April 8, 2021

McClure Engineering Company
1740 Lininger Lane
North Liberty, Iowa 52317

Attn: Mr. Bhooshan Karnik, MSCE, P.E., PMP

Re: Subsurface Exploratory Borings and Laboratory Testing Data Report
Manufacturing Drive Reconstruction
Between Highway 30 and College Avenue
Clinton, Iowa
Terracon Project No. 07205036

Dear Mr. Karnik:

Terracon Consultants, Inc. (Terracon) has completed the field exploration and laboratory testing services for the above referenced project. Our services were performed in general accordance with Terracon Proposal No. P06205023 dated April 20, 2020. This report presents the findings of the field exploration and laboratory testing for the proposed project.

Twenty-seven borings extending to depths ranging from approximately 5 to 85 feet below existing grades, at the approximate locations requested, as shown in **Exploration Plan**. Borings B-0004, B-0006, B-0010, and B-0024 were cancelled by McClure prior to our mobilization and were not performed. A description of the field exploration and laboratory testing services performed is provided in **Exploration and Testing Procedures**. Logs for the borings are provided in **Exploration Results**. **General Notes** and a summary of the **Unified Soil Classification System** are provided in **Supplemental Information**.

We have not been asked to interpret the data or to make design and construction recommendations for the project. Therefore, Terracon does not accept any responsibility or liability for interpretation of this data by others.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants, Inc.

Joel D. Schluensen, E.I.
Staff Engineer

Sara J. Sonisky, P.E.
Iowa No. 23543

Attachments

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

EXPLORATION AND TESTING PROCEDURES

Field Exploration

The McClure Engineering Company (McClure) selected the number of borings, their locations, and depths. The borings extended to the following depths:

Boring Number [1]	Boring Depth (feet) [2]	Location
B-0001	85	See Exploration Plan
B-0002	52½	
B-0003	70	
B-0005	60	
B-0007	65	
B-0008, B-0016	18½	
B-0009 [3]	46	
B-0011, B-0023	25	
B-0012	50	
B-0013, B-0014, B-0019, B-0021, B-0022, B-0028, B-0029, B-0030, B-0031	15	
B-0015, B-0017, B-0020, B-0026	20	
B-0018, B-0027	13½	
B-0025	5	

1. Borings B-0004, B-0006, B-0010, and B-0024 were cancelled by McClure prior to our mobilization and were not performed.
2. Below ground surface
3. Boring B-0009 was offset and redrilled approximately 40 feet east due to encountering an existing abutment wall for a previous bridge approximately 1 foot below ground surface.

Boring Layout and Elevations: McClure provided the boring layout and staked the borings in the field. Elevations at the boring locations were also provided by McClure.

Subsurface Exploration Procedures: Terracon advanced the borings with an ATV-mounted drill rig using continuous-flight augers. Four samples were generally obtained in the upper 10 feet of each boring and one sample was obtained at intervals of 5 feet thereafter. Sampling was performed using a split-barrel sampling procedure. Bulk samples were collected at Borings B-0013, B-0019, B-0022, B-0025, B-0029, and B-0031. Samples were placed in appropriate containers, taken to Terracon's laboratory for testing, and classified by the project engineer.

Subsurface water levels in the borings were observed and recorded during drilling operations. Mud rotary drilling was performed below depths of 10 and 25 feet in Borings B-0002 and B-003, respectively, which introduced drilling fluid into the borehole. Upon encountering bedrock or refusal-to-drilling conditions, rock coring using an NQ rock core barrel was performed at borings B-0001, B-003, B-0005, B-0007, B-0009, and B-0012. Water level observations after drilling were not obtained in these borings.

Terracon's exploration team prepared field logs as part of standard drilling operations, and these logs include sampling depths, penetration distances, and other relevant sampling information. Field logs also include visual classifications of materials encountered during drilling and the exploration team's interpretation of subsurface conditions between samples and were prepared by a field engineer. Boring logs included in our report were prepared from the field logs, represent the project engineer's interpretation, and include modifications based on observations and laboratory tests.

Laboratory Testing

Laboratory testing on the samples obtained from the field were performed at the direction of McClure. Laboratory testing performed included:

- Moisture Content
- Unit Weight
- Atterberg Limits
- Sieve Analysis
- Hydraulic Conductivity
- Direct Shear
- Consolidation
- Soil Unconfined Compressive Strength
- Rock Unconfined Compressive Strength
- Standard Proctor

The soil descriptions presented on the boring logs are in accordance with the **General Notes** and **Unified Soil Classification System (USCS)** included in **Supporting Information**. The estimated USCS group symbols are shown on the boring logs, and a brief description of the USCS is included in **Supporting Information**

SITE LOCATION AND EXPLORATION PLANS

SITE LOCATION

Manufacturing Drive Reconstruction ■ Clinton, Iowa
April 8, 2021 ■ Terracon Project No. 07205036

Terracon GeoReport

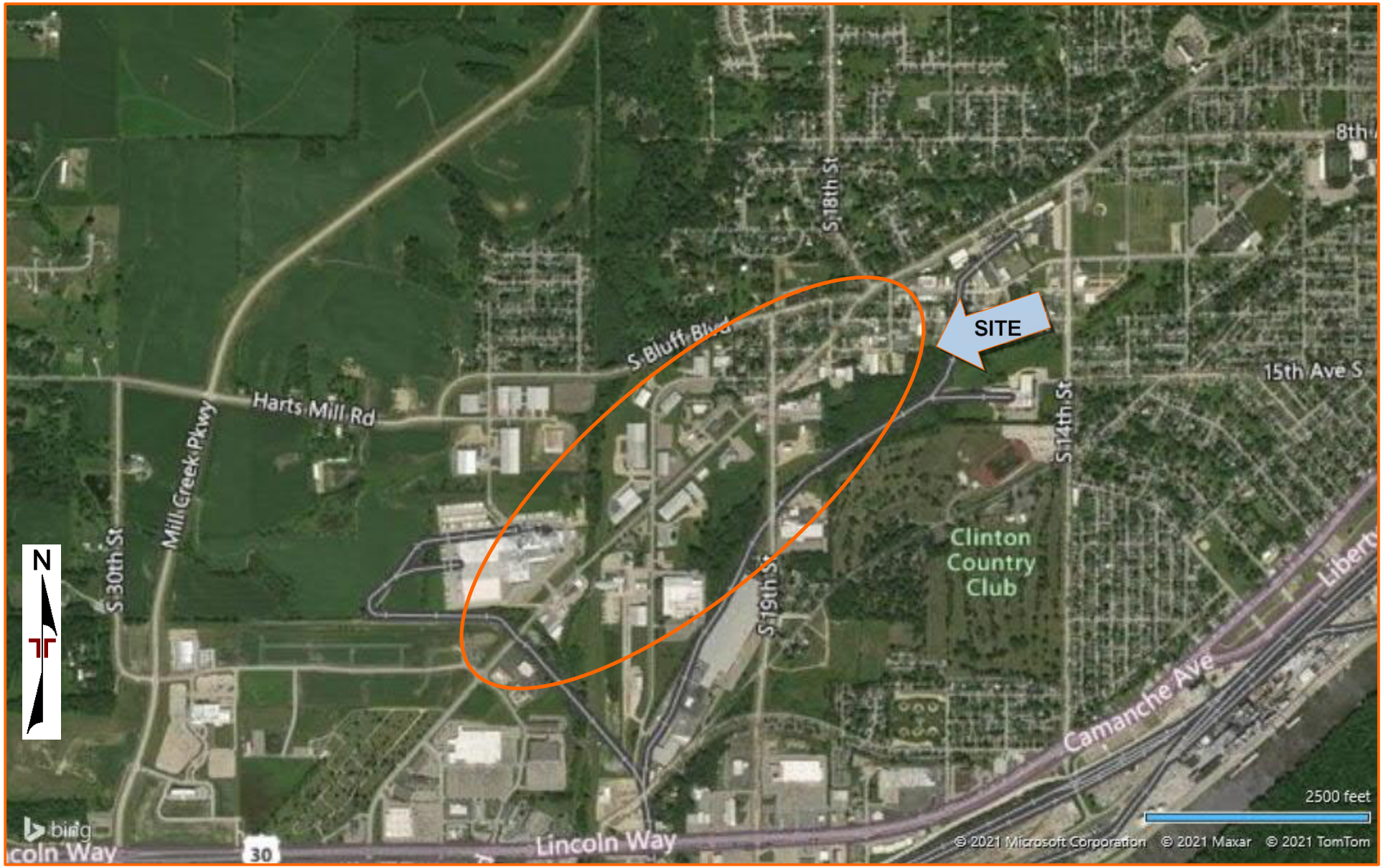
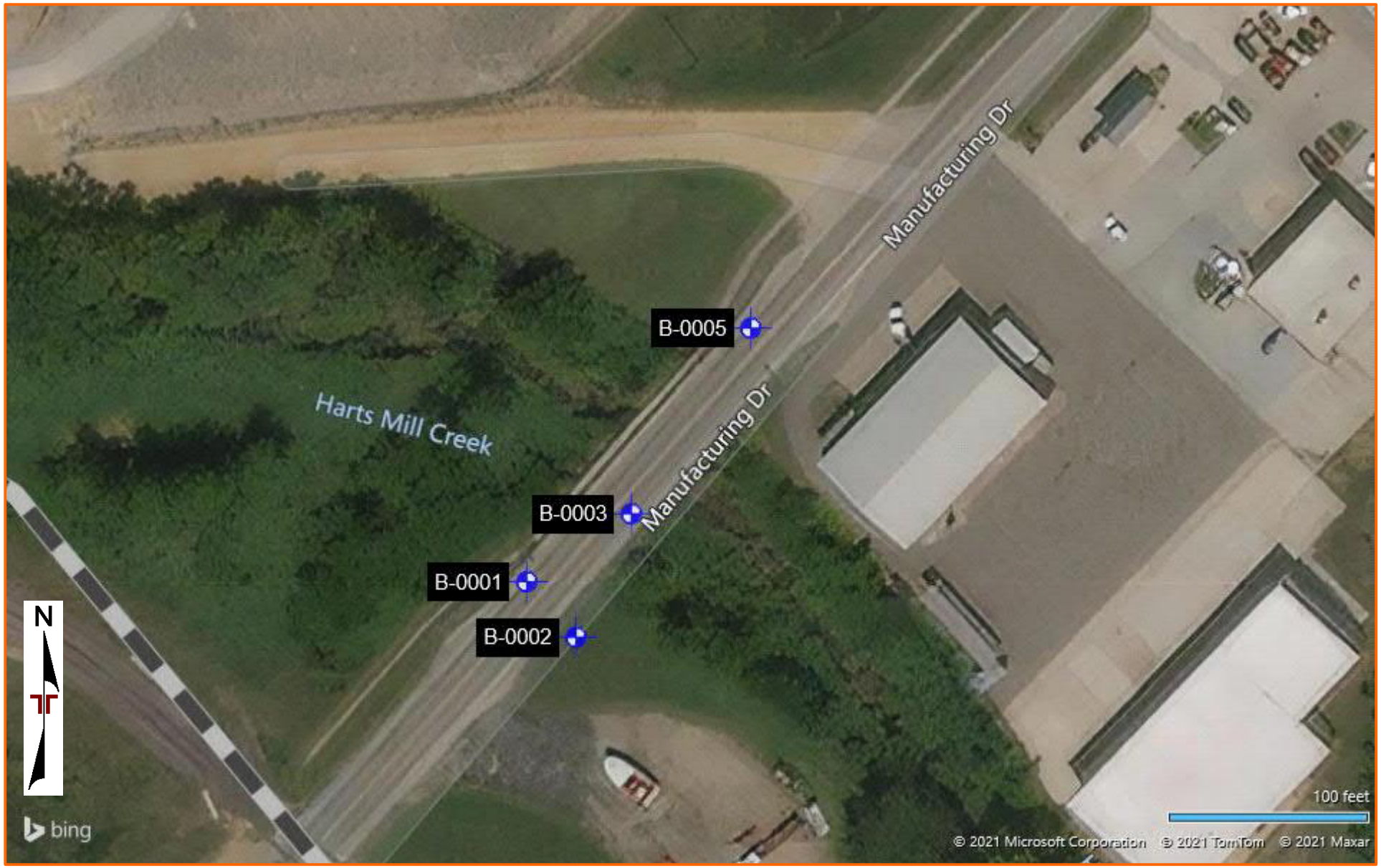


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Manufacturing Drive Reconstruction ■ Clinton, Iowa
April 8, 2021 ■ Terracon Project No. 07205036



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April 8, 2021 ■ Terracon Project No. 07205036

