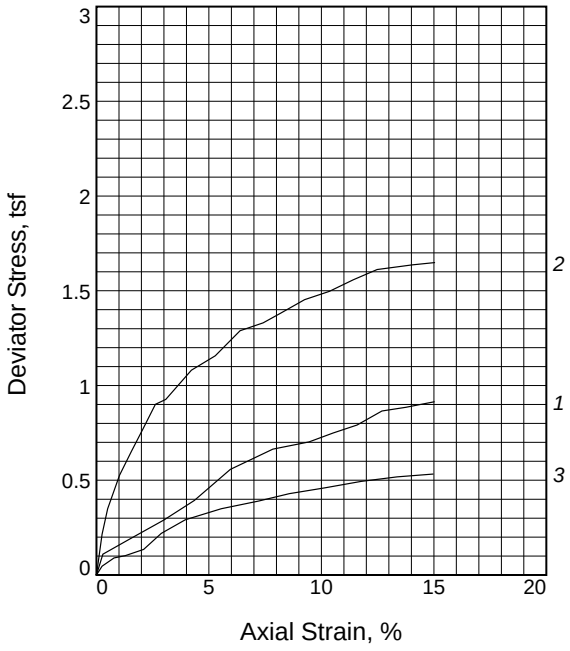
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-147 **Depth:** 7-9' **Sample Number:** TW-2147

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.0	40.0	46.5
	Dry Density, pcf	79.9	81.4	76.5
	Saturation, %	99.9	96.2	100.0
	Void Ratio	1.2270	1.1846	1.3263
	Diameter, in.	1.433	1.440	1.425
	Height, in.	2.804	2.821	2.813
At Test	Water Content, %	43.0	40.0	46.5
	Dry Density, pcf	79.9	81.4	76.5
	Saturation, %	99.9	96.2	100.0
	Void Ratio	1.2270	1.1846	1.3263
	Diameter, in.	1.433	1.440	1.425
	Height, in.	2.804	2.821	2.813
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.914	1.649	0.533
Ult. Stress, tsf		0.914	1.649	0.533
σ_1 Failure, tsf		1.414	2.649	2.533
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-7-6

Assumed Specific Gravity= 2.85

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

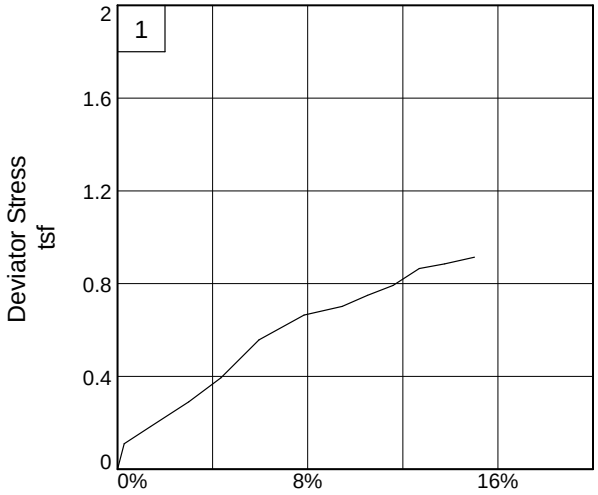
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

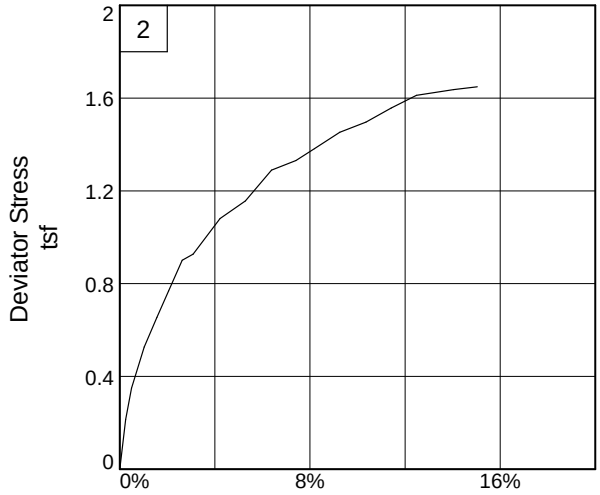
Source of Sample: GDRL-149 **Depth:** 7-9'

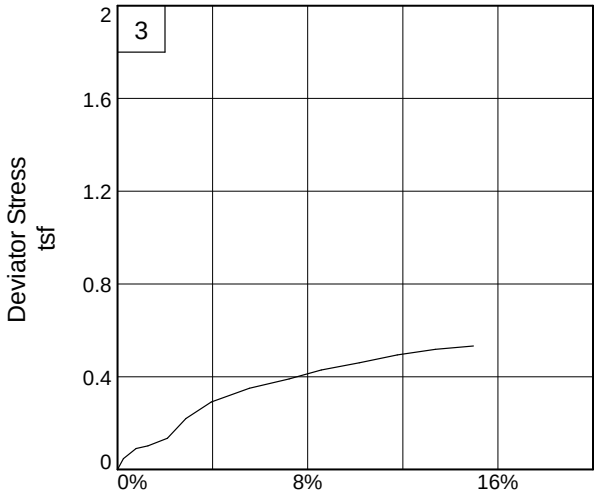
Sample Number: TW-2136

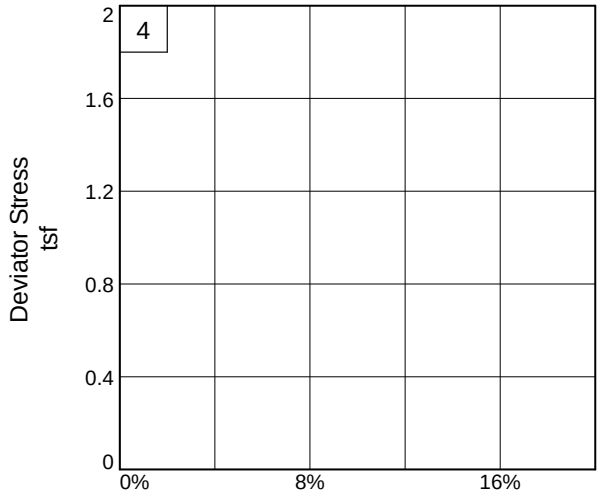
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

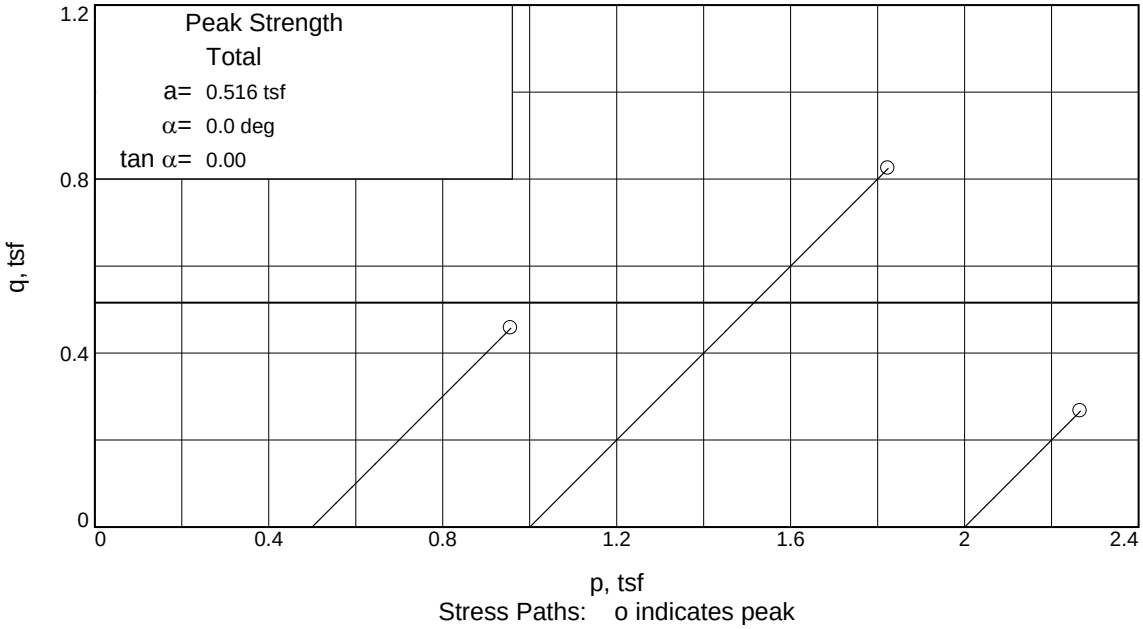
BRAUN INTERTEC











Stress Paths: o indicates peak

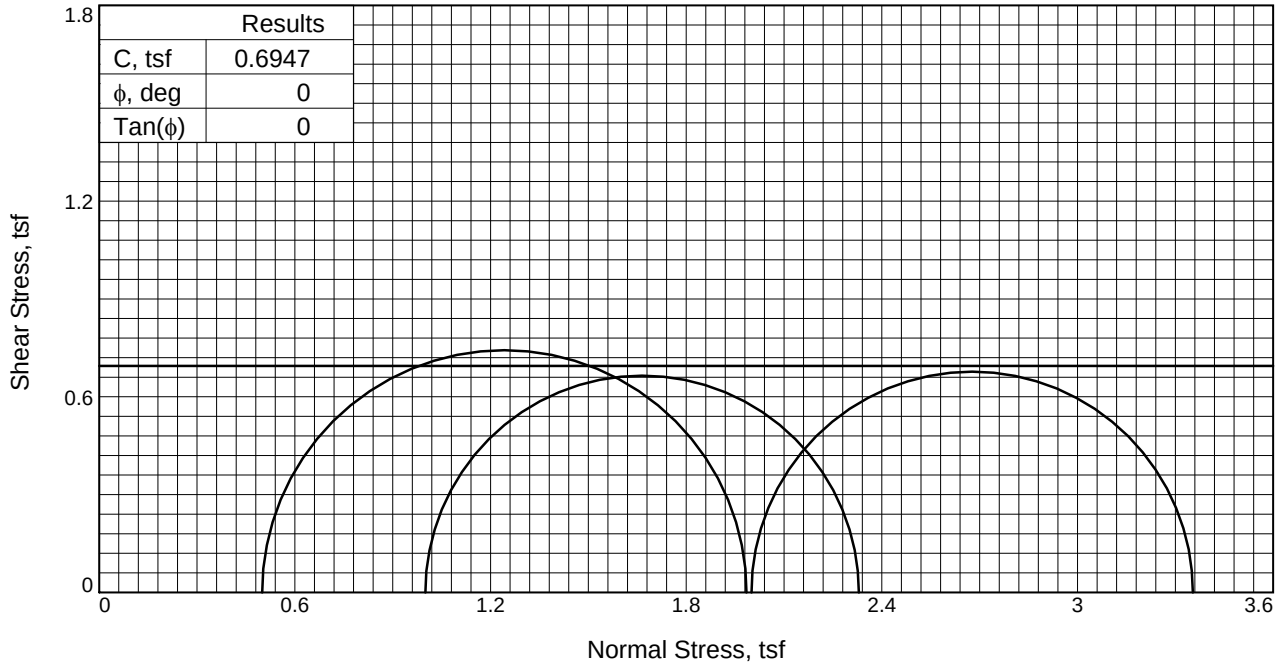
Client: KLJ Engineering LLC

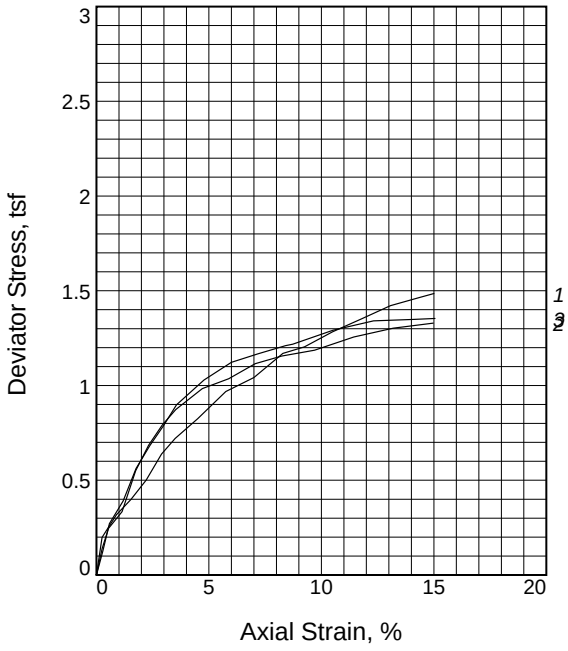
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-149 **Depth:** 7-9' **Sample Number:** TW-2136

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	36.8	41.4	39.1
	Dry Density, pcf	82.9	78.9	80.6
	Saturation, %	96.1	98.3	96.9
	Void Ratio	1.0334	1.1362	1.0904
	Diameter, in.	1.400	1.421	1.421
	Height, in.	2.800	2.805	2.784
At Test	Water Content, %	36.8	41.4	39.1
	Dry Density, pcf	82.9	78.9	80.6
	Saturation, %	96.1	98.3	96.9
	Void Ratio	1.0334	1.1362	1.0904
	Diameter, in.	1.400	1.421	1.421
	Height, in.	2.800	2.805	2.784
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.485	1.329	1.354
Ult. Stress, tsf		1.485	1.329	1.354
σ_1 Failure, tsf		1.985	2.330	3.354
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

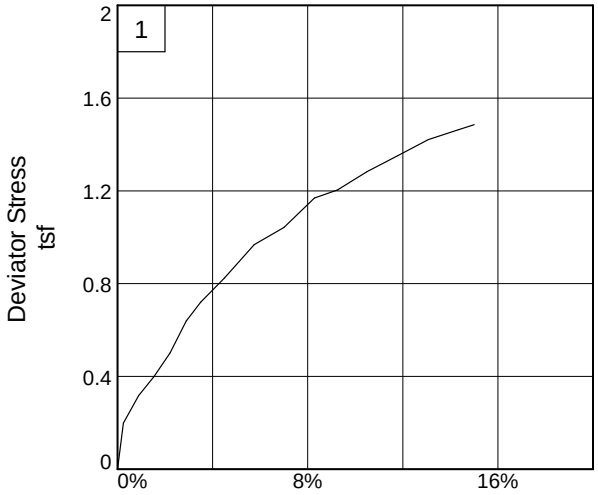
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

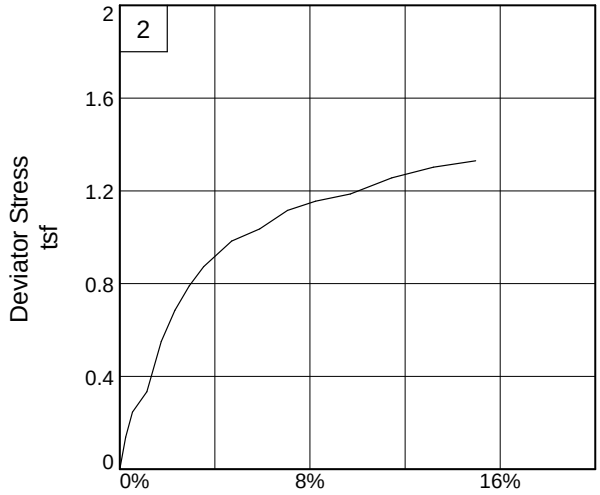
Source of Sample: GDRL-151 **Depth:** 7-9'

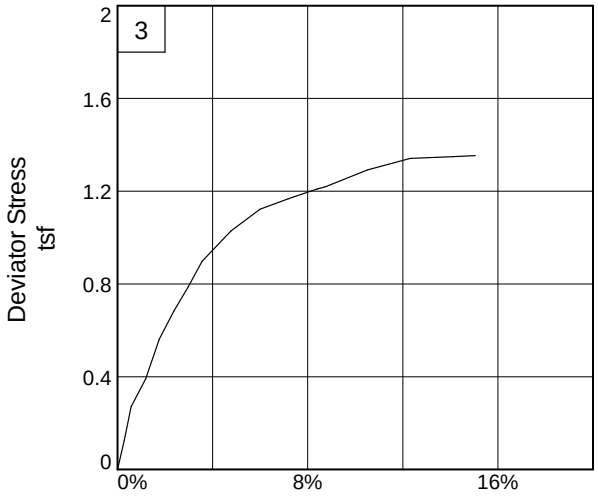
Sample Number: TW-2128

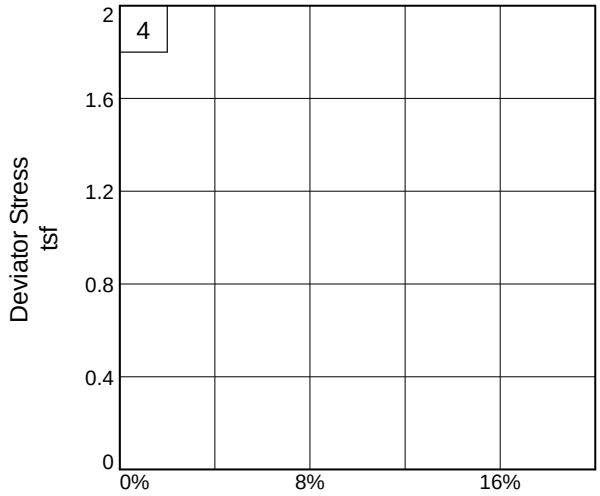
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

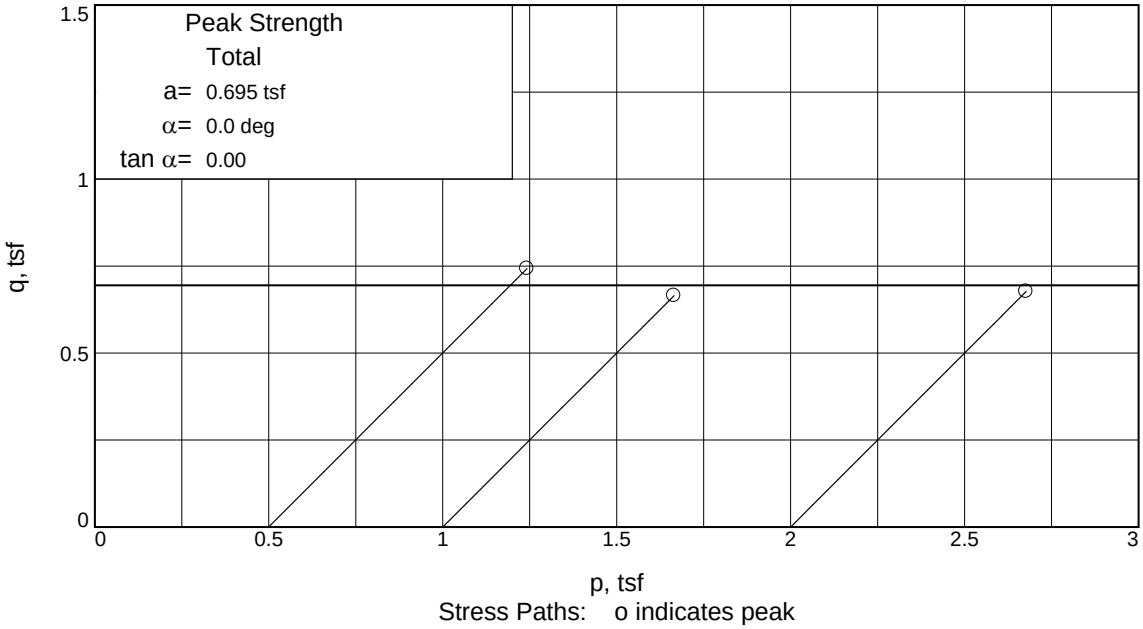
BRAUN INTERTEC











Stress Paths: o indicates peak

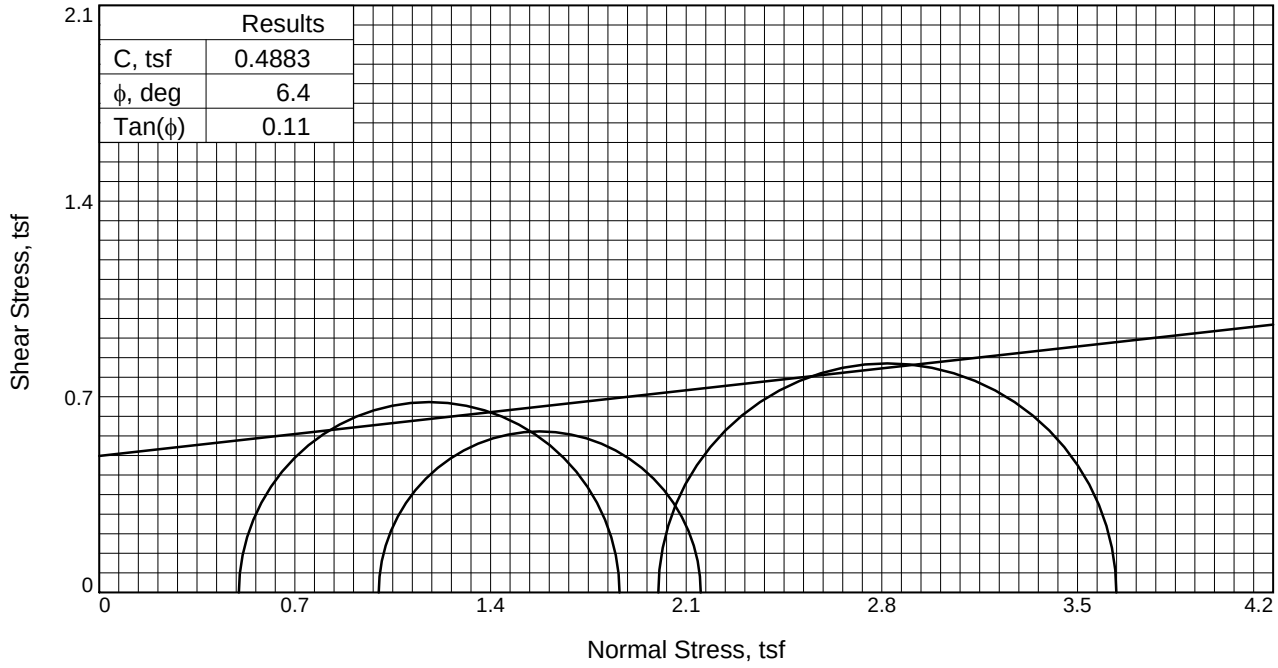
Client: KLJ Engineering LLC

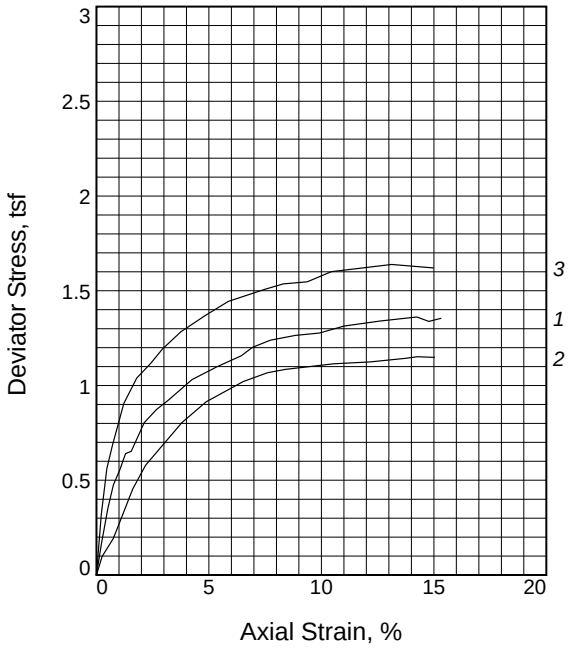
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-151 **Depth:** 7-9' **Sample Number:** TW-2128

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	41.2	40.2	41.2
	Dry Density, pcf	79.5	81.2	78.7
	Saturation, %	99.4	100.0	96.8
	Void Ratio	1.1199	1.0919	1.1570
	Diameter, in.	1.421	1.407	1.416
	Height, in.	2.781	2.788	2.796
At Test	Water Content, %	41.2	40.2	41.2
	Dry Density, pcf	79.5	81.2	78.7
	Saturation, %	99.4	100.0	96.8
	Void Ratio	1.1199	1.0919	1.1570
	Diameter, in.	1.421	1.407	1.416
	Height, in.	2.781	2.788	2.796
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.362	1.152	1.639
Ult. Stress, tsf		1.338	1.149	1.621
σ_1 Failure, tsf		1.861	2.152	3.639
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

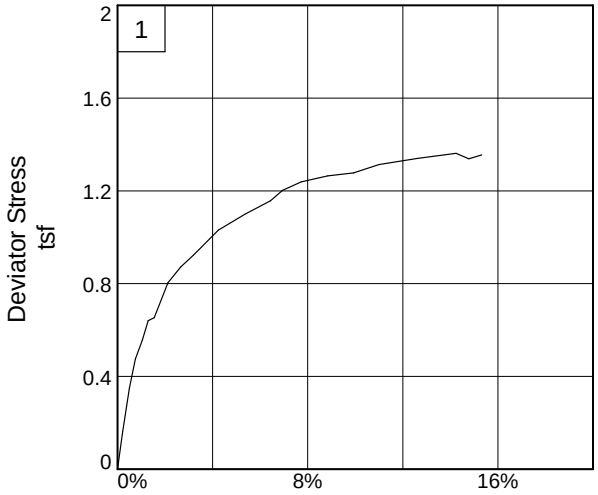
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

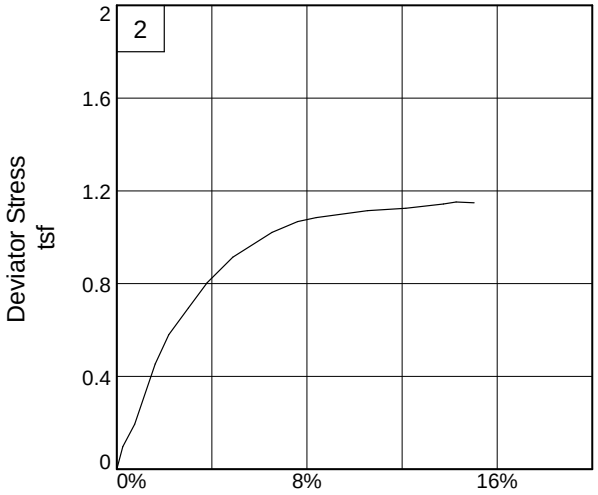
Source of Sample: GDRL-153 **Depth:** 7-9'

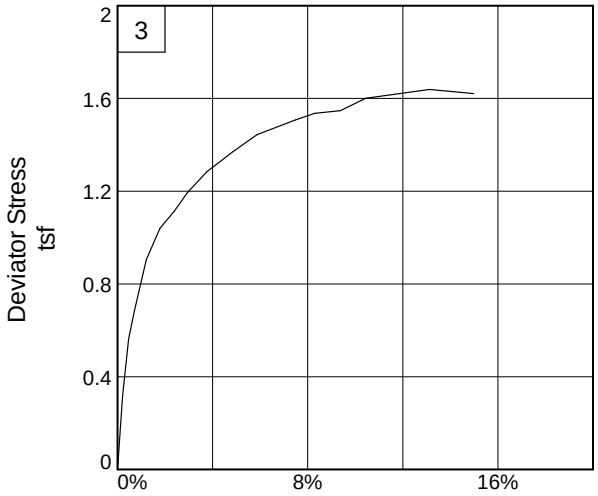
Sample Number: TW-2120

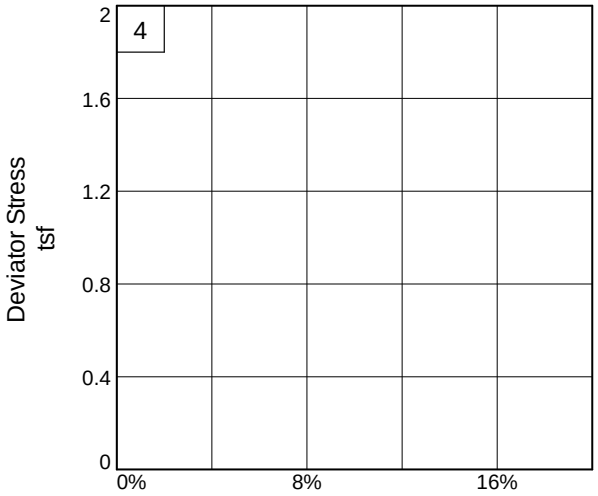
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

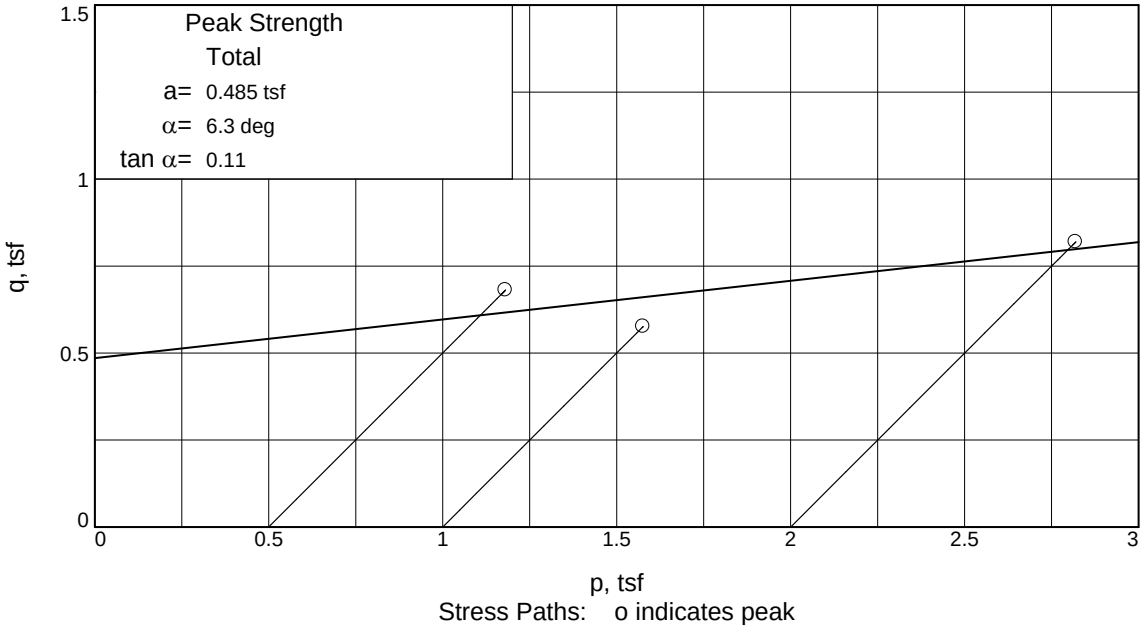
BRAUN INTERTEC











Stress Paths: o indicates peak

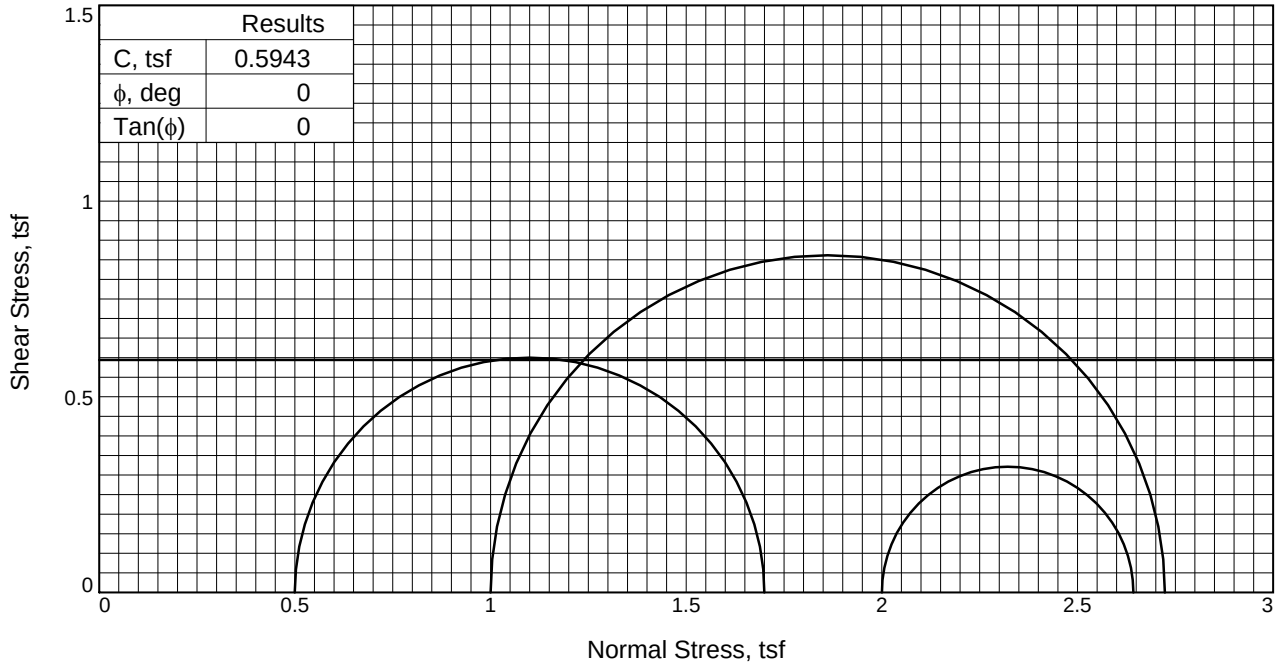
Client: KLJ Engineering LLC

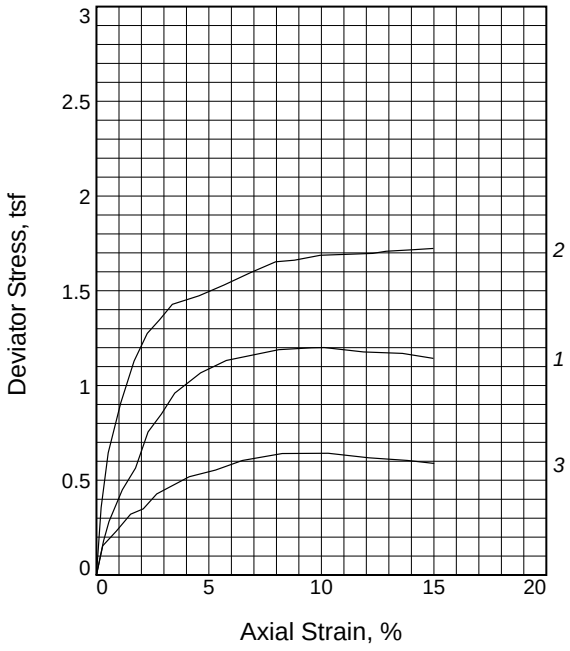
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-153 **Depth:** 7-9' **Sample Number:** TW-2120