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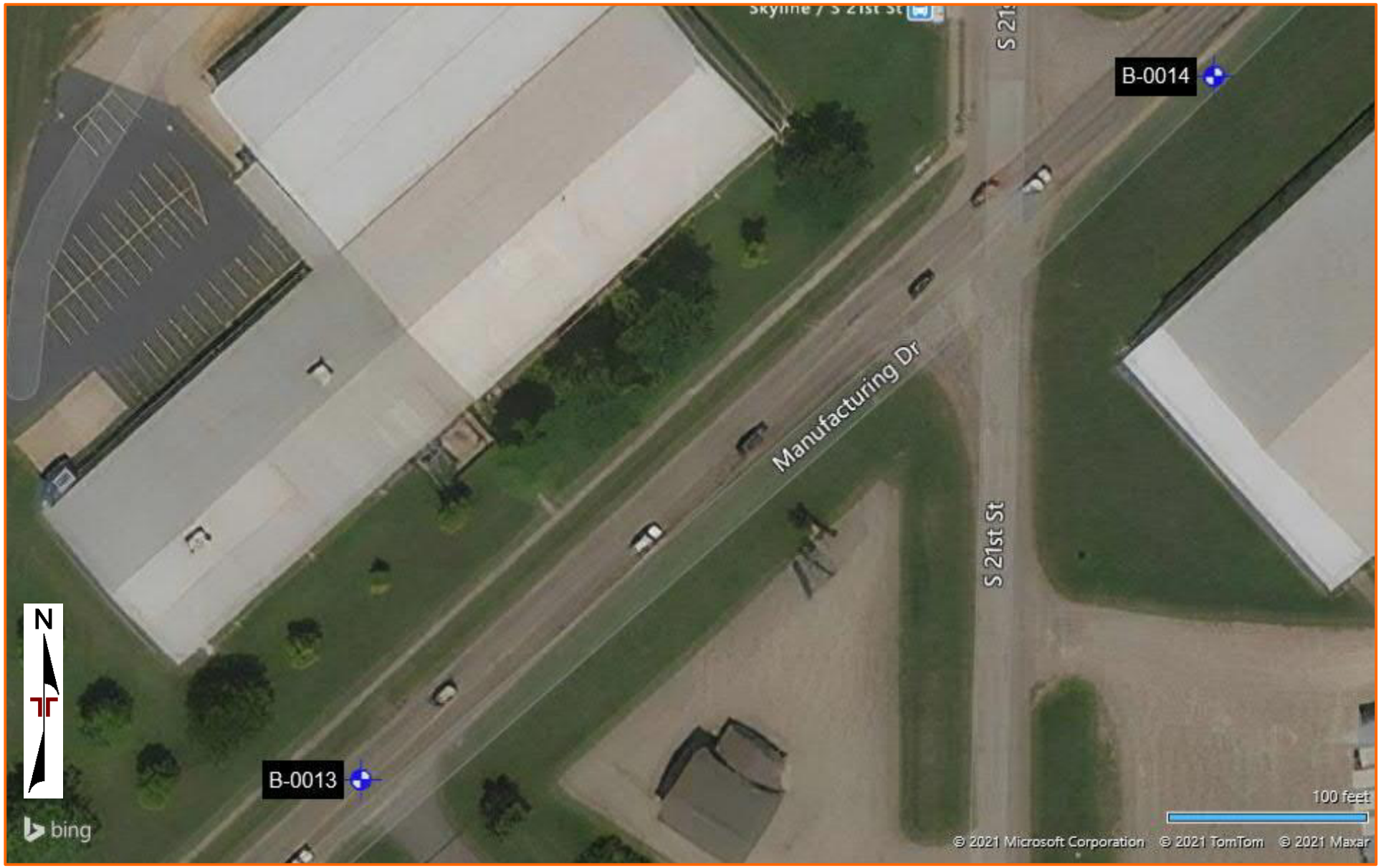

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Manufacturing Drive Reconstruction ■ Clinton, Iowa
April 8, 2021 ■ Terracon Project No. 07205036

Terracon GeoReport

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Manufacturing Drive Reconstruction ■ Clinton, Iowa
April 8, 2021 ■ Terracon Project No. 07205036

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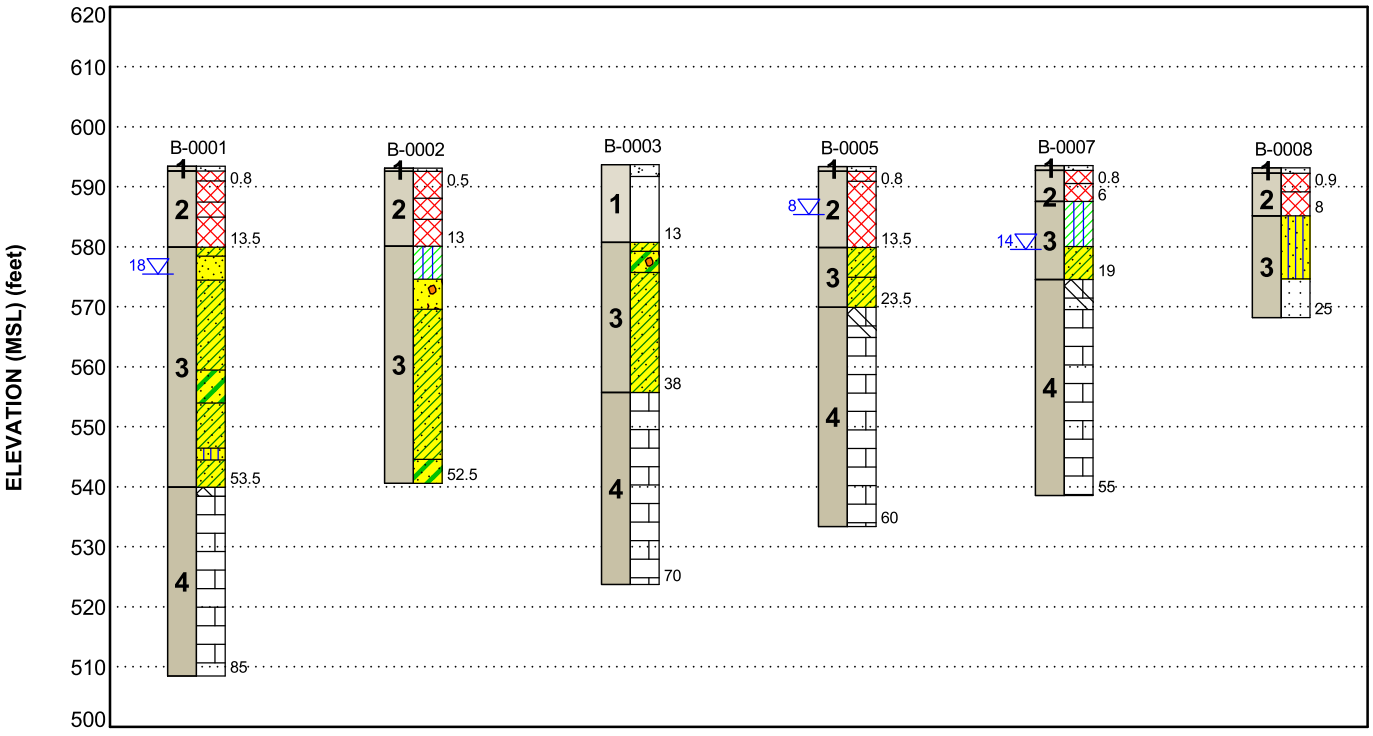
GEOMODEL

GEOMODEL

Manufacturing Drive Reconstruction ■ Clinton, Iowa
Terracon Project No. 07205036



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surface**	Asphaltic Cement Concrete, Portland Cement Concrete Aggregate Base Course, Topsoil
2	**Existing Fill**	Lean Clay, Silty Clay, and Fat Clay Poorly Graded Sand, Clayey Sand
3	**Native Soil**	Lean Clay, Silty Clay, Lean to Fat Clay, Fat Clay, and Silt Poorly Graded Sand, and Silty Sand
4	**Bedrock**	Limestone

LEGEND

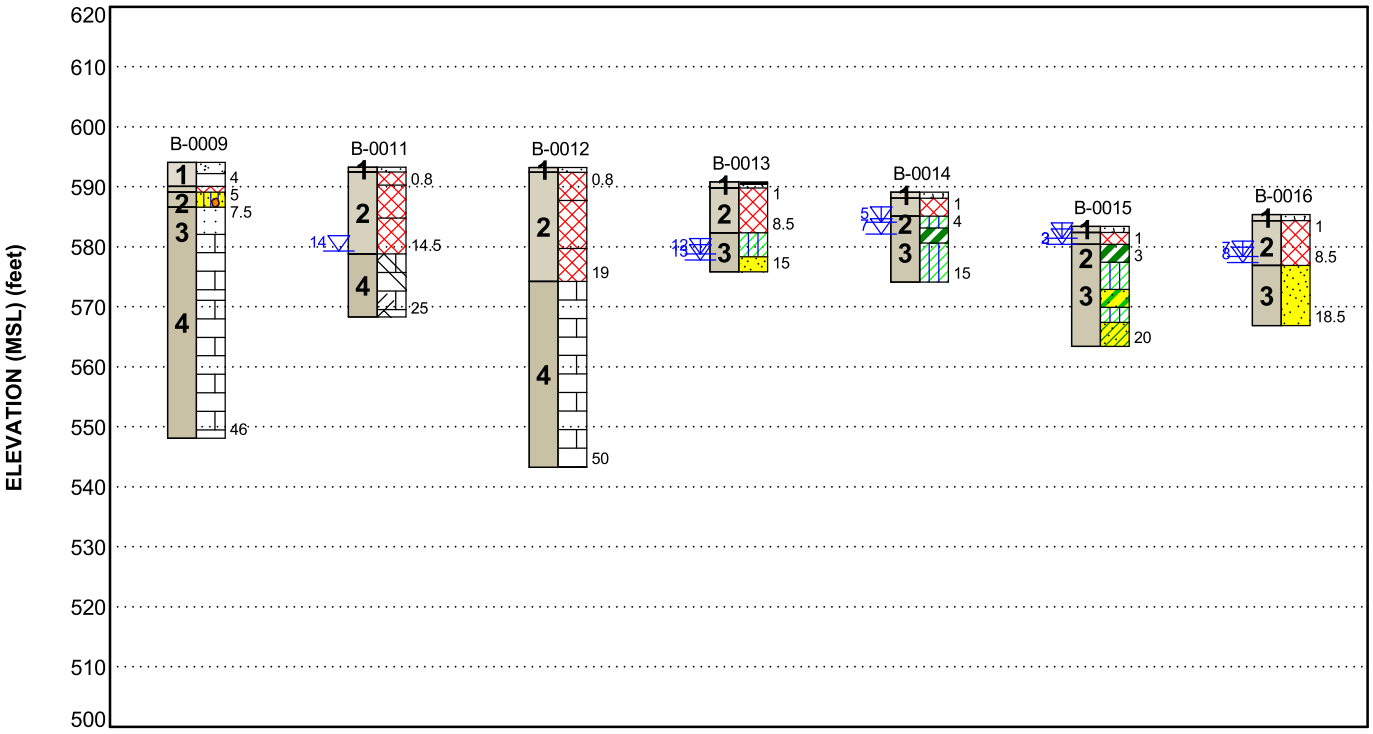
- Concrete
- Fill
- Sandy Lean Clay
- Poorly-graded Sand
- Clayey Sand
- Silty Sand
- Weathered Limestone
- Limestone
- Topsoil
- Silty Clay
- Poorly-graded Sand with Gravel
- Clayey Sand with Gravel
- Sandstone

▽ First Water Observation
▽ Second Water Observation

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL

Manufacturing Drive Reconstruction ■ Clinton, Iowa
Terracon Project No. 07205036



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4	**Bedrock**	Limestone

LEGEND

- Concrete
- Fill
- Silty Sand with Gravel
- Sandstone
- Limestone
- Weathered Limestone
- Asphalt
- Silty Clay
- Poorly-graded Sand
- Topsoil
- Fat Clay
- Clayey Sand
- Sandy Lean Clay

▽ First Water Observation
▽ Second Water Observation

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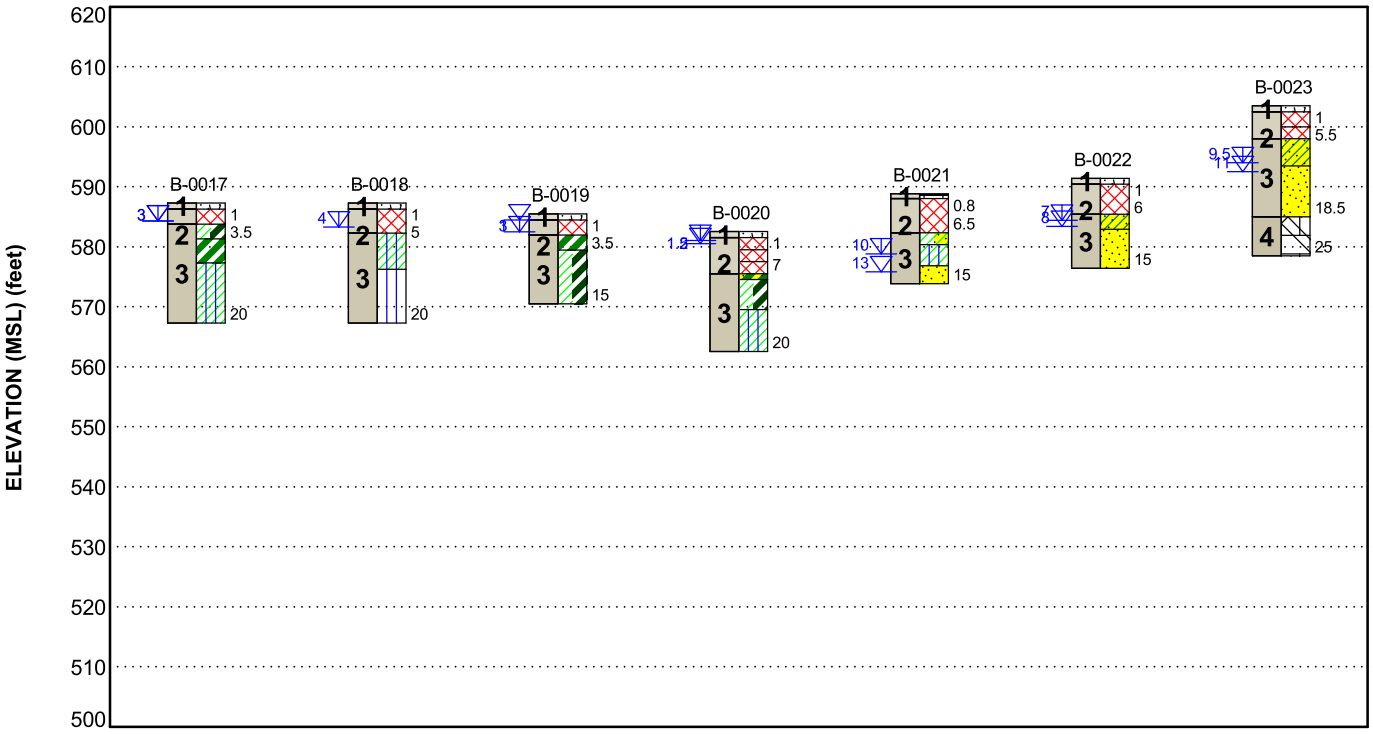