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.5	38.3	49.7
	Dry Density, pcf	77.1	82.8	71.9
	Saturation, %	99.0	99.9	99.9
	Void Ratio	1.1865	1.0348	1.3442
	Diameter, in.	1.410	1.452	1.445
	Height, in.	2.874	2.874	2.833
At Test	Water Content, %	43.5	38.3	49.7
	Dry Density, pcf	77.1	82.8	71.9
	Saturation, %	99.0	99.9	99.9
	Void Ratio	1.1865	1.0348	1.3442
	Diameter, in.	1.410	1.452	1.445
	Height, in.	2.874	2.874	2.833
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.200	1.723	0.643
Ult. Stress, tsf		1.143	1.723	0.589
σ_1 Failure, tsf		1.700	2.723	2.643
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

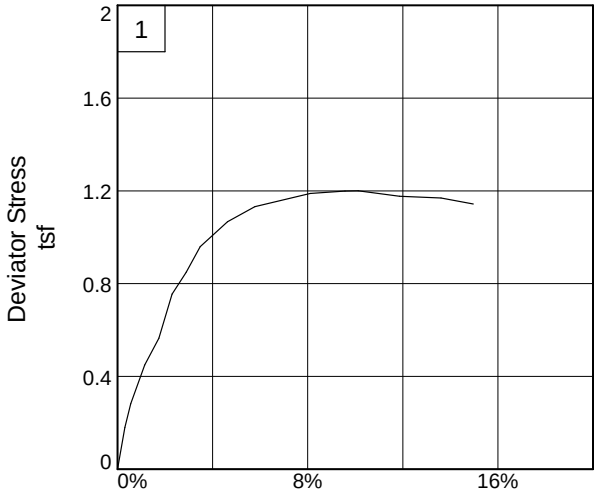
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

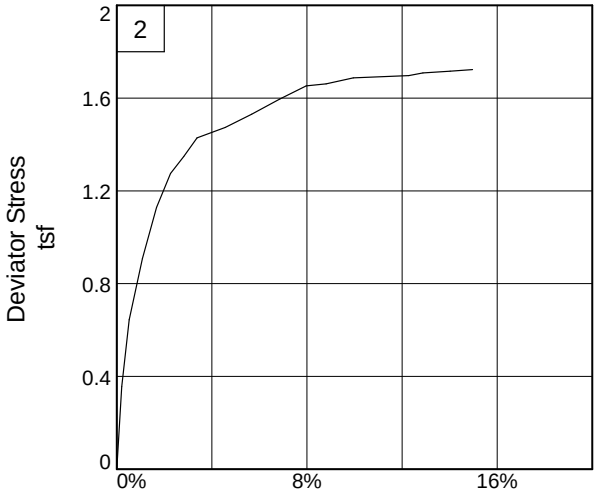
Source of Sample: CAA-154 **Depth:** 17-19'

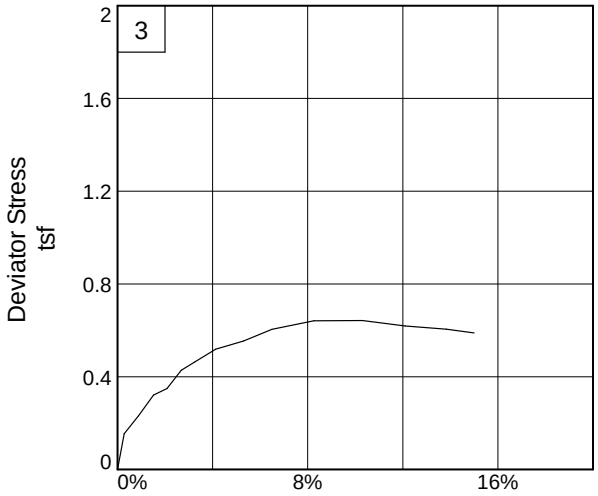
Sample Number: TW-2116

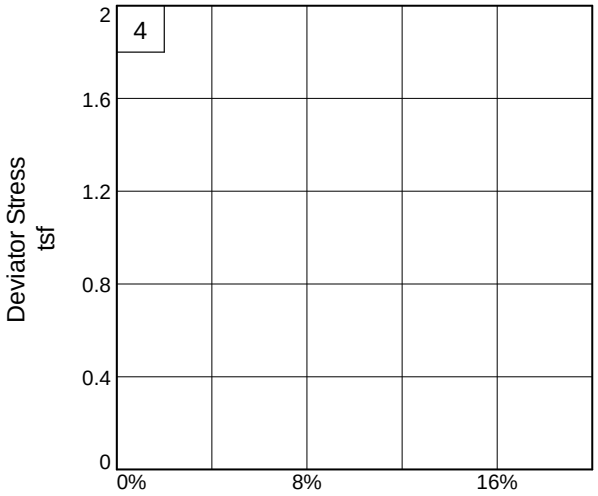
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

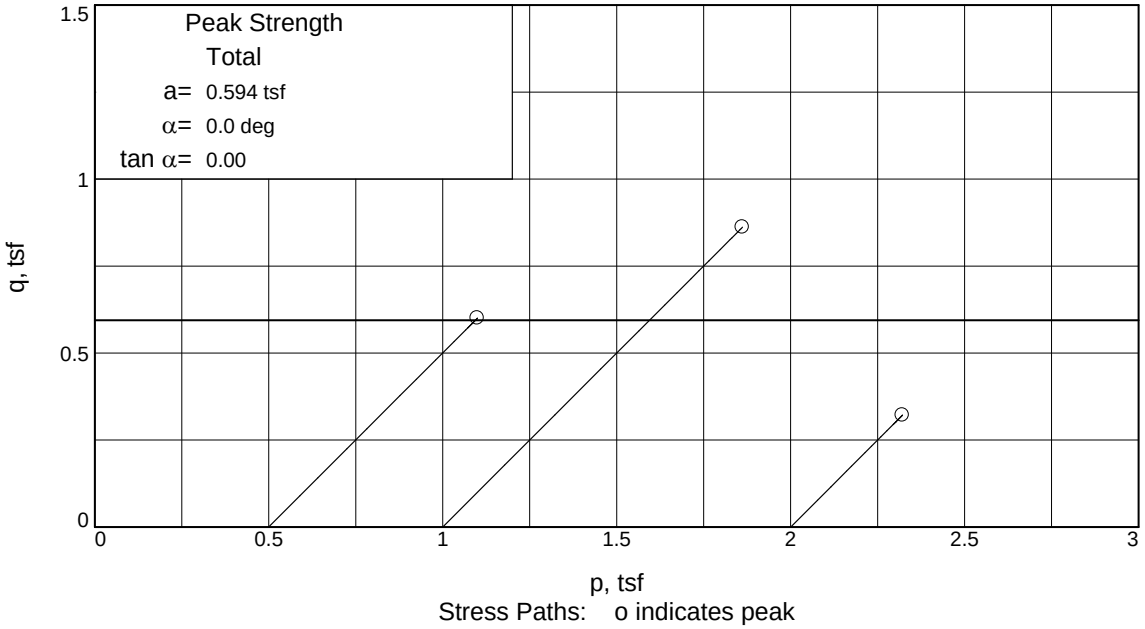
BRAUN INTERTEC











Stress Paths: o indicates peak

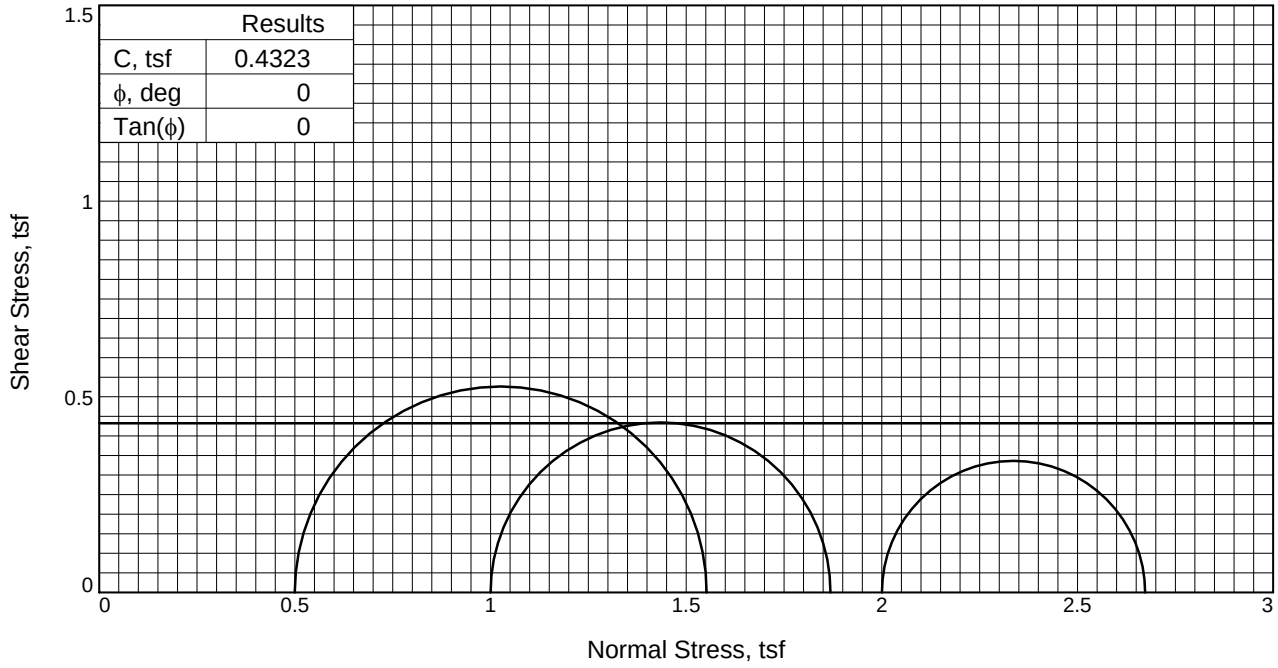
Client: KLJ Engineering LLC

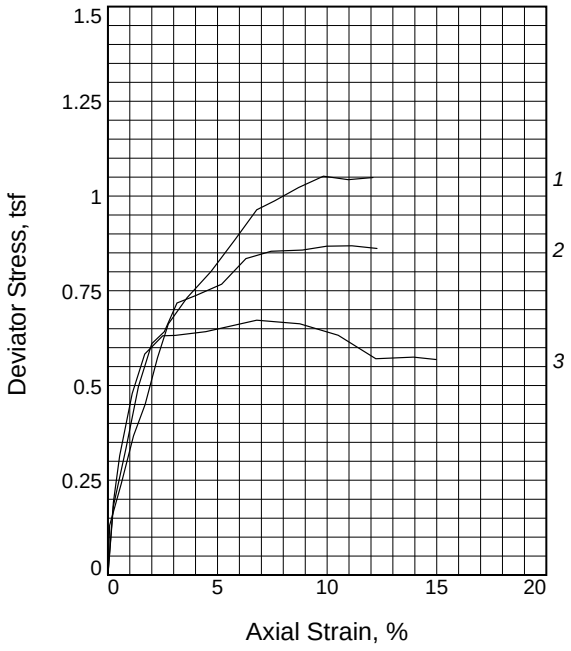
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-154 **Depth:** 17-19' **Sample Number:** TW-2116

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	38.9	35.5	42.8
	Dry Density, pcf	82.1	85.7	76.8
	Saturation, %	99.8	99.1	96.8
	Void Ratio	1.0528	0.9670	1.1938
	Diameter, in.	1.460	1.420	1.362
	Height, in.	2.828	2.795	2.798
At Test	Water Content, %	38.9	35.5	42.8
	Dry Density, pcf	82.1	85.7	76.8
	Saturation, %	99.8	99.1	96.8
	Void Ratio	1.0528	0.9670	1.1938
	Diameter, in.	1.460	1.420	1.362
	Height, in.	2.828	2.795	2.798
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.053	0.869	0.673
Ult. Stress, tsf		1.043	0.861	0.569
σ_1 Failure, tsf		1.552	1.869	2.673
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

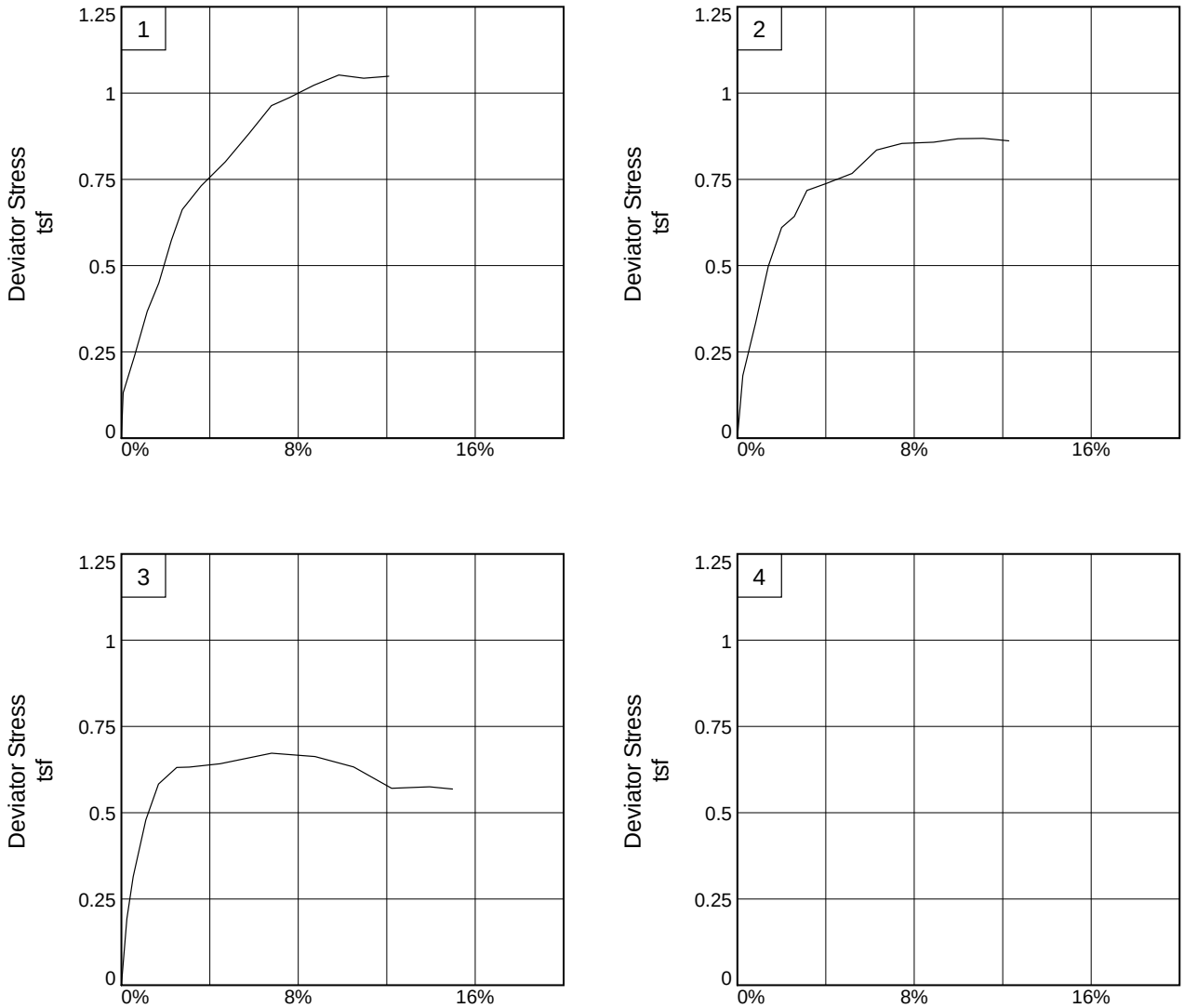
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

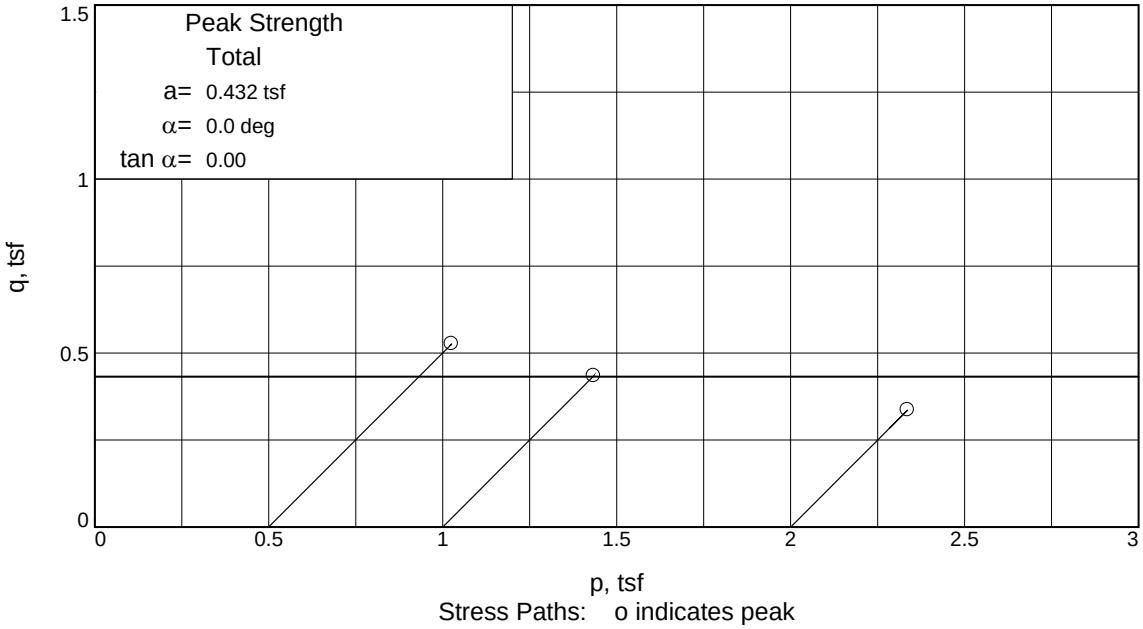
Source of Sample: GDRL-155 **Depth:** 7-9'

Sample Number: TW-2109

Proj. No.: B2009724 **Date Sampled:** 1/6/2021

BRAUN INTERTEC





Stress Paths: o indicates peak

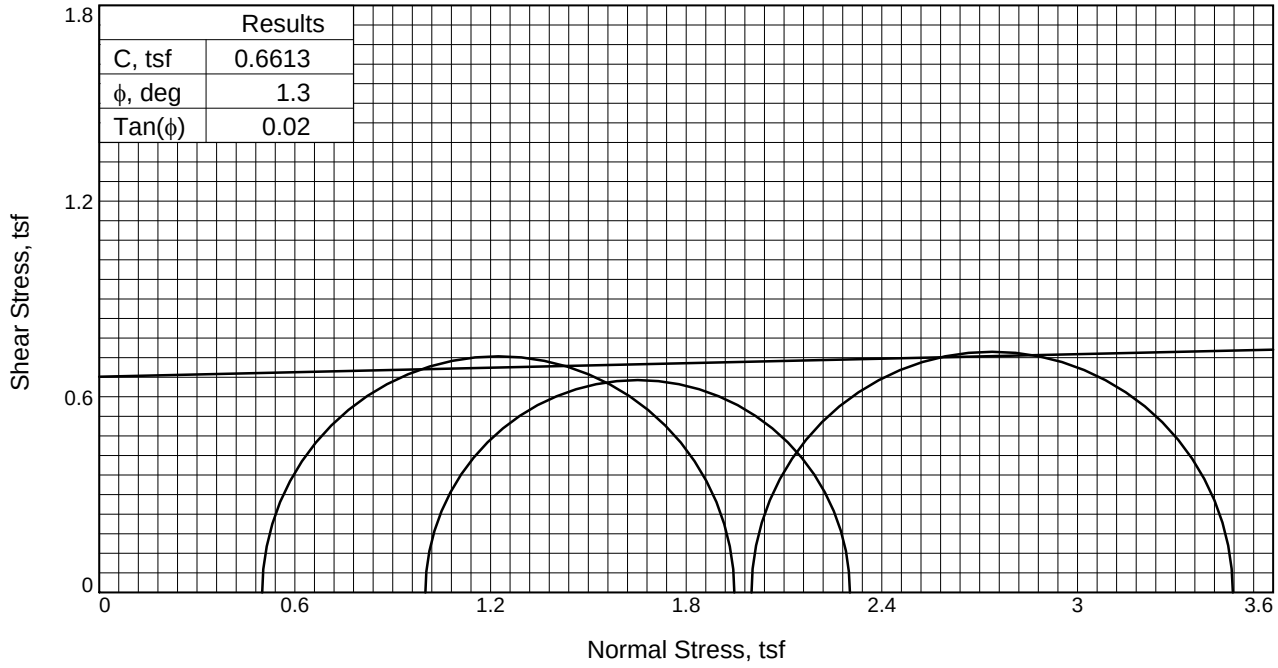
Client: KLJ Engineering LLC

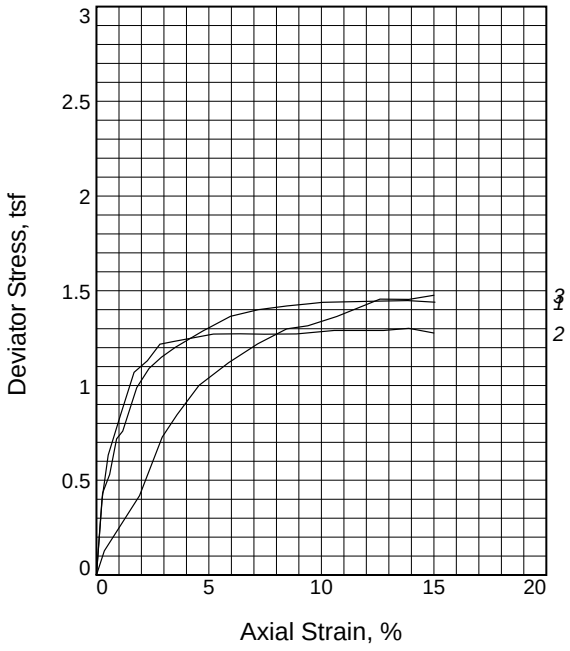
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-155 **Depth:** 7-9' **Sample Number:** TW-2109

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	41.2	41.0	42.9
	Dry Density, pcf	78.2	77.9	77.8
	Saturation, %	96.3	95.0	99.2
	Void Ratio	1.1552	1.1648	1.1667
	Diameter, in.	1.385	1.410	1.390
	Height, in.	2.904	2.867	2.873
At Test	Water Content, %	41.2	41.0	42.9
	Dry Density, pcf	78.2	77.9	77.8
	Saturation, %	96.3	95.0	99.2
	Void Ratio	1.1552	1.1648	1.1667
	Diameter, in.	1.385	1.410	1.390
	Height, in.	2.904	2.867	2.873
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.448	1.302	1.476
Ult. Stress, tsf		1.440	1.277	1.476
σ_1 Failure, tsf		1.948	2.302	3.476
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray to brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

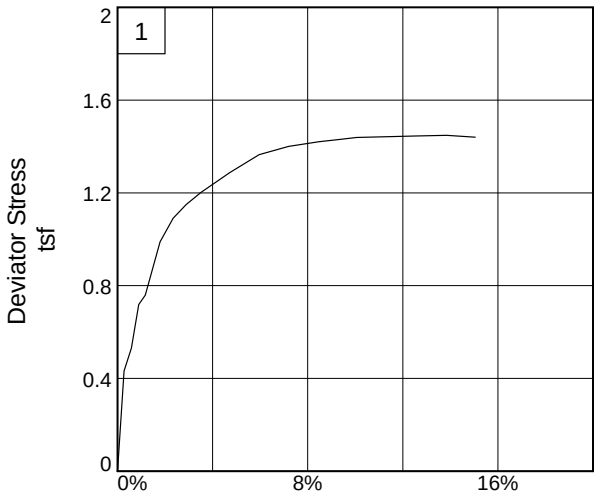
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

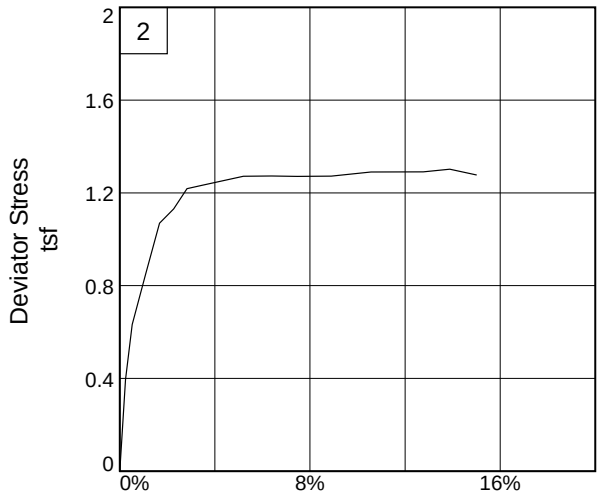
Source of Sample: GDRL-157 **Depth:** 7-9'

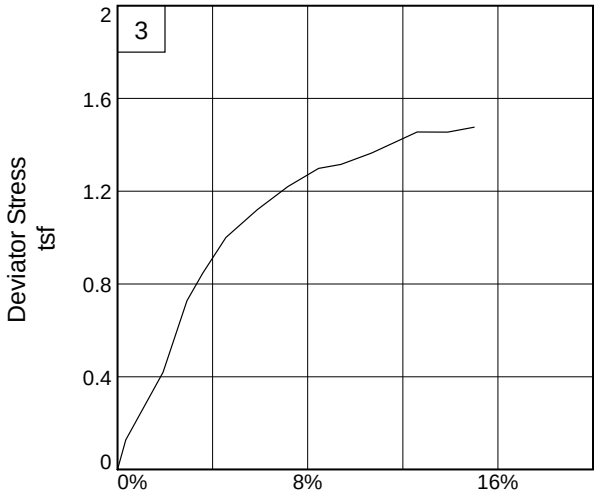
Sample Number: TW-2100

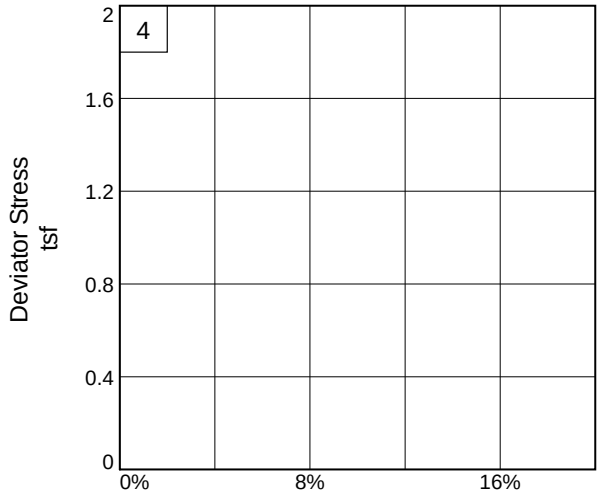
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

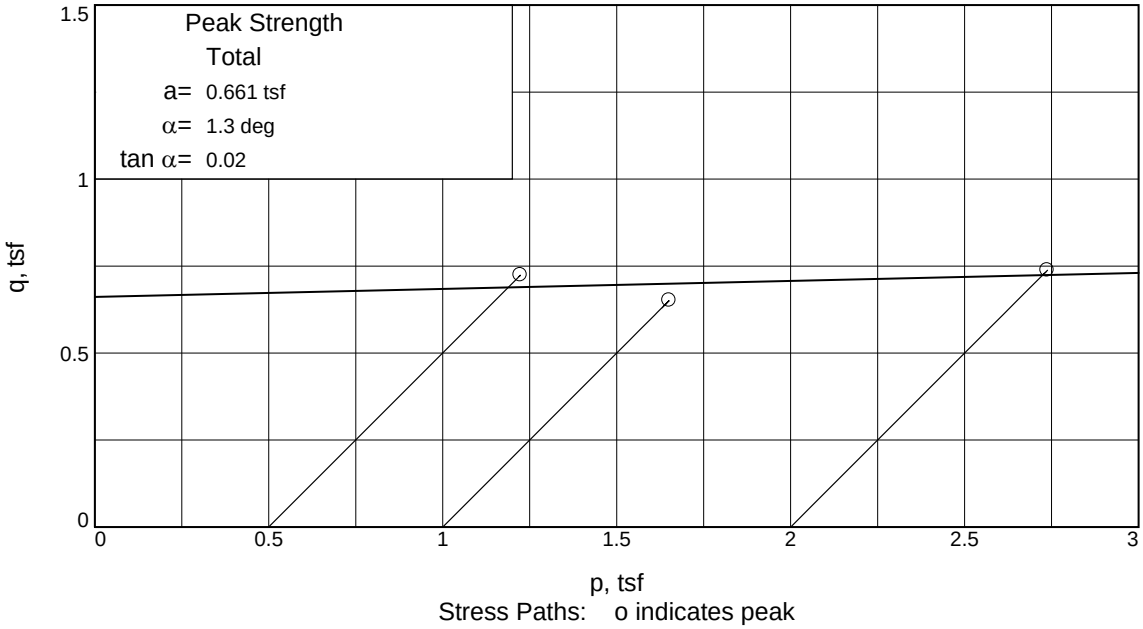
BRAUN INTERTEC











Stress Paths: o indicates peak

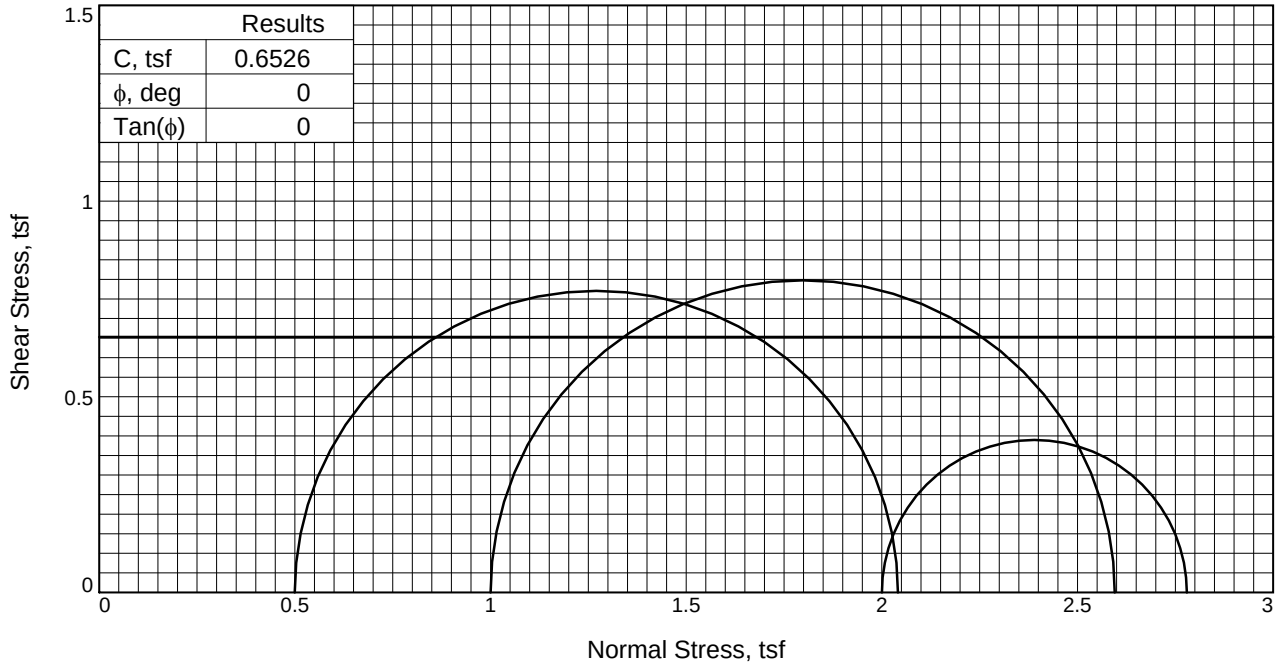
Client: KLJ Engineering LLC

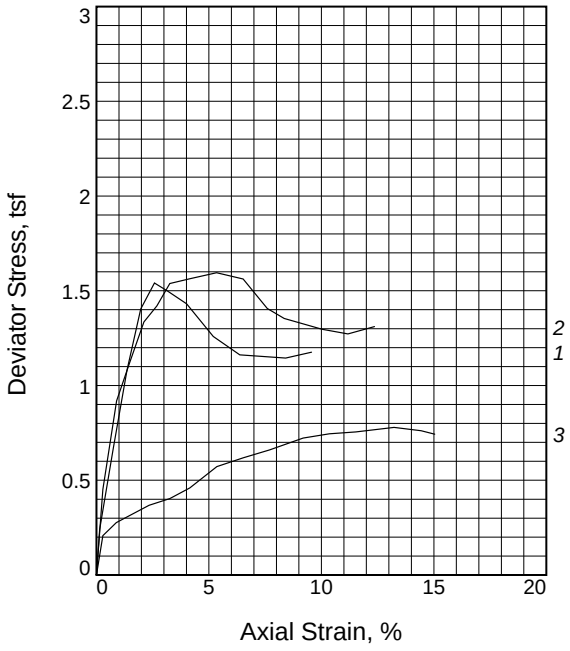
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-157 **Depth:** 7-9' **Sample Number:** TW-2100

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.0	43.7	49.9
	Dry Density, pcf	76.4	76.3	71.8
	Saturation, %	96.3	97.7	99.8
	Void Ratio	1.2057	1.2083	1.3490
	Diameter, in.	1.420	1.425	1.435
	Height, in.	2.793	2.791	2.820
At Test	Water Content, %	43.0	43.7	49.9
	Dry Density, pcf	76.4	76.3	71.8
	Saturation, %	96.3	97.7	99.8
	Void Ratio	1.2057	1.2083	1.3490
	Diameter, in.	1.420	1.425	1.435
	Height, in.	2.793	2.791	2.820
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.541	1.595	0.779
Ult. Stress, tsf		1.145	1.272	0.743
σ_1 Failure, tsf		2.041	2.595	2.779
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

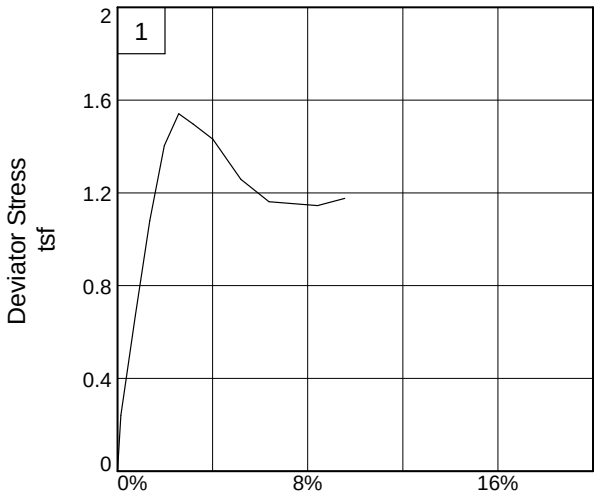
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

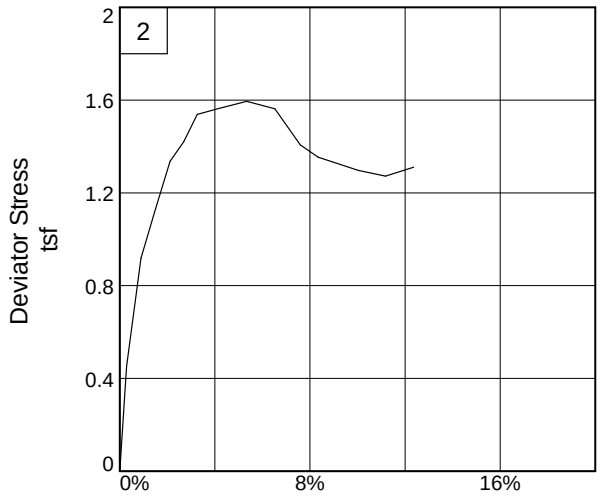
Source of Sample: CAA-158 **Depth:** 17-19'

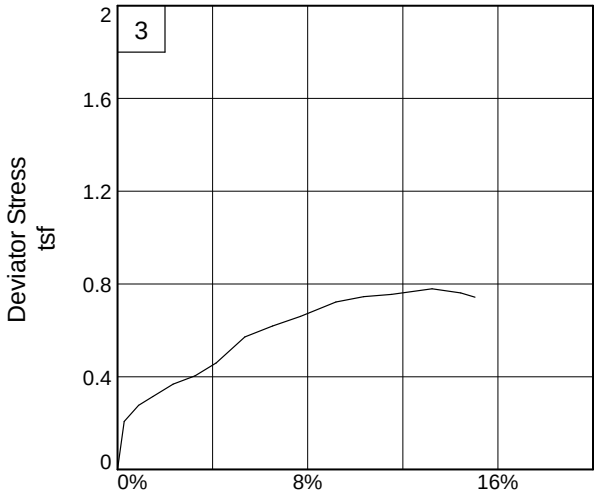
Sample Number: TW-2096

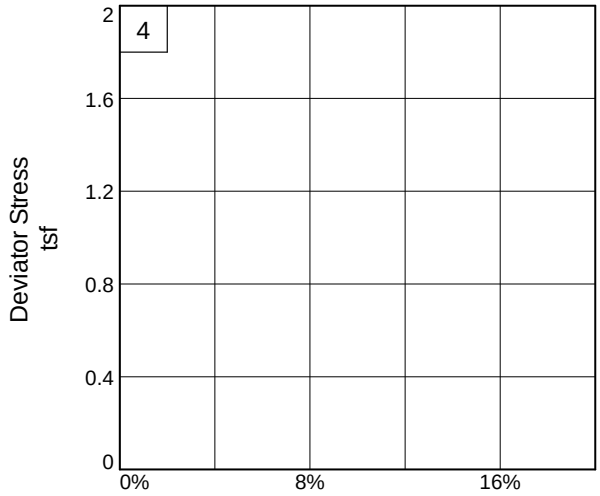
Proj. No.: B2009724 **Date Sampled:** 1/6/2021

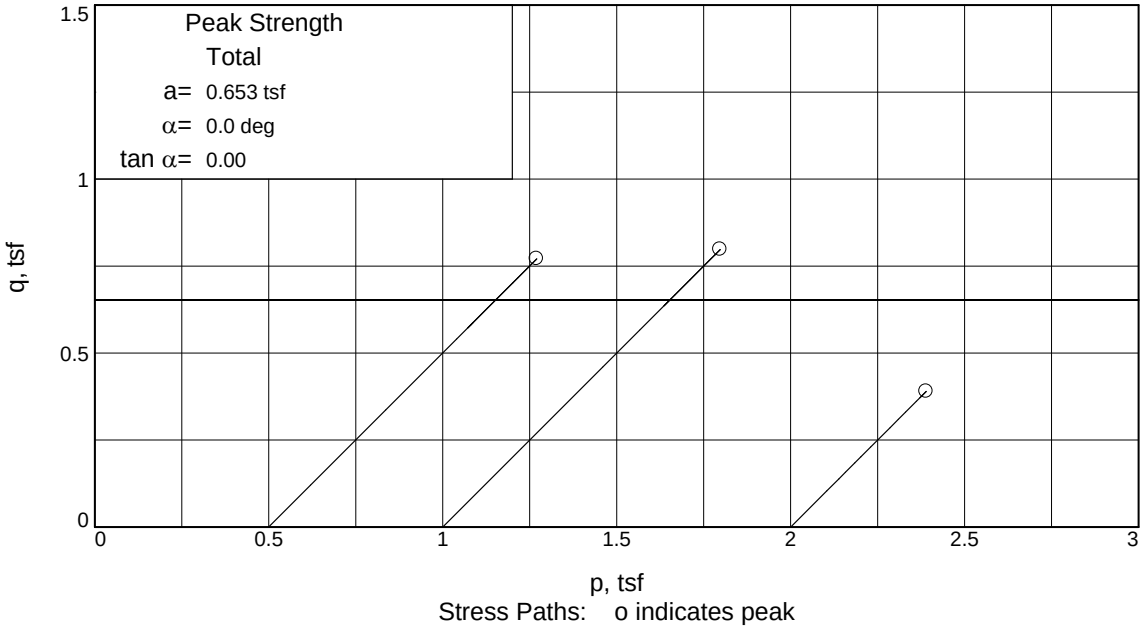
BRAUN INTERTEC











Stress Paths: o indicates peak

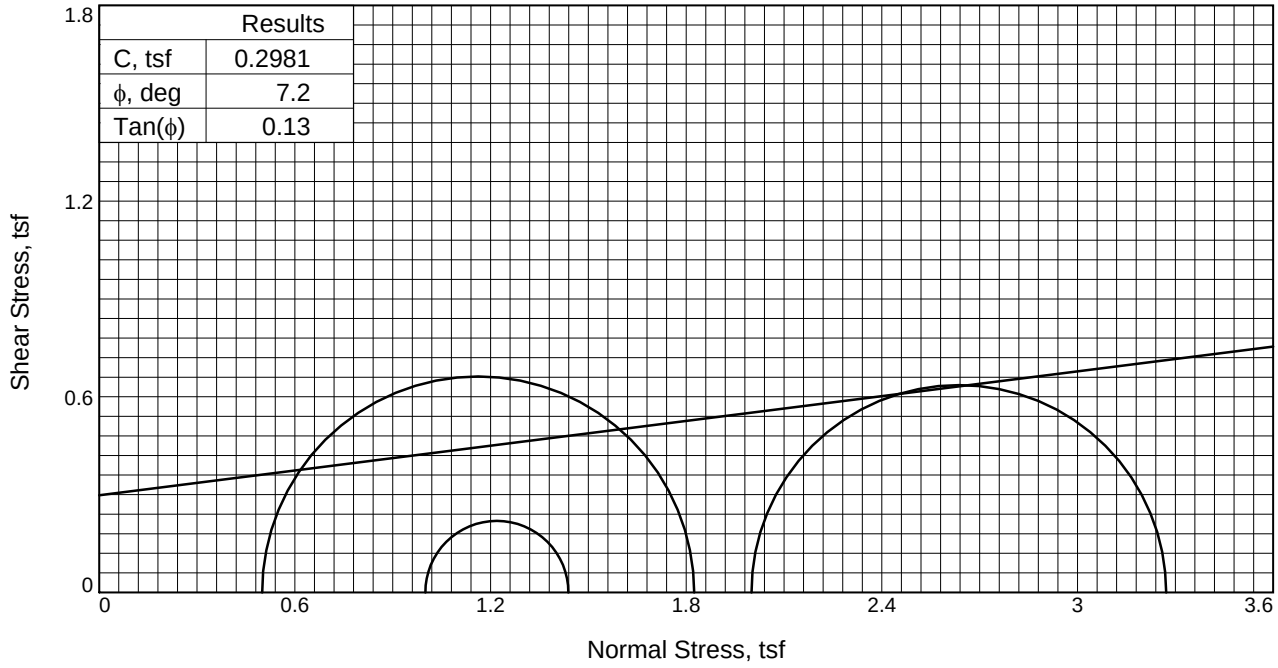
Client: KLJ Engineering LLC

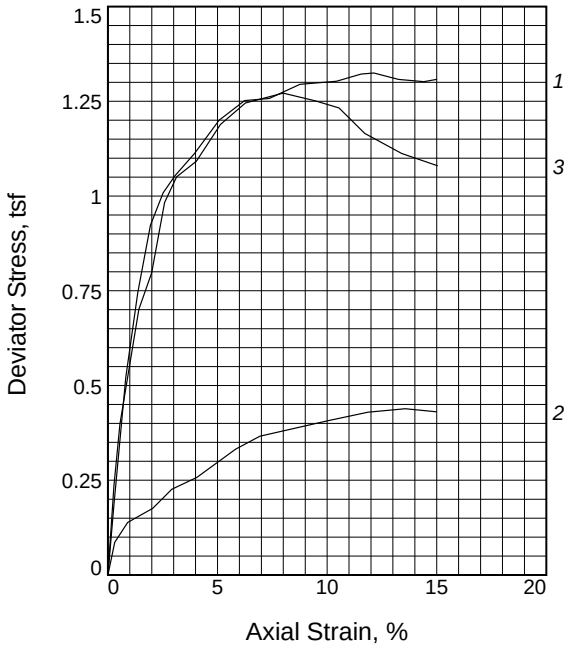
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-158 **Depth:** 17-19' **Sample Number:** TW-2096

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	38.5	39.4	38.2
	Dry Density, pcf	82.2	81.6	82.5
	Saturation, %	99.1	99.9	99.0
	Void Ratio	1.0495	1.0658	1.0427
	Diameter, in.	1.440	1.438	1.437
	Height, in.	2.935	2.883	2.902
At Test	Water Content, %	38.5	39.4	38.2
	Dry Density, pcf	82.2	81.6	82.5
	Saturation, %	99.1	99.9	99.0
	Void Ratio	1.0495	1.0658	1.0427
	Diameter, in.	1.440	1.438	1.437
	Height, in.	2.935	2.883	2.902
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.325	0.439	1.272
Ult. Stress, tsf		1.302	0.431	1.080
σ_1 Failure, tsf		1.824	1.439	3.272
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

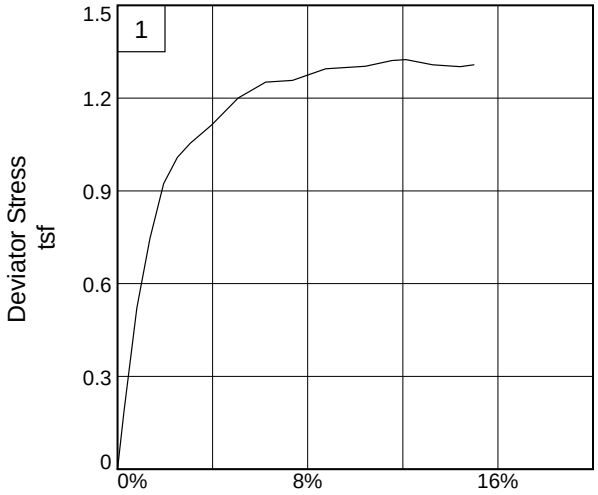
Source of Sample: GDRL-160 **Depth:** 7-9'

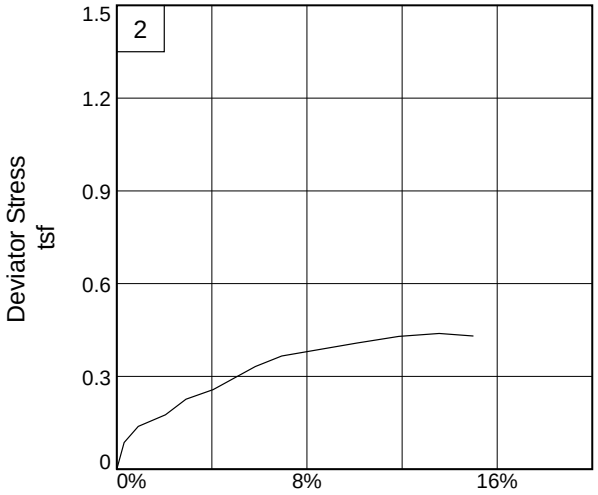
Sample Number: TW-2089

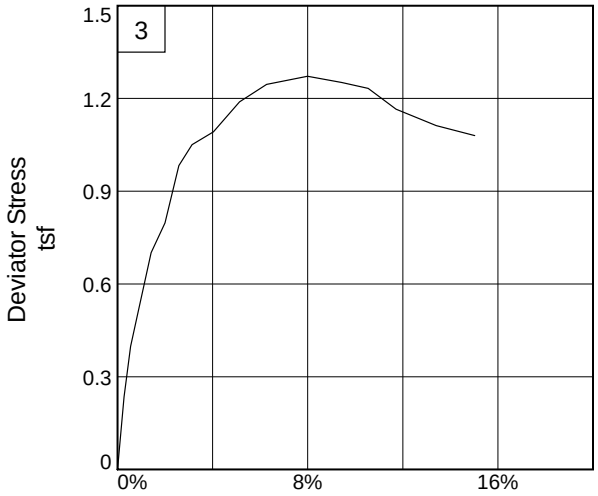
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

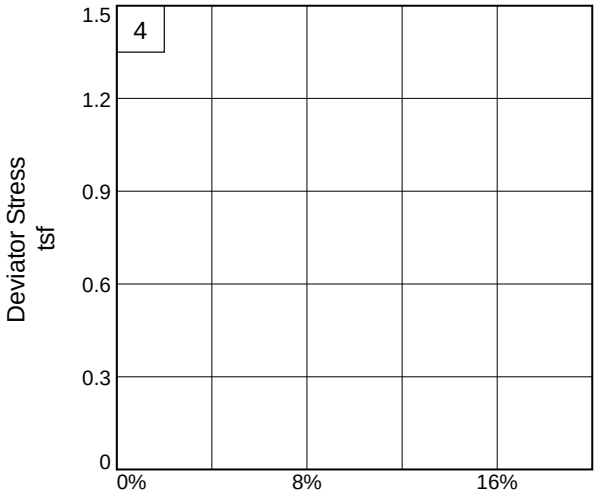
BRAUN INTERTEC

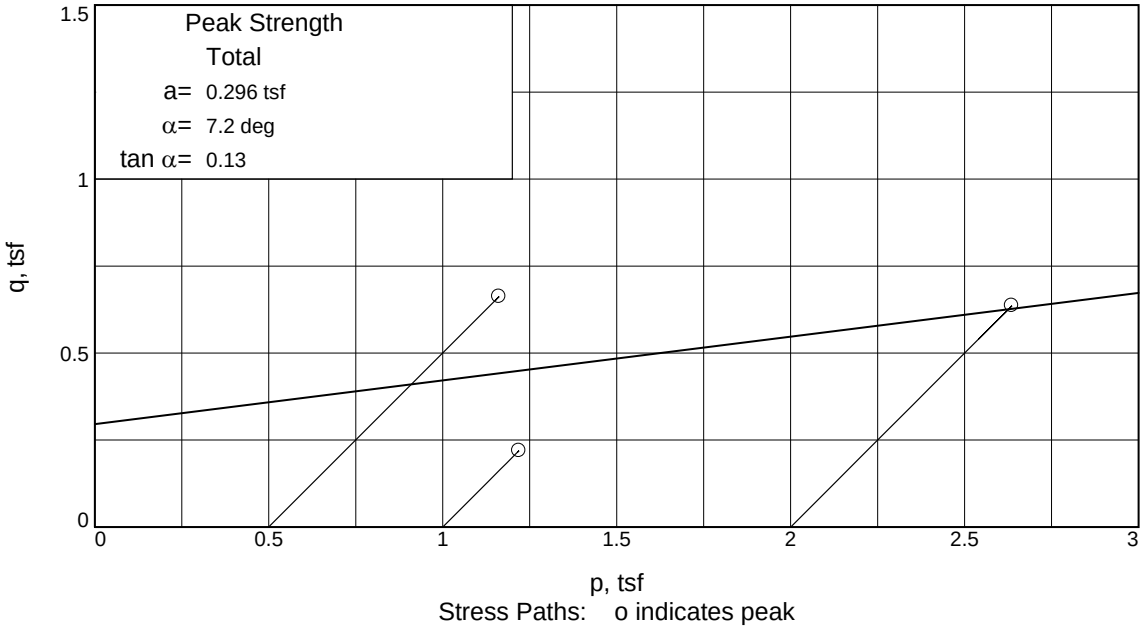
Figure _____











Stress Paths: o indicates peak

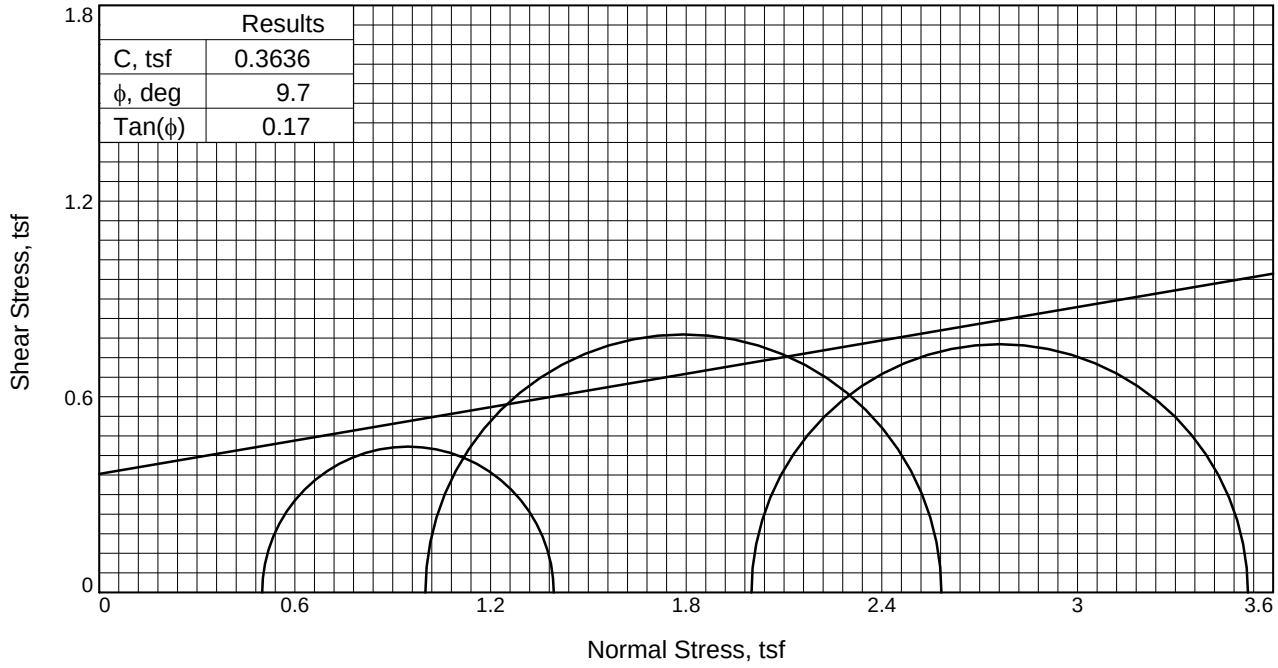
Client: KLJ Engineering LLC

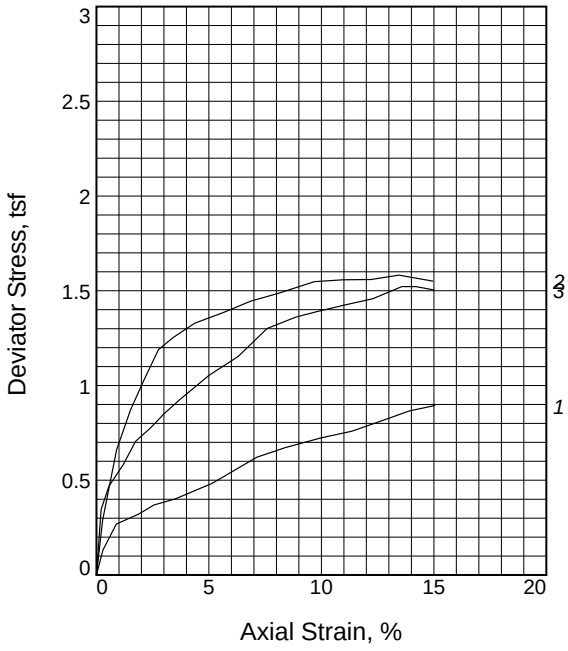
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-160 **Depth:** 7-9' **Sample Number:** TW-2089

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	33.0	38.4	37.5
	Dry Density, pcf	87.7	82.3	83.7
	Saturation, %	96.5	98.9	99.8
	Void Ratio	0.9225	1.0488	1.0138
	Diameter, in.	1.400	1.446	1.458
	Height, in.	2.820	2.901	2.873
At Test	Water Content, %	33.0	38.4	37.5
	Dry Density, pcf	87.7	82.3	83.7
	Saturation, %	96.5	98.9	99.8
	Void Ratio	0.9225	1.0488	1.0138
	Diameter, in.	1.400	1.446	1.458
	Height, in.	2.820	2.901	2.873
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.894	1.583	1.522
Ult. Stress, tsf		0.894	1.551	1.504
σ_1 Failure, tsf		1.394	2.583	3.523
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

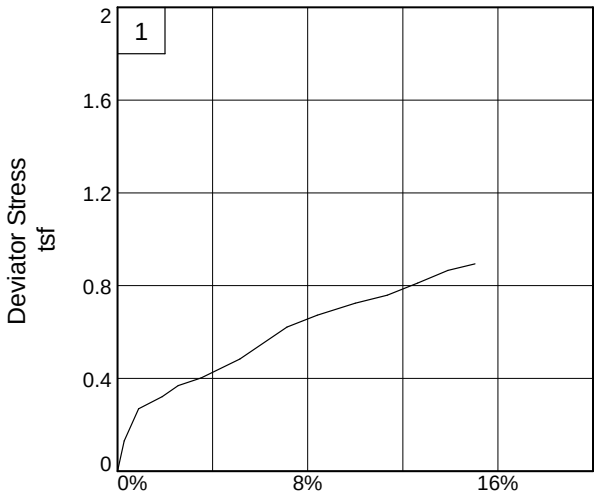
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

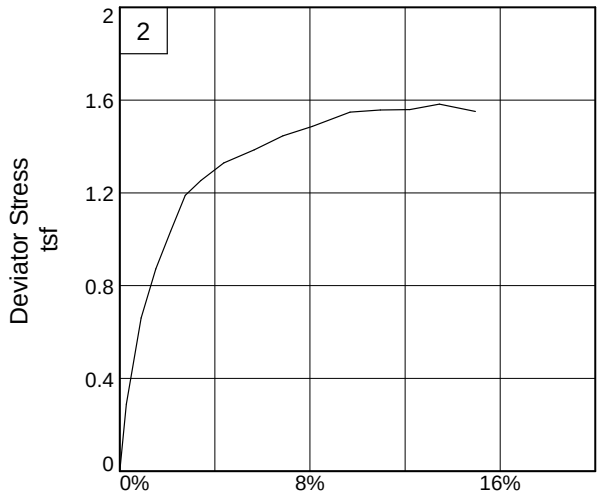
Source of Sample: CAA-161 **Depth:** 7-9'

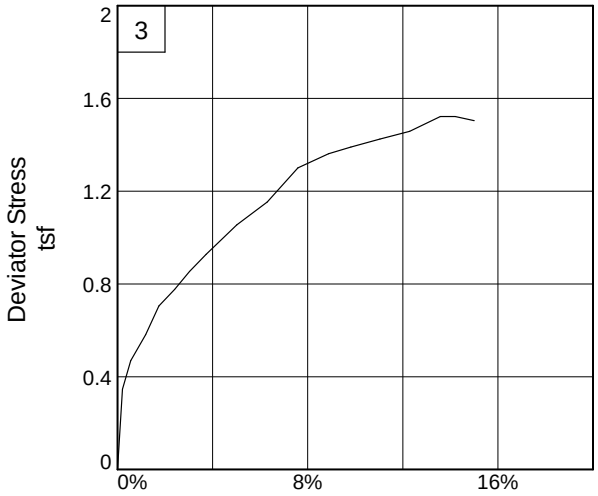
Sample Number: TW-2078

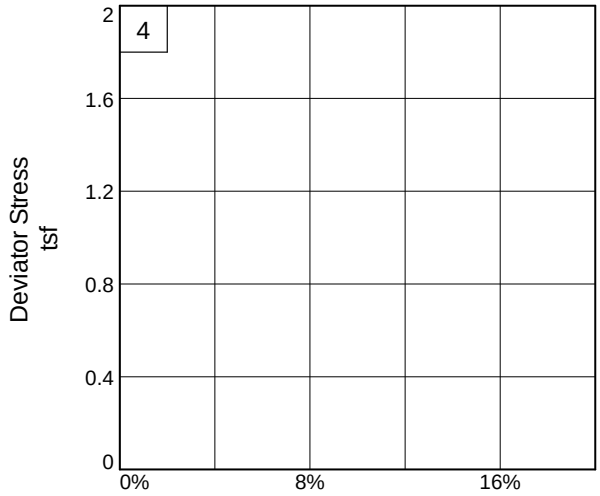
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