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3	Native Soil	Lean Clay, Silty Clay, Lean to Fat Clay, Fat Clay, and Silt Poorly Graded Sand, and Silty Sand
4	Bedrock	Limestone

LEGEND

- Topsoil
- Fill
- Lean Clay/Fat Clay
- Fat Clay
- Silty Clay
- Silt
- Sandy Fat Clay
- Asphalt
- Concrete
- Lean Clay with Sand
- Poorly-graded Sand
- Sandy Lean Clay
- Weathered Limestone

▽ First Water Observation
▽ Second Water Observation

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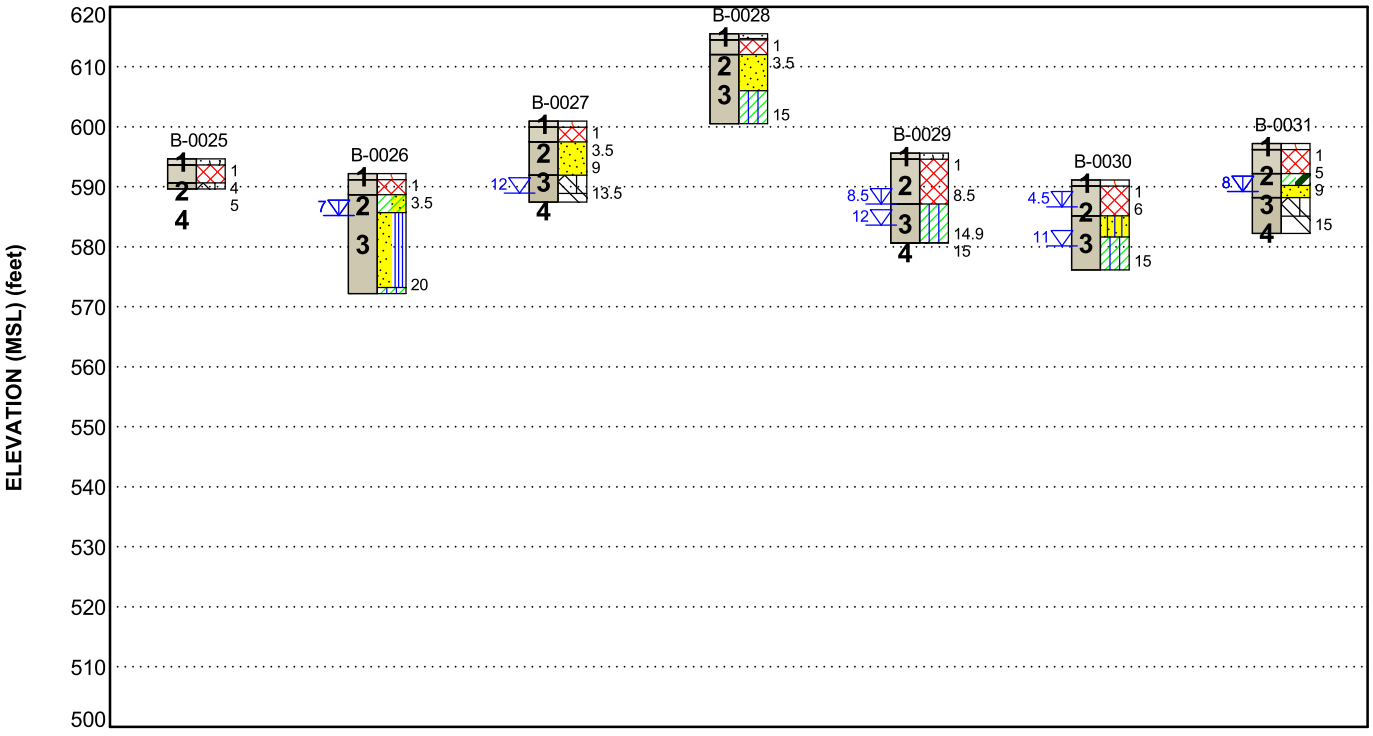
Terracon Project No. 07205036



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3	**Native Soil**	Lean Clay, Silty Clay, Lean to Fat Clay, Fat Clay, and Silt Poorly Graded Sand, and Silty Sand
4	**Bedrock**	Limestone

LEGEND

- Topsoil
- Aggregate Base Course
- Silty Clay
- Silty Sand
- Fill
- Lean Clay with Sand
- Poorly-graded Sand
- Lean Clay/Fat Clay
- Weathered Limestone
- Poorly-graded Sand with Silt
- Concrete

▽ First Water Observation
▽ Second Water Observation

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

EXPLORATION RESULTS

BORING LOG NO. B-0001

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8225° Longitude: -90.2408°

Surface Elev.: 593.46 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	592.5											
			PORTLAND CEMENT CONCRETE, approx. 10"											
			FILL - CRUSHED LIMESTONE, brown											
		2.5	591											
			FILL - SANDY LEAN CLAY, trace crushed limestone, brown				12	6-20-37 N=57	1		10.2			
							8	3-4-5 N=9	2		15.5			
		6.0	587.5	5										
2			**FILL - CLAYEY SAND**, brown				6		3		15.0	90		43
		8.5	585											
			FILL - SILTY CLAY, dark brown				15	2-2-3 N=5	4		25.4			
		13.5	580	10										
			SANDY LEAN CLAY (CL), brown to dark brown, medium stiff				18	1-2-4 N=6	5		26.5			
		15.0	578.5											
			POORLY GRADED SAND (SP), fine to coarse grained, brown	15	▽									
		19.0	574.5											
3			**SANDY LEAN CLAY (CL)**, trace gravel, gray, stiff				18	1-4-6 N=10	6		24.6		38-20-18	
				20										
							18	5-8-17 N=25	7		26.9			
				25										

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 55 feet
NQ2 Core Barrel from 55 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-02-2021 | Boring Completed: 03-02-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0001

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8225° Longitude: -90.2408°

Surface Elev.: 593.46 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
							0	50/0"	8					
		34.0	559.5											
			CLAYEY SAND (SC), trace gravel, fine to coarse grained, gray, medium stiff				18	3-4-8 N=12	9		17.0			
		39.5	554											
3			**SANDY LEAN CLAY (CL)**, trace gravel, dark gray, stiff				18	3-4-6 N=10	10		15.6		31-14-17	
			stiff to very stiff at Sample 11				15	4-5-10 N=15	11		17.2			
		47.0	546.5											
			SILTY SAND (SM), fine grained, gray											
		49.0	544.5				18	4-5-8 N=13	12		22.0			
			SANDY LEAN CLAY (CL), trace gravel, dark gray, stiff											

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 55 feet
NQ2 Core Barrel from 55 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

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Elevations were provided by others.

Notes:

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18' while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-02-2021 | Boring Completed: 03-02-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0001

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8225° Longitude: -90.2408°

Surface Elev.: 593.46 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
3		53.5	540											
							4	50/6"	13		12.8			
		55.0	538.5											
4				55			24	REC: 40% RQD: 18%	R1		0.3	155		
				60			59	REC: 98% RQD: 86%	R2		0.4	161		
				65			55	REC: 92% RQD: 89%	R3		0.5	157		
				70			60	REC: 100% RQD: 88%	R4		0.3	154		
				75			60	REC: 100% RQD: 100%	R5		0.3	151		

HIGHLY WEATHERED LIMESTONE, brown

LIMESTONE, with vugs, brown to light brown, slightly weathered
fractured to about 65 feet
rock unconfined compressive strength: 8,600 psi at about 55 feet

rock unconfined compressive strength: 3,658 psi at about 63.2 feet

vuggy below about 65 feet

rock unconfined compressive strength: 4,084 psi at about 67.5 feet

rock unconfined compressive strength: 4,784 psi at about 72 feet
clay seam at about 73 feet

rock unconfined compressive strength: 7,411 psi at about 77 feet

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 55 feet
NQ2 Core Barrel from 55 feet to end of boring

Abandonment Method:
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See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

18' while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-02-2021 | Boring Completed: 03-02-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0001

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 41.8225° Longitude: -90.2408° Surface Elev.: 593.46 (Ft.) DEPTH / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4		**LIMESTONE**, with vugs, brown to light brown, slightly weathered *(continued)* rock unconfined compressive strength: 2,634 psi at about 82.3 feet fractured from about 83 to 85 feet 85.0 508.5	80 85			60	REC: 100% RQD: 92%	R6		0.2	146		
		Boring Terminated at 85 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 55 feet
NQ2 Core Barrel from 55 feet to end of boring

Abandonment Method:
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Elevations were provided by others.

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WATER LEVEL OBSERVATIONS

▽ *18' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-02-2021 | Boring Completed: 03-02-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0002

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8224° Longitude: -90.2407°

Surface Elev.: 593.1 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION
1		0.5	592.5	**TOPSOIL**, approx. 6"
2		5.0	588	**FILL - SANDY LEAN CLAY**, trace crushed limestone, brown trace organics at Sample 2
2		8.5	584.5	**FILL - CLAYEY SAND**, trace crushed limestone, brown
2		13.0	580	**FILL - SILT**, trace clay, brown
3		18.5	574.5	**SILTY CLAY (CL/ML)**, brown, soft to medium stiff
3		23.5	569.5	**POORLY GRADED SAND (SP)**, with gravel, trace clay, fine to coarse grained, gray, medium dense
3				**SANDY LEAN CLAY (CL)**, gray and dark brown, stiff

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			12	1-2-3 N=5	1		18.0			
			8	2-3-2 N=5	2		19.5			
5			12		3		15.1			26
			18	2-3-2 N=5	4		28.5		33-24-9	
10										
			12	1-2-2 N=4	5		29.3			
15										
			15	4-15-19 N=34	6		15.1			5
20										
			18	3-4-9 N=13	7		30.6			
25										

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 10 feet
Wash Bore from 10 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021 | Boring Completed: 03-01-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0002

PROJECT: Manufacturing Drive Reconstruction	**CLIENT: McClure Engineering Company**
SITE: Between US 30 & College Avenue Clinton, Iowa	**OWNER: City of Clinton**

LOCATION See Exploration Plan

Latitude: 41.8224° Longitude: -90.2407°

Surface Elev.: 593.1 (Ft.)