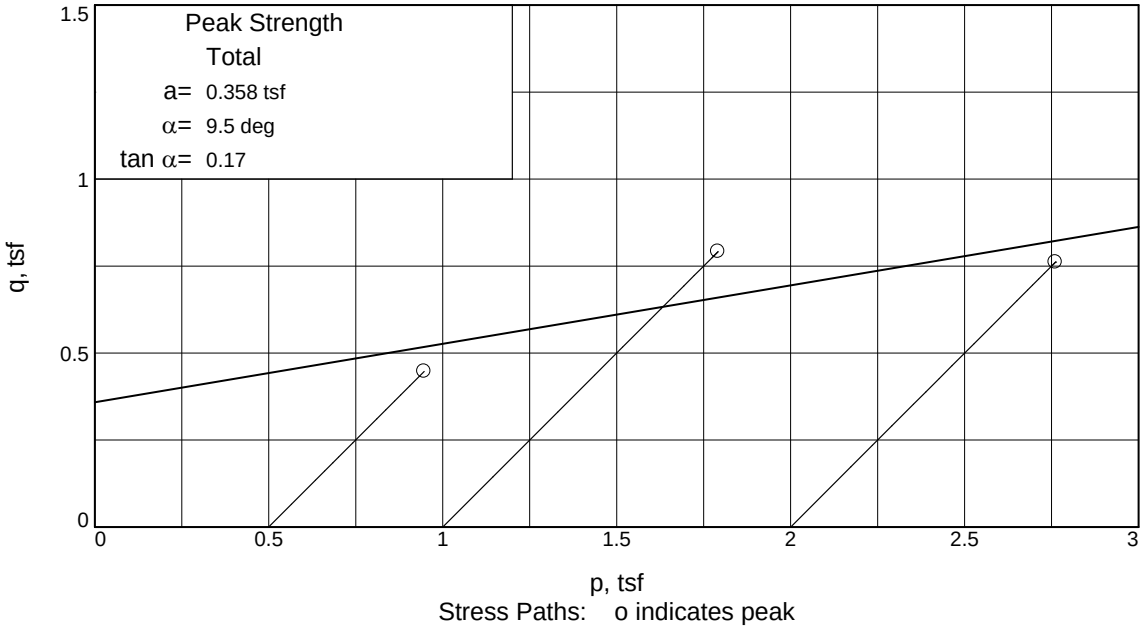
BRAUN INTERTEC











Stress Paths: o indicates peak

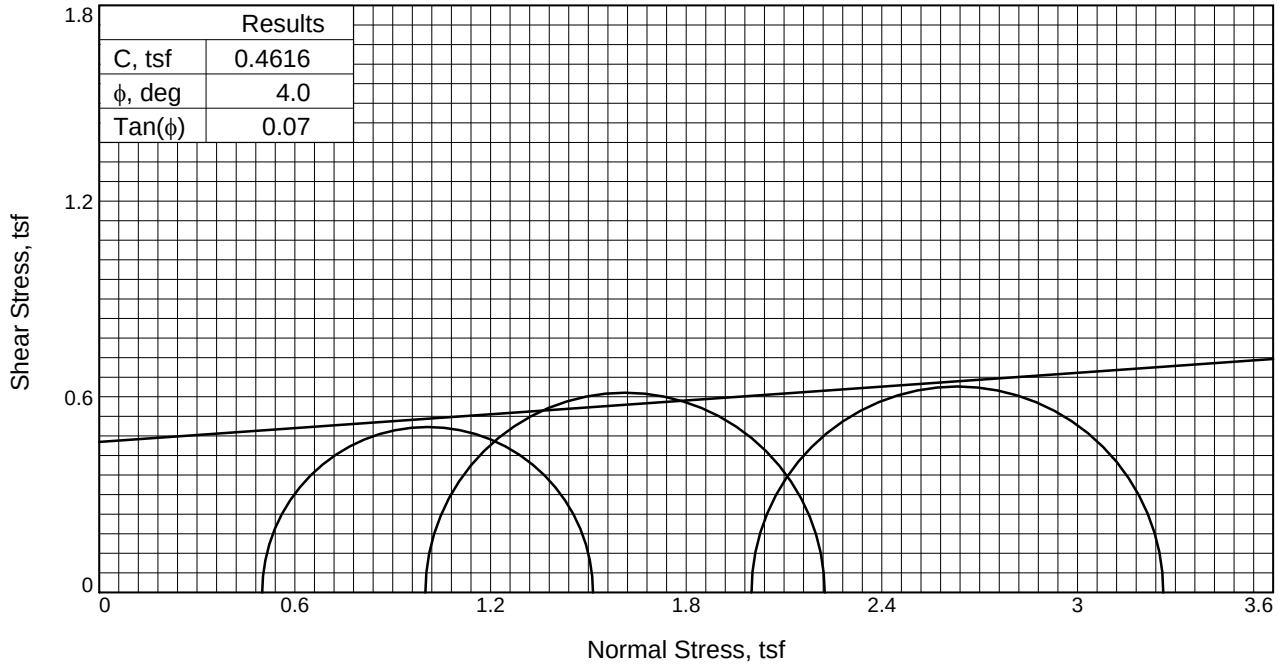
Client: KLJ Engineering LLC

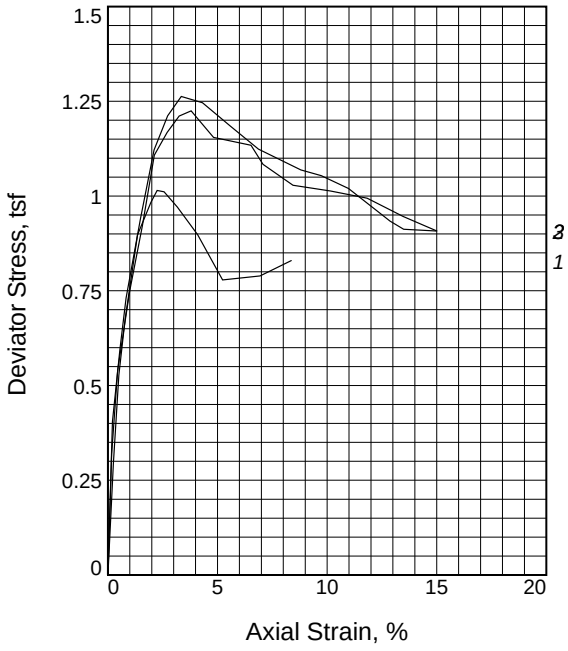
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-161 **Depth:** 7-9' **Sample Number:** TW-2078

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	49.0	44.4	47.4
	Dry Density, pcf	72.5	74.4	73.6
	Saturation, %	99.8	94.5	99.2
	Void Ratio	1.3245	1.2669	1.2912
	Diameter, in.	1.441	1.465	1.452
	Height, in.	2.809	2.926	2.898
At Test	Water Content, %	49.0	44.4	47.4
	Dry Density, pcf	72.5	74.4	73.6
	Saturation, %	99.8	94.5	99.2
	Void Ratio	1.3245	1.2669	1.2912
	Diameter, in.	1.441	1.465	1.452
	Height, in.	2.809	2.926	2.898
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.015	1.225	1.263
Ult. Stress, tsf		0.779	0.908	0.908
σ_1 Failure, tsf		1.514	2.225	3.263
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

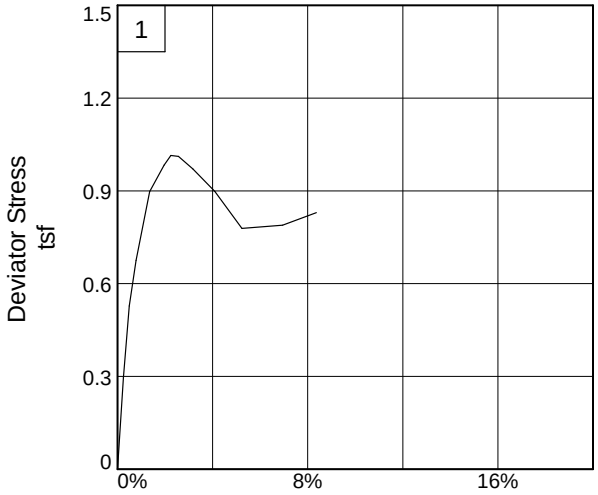
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

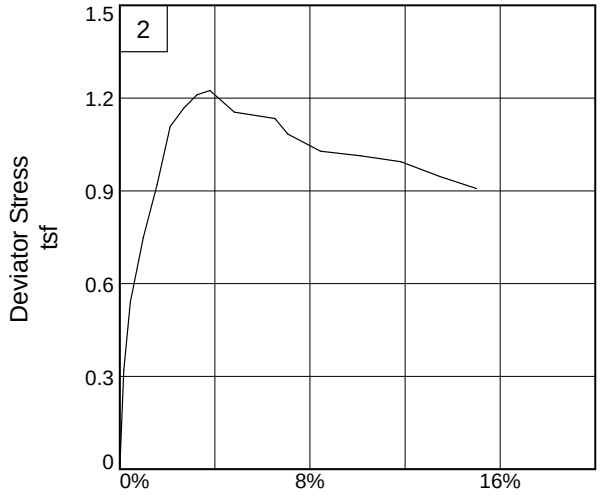
Source of Sample: CAA-161 **Depth:** 17-19'

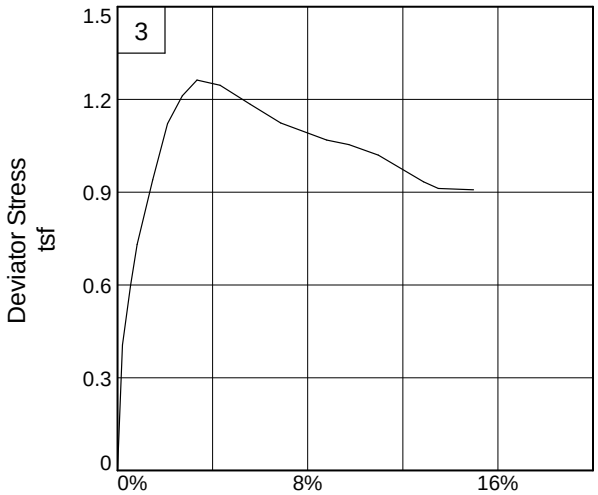
Sample Number: TW-2081

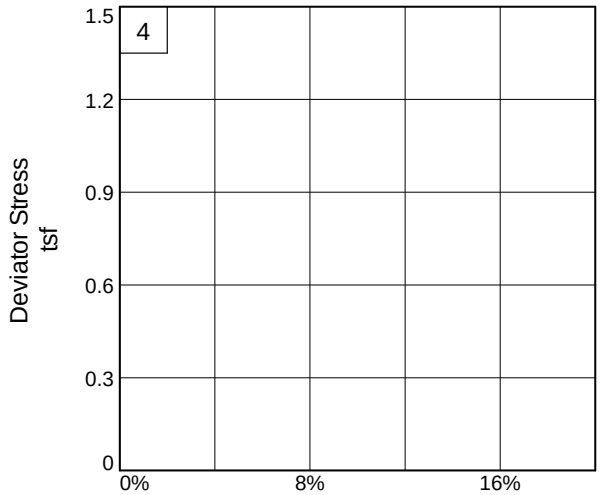
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

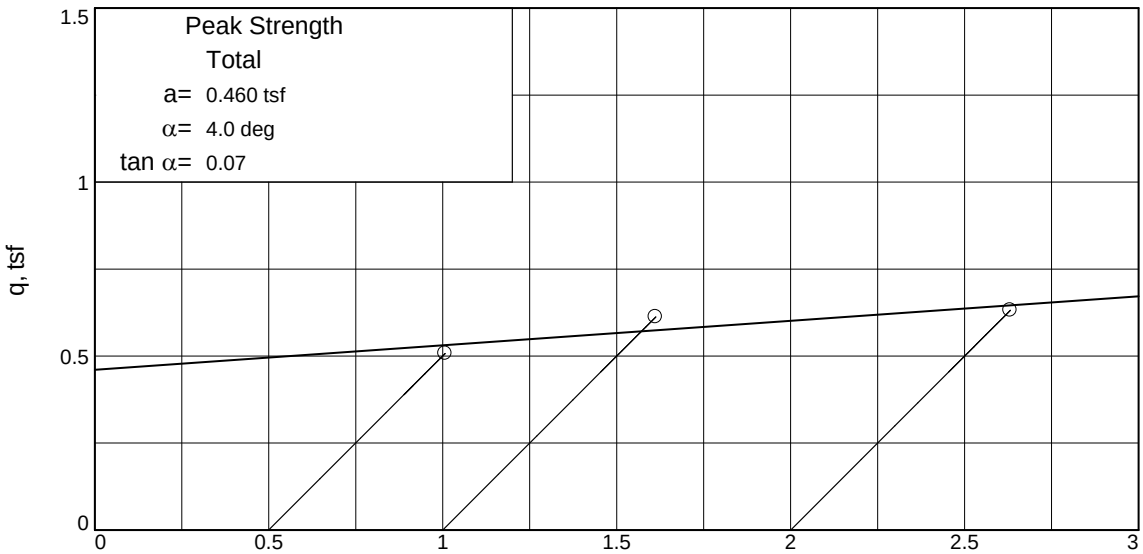
BRAUN INTERTEC











Stress Paths: o indicates peak

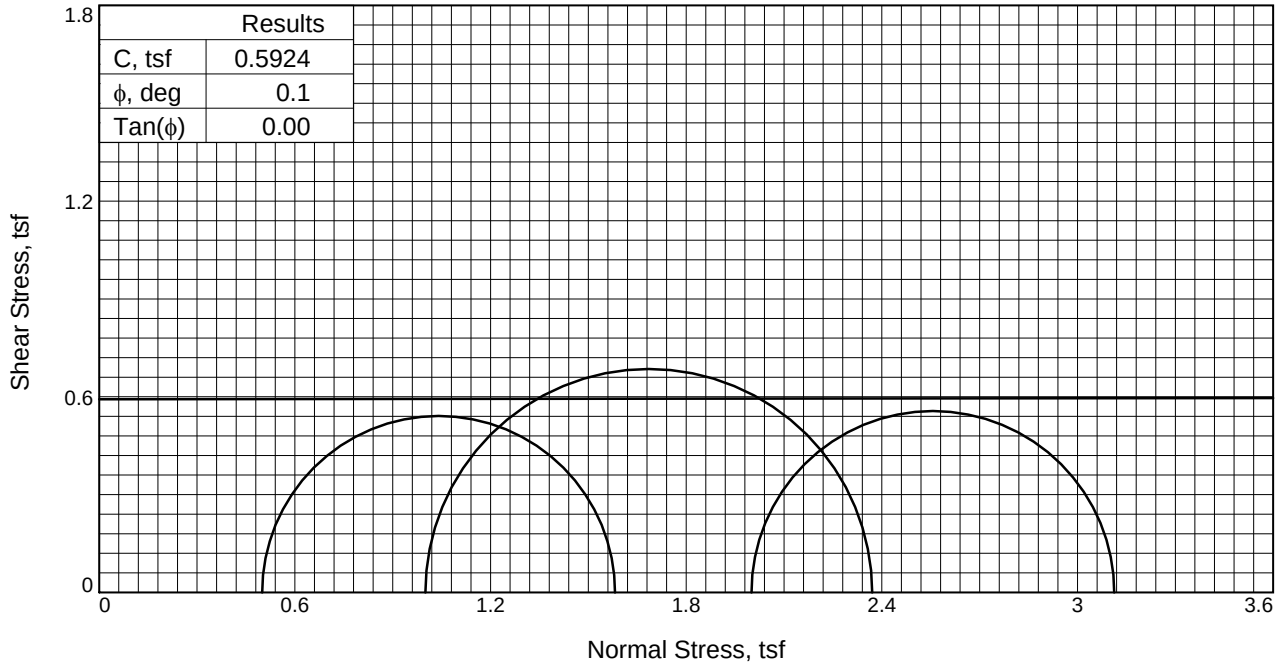
Client: KLJ Engineering LLC

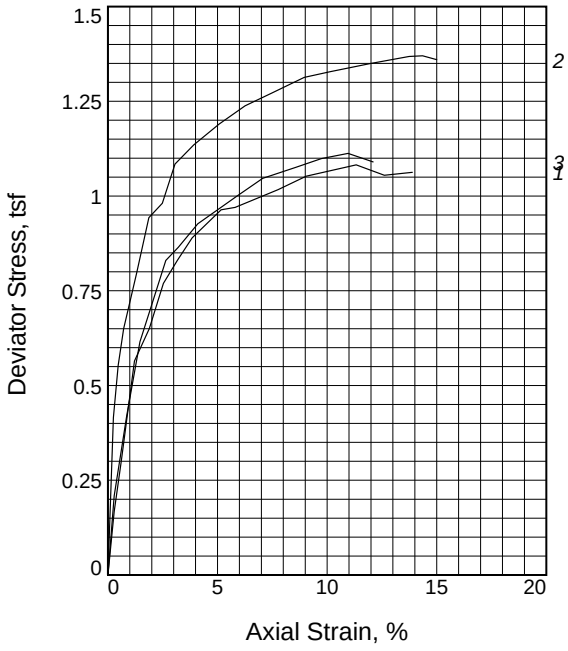
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-161 **Depth:** 17-19' **Sample Number:** TW-2081

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	43.4	42.3	40.9
	Dry Density, pcf	77.3	78.4	79.9
	Saturation, %	99.4	99.3	99.4
	Void Ratio	1.1802	1.1497	1.1103
	Diameter, in.	1.421	1.427	1.418
	Height, in.	2.808	2.780	2.803
At Test	Water Content, %	44.2	42.3	40.9
	Dry Density, pcf	77.3	78.4	79.9
	Saturation, %	101.0	99.3	99.4
	Void Ratio	1.1802	1.1497	1.1103
	Diameter, in.	1.421	1.427	1.418
	Height, in.	2.808	2.780	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	1.000	2.000
Fail. Stress, tsf		1.082	1.370	1.112
Ult. Stress, tsf		1.063	1.360	1.090
σ_1 Failure, tsf		1.582	2.370	3.113
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

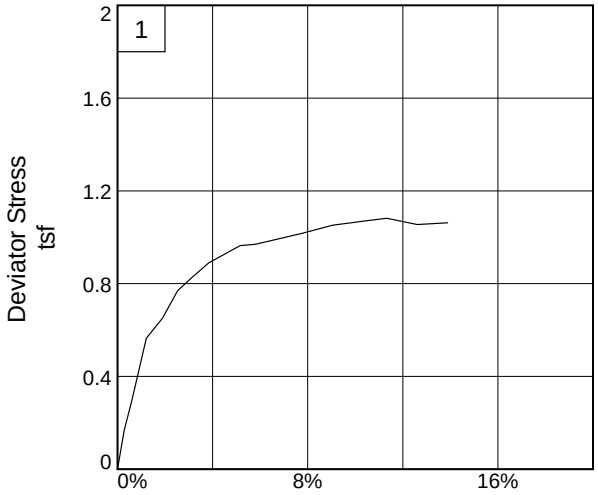
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

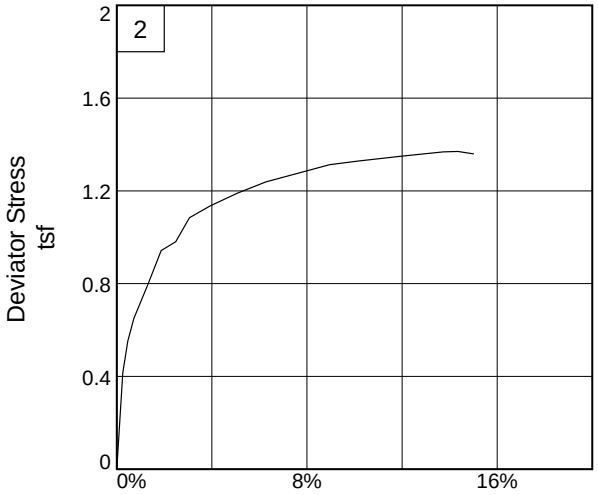
Source of Sample: GDRL-163 **Depth:** 7-9'

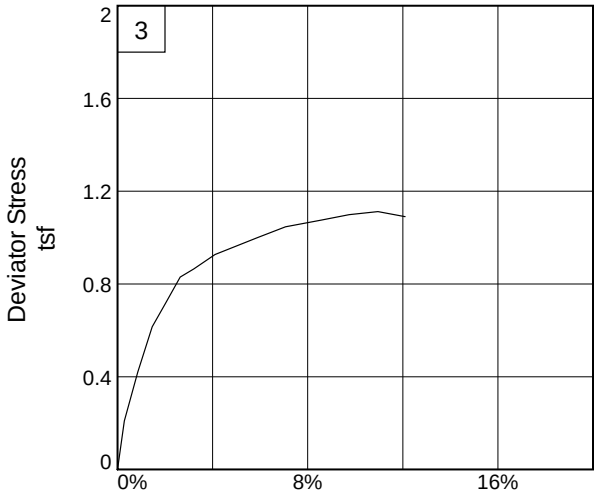
Sample Number: TW-2070

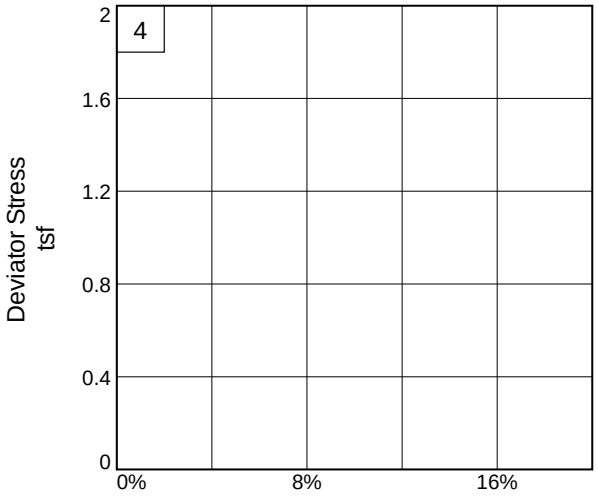
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

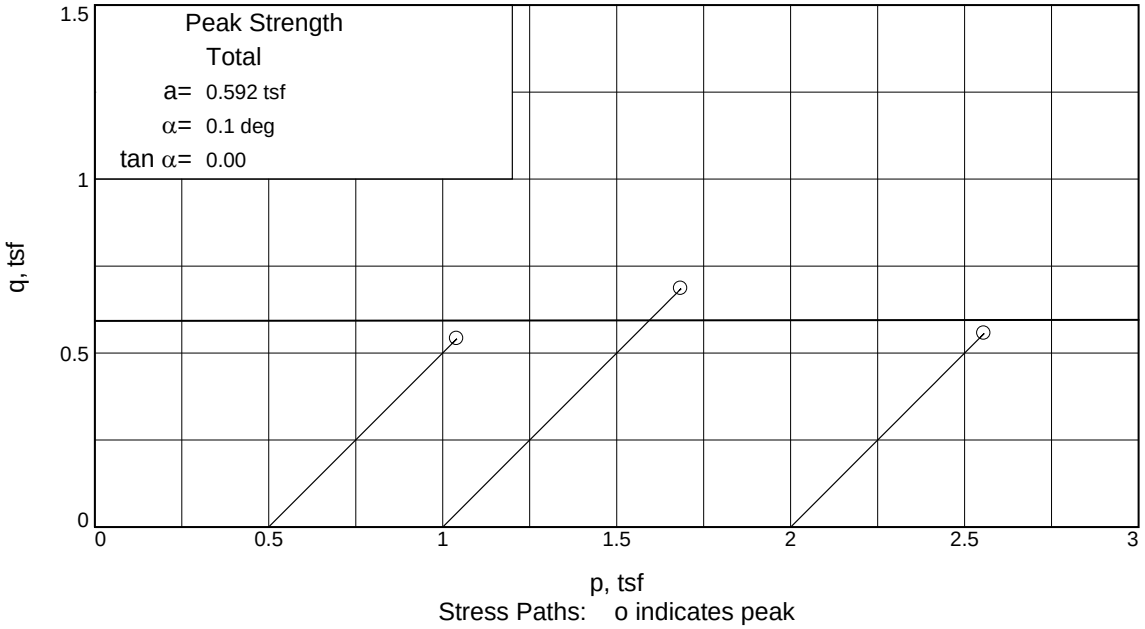
BRAUN INTERTEC











Stress Paths: o indicates peak

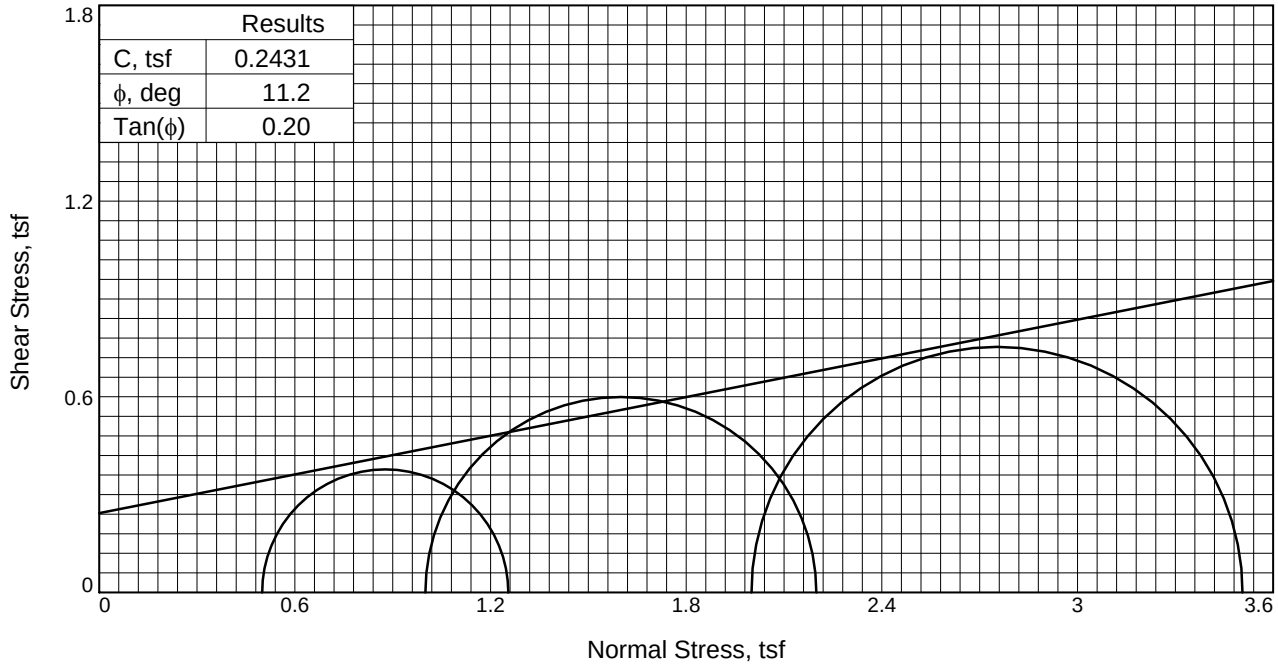
Client: KLJ Engineering LLC

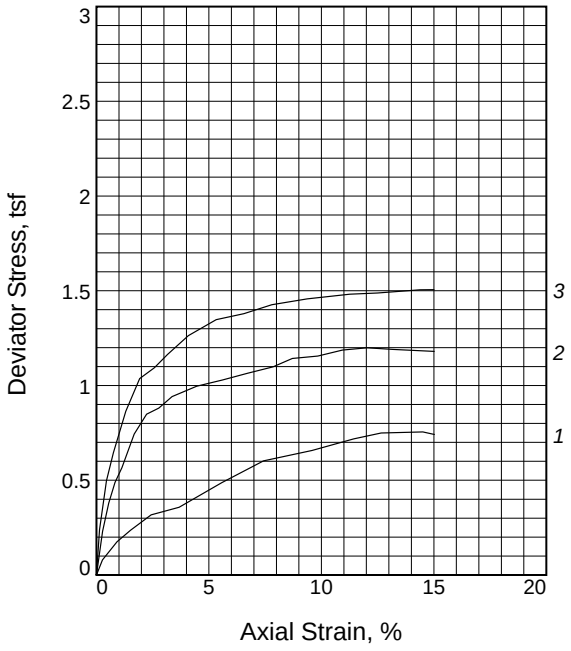
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-163 **Depth:** 7-9' **Sample Number:** TW-2070

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	39.8	39.6	38.7
	Dry Density, pcf	81.1	81.5	82.8
	Saturation, %	99.8	100.0	99.4
	Void Ratio	1.0775	1.0685	1.0724
	Diameter, in.	1.472	1.466	1.441
	Height, in.	2.963	2.917	2.913
At Test	Water Content, %	39.8	39.6	38.7
	Dry Density, pcf	81.1	81.5	82.8
	Saturation, %	99.8	100.0	99.4
	Void Ratio	1.0775	1.0685	1.0724
	Diameter, in.	1.472	1.466	1.441
	Height, in.	2.963	2.917	2.913
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.755	1.199	1.506
Ult. Stress, tsf		0.741	1.180	1.506
σ_1 Failure, tsf		1.254	2.199	3.506
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

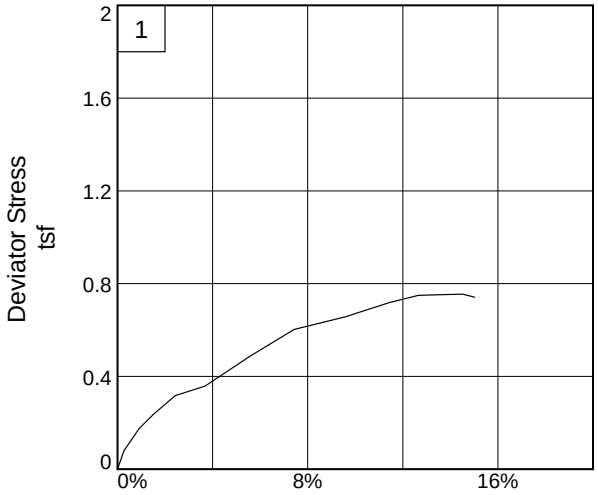
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

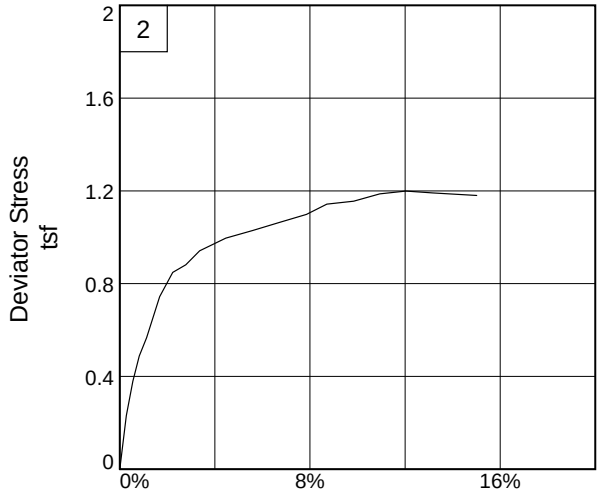
Source of Sample: CAA-164 **Depth:** 7-9'