MODEL LAYER	DEPTH	DESCRIPTION	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
3		**SANDY LEAN CLAY (CL)**, gray and dark brown, stiff *(continued)*												
				30		X	18	3-4-6 N=10	8		23.1			
				35		X	18	3-4-8 N=12	9		20.0		32-14-18	
				40		X	18	3-6-13 N=19	10		21.3			
				45		X	18	4-4-9 N=13	11		17.9			
	48.5	**CLAYEY SAND (SC)**, trace gravel, fine to coarse grained, gray, medium dense	544.5											
				50		X	13	6-9-50/1"	12		21.4			
	52.5	***Spoon Refusal on Apparent Limestone at***	540.5				0	50/0"	13					

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 10 feet
Wash Bore from 10 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021	Boring Completed: 03-01-2021
Drill Rig: 748	Driller: RP
Project No.: 07205036	

BORING LOG NO. B-0002

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 41.8224° Longitude: -90.2407° Surface Elev.: 593.1 (Ft.) DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		52.5 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 10 feet
Wash Bore from 10 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021 | Boring Completed: 03-01-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0003

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8226° Longitude: -90.2406°

Surface Elev.: 593.73 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		**BRIDGE DECK** 2.0	591.5											
1		**VOID** 13.0	580.5	5										
3		**SANDY LEAN CLAY (CL)**, trace organics, dark brown 14.5	579	10										
3		**CLAYEY SAND (SC)**, with gravel, trace organics, fine to coarse grained, brown, loose to medium dense		15		X	15	6-8-1 N=9	1		48.3			
						X	10	5-8-5 N=13	2		15.2			13
		18.0	575.5	20		X	15	3-5-16 N=21	3		21.1			69
3		**SANDY LEAN CLAY (CL)**, trace gravel, gray, stiff				X	0	4-6-15 N=21	4					
				25		X	15	5-4-9 N=13	5		17.3			

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 25 feet
Wash Bore at about 25 feet
NQ2 Core barrel from about 25 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-26-2021 | Boring Completed: 02-26-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0003

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8226° Longitude: -90.2406°

Surface Elev.: 593.73 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
3														
			SANDY LEAN CLAY (CL), trace gravel, gray, stiff *(continued)*											
				30			15	4-5-8 N=13	6		21.9			
				35			15	3-5-9 N=14	7		19.8		33-16-17	
		38.0	555.5											
4			**LIMESTONE**, trace vugs, brown to light brown, slightly weathered rock unconfined compressive strength: 6,174 psi at about 39.1 feet	40			21	REC: 88% RQD: 79%	R1		0.4	162		
							56	REC: 93% RQD: 93%	R2		0.3	159		
			rock unconfined compressive strength: 4,576 psi at about 43 feet	45										
							59	REC: 98% RQD: 98%	R3		0.3	158		
			rock unconfined compressive strength: 4,342 psi at about 48.3 feet	50										
							60	REC: 100% RQD: 93%	R4					

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 25 feet
Wash Bore at about 25 feet
NQ2 Core barrel from about 25 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-26-2021 | Boring Completed: 02-26-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0003

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8226° Longitude: -90.2406°

Surface Elev.: 593.73 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4				55							0.3	159		
							60	REC: 100% RQD: 93%	R5		0.2	153		
				60										
							59	REC: 98% RQD: 83%	R6		0.3	161		
				65										
							59	REC: 98% RQD: 88%	R7		0.3	144		
		70.0	523.5	70										

LIMESTONE, trace vugs, brown to light brown, slightly weathered *(continued)*
rock unconfined compressive strength: 5,187 psi at about 53.7 feet

rock unconfined compressive strength: 5,125 psi at about 57 feet
porous at 58 and 64 feet

rock unconfined compressive strength: 3,274 psi at about 61.5 feet

rock unconfined compressive strength: 2,042 psi at about 68.3 feet

Boring Terminated at 70 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 25 feet
Wash Bore at about 25 feet
NQ2 Core barrel from about 25 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-26-2021 | Boring Completed: 02-26-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0005

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8228° Longitude: -90.2404°

Surface Elev.: 593.41 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	592.5											
			PORTLAND CEMENT CONCRETE, approx. 9"											
			FILL - CRUSHED LIMESTONE, brown, medium dense											
		2.5	591											
2			**FILL - SANDY LEAN CLAY**, trace crushed limestone, brown				18	10-15-13 N=28	1		10.1			
							1	2-3-3 N=6	2		31.6			
				5										
					▽		12		3					
							8	2-3-4 N=7	4		29.9			
		13.5	580	10										
3			**SANDY LEAN CLAY (CL)**, brown and gray, soft				18	1-1-2 N=3	5		33.2		28-14-14	
		18.5	575	15										
			SANDY LEAN CLAY (CL), trace gravel, dark gray, stiff				18	2-3-8 N=11	6		17.1			
		23.5	570	20										
4			**HIGHLY WEATHERED LIMESTONE**, brown				2	50/2"	7		18.3			
				25										

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 29 feet
NQ2 Core Barrel from 29 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021 | Boring Completed: 03-01-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0005

PROJECT: Manufacturing Drive Reconstruction	**CLIENT: McClure Engineering Company**
SITE: Between US 30 & College Avenue Clinton, Iowa	**OWNER: City of Clinton**

LOCATION See Exploration Plan

Latitude: 41.8228° Longitude: -90.2404°

Surface Elev.: 593.41 (Ft.)

MODEL LAYER	DEPTH	DESCRIPTION	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
4		**HIGHLY WEATHERED LIMESTONE**, brown *(continued)*							
	28.5	**LIMESTONE**, vuggy, light brown, slightly weathered	565		2	50/3"	8	17.4	
				30	10	REC: 83% RQD: 33%	R1		
		rock unconfined compressive strength: 2,208 psi at about 32 feet			60	REC: 100% RQD: 48%	R2	0.2	146
		fractured at about 37 feet rock unconfined compressive strength: 2,434 psi at about 37 feet very weak rock from about 39 to 41 feet		35	60	REC: 100% RQD: 68%	R3	0.4	150
		rock unconfined compressive strength: 1,490 psi at about 42.9 feet clay seam from about 42½ to 43½ feet		40	56	REC: 93% RQD: 53%	R4	0.4	147
		rock unconfined compressive strength: 3,422 psi at about 47.3 feet		45	59	REC: 98% RQD: 73%	R5	0.2	156
		fractured from about 52 to 55 feet rock unconfined compressive strength: 6,430 psi at about 52.4 feet		50	58	REC: 97% RQD: 73%	R6	0.3	158

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 29 feet
NQ2 Core Barrel from 29 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

8' while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021	Boring Completed: 03-01-2021
Drill Rig: 748	Driller: RP
Project No.: 07205036	

BORING LOG NO. B-0005

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8228° Longitude: -90.2404°

Surface Elev.: 593.41 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4		60.0	533.5	55			60	REC: 100% RQD: 83%	R7		0.3	161		
				60										

LIMESTONE, vuggy, light brown, slightly weathered *(continued)*

rock unconfined compressive strength:
6,573 psi at about 56.9 feet

Boring Terminated at 60 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 29 feet
NQ2 Core Barrel from 29 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

8' while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 03-01-2021 | Boring Completed: 03-01-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0007

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8241° Longitude: -90.2387°

Surface Elev.: 593.57 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	593											
			PORTLAND CEMENT CONCRETE, approx. 10"											
2			**FILL - CRUSHED LIMESTONE**, brown				18	28-34-24 N=58	1		18.0			
		3.0	590.5											
			FILL - FAT CLAY, trace sand and crushed limestone, brown	5			2	2-3-2 N=5	2		32.3			
		6.0	587.5											
3			**LEAN CLAY (CL)**, dark gray, soft to medium stiff				8		3				42-22-20	
							8	2-1-3 N=4	4		31.2			
				10										
		13.5	580											
			SANDY LEAN CLAY (CL), trace gravel, gray to dark gray		▽		18	0-1-5 N=6	5		32.5			54
				15										
		19.0	574.5				3	50/3"	6		14.1			
4			**HIGHLY WEATHERED LIMESTONE**, brown	20										
		24.0	569.5				0	50/3"	7		15.7			
			LIMESTONE, vuggy, yellowish brown, slightly weathered	25			8	REC: 67% RQD: 58%	R1					

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 24 feet
NQ2 Core barrel from about 24 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-22-2021 | Boring Completed: 02-22-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0007

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8241° Longitude: -90.2387°

Surface Elev.: 593.57 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4		**LIMESTONE**, vuggy, yellowish brown, slightly weathered *(continued)*					60	REC: 100% RQD: 72%	R2		0.1	147		
		rock unconfined compressive strength: 3,061 psi at about 29 feet		30										
		rock unconfined compressive strength: 1,637 psi at about 31.6 feet					60	REC: 100% RQD: 88%	R3		0.1	136		
		rock unconfined compressive strength: 2,264 psi at about 36.8 feet		35			59	REC: 98% RQD: 63%	R4		0.3	146		
		rock unconfined compressive strength: 1,526 psi at about 42.5 feet		40			60	REC: 100% RQD: 85%	R5		0.3	141		
		rock unconfined compressive strength: 11,721 psi at about 47 feet		45			57	REC: 95% RQD: 82%	R6		0.3	150		
		rock unconfined compressive strength:		50			52	REC: 87% RQD: 45%	R7		0.2	154		

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 24 feet
NQ2 Core barrel from about 24 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-22-2021 | Boring Completed: 02-22-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0007

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8241° Longitude: -90.2387°

Surface Elev.: 593.57 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4		55.0	538.5	55										

5,745 psi at about 52.2 feet
LIMESTONE, vuggy, yellowish brown, slightly weathered *(continued)*

Boring Terminated at 55 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 24 feet
NQ2 Core barrel from about 24 feet to end of boring

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-22-2021 | Boring Completed: 02-22-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0008

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan
Latitude: 41.8240° Longitude: -90.2387°
Surface Elev.: 593.19 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.9	592.5											
			PORTLAND CEMENT CONCRETE, approx. 11"											
			FILL - CRUSHED LIMESTONE, brown				8	10-13-11 N=24	1		10.3			
		4.0	589											
2			**FILL - LEAN CLAY**, with sand, trace crushed limestone, brown to dark brown				4	3-1-3 N=4	2		13.2			
				5			18	2-2-2 N=4	3		25.6			80
		8.0	585											
3			**SILTY SAND (SM)**, fine to coarse grained, gray, dense				10		4					
			with gravel at Sample 5	10			18	2-10-41 N=51	5		16.3			16
		18.5	574.5	15										
			SANDSTONE*, gray				0	50/2"	6					
				20										
							0	50/0"	7					
		25.0	568	25										
			Boring Terminated at 25 Feet											

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

Hammer Type: Automatic

*Classification of rock materials has been estimated by the drill crew based on disturbed samples. Core samples and/or petrographic analysis may reveal other rock types.

Advancement Method:
Continuous-Flight Hollow-Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-22-2021 | Boring Completed: 02-22-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0009

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8243° Longitude: -90.2383°

Surface Elev.: 594.10 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.9	592											
								BRIDGE DECK, approx. 23"						
		4.0	590					**VOID**						
2		5.0	589					**FILL - WOOD FRAGMENTS**						
3		7.5	586.5	5			1	6-1-1 N=2	1		187.2			
							18	3-8-24 N=32	2		23.2		NP	36
							0	50/3"	3					
				10				**SILTY SAND (SM)**, with gravel, fine to coarse grained, gray, dense						
		12.0	582					**SANDSTONE***						
4				15			41	REC: 85% RQD: 44%	R1					
							60	REC: 100% RQD: 57%	R2		0.2	138		
				20				**LIMESTONE**, vuggy, brownish yellow, moderately weathered						
								rock unconfined compressive strength: 1,137 psi at about 19.3 feet			0.2	147		
								rock unconfined compressive strength: 1,801 psi at about 21.5 feet						
		23.0	571											
				25			60	REC: 100% RQD: 93%	R3					
								LIMESTONE, vuggy, light brown, slightly weathered						

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

Hammer Type: Automatic

*Classification of rock materials has been estimated by the drill crew based on disturbed samples. Core samples and/or petrographic analysis may reveal other rock types.

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 12 feet
NQ2 Core barrel from about 12 feet to end of boring

Abandonment Method:
Boring backfilled with bentonite grout upon completion

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-26-2021 | Boring Completed: 02-26-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0009

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan
Latitude: 41.8243° Longitude: -90.2383°
Surface Elev.: 594.10 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4				30			58	REC: 97% RQD: 92%	R4		0.3	151		
				35			60	REC: 100% RQD: 93%	R5		0.3	150		
				40			60	REC: 100% RQD: 85%	R6		0.2	150		
				45			59	REC: 100% RQD: 97%	R7					

LIMESTONE, vuggy, light brown, slightly weathered *(continued)*

rock unconfined compressive strength:
6,154 psi at about 28.2 feet

rock unconfined compressive strength:
3,012 psi at about 33.5 feet

rock unconfined compressive strength:
4,203 psi at about 38.1 feet

46.0 548

Boring Terminated at 46 Feet

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

Hammer Type: Automatic

*Classification of rock materials has been estimated by the drill crew based on disturbed samples. Core samples and/or petrographic analysis may reveal other rock types.

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 12 feet
NQ2 Core barrel from about 12 feet to end of boring

Abandonment Method:
Boring backfilled with bentonite grout upon completion

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-26-2021 Boring Completed: 02-26-2021

Drill Rig: 748 Driller: RP

Project No.: 07205036

BORING LOG NO. B-0011

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8247° Longitude: -90.2379°

Surface Elev.: 593.30 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	592.5											
			PORTLAND CEMENT CONCRETE, approx. 10"											
			FILL - CRUSHED LIMESTONE, brown			X	6	18-50/4"	1		10.0			
		3.0	590.5											
			FILL - FAT CLAY, trace sand and crushed limestone, dark brown			X	7	3-4-4 N=8	2		27.0		50-25-25	
2				5		■	15		3	670	18.4	89		
		8.5	585											
			FILL - SANDY LEAN CLAY, trace crushed limestone, dark brown			X	18	2-3-4 N=7	4		27.3			
				10										
		14.5	579		▽	X	18	0-1-6 N=7	5		32.0		34-21-13	63
			HIGHLY WEATHERED LIMESTONE, brown	15										
4						X	1	50/1"	6		16.3			
				20										
						X	0	50/0"	7					
		25.0	568.5	25										
			Boring Terminated at 25 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-23-2021 | Boring Completed: 02-23-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0012

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8246° Longitude: -90.2379°

Surface Elev.: 593.24 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	592.5											
			PORTLAND CEMENT CONCRETE, approx. 10"											
			FILL - CRUSHED LIMESTONE, brown			X	5	50/5"	1		7.3			
						X	2	5-6-7 N=13	2		5.4			
		5.5	587.5	5										
2			**FILL - LEAN CLAY**, with sand, trace crushed limestone, brown			X	10	2-3-6 N=9	3		33.7		47-23-24	78
						■	12		4					
		13.5	579.5	10										
			FILL - SANDY LEAN CLAY, trace crushed limestone, brown			X	15	1-1-3 N=4	5		32.8		36-22-14	52
		19.0	574	15		X	0	50/6"	6					
4			**LIMESTONE**, vuggy, yellowish brown, slightly weathered			■	12	REC: 100% RQD: 0%	R1					
			rock unconfined compressive strength: 2,348 psi at about 21.7 feet	20		■	59	REC: 98% RQD: 93%	R2		0.4	138		
				25										

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 19 feet
NQ2 Core barrel from about 19 feet to end of boring

Abandonment Method:
Boring backfilled with bentonite grout upon completion

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-23-2021 | Boring Completed: 02-23-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0012

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan
Latitude: 41.8246° Longitude: -90.2379°
Surface Elev.: 593.24 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
4							60	REC: 100% RQD: 77%	R3		0.1	136		
				30			60	REC: 100% RQD: 80%	R4		0.1	138		
				35			58	REC: 97% RQD: 67%	R5		0.2	150		
				40			60	REC: 100% RQD: 92%	R6		0.6	142		
				45			60	REC: 100% RQD: 100%	R7		0.3	152		
		50.0	543	50										

LIMESTONE, vuggy, yellowish brown, slightly weathered *(continued)*
rock unconfined compressive strength: 2,579 psi at about 27 feet

rock unconfined compressive strength: 1,734 psi at about 32.5 feet

fractured from about 35½ to about 36 feet
rock unconfined compressive strength: 4,153 psi at about 36.1 feet

rock unconfined compressive strength: 1,598 psi at about 41.5 feet

rock unconfined compressive strength: 10,630 psi at about 47.3 feet

Boring Terminated at 50 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous-Flight Hollow-Stem Auger from 0 to 19 feet
NQ2 Core barrel from about 19 feet to end of boring

Abandonment Method:
Boring backfilled with bentonite grout upon completion

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 02-23-2021 | Boring Completed: 02-23-2021

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0013

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8254° Longitude: -90.2368°

Surface Elev.: 590.83 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.3	590.5											
		1.0	590											
2							8	1-1-4 N=5	1		31.3			
							10	2-2-3 N=5	2		31.2			
				5			4	HP= 2 tsf	3					
3		8.5	582.5											
							15	1-1-2 N=3	4		30.1			
		12.5	578.5	10	▽		24	HP= 0.5 tsf	5		27.9			
					▽									
		15.0	576				18	2-1-1 N=2	6					
				15										

SILTY CLAY (CL/ML), gray and brown, soft

POORLY GRADED SAND (SP), gray to brown, very loose

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface capped with concrete

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *13' while drilling*

▽ *12' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0014

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8264° Longitude: -90.2353°

Surface Elev.: 589.13 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	588											
2			**TOPSOIL**, approx. 12"											
			FILL - LEAN CLAY, trace sand and crushed limestone, dark brown			X	2	1-3-5 N=8	1					
		4.0	585											
			SILTY CLAY (CL/ML), trace sand, dark brown, medium stiff			X	8	2-2-3 N=5	2		27.1			
		6.0	583	5	▽									
			FAT CLAY (CH), gray and brown, soft to medium stiff		▽	■	24	HP= 0.5 tsf	3		42.8		68-25-43	
		8.5	580.5											
3			**SILTY CLAY (CL/ML)**, gray and brown, soft to medium stiff			X	18	1-1-3 N=4	4					
				10										
						■	24	HP= 0.25 tsf	5		44.0			
						X	18	1-1-3 N=4	6					
		15.0	574	15										
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *7' while drilling*

▽ *5' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0015

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8254° Longitude: -90.2332°

Surface Elev.: 583.42 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	582.5											
2		3.0	580.5		▽		6	1-2-2 N=4	1					
					▽									
3		6.0	577.5	5			24		2	1520	34.2	89	56-21-35	
							18	0-0-1 N=1	3		43.6			
		10.5	573	10			18	0-0-0 N=0	4		33.1			
		13.5	570				24		5	320	22.9	91	46-18-28	
		16.0	567.5	15			18	0-0-0 N=0	6		44.4			
		20.0	563.5				24		7	1050	43.6	68		
				20			18	0-0-0 N=0	8					

TOPSOIL, approx. 18"

FILL - SILTY CLAY, dark gray

FAT CLAY (CH), dark gray, medium stiff

SILTY CLAY (CL/ML), gray and brown, very soft

CLAYEY SAND (SC), fine grained, gray

SILTY CLAY (CL/ML), gray and brown, very soft

SANDY LEAN CLAY (CL), trace organics, dark brown, very soft
medium stiff at Sample 7

Boring Terminated at 20 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ 3' while drilling

▽ 2' after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-18-2020 | Boring Completed: 11-18-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0016

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8230° Longitude: -90.2334°

Surface Elev.: 585.38 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	584.5											
2			**TOPSOIL**, approx. 12"											
			FILL - SANDY LEAN CLAY, trace crushed limestone, dark brown			X	2	3-4-4 N=8	1					
							12		2		32.1	91	42-22-20	
				5										
					▽	X	8	2-2-2 N=4	3		34.3			
					▽									
		8.5	577											
3			**POORLY GRADED SAND (SP)**, with gravel, light gray, medium dense			X	8	11-10-7 N=17	4					
				10										
						X	8	8-9-8 N=17	5					
				15										
		18.5	567											
			Auger Refusal on Apparent Limestone at 18.5 Feet				0	50/0"	6					

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8' while drilling*

▽ *7' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-18-2020 | Boring Completed: 11-18-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0017

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8277° Longitude: -90.2337°

Surface Elev.: 587.31 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	586.5											
2			**TOPSOIL**, approx. 12"											
			FILL - SILTY CLAY, trace crushed limestone, dark gray			X	6	2-2-2 N=4	1					
		3.5	584		▽									
3			**LEAN TO FAT CLAY (CL/CH)**, trace sand and organics, gray to brown, very soft			■	13	HP= 1.25 tsf	2					
		6.0	581.5	5										
			FAT CLAY (CH), gray to brown, very soft			X	24	0-0-0 N=0	3		40.5			
						■	24		4	340	43.2	72	54-23-31	
		10.0	577.5	10										
			SILTY CLAY (CL/ML), gray to brown, very soft			X	18	0-0-0 N=0	5		37.6			
				15										
						■	24		6	270	38.3	84		
			medium stiff at Sample 7			X	18	1-2-3 N=5	7					
		20.0	567.5	20										
			Boring Terminated at 20 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *3' while drilling*

▽ *3' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-18-2020 | Boring Completed: 11-18-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0018

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8284° Longitude: -90.2327°

Surface Elev.: 587.29 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	586.5											
2			**FILL - SILTY CLAY**, dark brown				12	2-2-3 N=5	1		24.4			
					▽		12	1-1-1 N=2	2		35.3			
		5.0	582.5	5										
			SILTY CLAY (CL/ML), gray and brown, very soft				22	HP = 0.25 tsf	3					
							18	0-0-0 N=0	4		33.4			
		11.0	576.5	10										
3			**SILT (ML)**, gray, very soft				24		5	440	32.3	90	32-24-8	
							18	0-0-0 N=0	6					
				15										
							18	0-0-0 N=0	7					
		20.0	567.5	20										
			Boring Terminated at 20 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Not recorded while drilling

▽ *4' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0019

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8290° Longitude: -90.2319°

Surface Elev.: 585.49 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	584.5		▽									
2			**TOPSOIL**, approx. 12"											
			FILL - SILTY CLAY, dark brown and gray				6	1-2-2 N=4	1					
		3.5	582		▽									
3			**FAT CLAY (CH)**, trace sand, gray and brown, soft to medium stiff	5			24	HP= 0.5 tsf	2		32.6			
		6.0	579.5											
			LEAN TO FAT CLAY (CL/CH), with sand, reddish brown, medium stiff to stiff				18	0-0-0 N=0	3		32.1			
							24	HP= 1 tsf	4		45.4			
				10										
			very soft, gray at Sample 5				18	0-0-1 N=1	5					
		15.0	570.5	15										
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *1' while drilling*

▽ *3' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0020

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8294° Longitude: -90.2302°

Surface Elev.: 582.54 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	581.5											
			TOPSOIL, approx. 12"											
		3.0	579.5				6	0-0-1 N=1	1					
			FILL - SANDY FAT CLAY, trace crushed limestone, dark gray											
2		5.0	577.5				9	HP= 0 tsf	2					
			FILL - SILTY CLAY, trace sand, brownish gray	5										
		7.0	575.5											
			FILL - SANDY FAT CLAY, trace crushed limestone, dark gray				12	0-0-1 N=1	3		56.0			
		8.0	574.5											
			SANDY FAT CLAY (CH), reddish brown, very soft				24	HP= 0.5 tsf	4	200	42.2	73	43-20-23	
		13.0	569.5	10										
			LEAN TO FAT CLAY (CL/CH), gray and reddish brown											
3							14	HP= 0.5 tsf	5		40.6			
			SILTY CLAY (CL/ML), trace organics, gray to dark gray, very soft	15										
							24	HP= 0.25 tsf	6		47.1	64		
		20.0	562.5				24	0-0-0 N=0	7					
			Boring Terminated at 20 Feet	20										

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

2' while drilling

1½' after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0021

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8300° Longitude: -90.2301°

Surface Elev.: 588.85 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.2	588.5											
		0.8	588											
			ASPHALTIC CEMENT CONCRETE, approx. 2											
			PORTLAND CEMENT CONCRETE, approx. 8"											
2			**FILL - SANDY LEAN CLAY**, gray to brown				6	4-2-2 N=4	1					
			dark gray at Sample 2				8	1-2-2 N=4	2					
		6.5	582.5	5										
			LEAN CLAY (CL), with sand, dark gray, soft to medium stiff				15	HP= 0.5 tsf	3		32.7		38-19-19	
		8.5	580.5											
3			**SILTY CLAY (CL/ML)**, gray, soft		▽		12	1-1-2 N=3	4					
		12.0	577	10										
			POORLY GRADED SAND (SP), gray, very loose		▽		24	HP= 0.75 tsf	5		30.5			
							18	1-1-2 N=3	6					
		15.0	574	15										
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *13' while drilling*

▽ *10' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0022

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8309° Longitude: -90.2285°

Surface Elev.: 591.43 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	590.5											
2			**TOPSOIL**, approx. 12"											
			FILL - SANDY FAT CLAY, dark gray				6	1-1-3 N=4	1					
							8		2		24.1			
		6.0	585.5	5										
			SANDY LEAN CLAY (CL), gray and brown, soft to medium stiff		▽		12	0-1-3 N=4	3					
		8.5	583		▽									
3			**POORLY GRADED SAND (SP)**, gray, very loose				12	0-1-2 N=3	4					
				10										
							18	0-0-2 N=2	5					
		15.0	576.5	15										
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8' while drilling*

▽ *7' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0023

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8322° Longitude: -90.2278°

Surface Elev.: 603.51 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	602.5											
2		3.5	600				8	1-1-3 N=4	1					
2		5.5	598	5			13		2		16.4		23-17-6	
3		10.0	593.5				15	5-8-11 N=19	3		15.0			
				10	▽		18	5-5-16 N=21	4					
					▽									
				15			18	5-5-10 N=15	5					
4		18.5	585				0	50/0"	6					
		25.0	578.5	20			0	50/0"	7					
				25										

Boring Terminated at 25 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *11' while drilling*

▽ *9½' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0025

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8309° Longitude: -90.2315°

Surface Elev.: 594.67 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	593.5											
2			**TOPSOIL**, approx. 12"											
			FILL - CLAYEY SAND, trace crushed limestone, brown and dark brown				10	3-7-30 N=37	1		19.2			
		4.0	590.5				2	50/2"	2					
4		5.0	**HIGHLY WEATHERED LIMESTONE**, brown 589.5	5			0	50/0"	3					
			Boring Terminated at 5 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

None observed whiled drilling

Non observed after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0026

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8308° Longitude: -90.2293°

Surface Elev.: 592.21 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	591											
2			**AGGREGATE BASE COURSE**, approx. 12"			X	6	4-5-4 N=9	1					
		3.5	588.5											
			FILL - SILTY CLAY, with organics, trace brick fragments, dark brown			■	12	HP= 1.25 tsf	2		20.5		38-17-21	
		6.5	585.5	5										
3			**LEAN CLAY (CL)**, with sand, dark gray, medium stiff		▽	X	12	2-2-8 N=10	3		18.7			
			POORLY GRADED SAND WITH SILT (SP-SM), fine grained, gray to brown, loose medium dense at Sample 3			X	8	0-1-4 N=5	4					
				10										
			very loose at Sample 5			X	12	0-1-1 N=2	5					
				15										
		19.0	573											
			SILTY CLAY (CL/ML), gray, very stiff			X	18	6-6-13 N=19	6					
		20.0	572	20										
			Boring Terminated at 20 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *7' while drilling*

▽ *7' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0027

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8317° Longitude: -90.2295°

Surface Elev.: 600.97 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	600											
2							12	2-3-2 N=5	1		17.5		NP	
		3.5	597.5											
3				5			12	3-4-5 N=9	2		14.9			
							6	3-8-12 N=20	3					
		9.0	592				3	50/3"	4					
4				10	▽									
		13.5	587.5				0	50/0"	5					