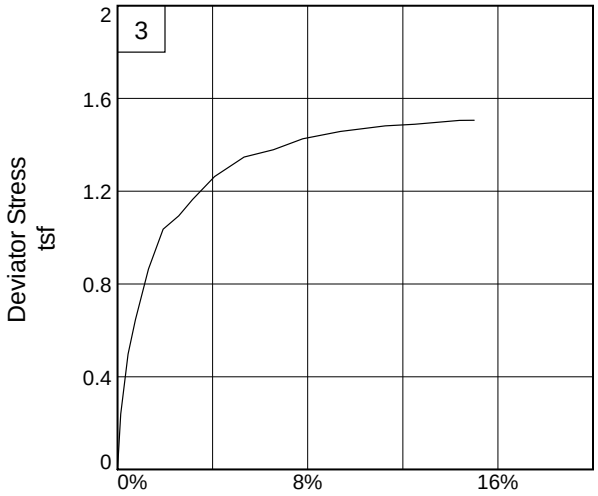
Sample Number: TW-2063

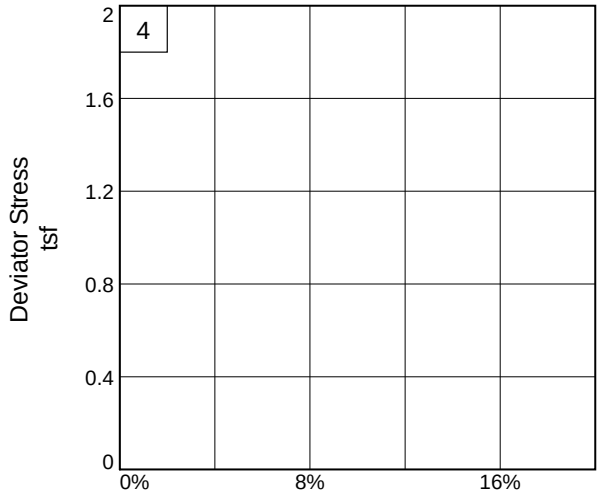
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

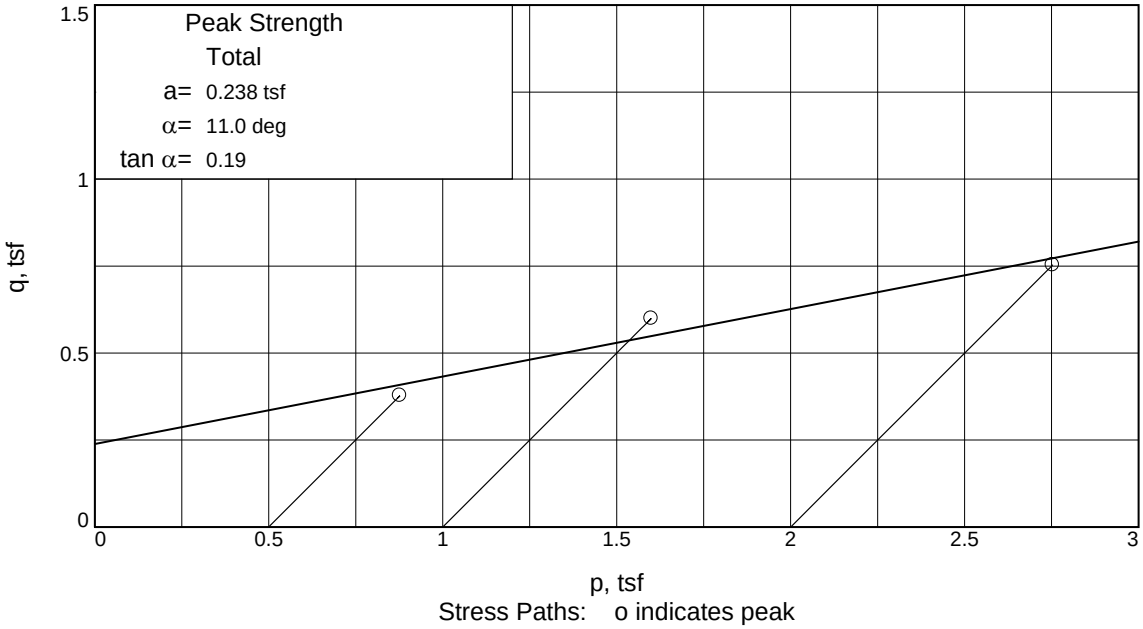
BRAUN INTERTEC











Stress Paths: o indicates peak

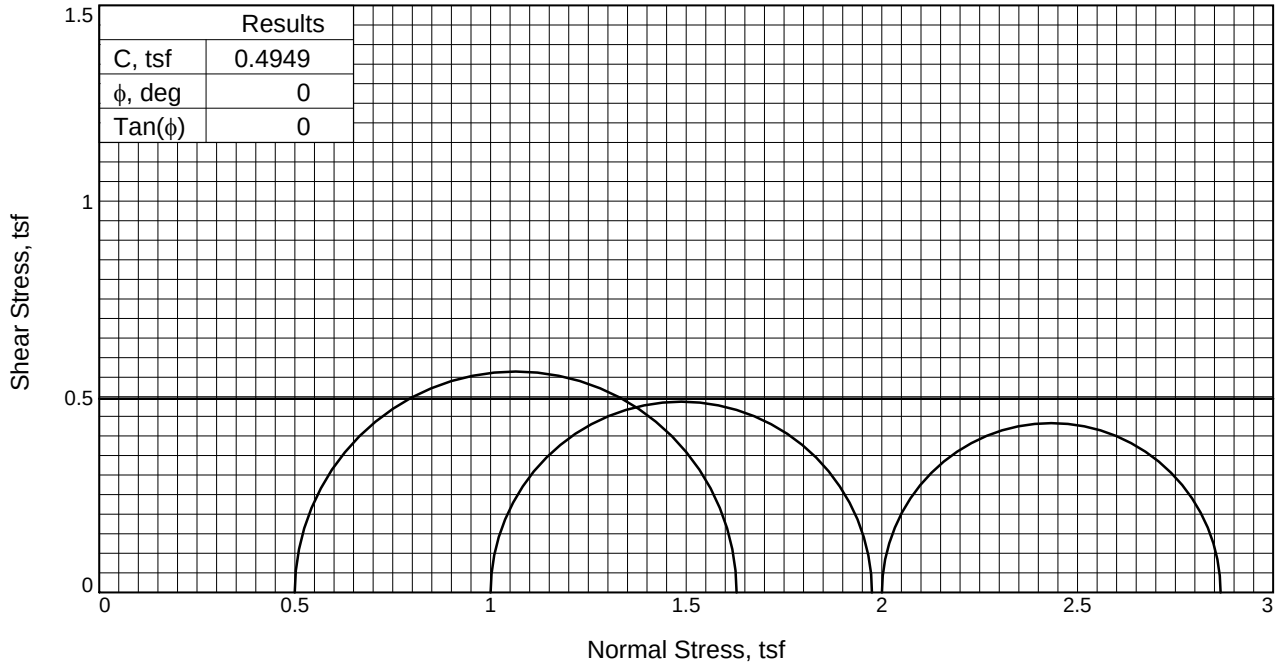
Client: KLJ Engineering LLC

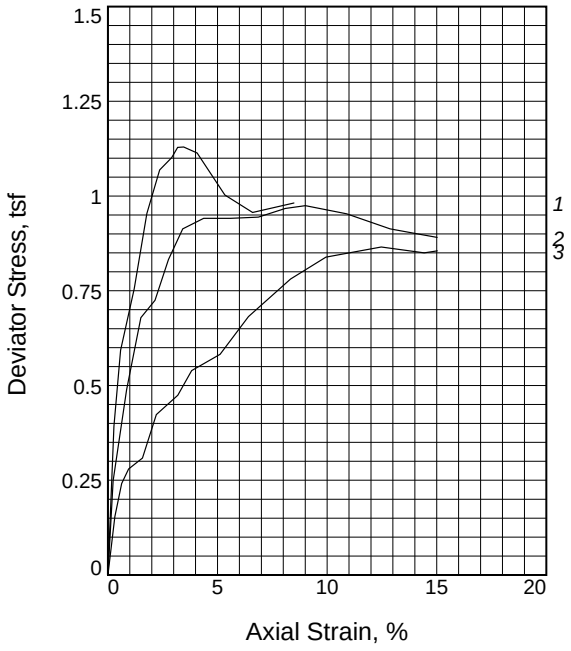
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-164 **Depth:** 7-9' **Sample Number:** TW-2063

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	46.6	49.9	46.2
	Dry Density, pcf	74.6	71.6	74.9
	Saturation, %	100.0	99.5	99.9
	Void Ratio	1.2588	1.3552	1.2495
	Diameter, in.	1.442	1.465	1.441
	Height, in.	2.924	2.929	2.855
At Test	Water Content, %	46.6	49.9	46.2
	Dry Density, pcf	74.6	71.6	74.9
	Saturation, %	100.0	99.5	99.8
	Void Ratio	1.2588	1.3552	1.2495
	Diameter, in.	1.442	1.465	1.441
	Height, in.	2.924	2.929	2.855
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.129	0.975	0.866
Ult. Stress, tsf		0.957	0.891	0.855
σ_1 Failure, tsf		1.629	1.975	2.866
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-5

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

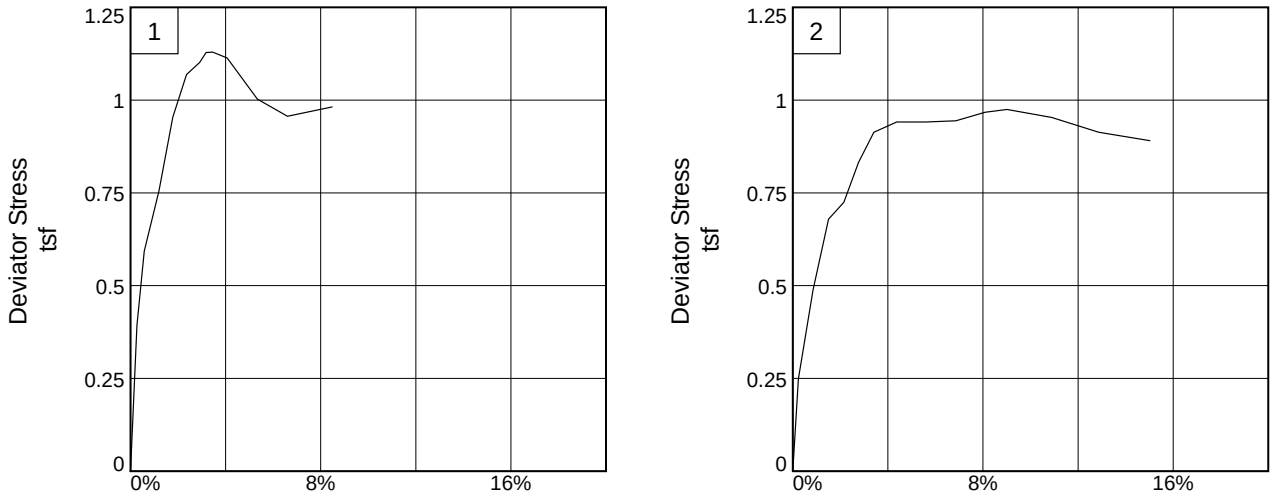
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

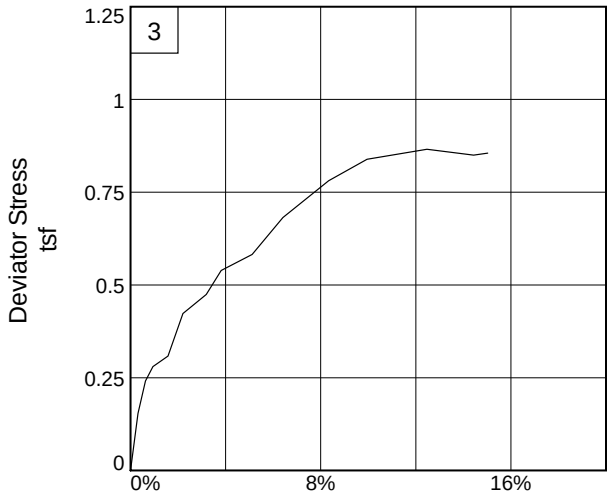
Source of Sample: CAA-164 **Depth:** 17-19'

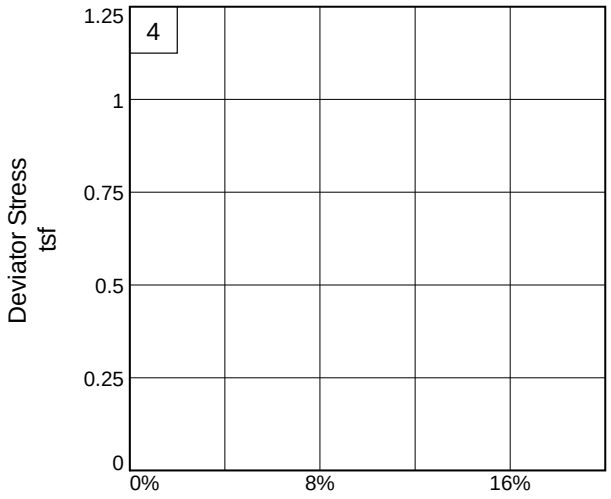
Sample Number: TW-2066

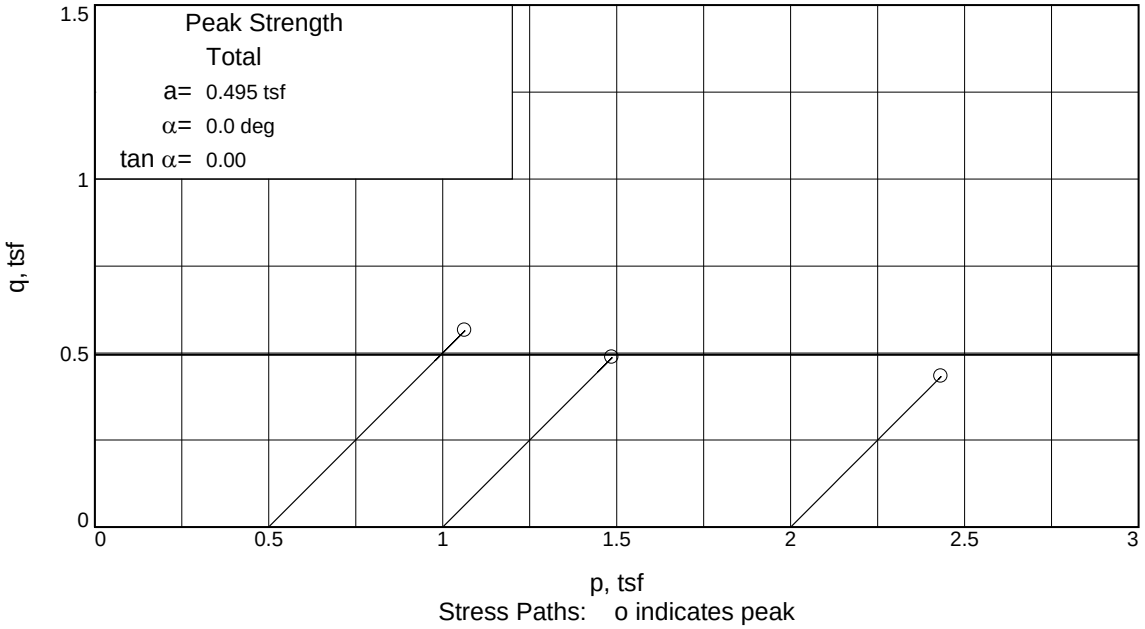
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

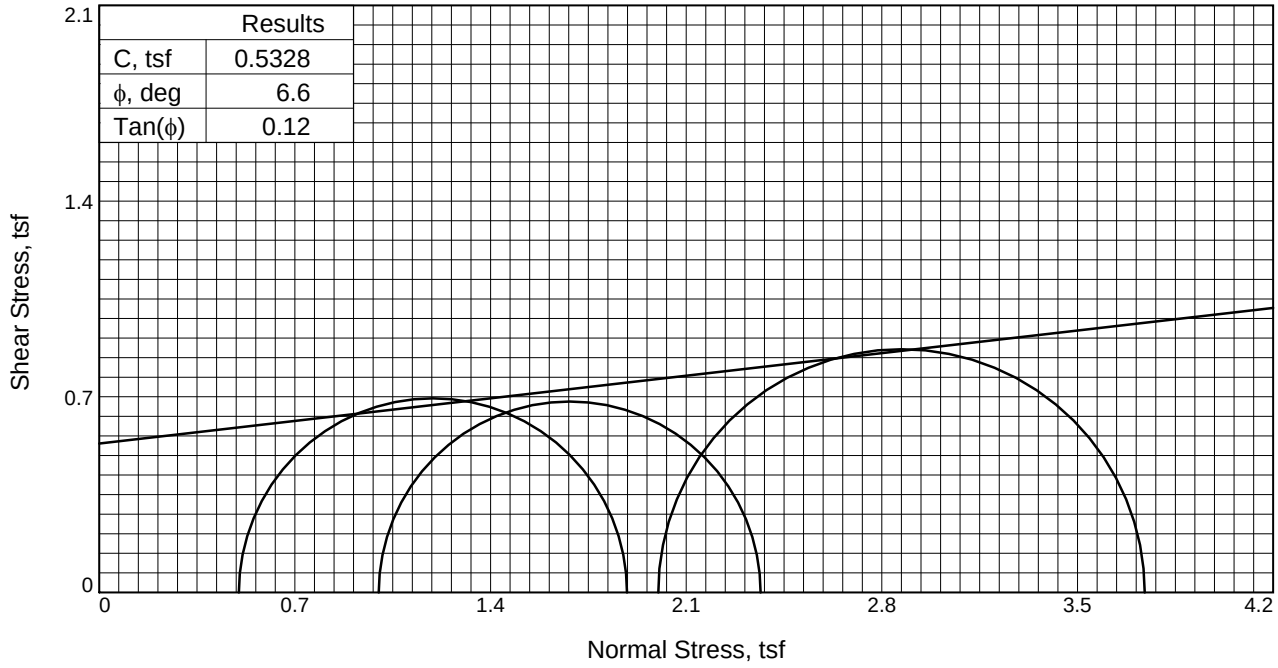
Client: KLJ Engineering LLC

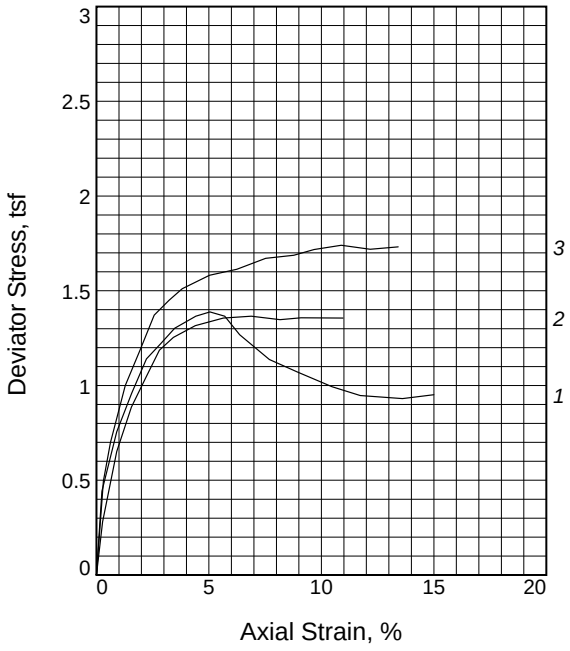
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-164 **Depth:** 17-19' **Sample Number:** TW-2066

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.1	40.0	39.6
	Dry Density, pcf	80.3	80.2	80.5
	Saturation, %	98.4	98.0	97.9
	Void Ratio	1.0996	1.1008	1.0934
	Diameter, in.	1.397	1.456	1.462
	Height, in.	2.874	2.892	2.885
At Test	Water Content, %	40.1	40.0	39.6
	Dry Density, pcf	80.3	80.2	80.5
	Saturation, %	98.4	98.0	97.9
	Void Ratio	1.0996	1.1008	1.0934
	Diameter, in.	1.397	1.456	1.462
	Height, in.	2.874	2.892	2.885
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.388	1.366	1.740
Ult. Stress, tsf		0.952	1.347	1.719
σ_1 Failure, tsf		1.888	2.366	3.740
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

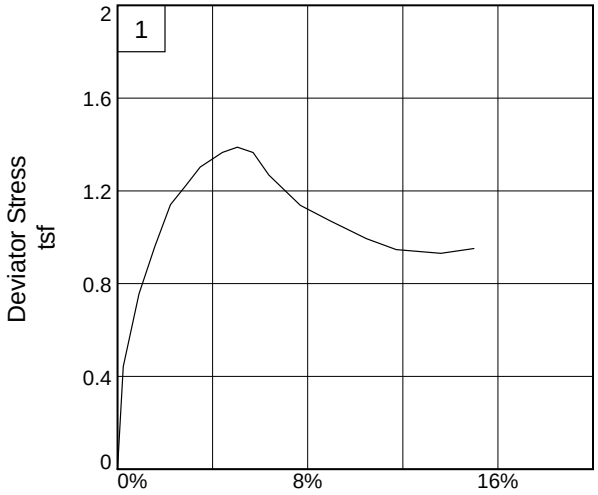
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

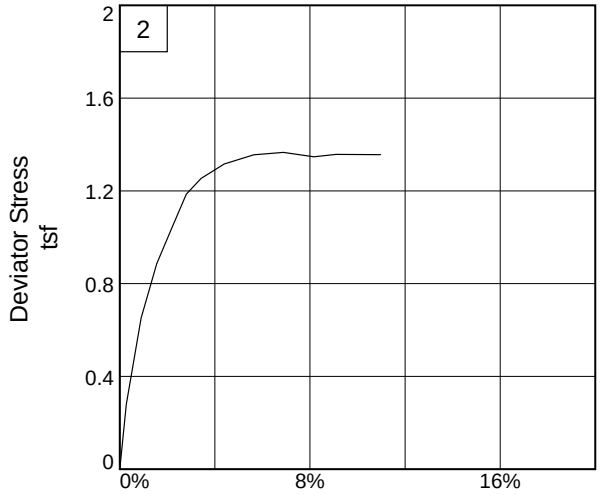
Source of Sample: GDRL-166 **Depth:** 7-9'

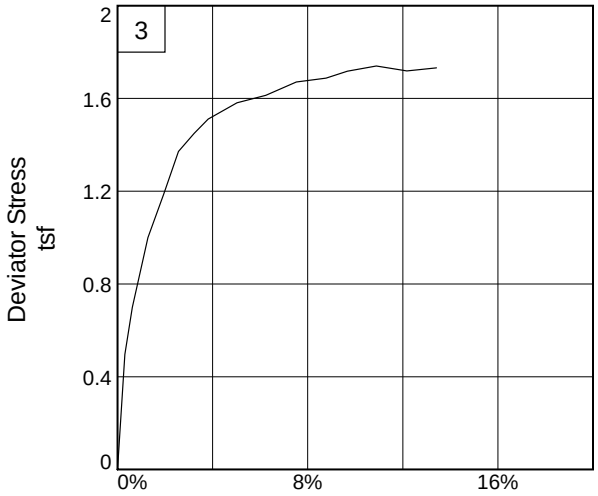
Sample Number: TW-2055

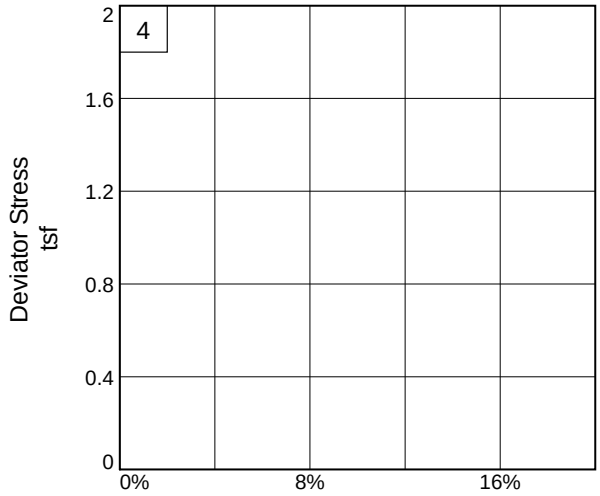
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

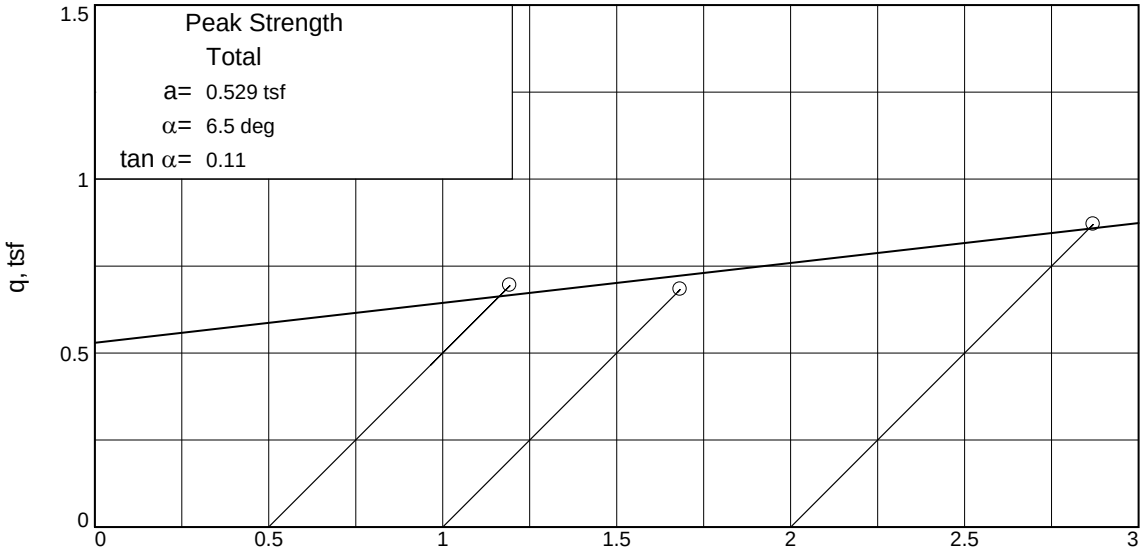
BRAUN INTERTEC











Stress Paths: o indicates peak

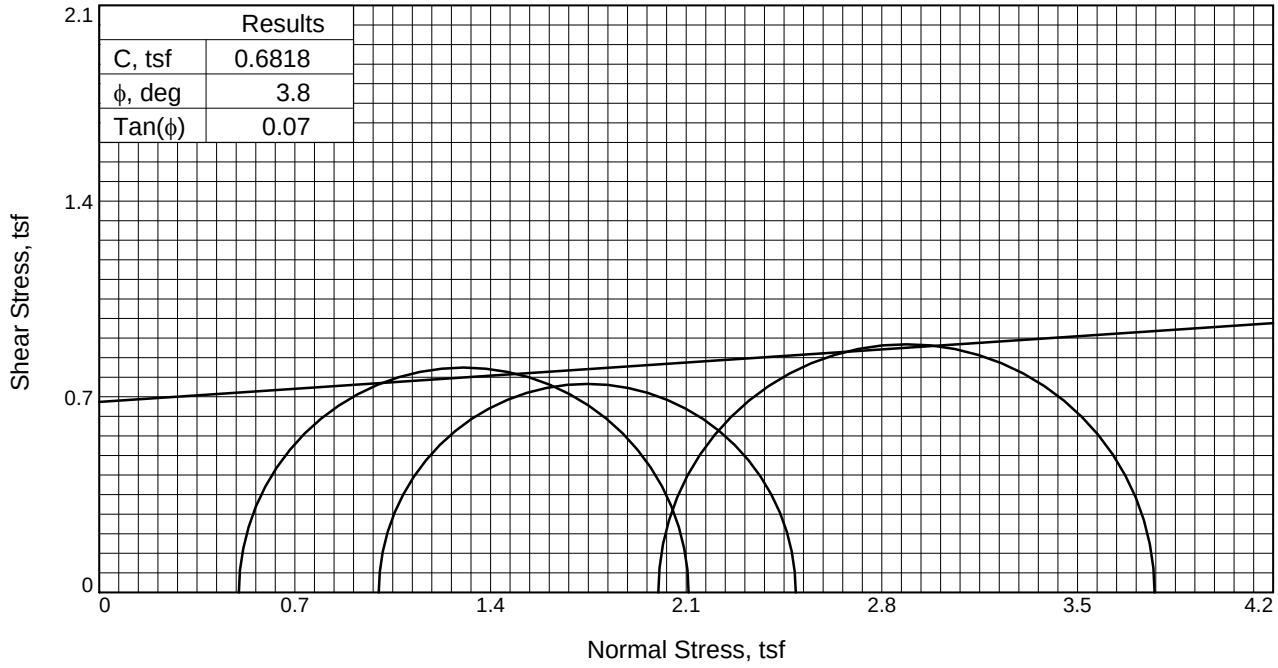
Client: KLJ Engineering LLC

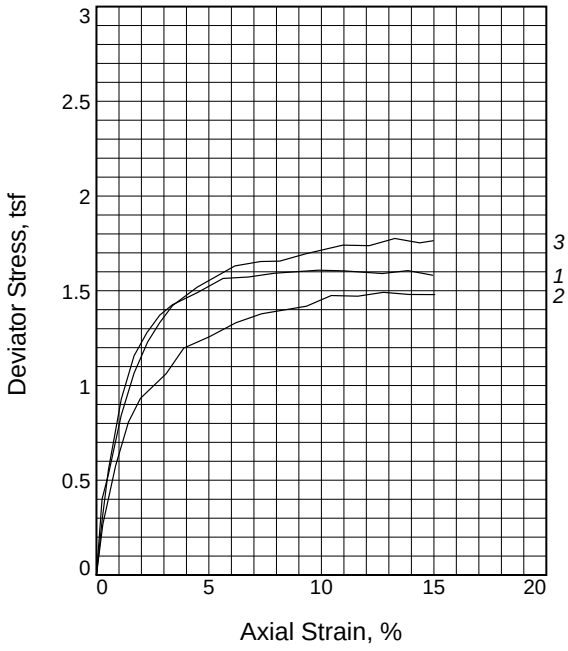
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-166 **Depth:** 7-9' **Sample Number:** TW-2055

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	38.0	39.2	38.6
	Dry Density, pcf	82.1	81.6	81.9
	Saturation, %	97.3	99.3	98.3
	Void Ratio	1.0539	1.0663	1.0592
	Diameter, in.	1.400	1.420	1.410
	Height, in.	2.809	2.807	2.812
At Test	Water Content, %	38.0	39.2	38.6
	Dry Density, pcf	82.1	81.6	81.9
	Saturation, %	97.3	99.3	98.3
	Void Ratio	1.0539	1.0663	1.0592
	Diameter, in.	1.400	1.420	1.410
	Height, in.	2.809	2.807	2.812
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.609	1.492	1.776
Ult. Stress, tsf		1.582	1.480	1.753
σ_1 Failure, tsf		2.108	2.492	3.776
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

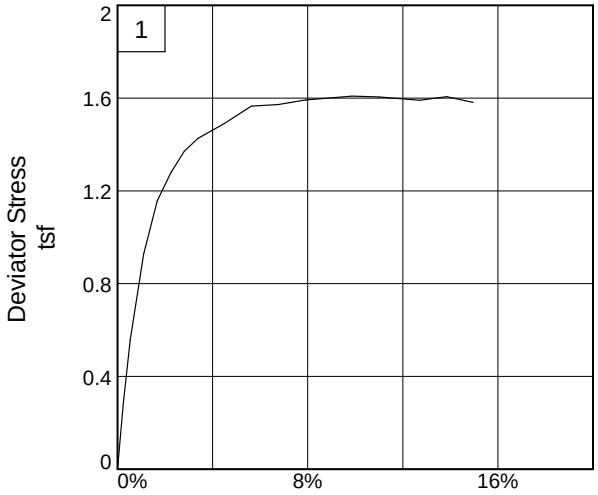
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