HIGHLY WEATHERED LIMESTONE, brown

FILL - POORLY GRADED SAND WITH SILT, brown and dark brown

POORLY GRADED SAND (SP), with clay, fine grained, brown, loose

AGGREGATE BASE COURSE, approx. 12"

Boring Terminated at 13.5 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *12' while drilling*

Not recorded after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0028

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8323° Longitude: -90.2290°

Surface Elev.: 615.53 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.8	614.5											
		1.0	614.5											
2			**AGGREGATE BASE COURSE**, approx. 4½"											
			FILL - POORLY GRADED SAND, brown				8	4-4-6 N=10	1					
		3.5	612											
3			**POORLY GRADED SAND (SP)**, trace gravel, fine grained, brown, medium dense	5			6	5-6-8 N=14	2		5.6			
							10	4-6-9 N=15	3					
		9.5	606				8	4-5-8 N=13	4					
			SILTY CLAY (CL/ML), brown and gray, stiff	10										
		15.0	600.5	15			15	2-4-6 N=10	5					
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

None observed whiled drilling

Non observed after drilling

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-16-2020 | Boring Completed: 11-16-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0029

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8318° Longitude: -90.2272°

Surface Elev.: 595.62 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	594.5											
2			**TOPSOIL**, approx. 12"											
			FILL - SANDY LEAN CLAY, trace crushed limestone, gray and dark gray			X	8	4-6-5 N=11	1					
						X	6	4-4-3 N=7	2					
				5										
							10		3		10.5			
		8.5	587		▽									
3			**SILTY CLAY (CL/ML)**, gray, very soft			X	6	0-0-0 N=0	4					
				10										
					▽									
			trace organics, soft at Sample 5			X	8	0-1-1 N=2	5					
4		14.9	580.5											
		15.0	**HIGHLY WEATHERED LIMESTONE**, brown	15										
			Boring Terminated at 15 Feet											

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *12' while drilling*

▽ *8½' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started:

Boring Completed:

Drill Rig: 748

Driller: RP

Project No.: 07205036

BORING LOG NO. B-0030

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8314° Longitude: -90.2259°

Surface Elev.: 591.15 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	590											
						X	8	6-9-10 N=19	1		12.7			
2														
					▽	X	12	3-5-8 N=13	2		21.9			
		6.0	585	5										
						X	18	1-1-2 N=3	3					
		9.5	581.5			■	19	HP= 0 tsf	4					
3				10	▽									
						X	8	5-2-1 N=3	5					
		15.0	576	15										

AGGREGATE BASE COURSE, approx. 12"

FILL - SANDY LEAN CLAY, with crushed limestone, gray and dark gray

SILTY SAND (SM), trace gravel, fine grained, gray, loose

SILTY CLAY (CL/ML), brown and gray, soft

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *11' while drilling*

▽ *4½' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

BORING LOG NO. B-0031

PROJECT: Manufacturing Drive Reconstruction

CLIENT: McClure Engineering Company

SITE: Between US 30 & College Avenue
Clinton, Iowa

OWNER: City of Clinton

LOCATION See Exploration Plan

Latitude: 41.8323° Longitude: -90.2259°

Surface Elev.: 597.23 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		1.0	596											
2							10	10-6-5 N=11	1		14.7		NP	
							12	1-2-2 N=4	2					
		5.0	592	5										
3														
		7.0	590				24	HP= 0.25 tsf	3		30.7			
					▽									
		9.0	588				11	1-50/5"	4					
4				10										
							12	1-1-3 N=4	5					
		15.0	582	15										

LEAN TO FAT CLAY (CL/CH), trace gravel, gray and dark gray, loose

AGGREGATE BASE COURSE, approx. 12"

FILL - CLAYEY SAND, traced crushed limestone, dark gray

trace organics at Sample 2

POORLY GRADED SAND (SP), fine grained, brown

HIGHLY WEATHERED LIMESTONE, brown

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continous-Flight Solid-Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8' while drilling*

▽ *8' after drilling*

Terracon
870 40th Ave
Bettendorf, IA

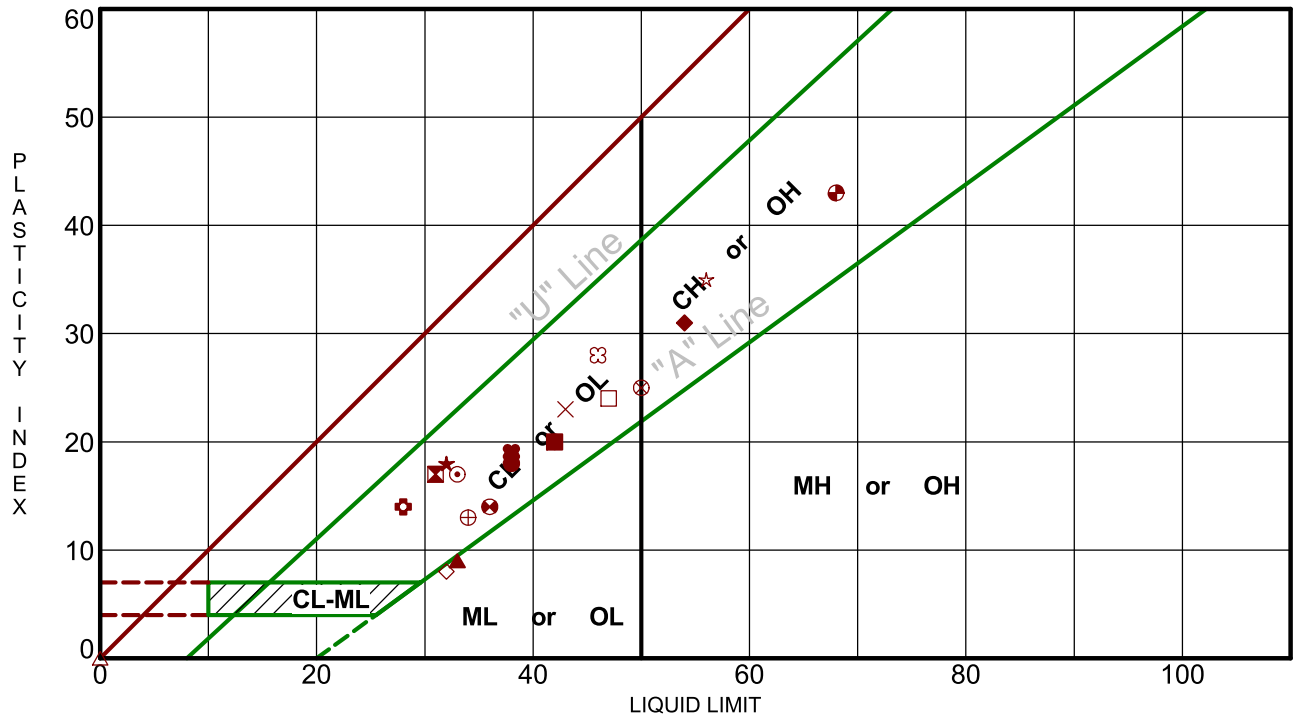
Boring Started: 11-17-2020 | Boring Completed: 11-17-2020

Drill Rig: 748 | Driller: RP

Project No.: 07205036

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	B-0001	18.5 - 20	38	20	18		CL	SANDY LEAN CLAY
⊠	B-0001	38.5 - 40	31	14	17		CL	SANDY LEAN CLAY
▲	B-0002	8.5 - 10	33	24	9			SILT
★	B-0002	33.5 - 35	32	14	18		CL	SANDY LEAN CLAY
⊙	B-0003	34 - 35.5	33	16	17		CL	SANDY LEAN CLAY
✿	B-0005	13.5 - 15	28	14	14		CL	SANDY LEAN CLAY
○	B-0007	6 - 8	42	22	20		CL	LEAN CLAY
△	B-0009	6.5 - 8	NP	NP	NP	35.5	SM	SILTY SAND with GRAVEL
⊗	B-0011	3.5 - 5	50	25	25			FAT CLAY
⊕	B-0011	13.5 - 15	34	21	13	62.9	CL	SANDY LEAN CLAY
□	B-0012	5.5 - 7	47	23	24	77.7	CL	LEAN CLAY with SAND
⊛	B-0012	13.5 - 15	36	22	14	51.9	CL	SANDY LEAN CLAY
◕	B-0014	6 - 8	68	25	43		CH	FAT CLAY
☆	B-0015	3 - 5	56	21	35		CH	FAT CLAY
❀	B-0015	11 - 13	46	18	28		SC	CLAYEY SAND
■	B-0016	3 - 5	42	22	20			SANDY LEAN CLAY
◆	B-0017	8 - 10	54	23	31		CH	FAT CLAY
◇	B-0018	11 - 13	32	24	8		ML	SILT
×	B-0020	8.5 - 10.5	43	20	23		CL/CH	LEAN TO FAT CLAY
✖	B-0021	6 - 8	38	19	19		CL	LEAN CLAY with SAND

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

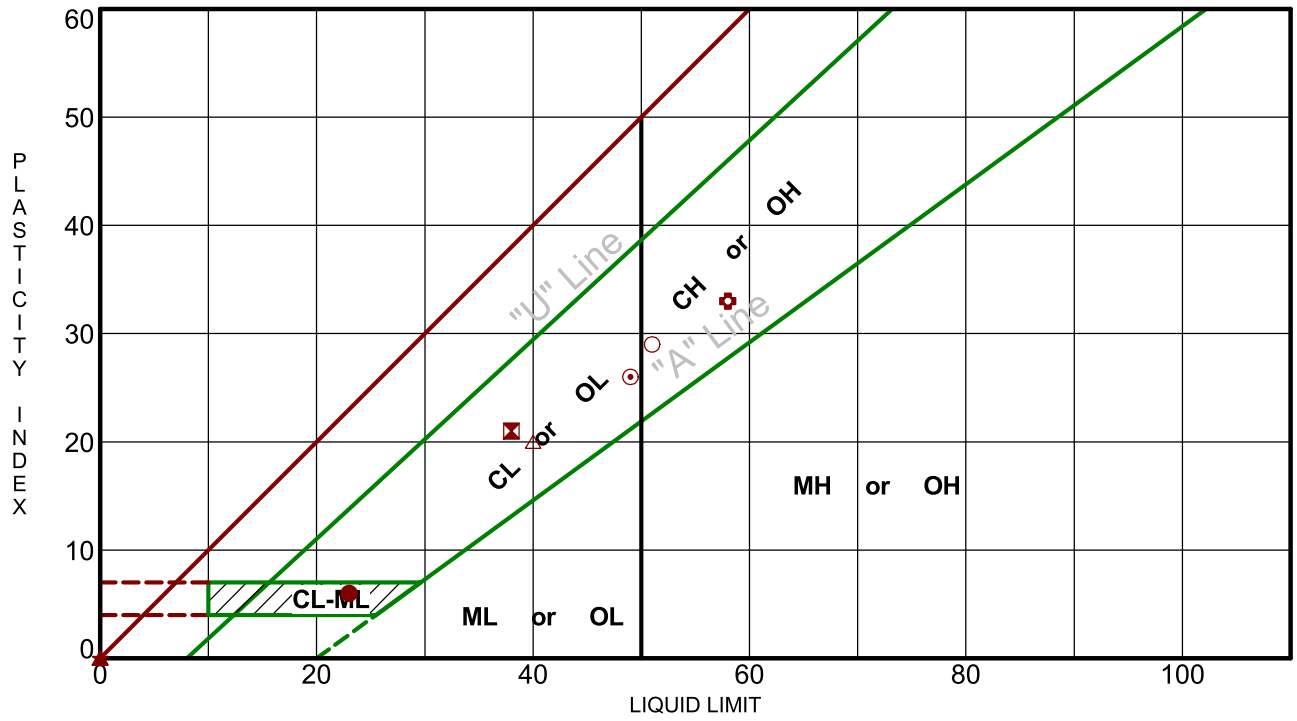
Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	B-0023	3.5 - 5.5	23	17	6			SILTY CLAY
⊠	B-0026	3 - 5	38	17	21		CL	LEAN CLAY with SAND
▲	B-0027	1 - 2.5	NP	NP	NP			POORLY GRADED SAND with SILT
★	B-0031	1 - 2.5	NP	NP	NP			CLAYEY SAND
⊙	BULK-13	1 - 5	49	23	26	94.2	CL	LEAN CLAY
✿	BULK-19	1 - 5	58	25	33	96.0	CH	FAT CLAY
○	BULK-22	1 - 5	51	22	29	86.8	CH	FAT CLAY
△	BULK-29	1 - 5	40	20	20	74.7	CL	LEAN CLAY with SAND