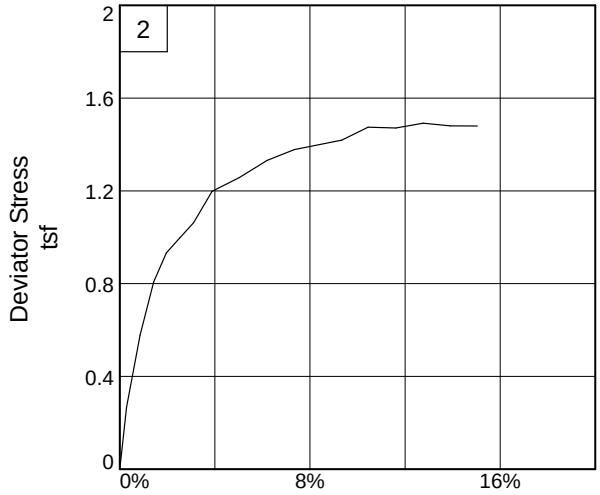
Source of Sample: CAA-167 **Depth:** 7-9'

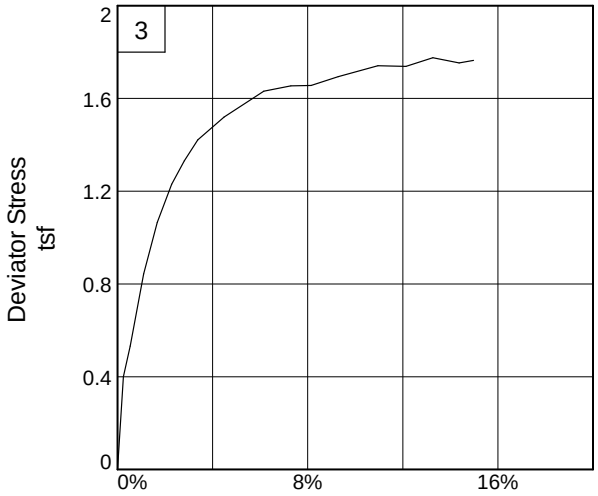
Sample Number: TW-2048

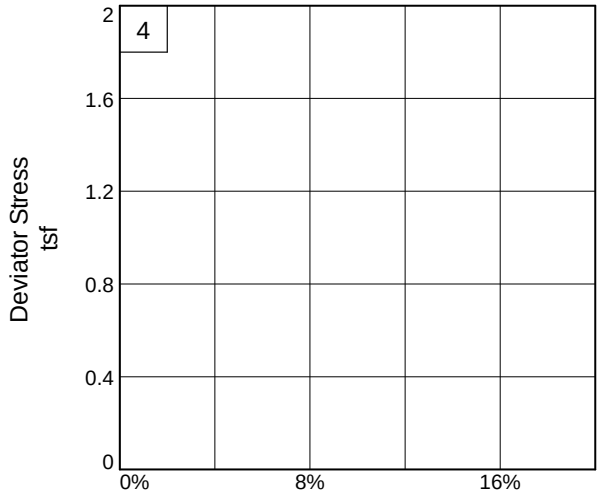
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

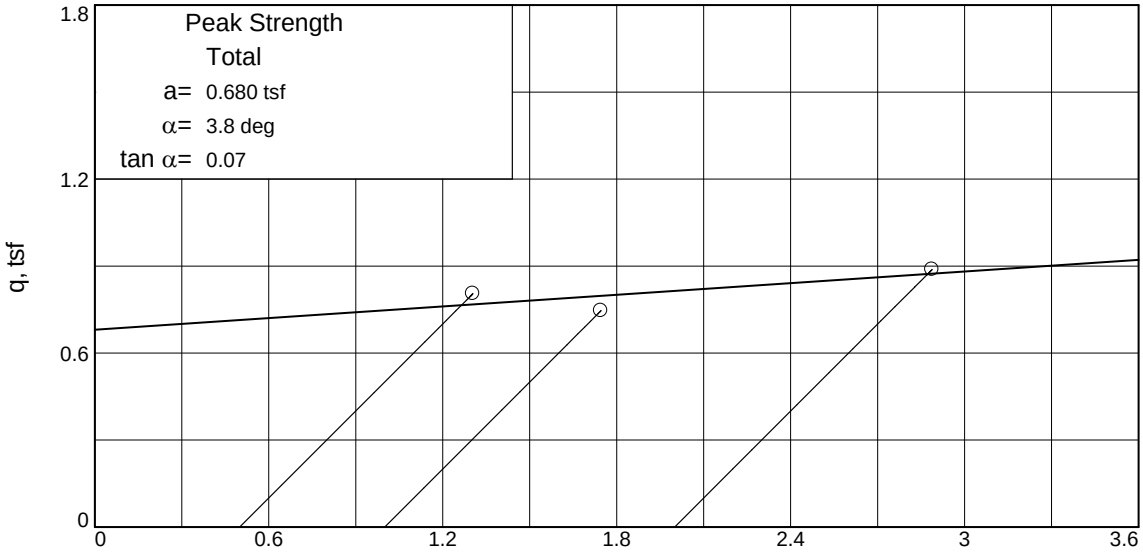
BRAUN INTERTEC











Stress Paths: o indicates peak

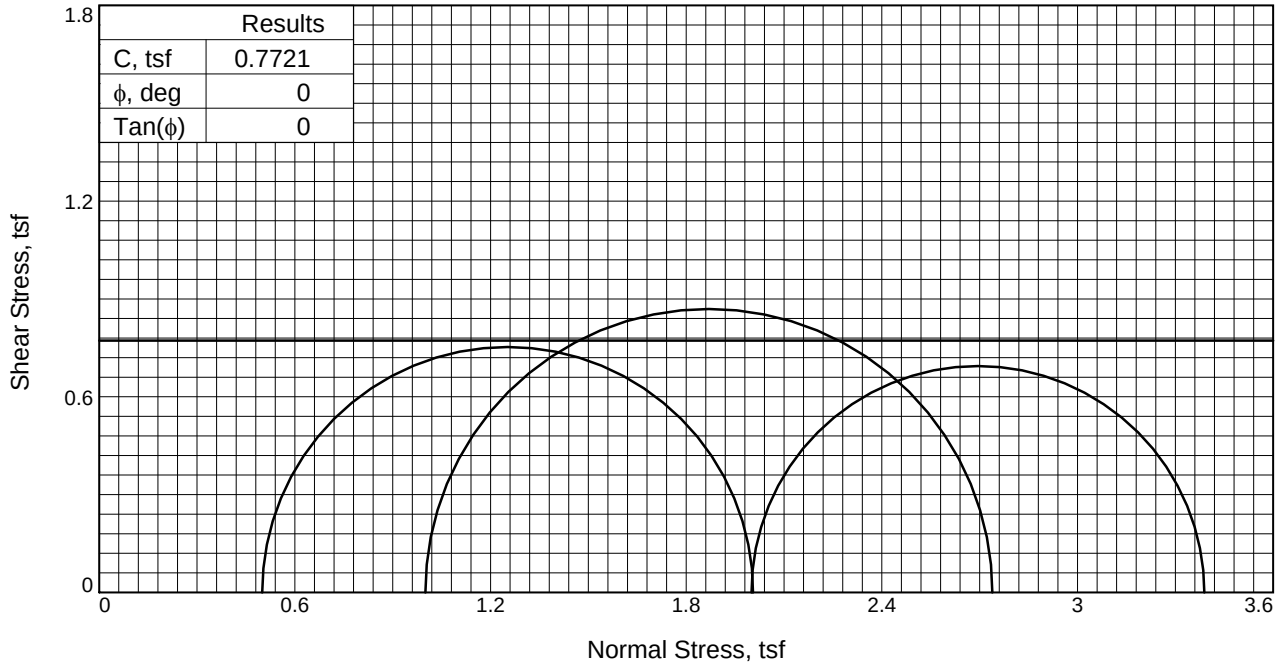
Client: KLJ Engineering LLC

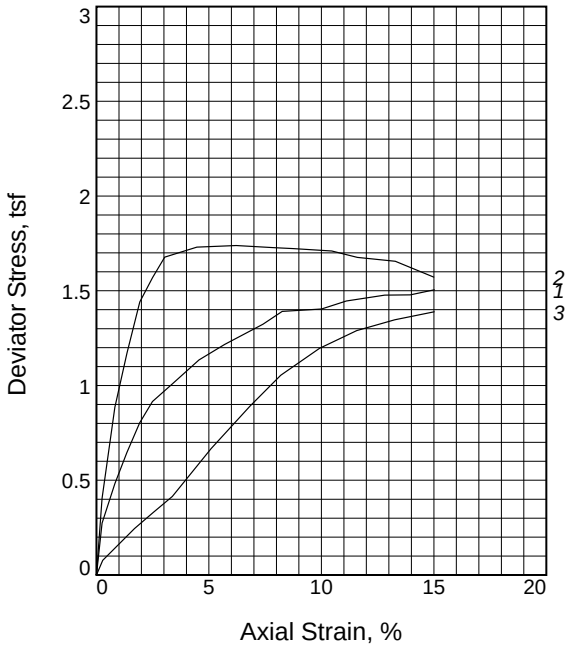
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-167 **Depth:** 7-9' **Sample Number:** TW-2048

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	38.5	41.1	42.8
	Dry Density, pcf	81.7	79.8	78.1
	Saturation, %	97.9	99.8	99.6
	Void Ratio	1.0623	1.1123	1.1588
	Diameter, in.	1.380	1.465	1.498
	Height, in.	2.809	2.801	2.844
At Test	Water Content, %	38.5	41.1	42.8
	Dry Density, pcf	81.7	79.8	78.1
	Saturation, %	97.9	99.8	99.6
	Void Ratio	1.0623	1.1123	1.1588
	Diameter, in.	1.380	1.465	1.498
	Height, in.	2.809	2.801	2.844
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.505	1.739	1.389
Ult. Stress, tsf		1.505	1.572	1.389
σ_1 Failure, tsf		2.005	2.739	3.389
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

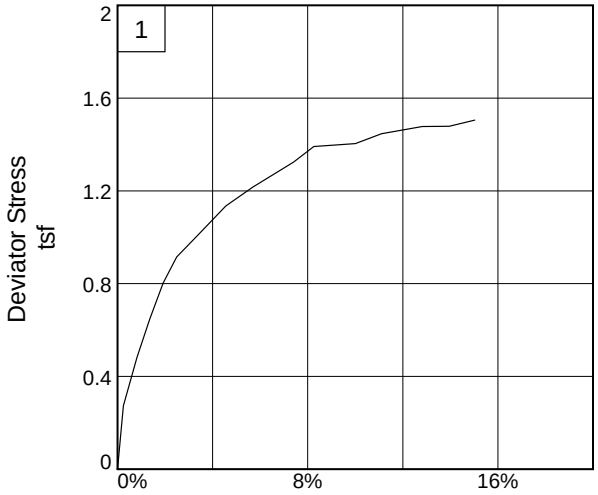
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

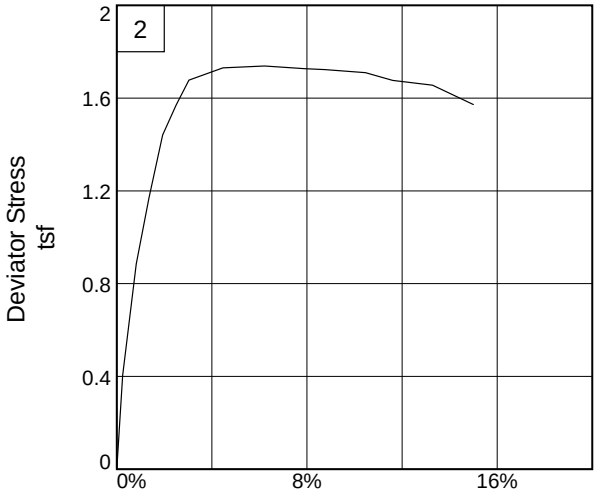
Source of Sample: CAA-167 **Depth:** 17-19'

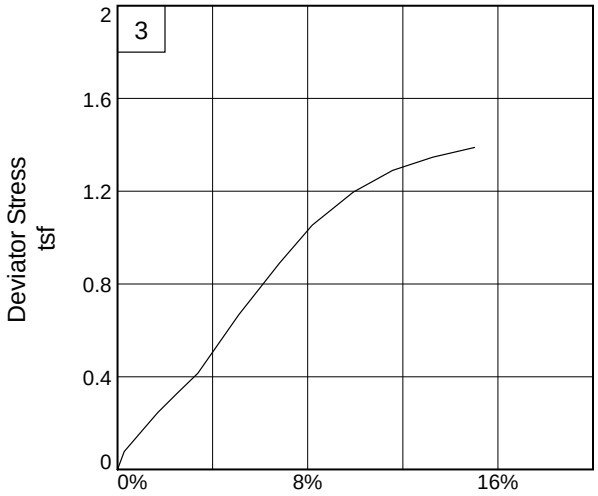
Sample Number: TW-2051

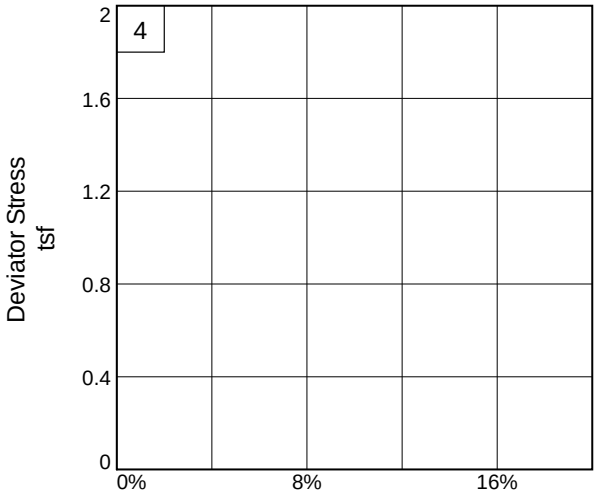
Proj. No.: B2009724 **Date Sampled:** 1/5/2021

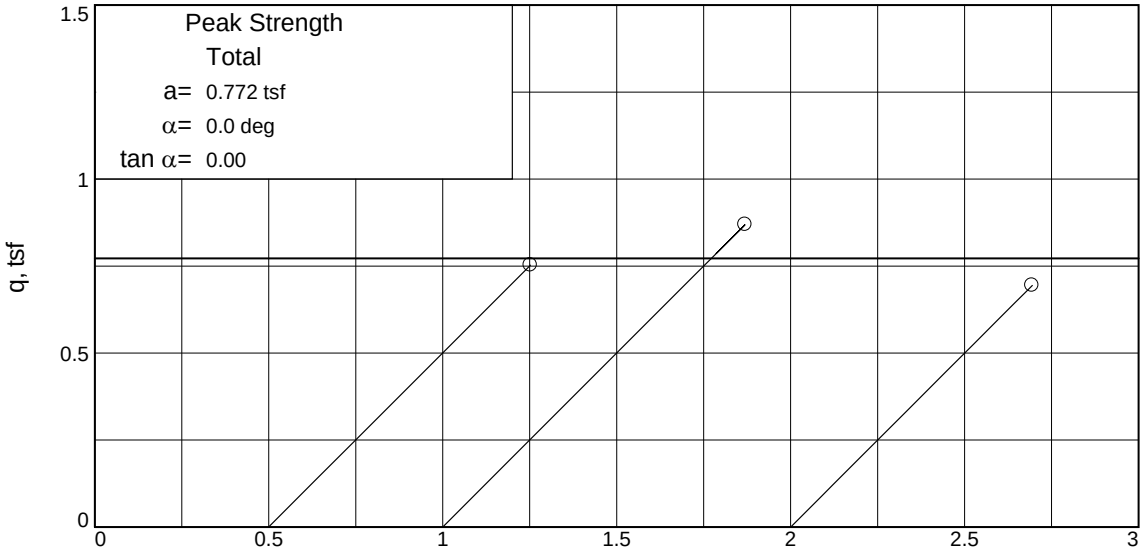
BRAUN℠ INTERTEC











Stress Paths: o indicates peak

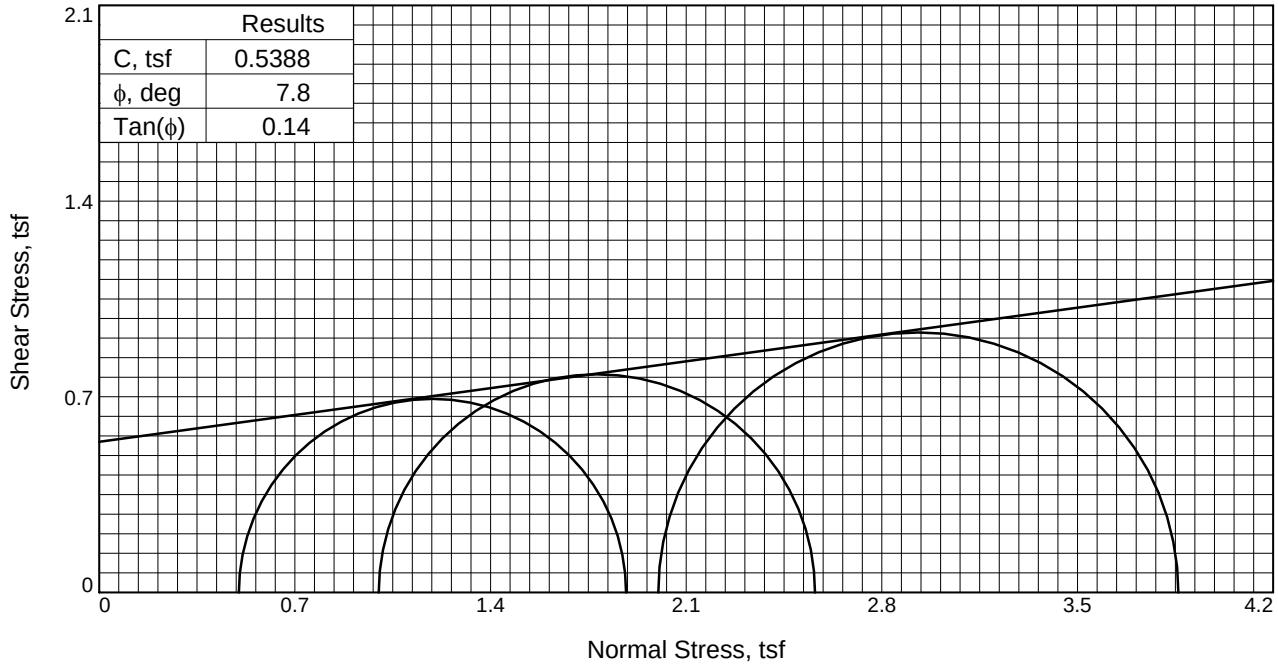
Client: KLJ Engineering LLC

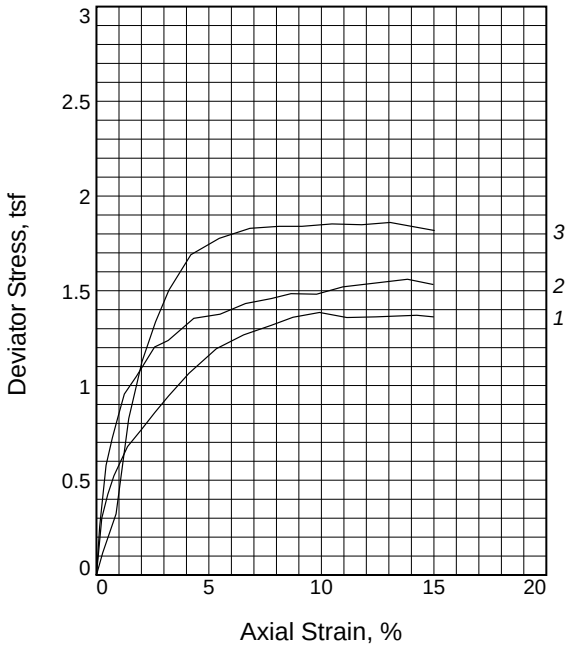
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-167 **Depth:** 17-19' **Sample Number:** TW-2051

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.8	39.4	39.5
	Dry Density, pcf	78.2	80.9	80.9
	Saturation, %	95.3	98.3	98.3
	Void Ratio	1.1548	1.0829	1.0840
	Diameter, in.	1.457	1.455	1.441
	Height, in.	2.964	2.821	2.857
At Test	Water Content, %	40.8	39.4	39.5
	Dry Density, pcf	78.2	80.9	80.9
	Saturation, %	95.3	98.3	98.3
	Void Ratio	1.1548	1.0829	1.0840
	Diameter, in.	1.457	1.455	1.441
	Height, in.	2.964	2.821	2.857
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.385	1.561	1.860
Ult. Stress, tsf		1.359	1.533	1.819
σ_1 Failure, tsf		1.885	2.561	3.861
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

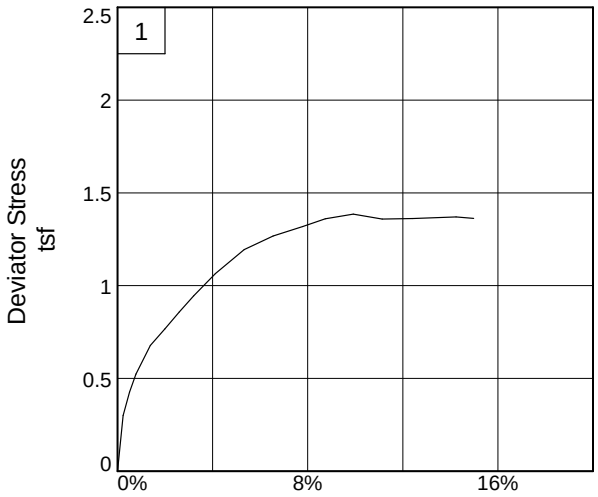
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

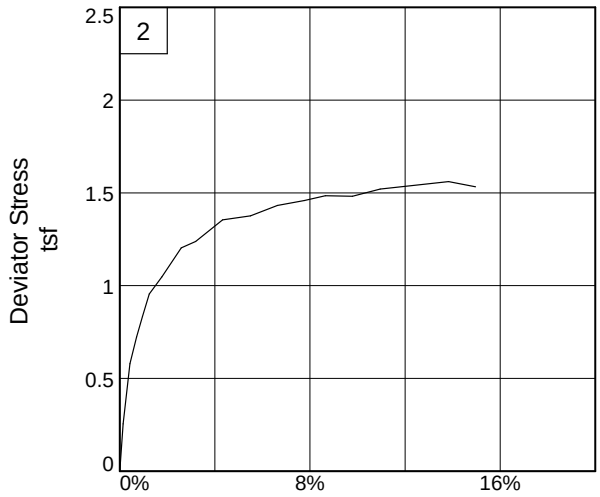
Source of Sample: GDRL-169 **Depth:** 7-9'

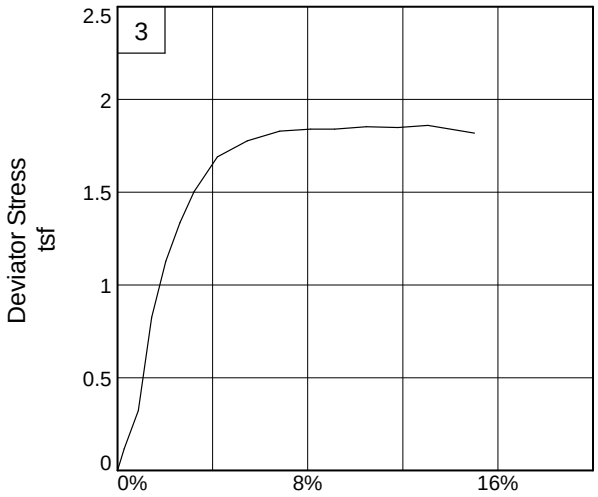
Sample Number: TW-2040

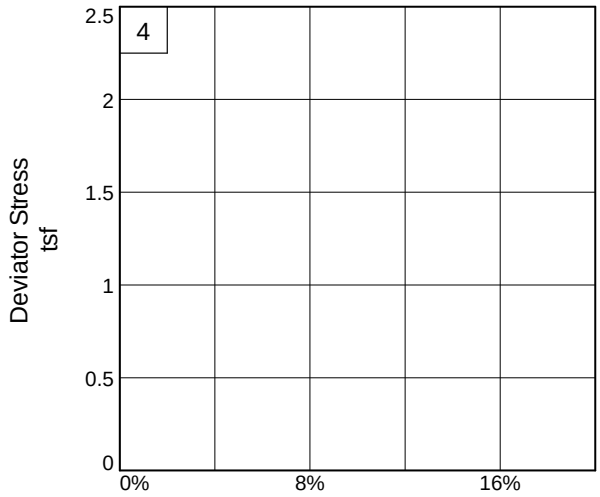
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

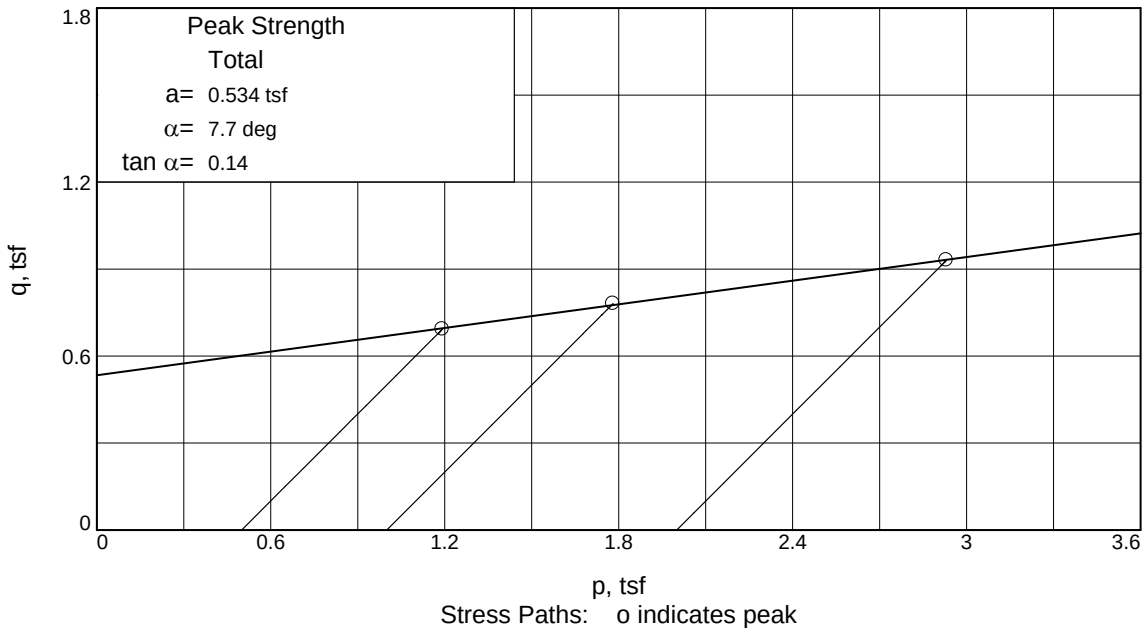
BRAUN INTERTEC











Stress Paths: o indicates peak

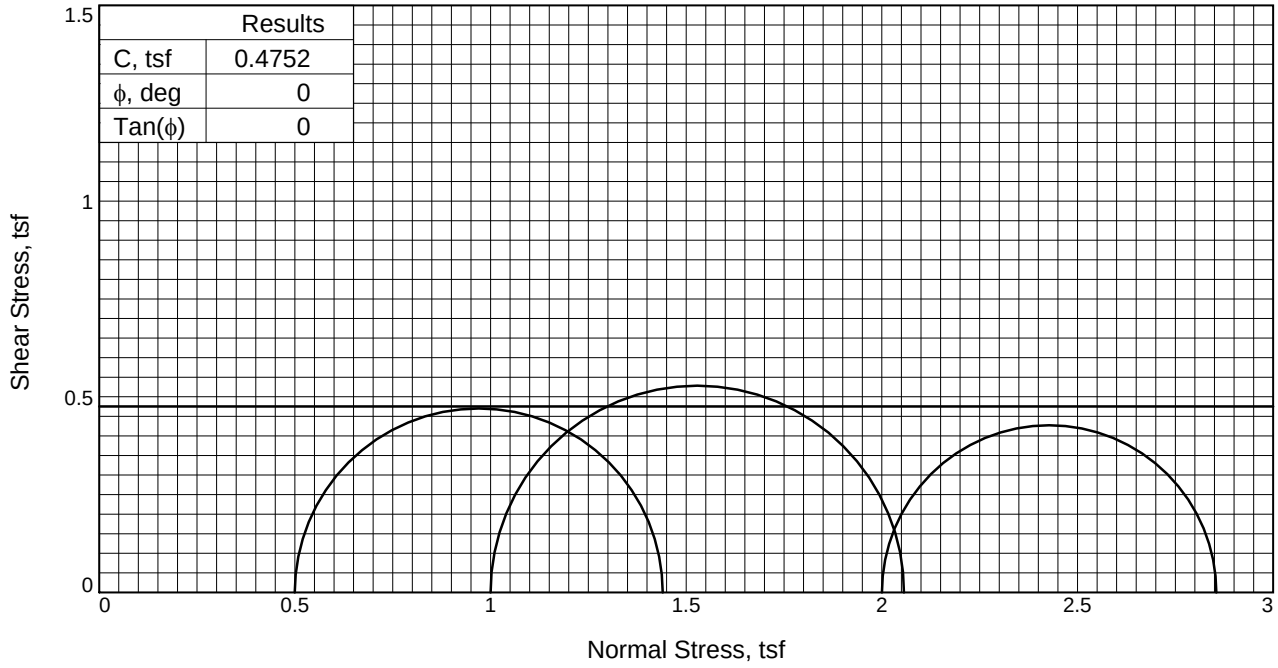
Client: KLJ Engineering LLC

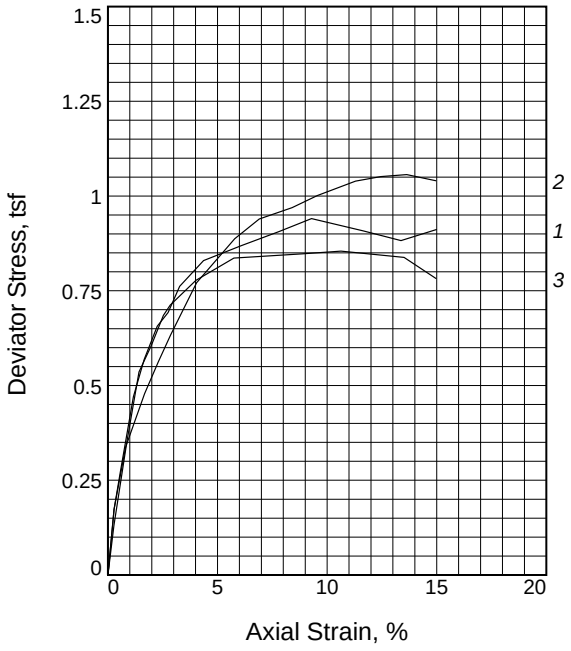
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-169 **Depth:** 7-9' **Sample Number:** TW-2040

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	39.9	38.2	40.2
	Dry Density, pcf	80.0	82.3	80.3
	Saturation, %	97.4	98.4	98.7
	Void Ratio	1.1072	1.0471	1.0986
	Diameter, in.	1.436	1.433	1.460
	Height, in.	2.842	2.868	2.887
At Test	Water Content, %	39.9	38.2	40.2
	Dry Density, pcf	80.0	82.3	80.3
	Saturation, %	97.4	98.4	98.7
	Void Ratio	1.1072	1.0471	1.0986
	Diameter, in.	1.435	1.433	1.460
	Height, in.	2.842	2.868	2.887
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		0.940	1.056	0.855
Ult. Stress, tsf		0.911	1.040	0.782
σ_1 Failure, tsf		1.440	2.057	2.855
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: LEAN CLAY (CL), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

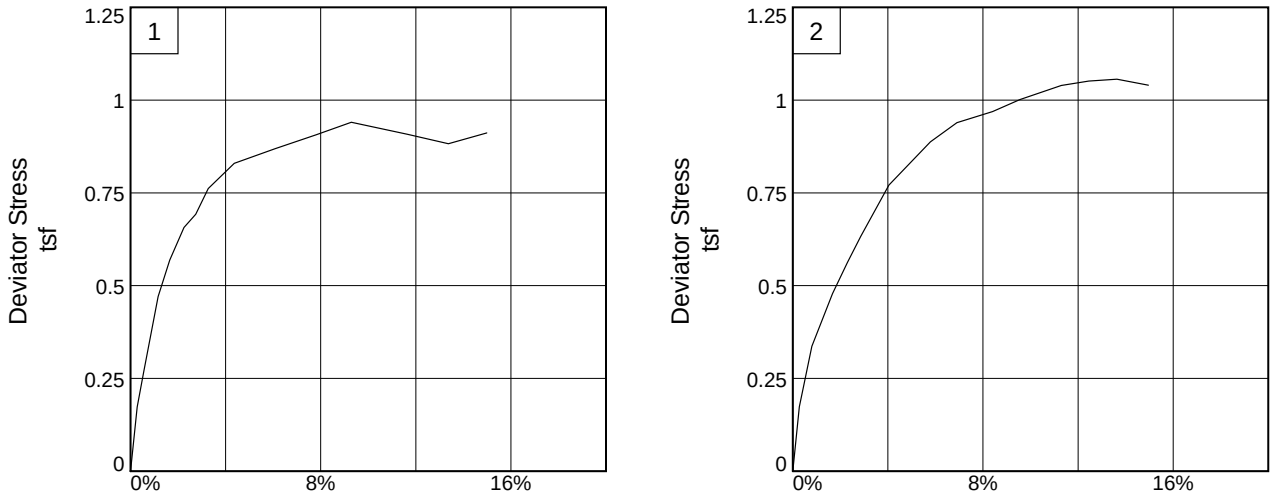
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

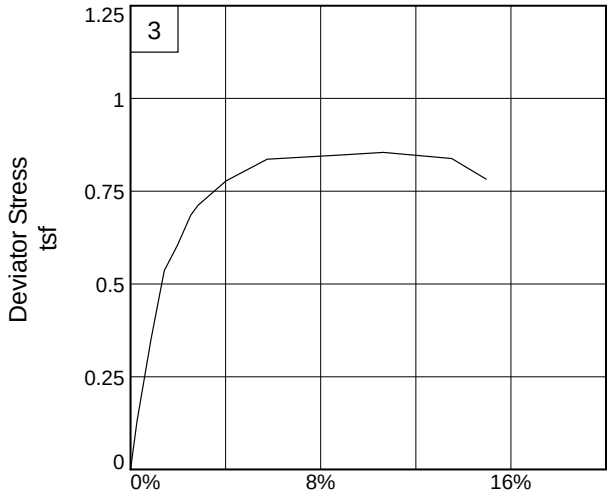
Source of Sample: CAA-170 **Depth:** 7-9'

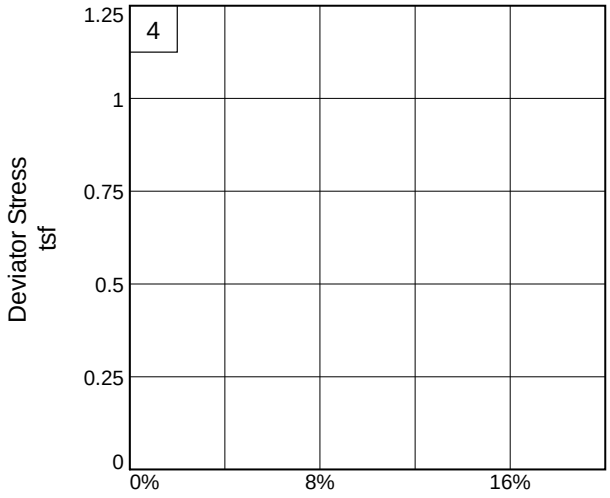
Sample Number: TW-2033

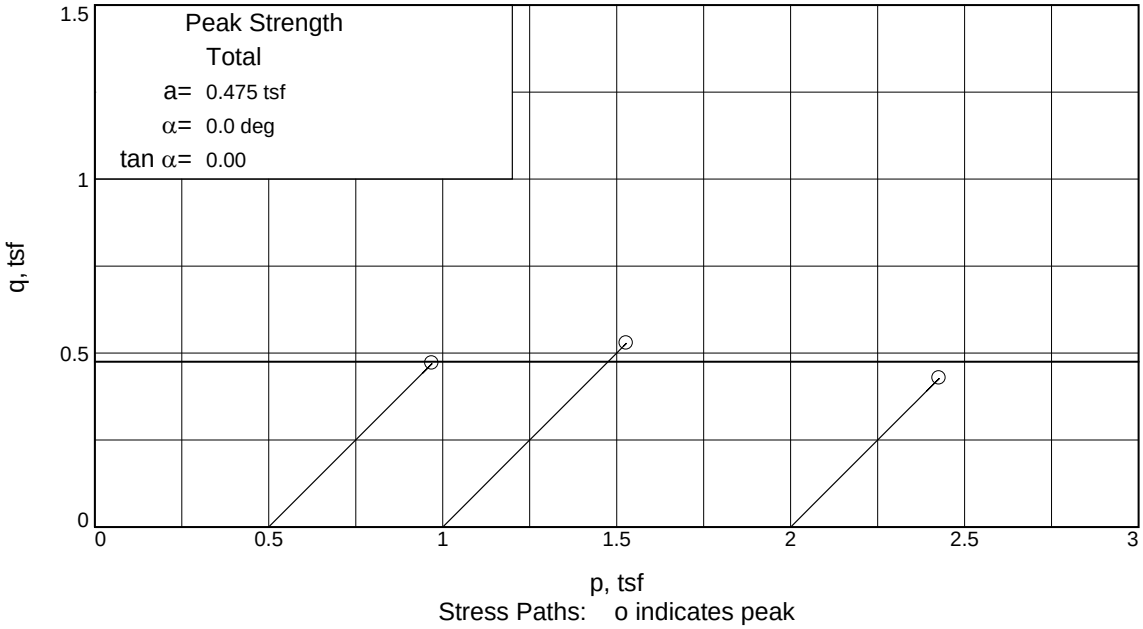
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

BRAUN INTERTEC









Stress Paths: o indicates peak

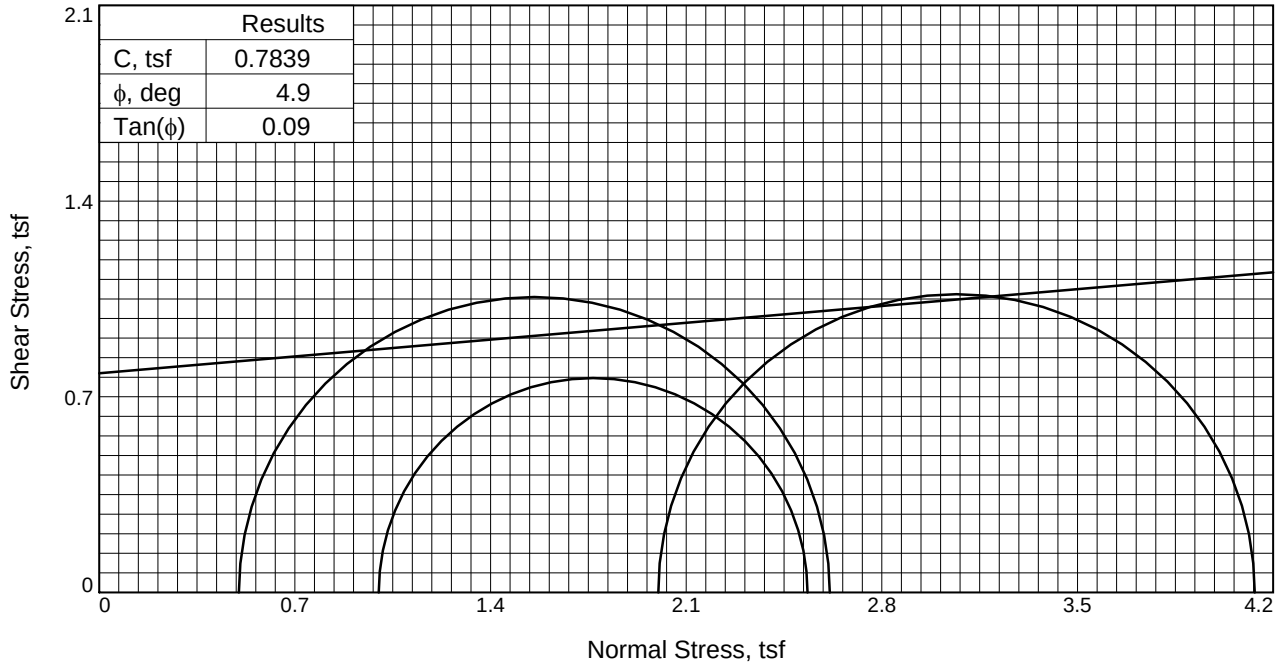
Client: KLJ Engineering LLC

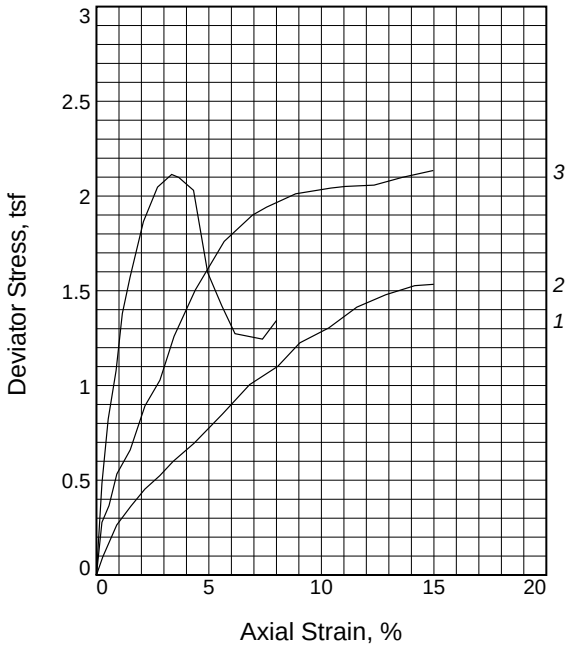
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-170 **Depth:** 7-9' **Sample Number:** TW-2033

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.8	34.4	37.7
	Dry Density, pcf	77.2	87.4	82.3
	Saturation, %	97.5	99.8	97.3
	Void Ratio	1.1846	0.9294	1.0471
	Diameter, in.	1.452	1.465	1.468
	Height, in.	2.873	2.877	2.869
At Test	Water Content, %	42.8	34.4	37.7
	Dry Density, pcf	77.2	87.4	82.3
	Saturation, %	97.5	99.8	97.3
	Void Ratio	1.1846	0.9294	1.0471
	Diameter, in.	1.452	1.465	1.468
	Height, in.	2.873	2.877	2.869
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		2.114	1.534	2.134
Ult. Stress, tsf		1.245	1.534	2.134
σ_1 Failure, tsf		2.614	2.534	4.134
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Client: KLJ Engineering LLC

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

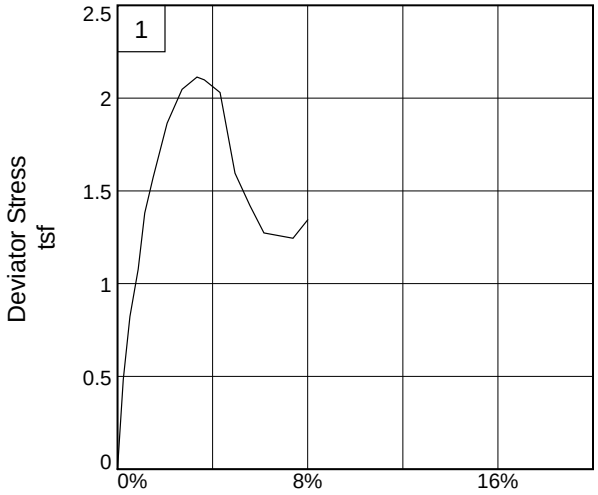
Source of Sample: CAA-170 **Depth:** 17-19'

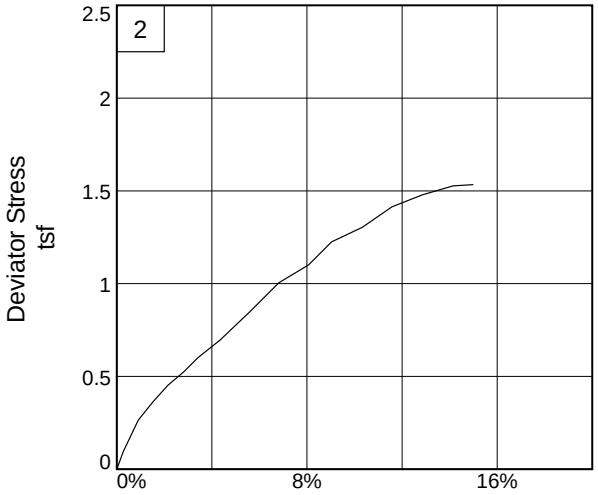
Sample Number: TW-2036

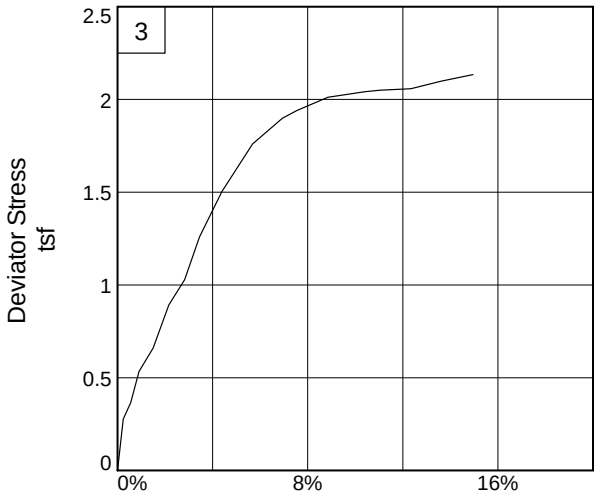
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

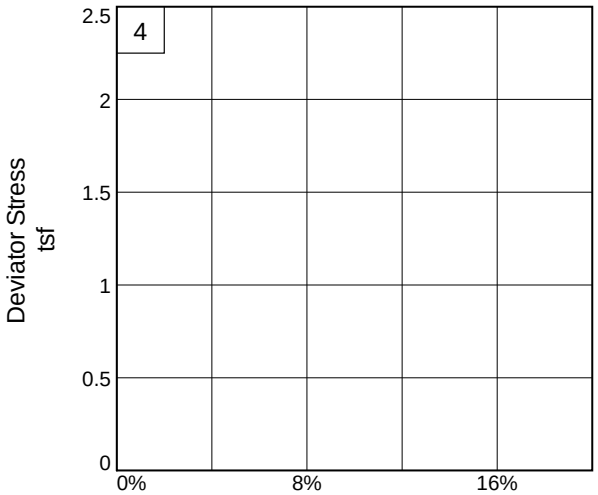
BRAUN INTERTEC

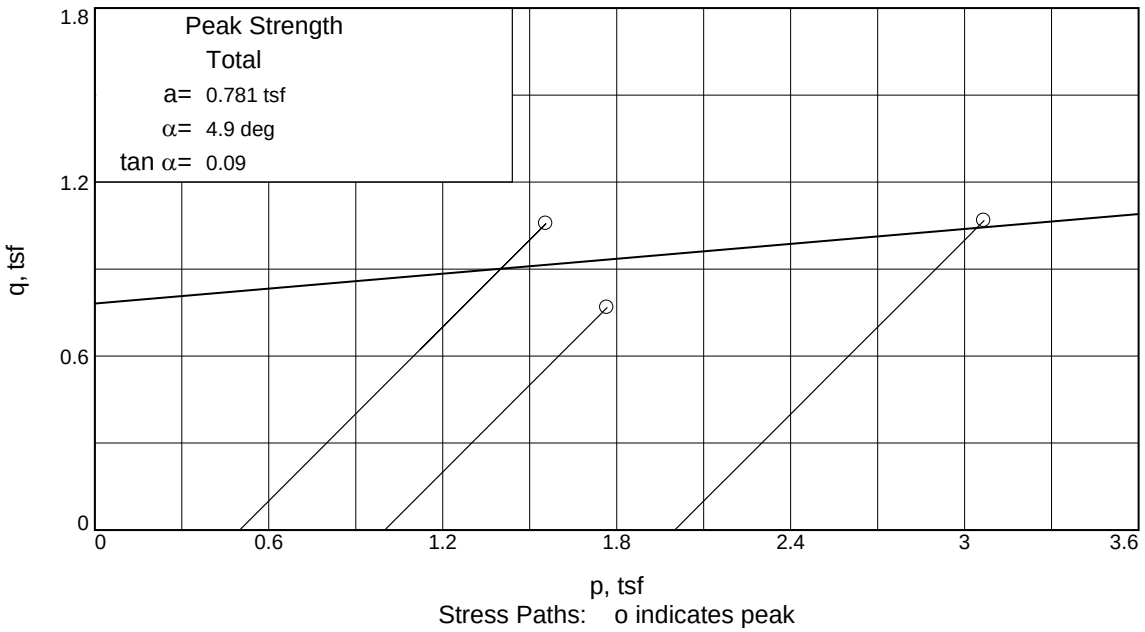
Figure _____











Stress Paths: o indicates peak

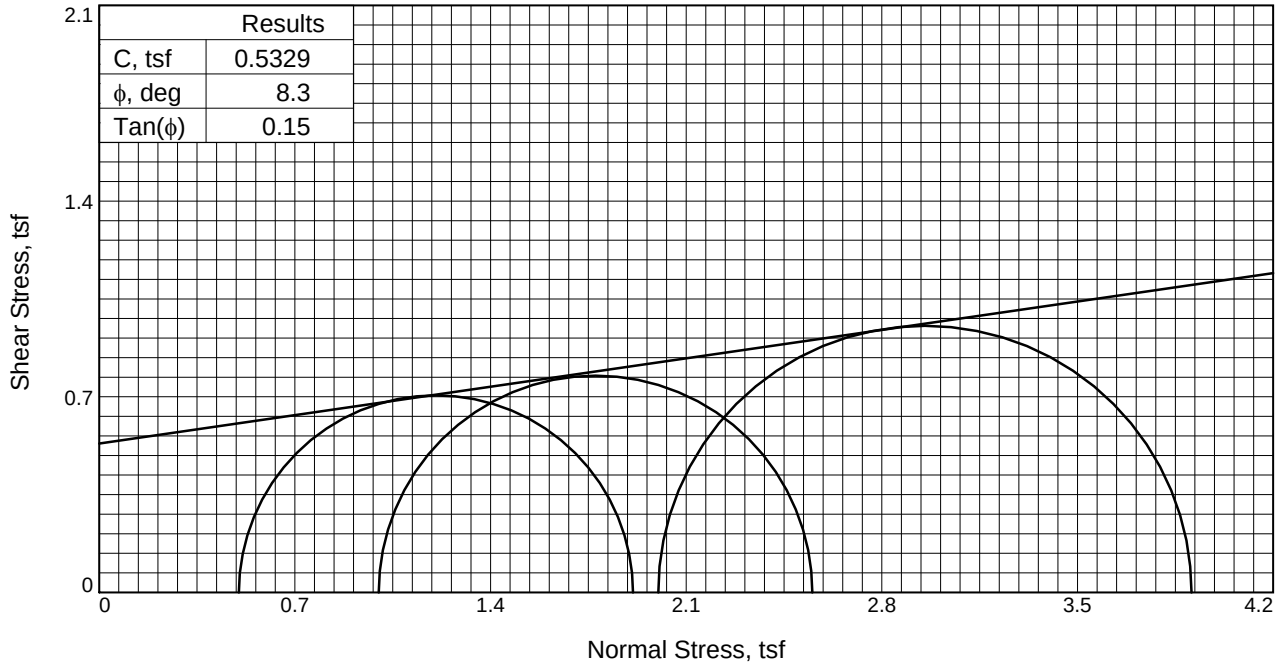
Client: KLJ Engineering LLC

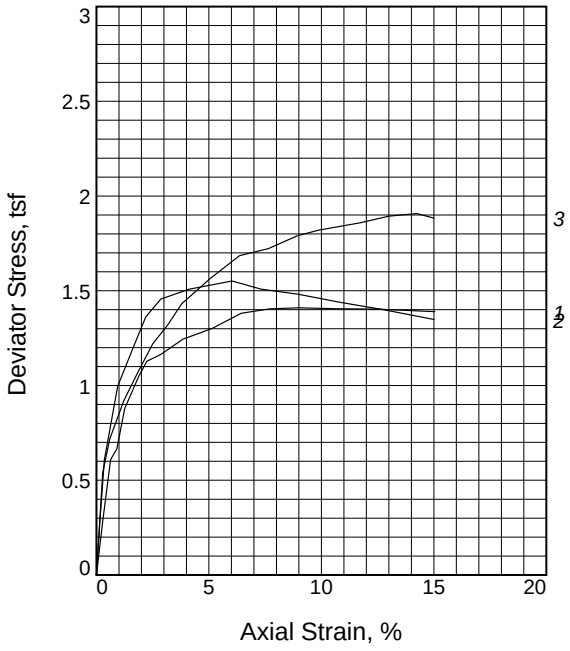
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-170 **Depth:** 17-19' **Sample Number:** TW-2036

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.5	40.7	39.6
	Dry Density, pcf	80.0	78.2	79.0
	Saturation, %	98.6	95.1	94.4
	Void Ratio	1.1078	1.1551	1.1330
	Diameter, in.	1.420	1.410	1.446
	Height, in.	2.858	2.870	2.878
At Test	Water Content, %	40.5	40.7	39.6
	Dry Density, pcf	80.0	78.2	79.0
	Saturation, %	98.6	95.1	94.4
	Void Ratio	1.1078	1.1551	1.1330
	Diameter, in.	1.420	1.410	1.446
	Height, in.	2.858	2.870	2.878
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.410	1.551	1.908
Ult. Stress, tsf		1.389	1.348	1.883
σ_1 Failure, tsf		1.910	2.551	3.908
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

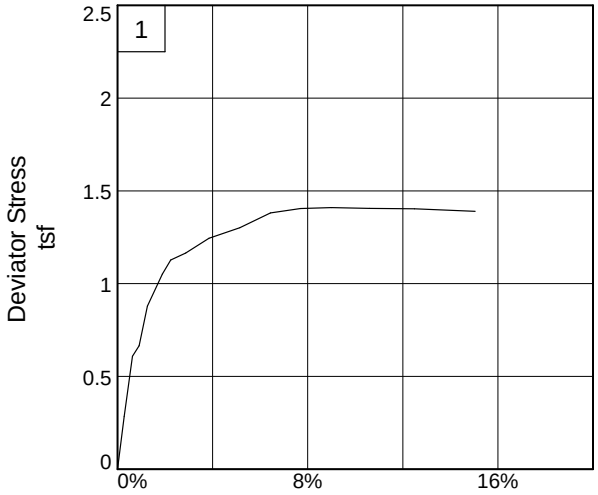
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

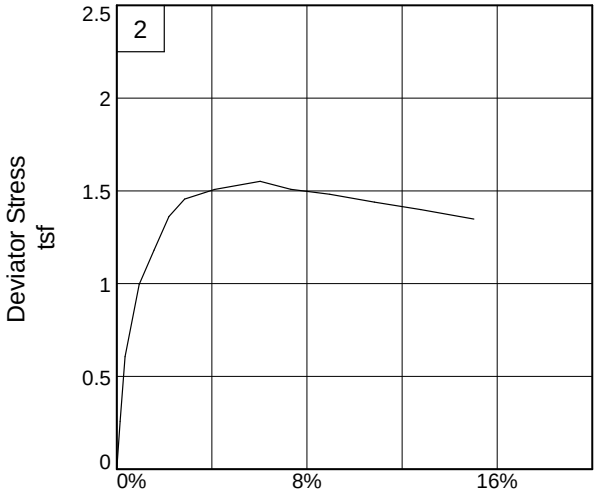
Source of Sample: GDRL-172 **Depth:** 7-9'

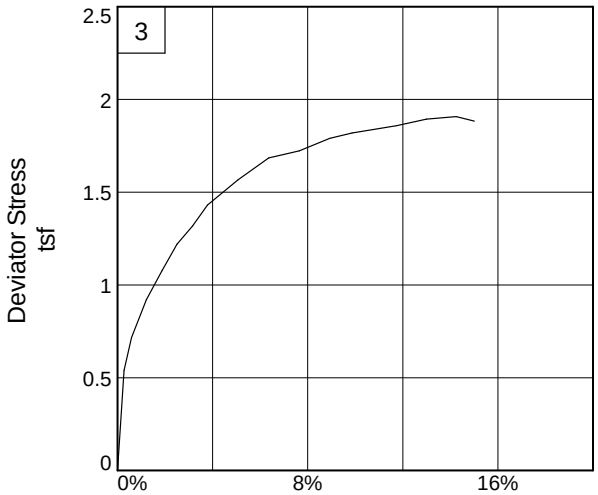
Sample Number: TW-2025

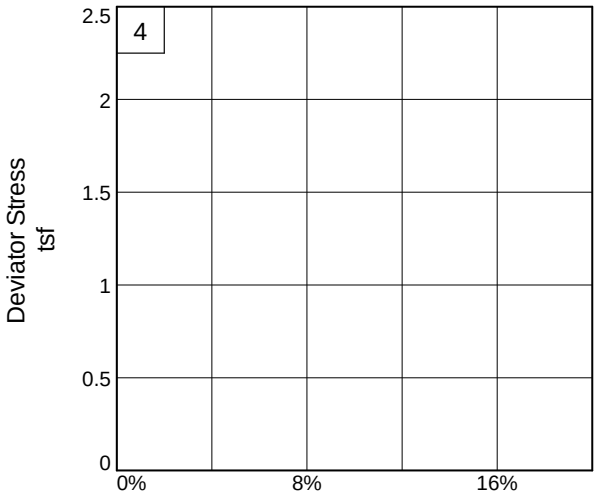
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

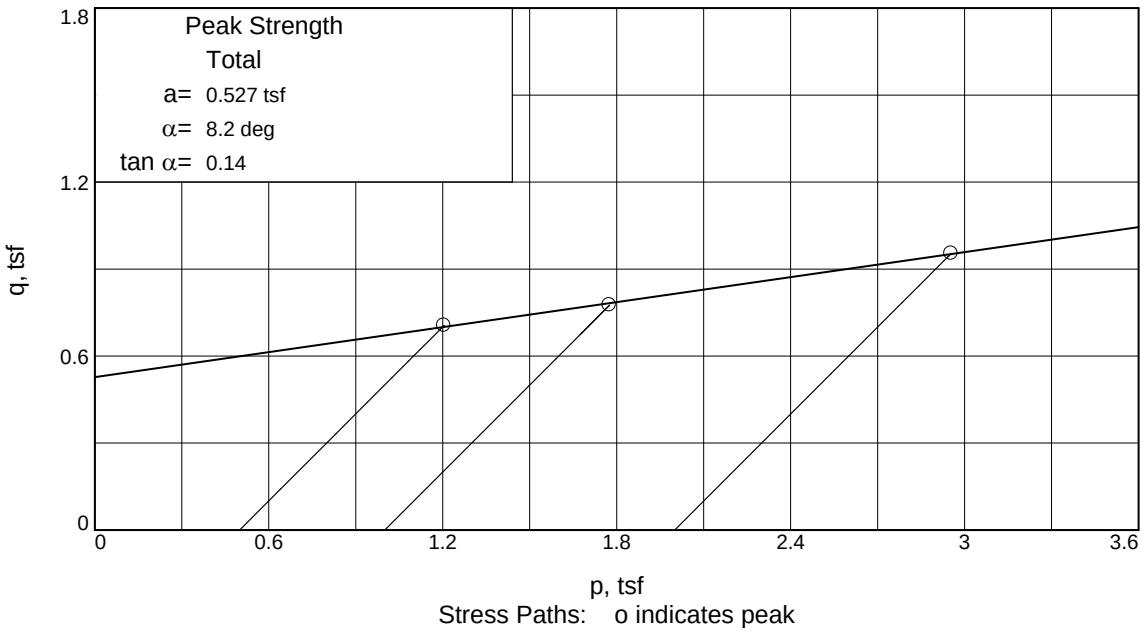
BRAUN INTERTEC











Stress Paths: o indicates peak

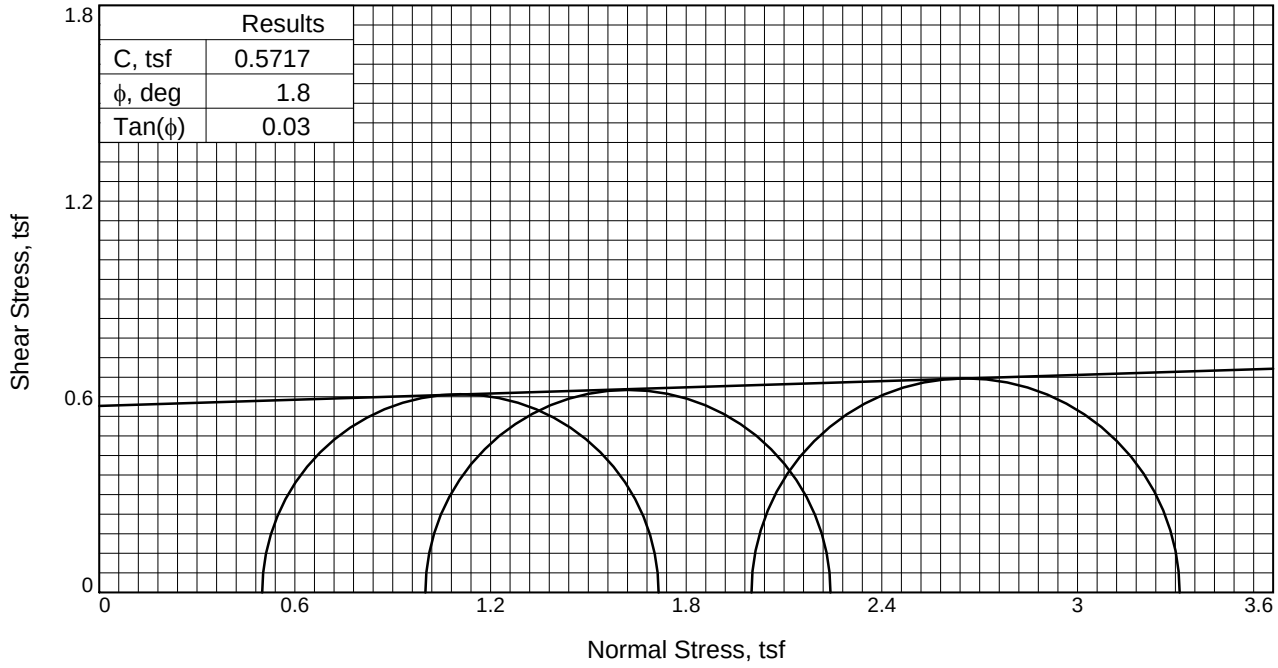
Client: KLJ Engineering LLC

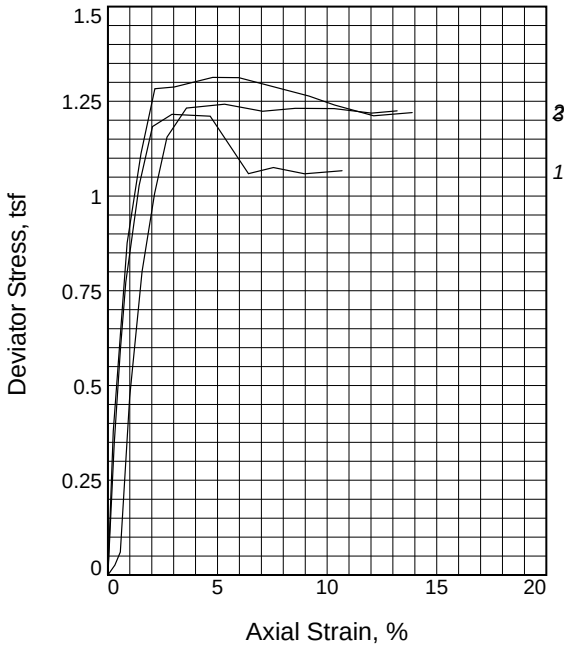
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-172 **Depth:** 7-9' **Sample Number:** TW-2025

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	42.4	39.4	50.0
	Dry Density, pcf	78.5	78.7	70.9
	Saturation, %	100.0	93.2	98.1
	Void Ratio	1.1464	1.1420	1.3773
	Diameter, in.	1.433	1.460	1.472
	Height, in.	2.808	2.819	2.845
At Test	Water Content, %	42.4	39.4	50.0
	Dry Density, pcf	78.5	78.7	70.9
	Saturation, %	100.0	93.2	98.1
	Void Ratio	1.1464	1.1420	1.3773
	Diameter, in.	1.433	1.460	1.472
	Height, in.	2.808	2.819	2.845
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.216	1.242	1.313
Ult. Stress, tsf		1.059	1.219	1.212
σ_1 Failure, tsf		1.715	2.242	3.313
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown to gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

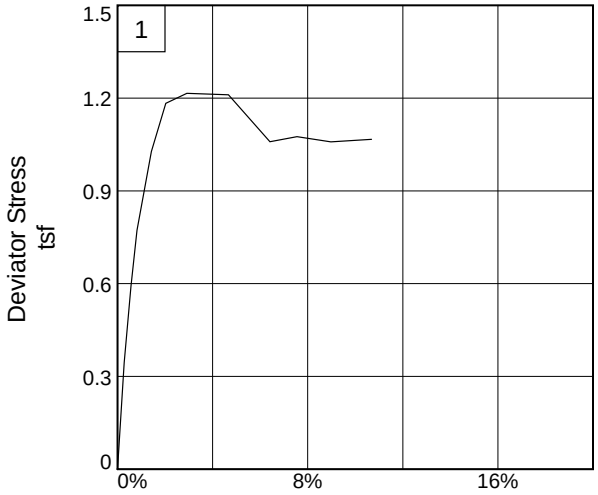
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

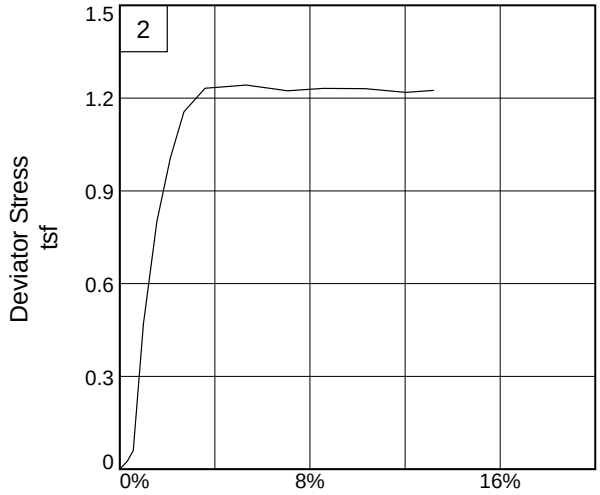
Source of Sample: CAA-173 **Depth:** 17-19'

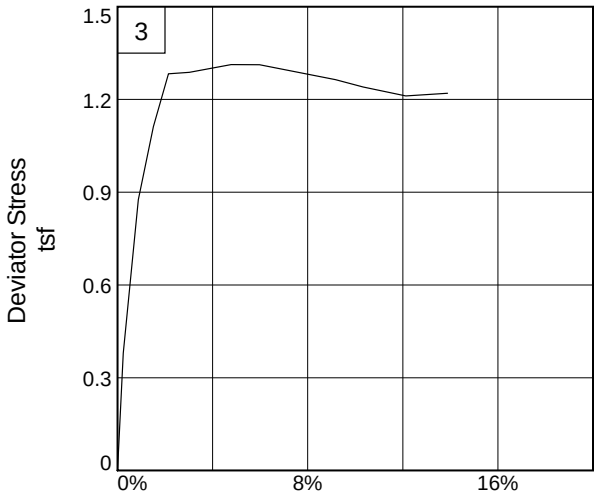
Sample Number: TW-2021

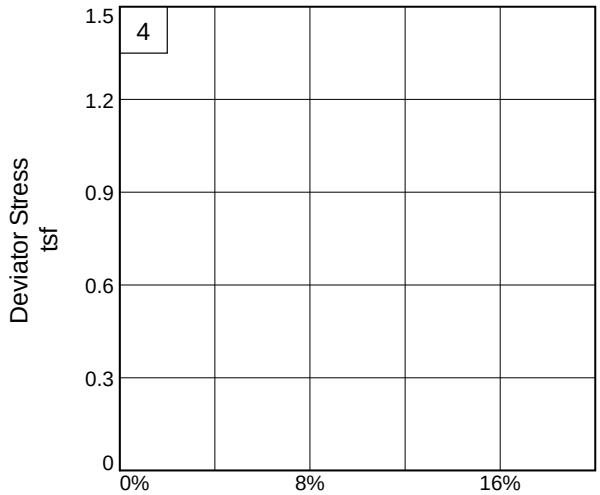
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

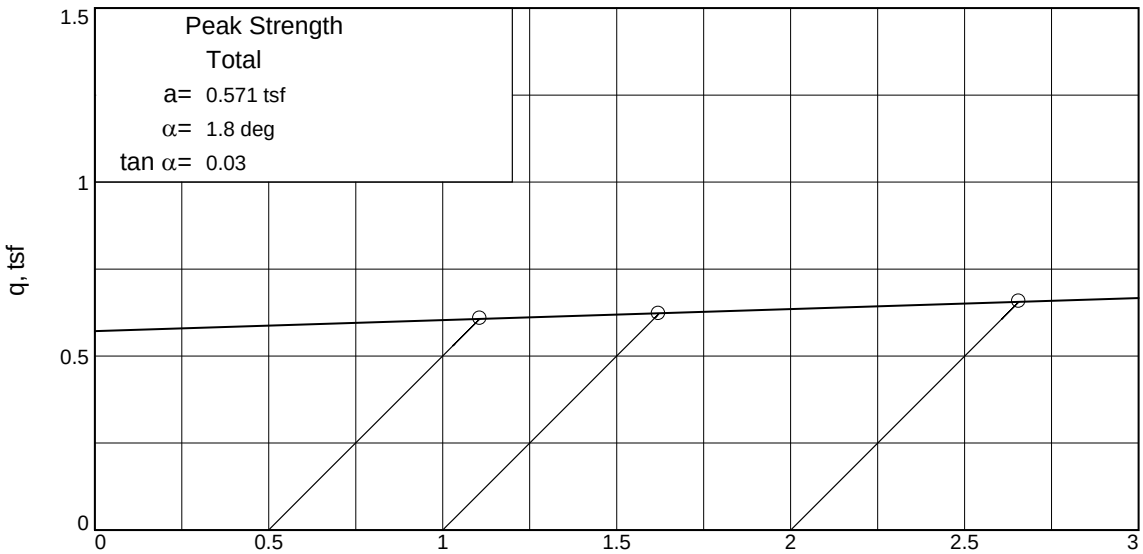
BRAUN INTERTEC











Stress Paths: o indicates peak

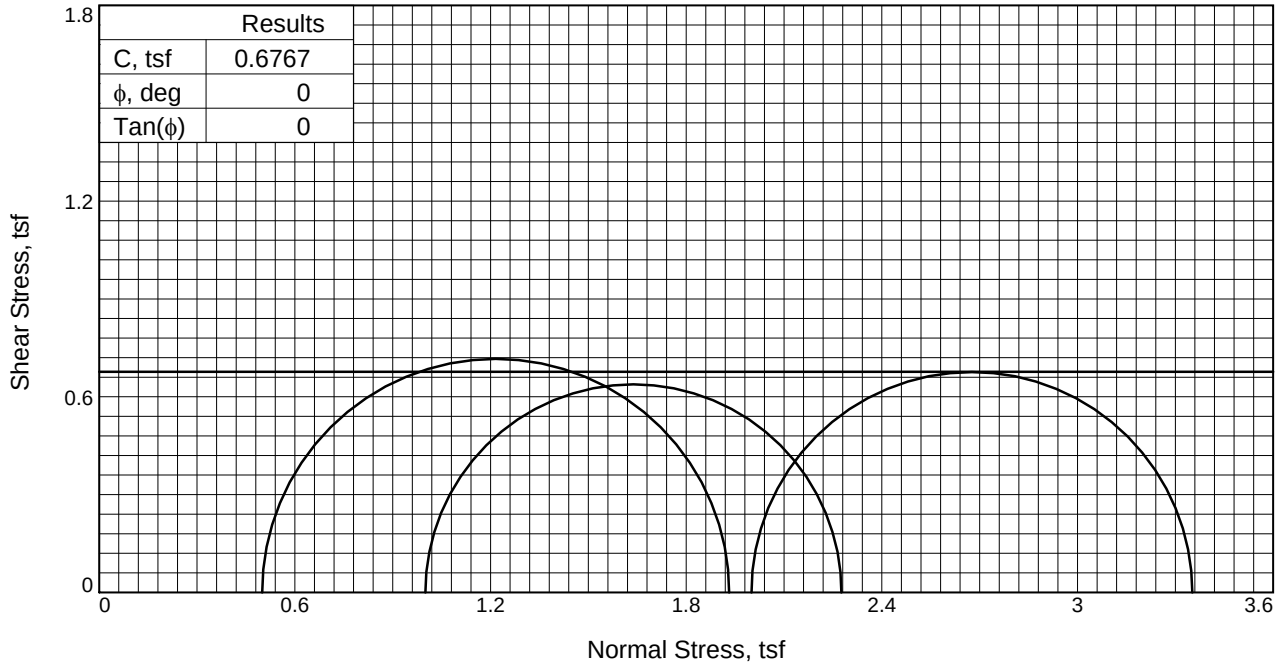
Client: KLJ Engineering LLC

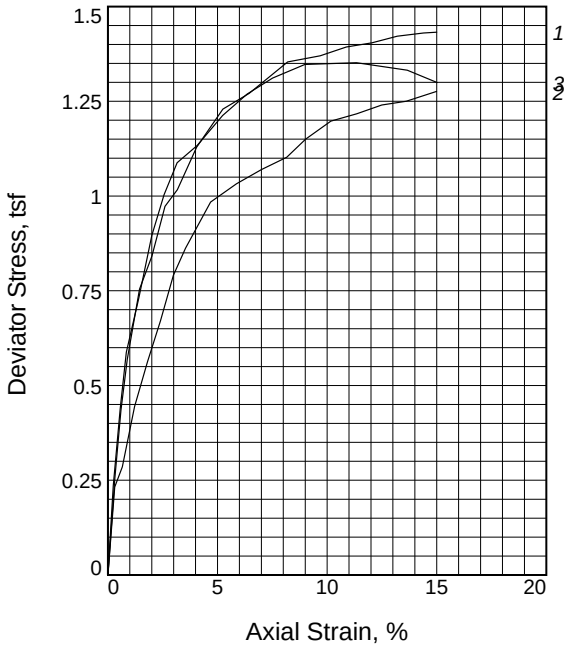
Project: 8-029(200)069; PCN 22888

Source of Sample: CAA-173 **Depth:** 17-19' **Sample Number:** TW-2021

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	40.1	42.6	40.3
	Dry Density, pcf	80.4	77.9	80.7
	Saturation, %	98.7	99.0	100.0
	Void Ratio	1.0977	1.1627	1.0887
	Diameter, in.	1.401	1.363	1.434
	Height, in.	2.841	2.881	2.849
At Test	Water Content, %	40.1	42.6	40.3
	Dry Density, pcf	80.4	77.9	80.7
	Saturation, %	98.7	99.0	100.0
	Void Ratio	1.0977	1.1627	1.0887
	Diameter, in.	1.401	1.363	1.434
	Height, in.	2.841	2.881	2.849
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.432	1.276	1.352
Ult. Stress, tsf		1.432	1.276	1.299
σ_1 Failure, tsf		1.932	2.276	3.352
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), brown, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

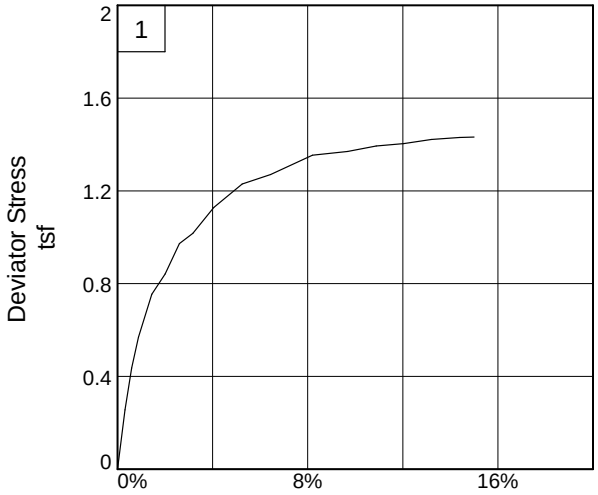
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

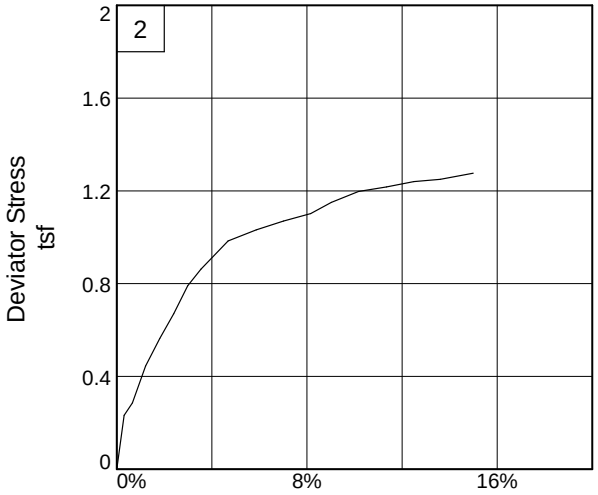
Source of Sample: GDRL-175 **Depth:** 7-9'

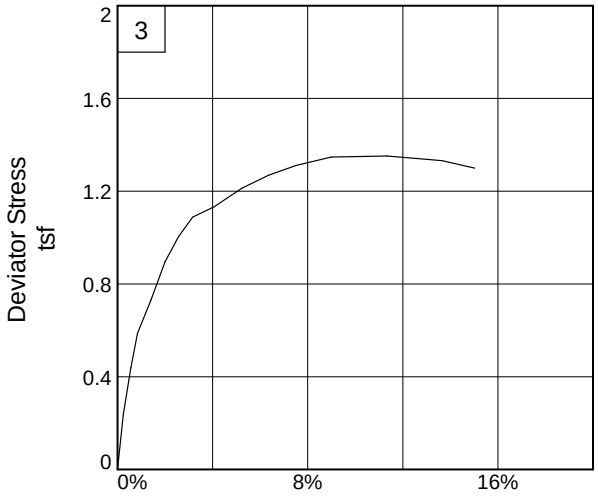
Sample Number: TW-2010

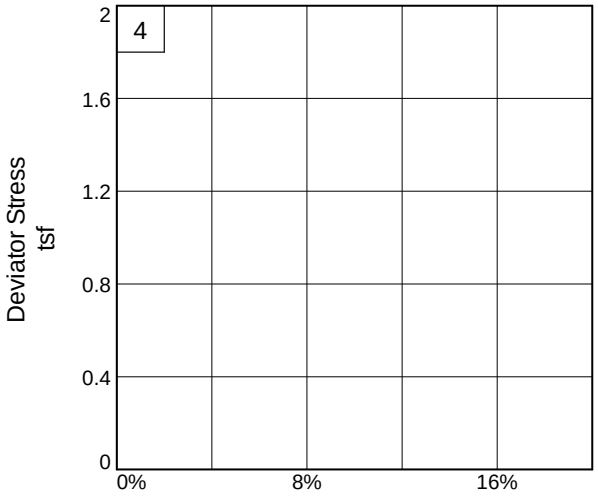
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

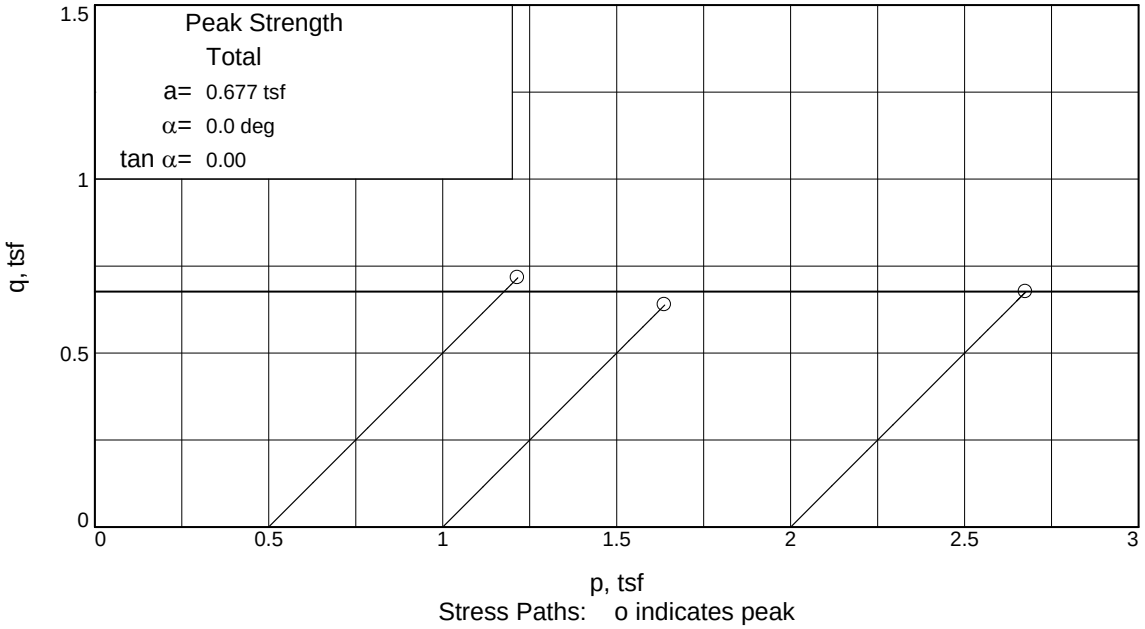
BRAUN INTERTEC











Stress Paths: o indicates peak

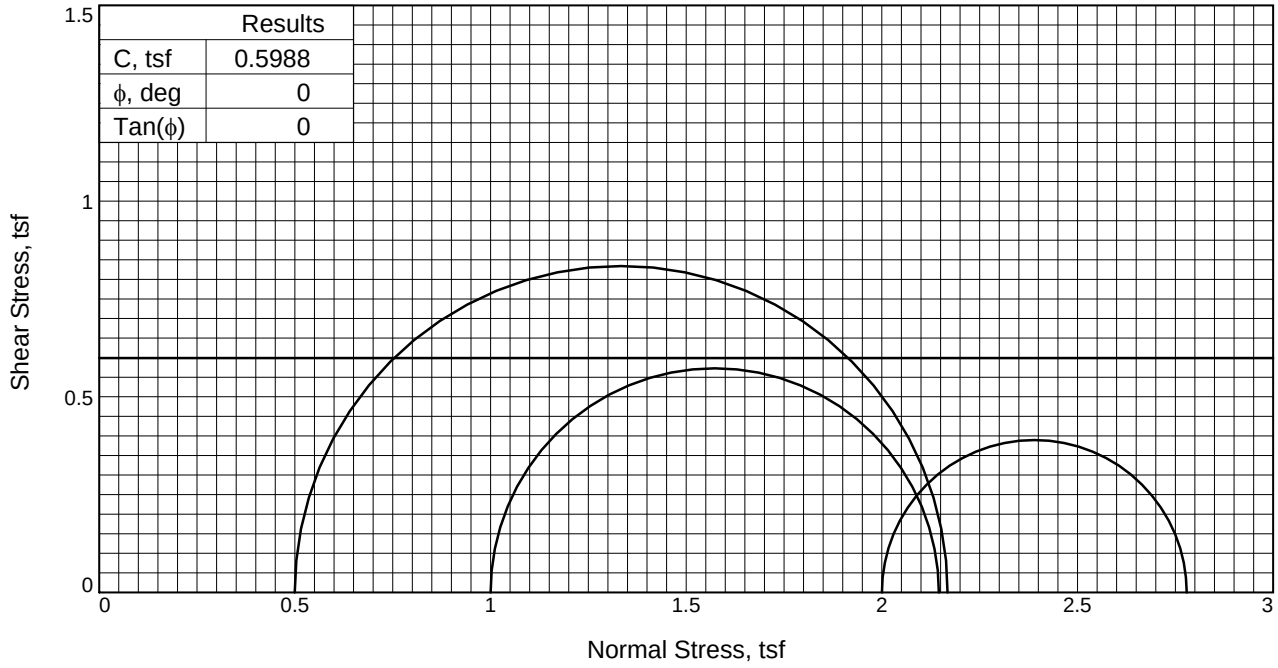
Client: KLJ Engineering LLC

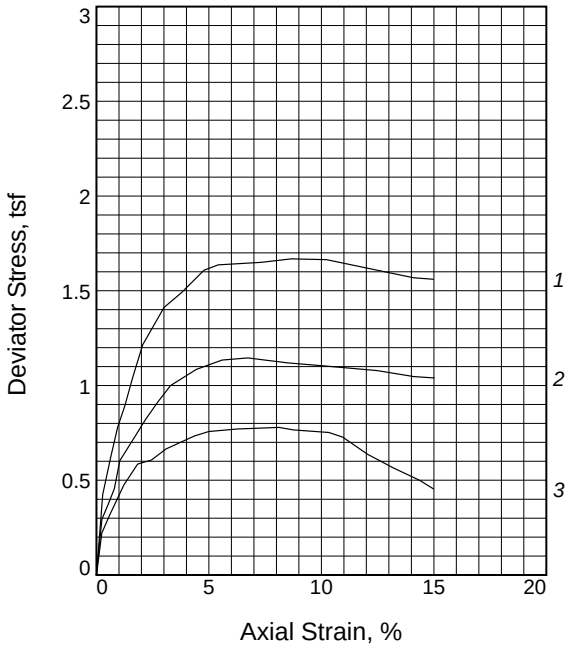
Project: 8-029(200)069; PCN 22888

Source of Sample: GDRL-175 **Depth:** 7-9' **Sample Number:** TW-2010

Project No.: B2009724 **Figure** _____

Braun Intertec





Sample No.		1	2	3
Initial	Water Content, %	44.7	45.4	46.2
	Dry Density, pcf	75.4	75.7	74.6
	Saturation, %	97.7	99.9	99.0
	Void Ratio	1.2344	1.2271	1.2603
	Diameter, in.	1.415	1.440	1.467
	Height, in.	2.864	2.884	2.944
At Test	Water Content, %	44.7	45.4	46.2
	Dry Density, pcf	75.4	75.7	74.6
	Saturation, %	97.7	99.9	99.0
	Void Ratio	1.2344	1.2271	1.2603
	Diameter, in.	1.415	1.440	1.467
	Height, in.	2.864	2.884	2.944
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, tsf		0.000	0.000	0.000
Cell Pressure, tsf		0.500	1.000	2.000
Fail. Stress, tsf		1.668	1.146	0.779
Ult. Stress, tsf		1.561	1.040	0.454
σ_1 Failure, tsf		2.168	2.146	2.779
σ_3 Failure, tsf		0.500	1.000	2.000

Type of Test:
Unconsolidated Undrained

Sample Type: Shelby Tube

Description: FAT CLAY (CH), gray, A-7-6

Assumed Specific Gravity= 2.70

Remarks: UU Triax ASTM D 2850

Figure _____

Client: KLJ Engineering LLC

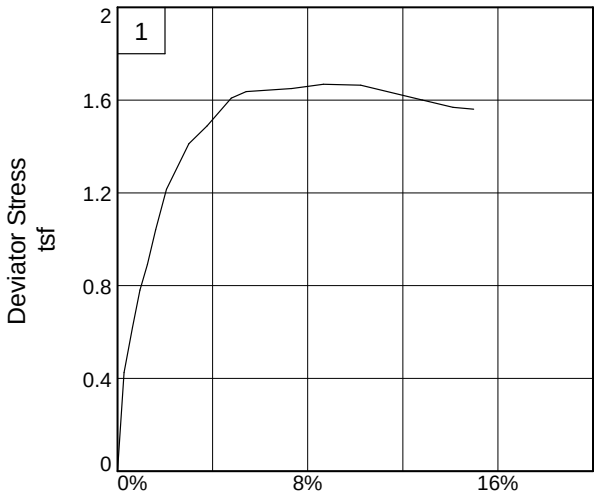
Project: 8-029(200)069; PCN 22888
Fargo, North Dakota

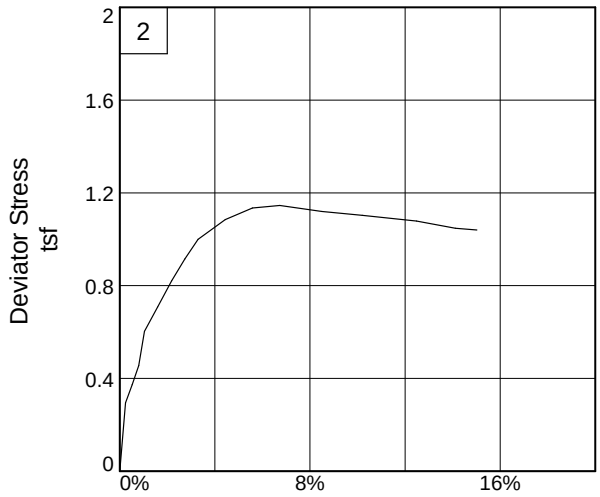
Source of Sample: CAA-176 **Depth:** 17-19'

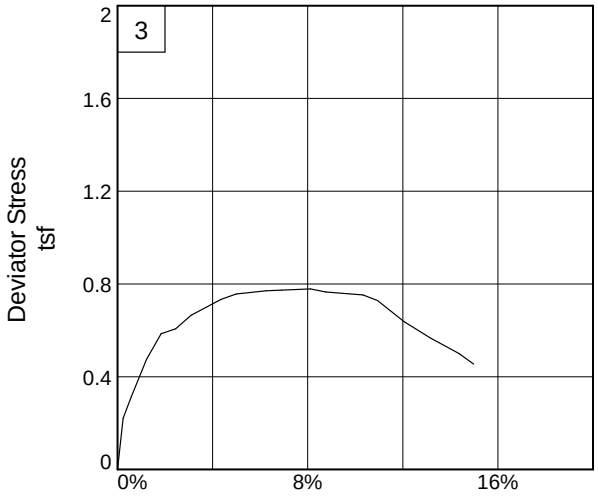
Sample Number: TW-2006

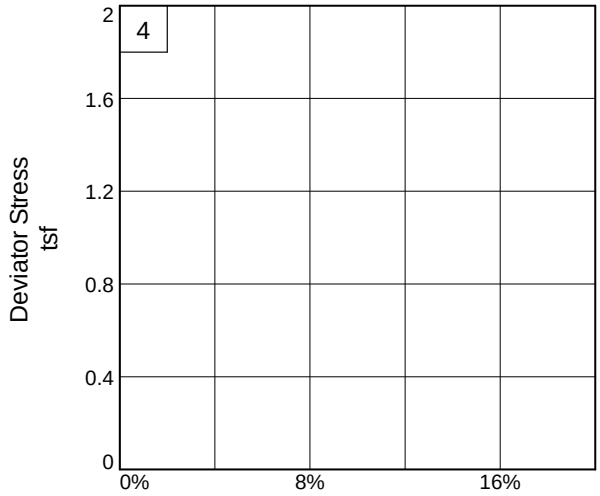
Proj. No.: B2009724 **Date Sampled:** 1/4/2021

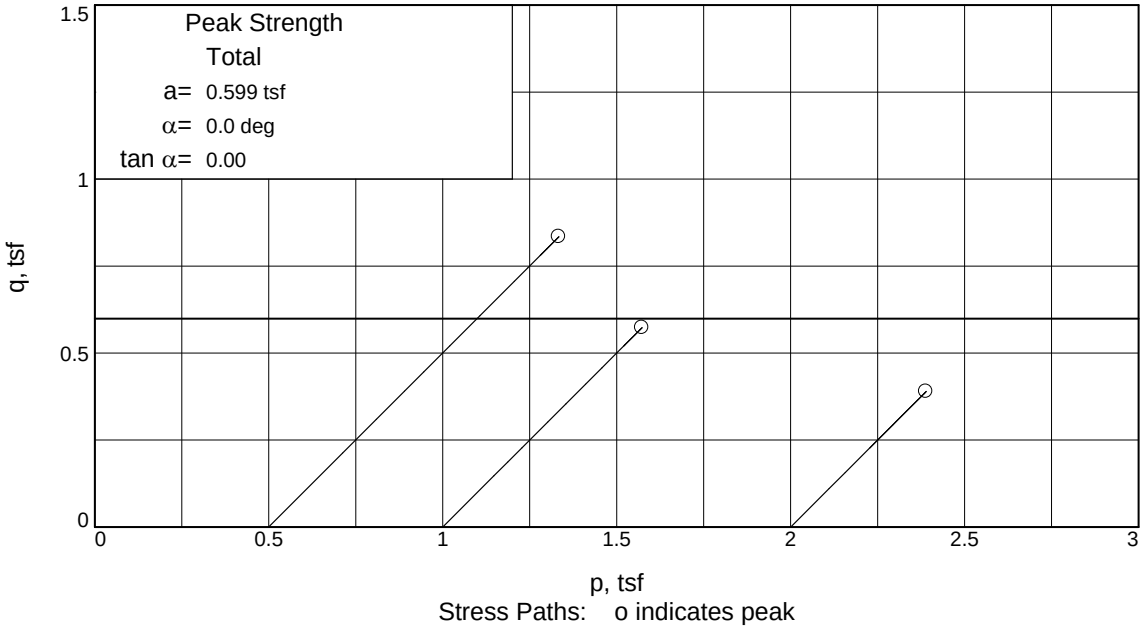
BRAUN INTERTEC











Stress Paths: o indicates peak

Client: KLJ Engineering LLC

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

Source of Sample: CAA-176 **Depth:** 17-19' **Sample Number:** TW-2006

Project No.: B2009724 **Figure** _____

Braun Intertec