PROJECT: Manufacturing Drive Reconstruction

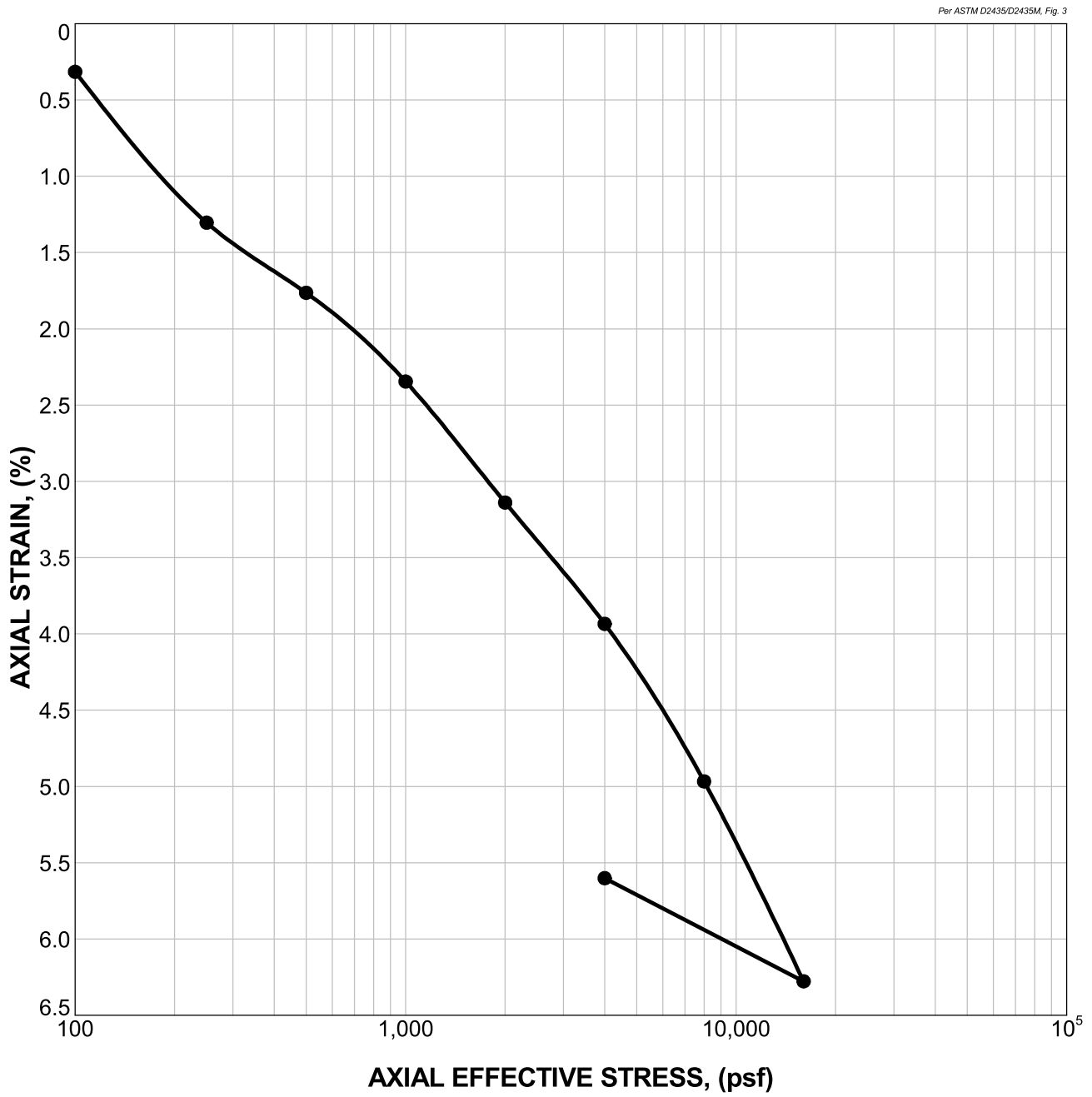
SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

CONSOLIDATION TEST (D2435)



Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation	Moisture									
97.3 %	14.3 %	119.0			2.65	720	2,450	4.353	1.123	0.391

MATERIAL DESCRIPTION	USCS	AASHTO
CLAYEY SAND		

NOTES:

Borehole: B-0002 Depth: 6 ft Specimen #: 3

PROJECT: Manufacturing Drive Reconstruction

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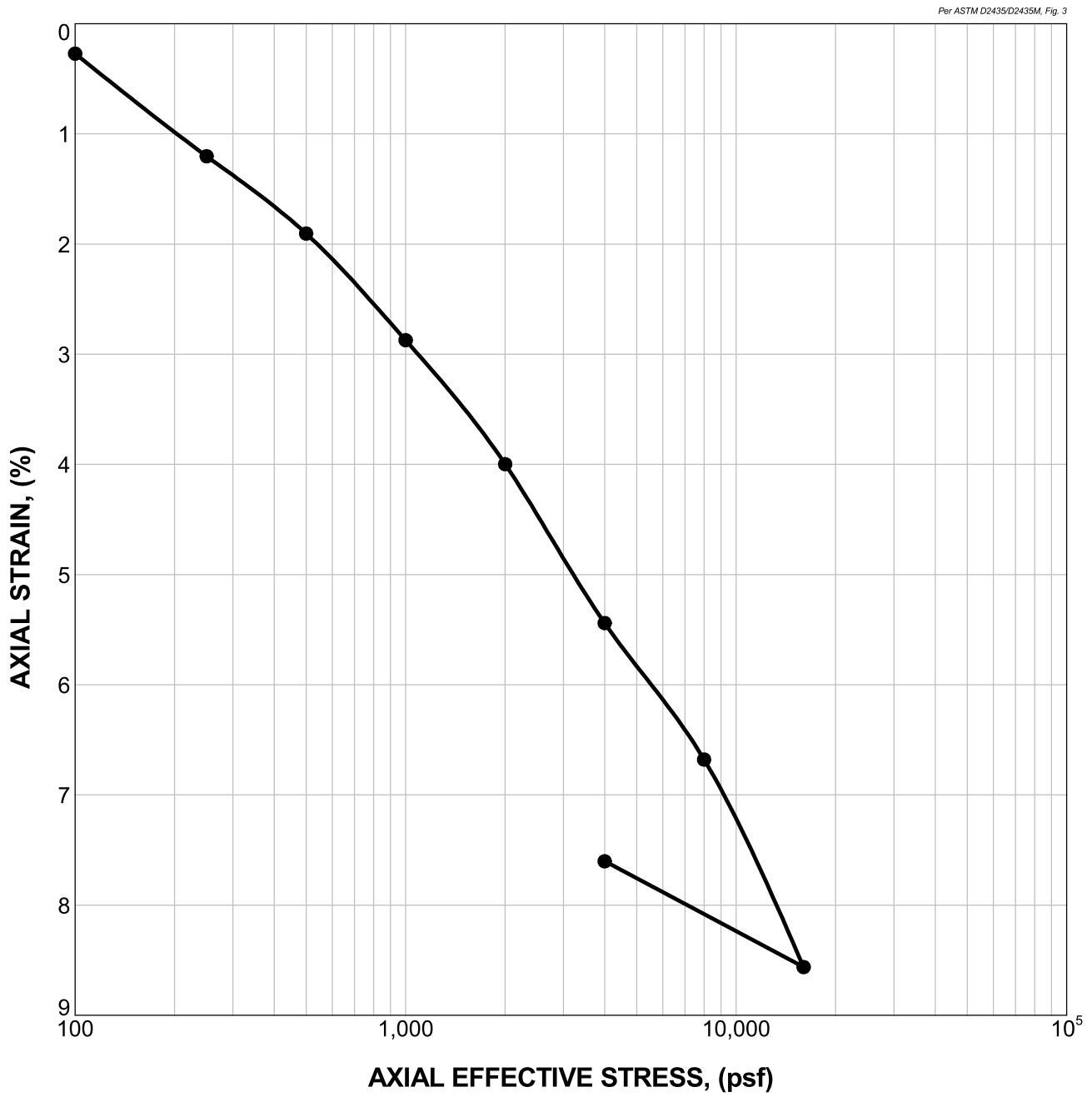
Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

CONSOLIDATION TEST (D2435)



Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation	Moisture									
91.0 %	26.9 %	92.8	42	20	2.65	720	2,400	6.256	1.594	0.782

MATERIAL DESCRIPTION	USCS	AASHTO
LEAN CLAY	CL	

NOTES:

Borehole: B-0007 Depth: 6 ft Specimen #: 3

PROJECT: Manufacturing Drive Reconstruction

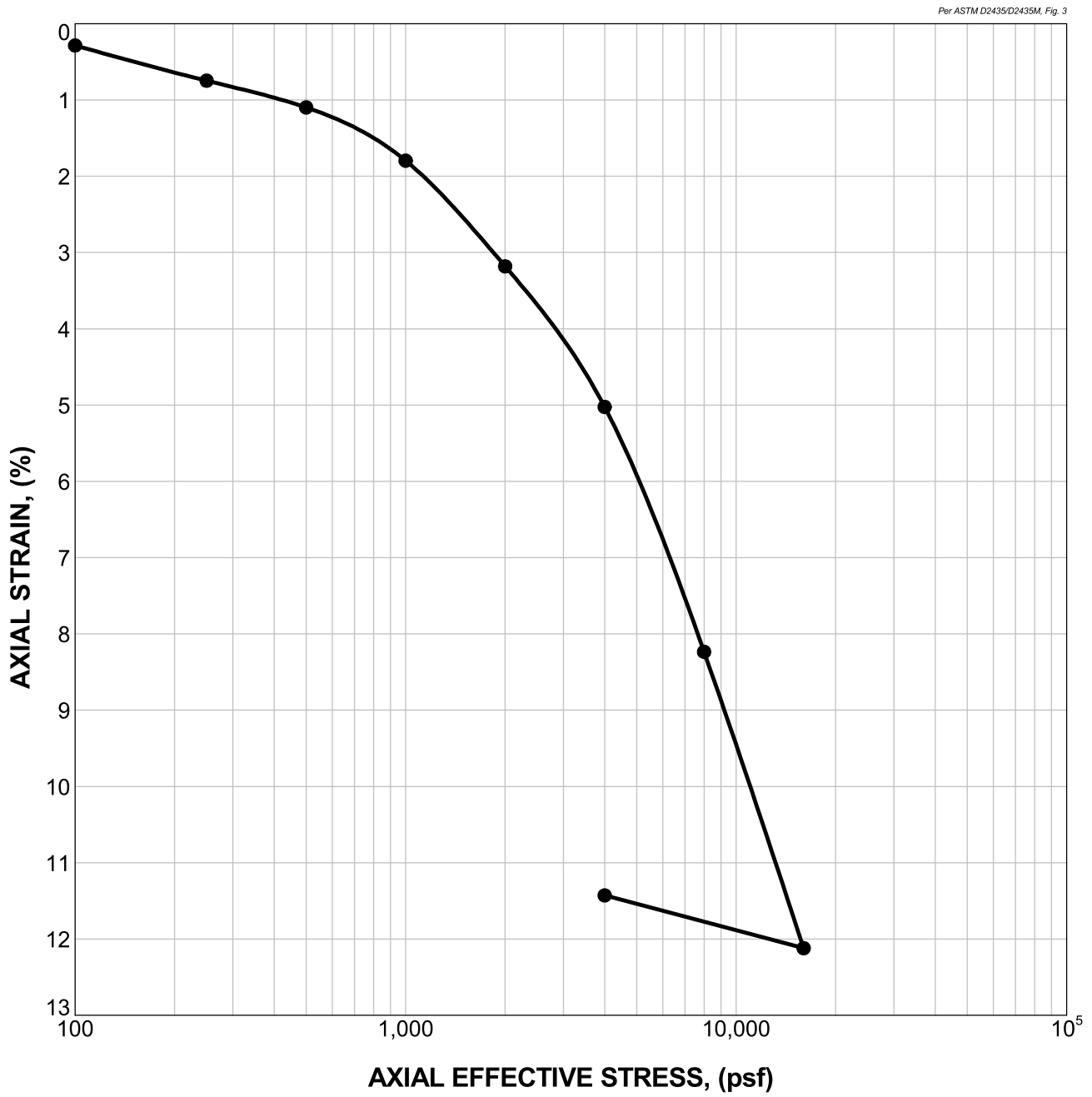
SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

CONSOLIDATION TEST (D2435)



Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c (% / log stress)	C_r (% / log stress)	Initial Void Ratio
Saturation	Moisture									
91.6 %	27.3 %	92.4			2.65	960	2,800	12.905	1.148	0.790

MATERIAL DESCRIPTION	USCS	AASHTO
LEAN CLAY with SAND		

NOTES:

Borehole: B-0012 Depth: 8 ft Specimen #: 4

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

DIRECT SHEAR TEST by ASTM D3080

Terracon
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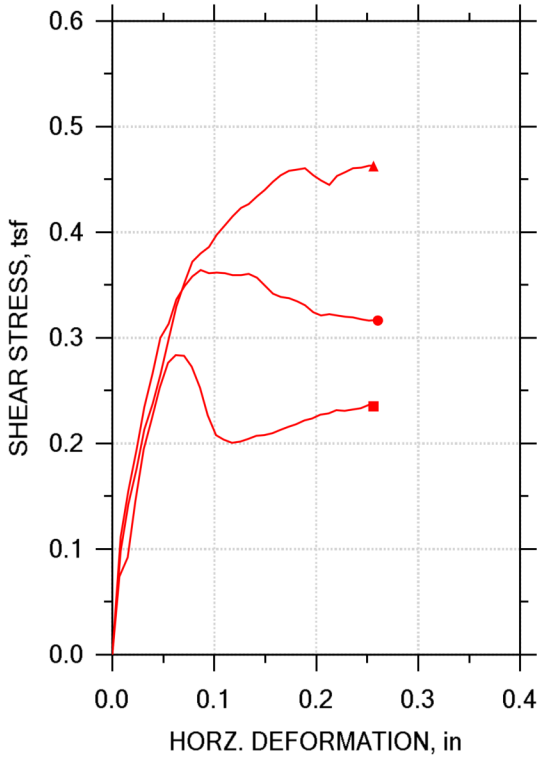
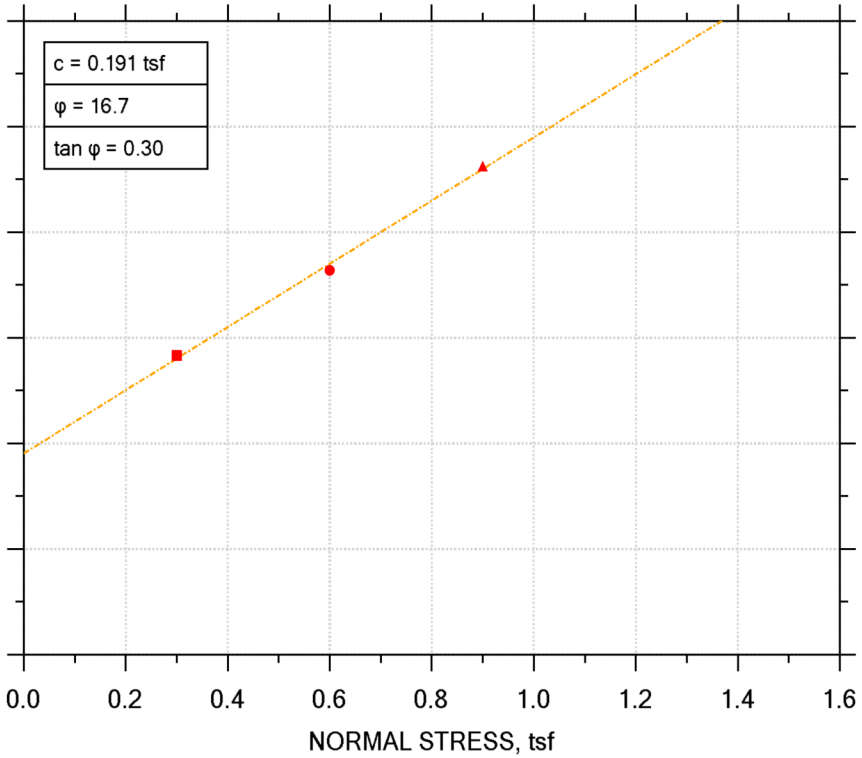
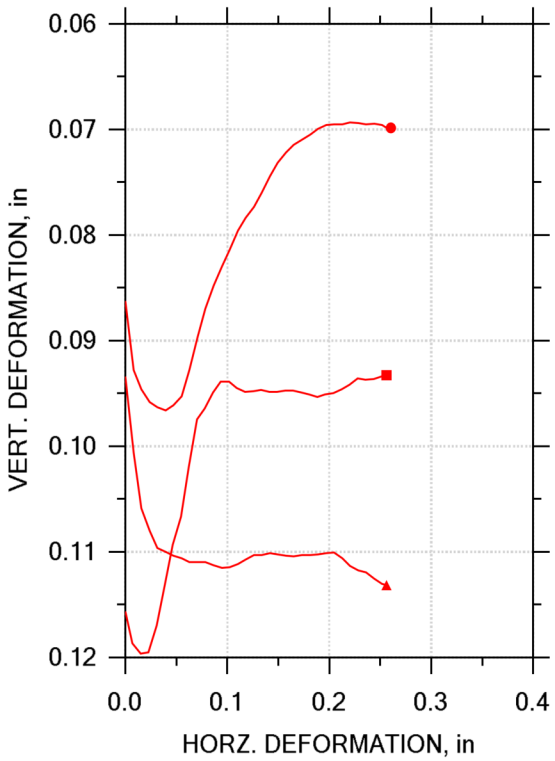






Symbol		■	●	▲	
Test No.		0.3 TSF	0.6 TSF	0.9 TSF	
Sample No.		3	3	3	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5004	2.5	2.5	
	Area, in²	4.9103	4.9087	4.9087	
	Height, in	1.0043	1.0043	1.0047	
	Water Content, %	21.06	24.44	25.79	
	Dry Density, pcf	103.3	98.52	92.96	
	Saturation, %	90.13	92.84	85.63	
	Void Ratio	0.63098	0.71087	0.81328	
Consol. Height, in		0.88872	0.91811	0.91133	
Consol. Void Ratio		0.44324	0.564	0.64473	
Final	Water Content, %	18.30	22.18	23.44	
	Dry Density, pcf	113.9	105.9	104.8	
	Saturation, %	103.06	101.17	103.91	
	Void Ratio	0.47952	0.59187	0.60907	
Normal Stress, tsf		0.30008	0.59955	0.89972	
Max. Shear Stress, tsf		0.28344	0.36394	0.46284	
Ult. Shear Stress, tsf		0.23521	0.31639	0.46284	
Time to Failure, min		583.94	381.32	752.99	
Disp. Rate, in/min		8.6811e-05	0.00024508	0.00024508	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	
Plasticity Index		---	---	---	

Project: MANUFACTURING DR RECONSTRUCT

Location: McCLURE ENGINEERING

Project No.: 07205036

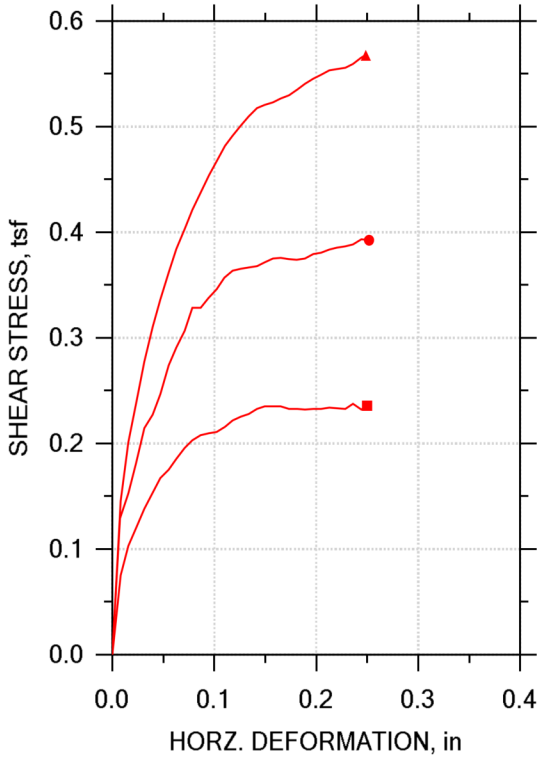
Boring No.: B-0005 Sample 3 6.0'-8.0'

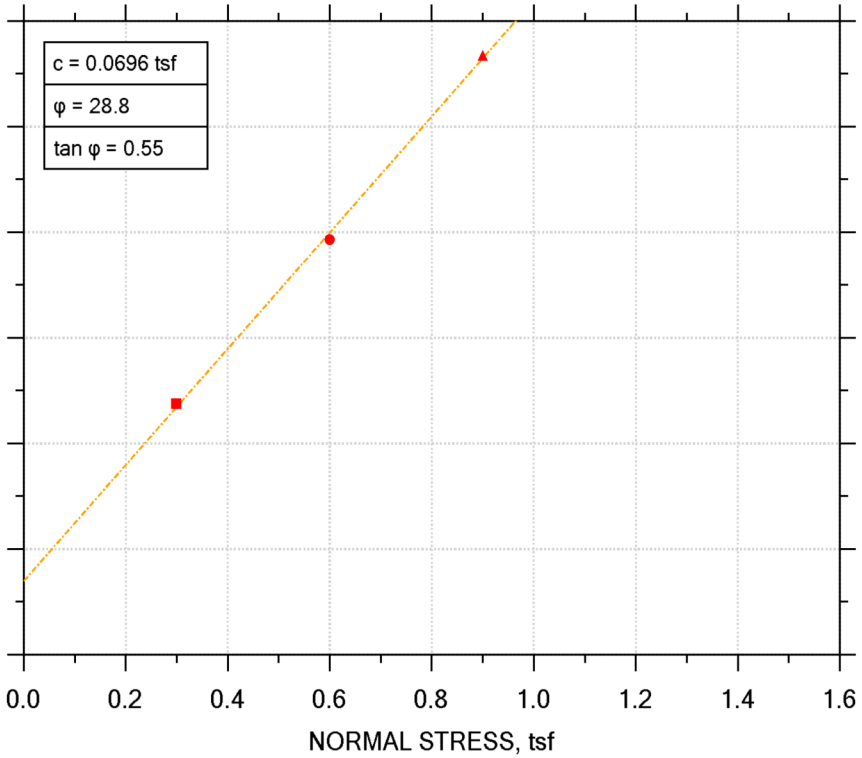
Sample Type: TRIMMED

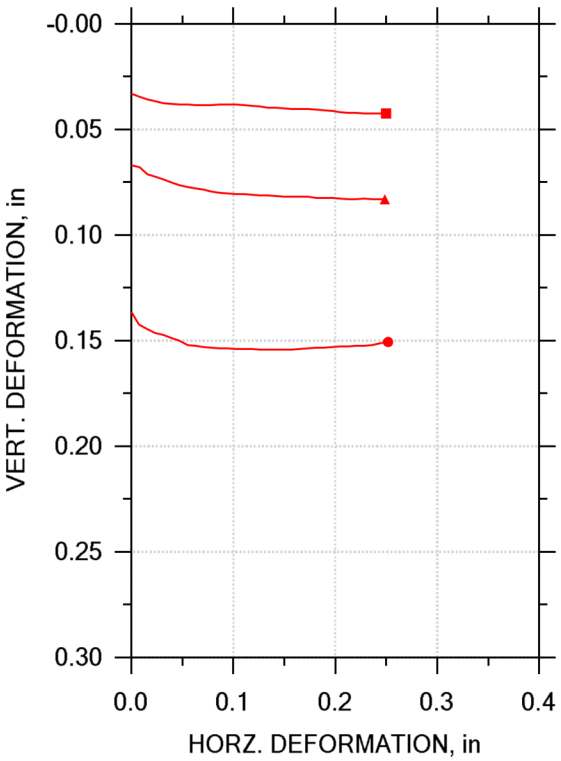
Remarks: TEST PERFORMED PER ASTM D3080 Qp = 3.25 tsf

DIRECT SHEAR TEST by ASTM D3080

Terracon
Consulting Engineers & Scientists







Symbol		■	●	▲	
Test No.		0.3 tsf	0.6 TSF	0.9 tsf	
Sample No.		S-4	S-4	S-4	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5004	2.5012	2.5016	
	Area, in²	4.9103	4.9134	4.9149	
	Height, in	1.0043	1.0142	1.0067	
	Water Content, %	20.04	24.93	24.50	
	Dry Density, pcf	95.60	91.52	91.52	
	Saturation, %	70.92	79.98	78.59	
	Void Ratio	0.76315	0.84171	0.84169	
Consol. Height, in		0.97142	0.87773	0.9398	
Consol. Void Ratio		0.70537	0.59394	0.71931	
Final	Water Content, %	23.98	21.99	24.85	
	Dry Density, pcf	99.82	107.5	99.75	
	Saturation, %	94.03	104.53	97.26	
	Void Ratio	0.68858	0.56811	0.68972	
Normal Stress, tsf		0.29928	0.59978	0.89938	
Max. Shear Stress, tsf		0.23749	0.39306	0.56759	
Ult. Shear Stress, tsf		0.23567	0.39247	0.56759	
Time to Failure, min		970.69	724.56	1052.6	
Disp. Rate, in/min		0.00024508	0.00024508	0.00024508	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	
Plasticity Index		---	---	---	

Project: MANUFACTURING DR RECONSTRUCT

Location: McCLURE ENGINEERING

Project No.: 07205036

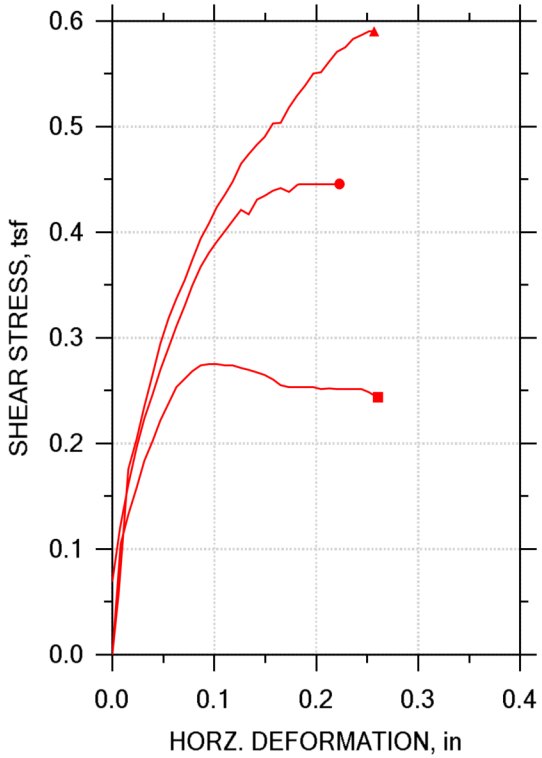
Boring No.: B-0008 Sample 4 8.0'-10.0'

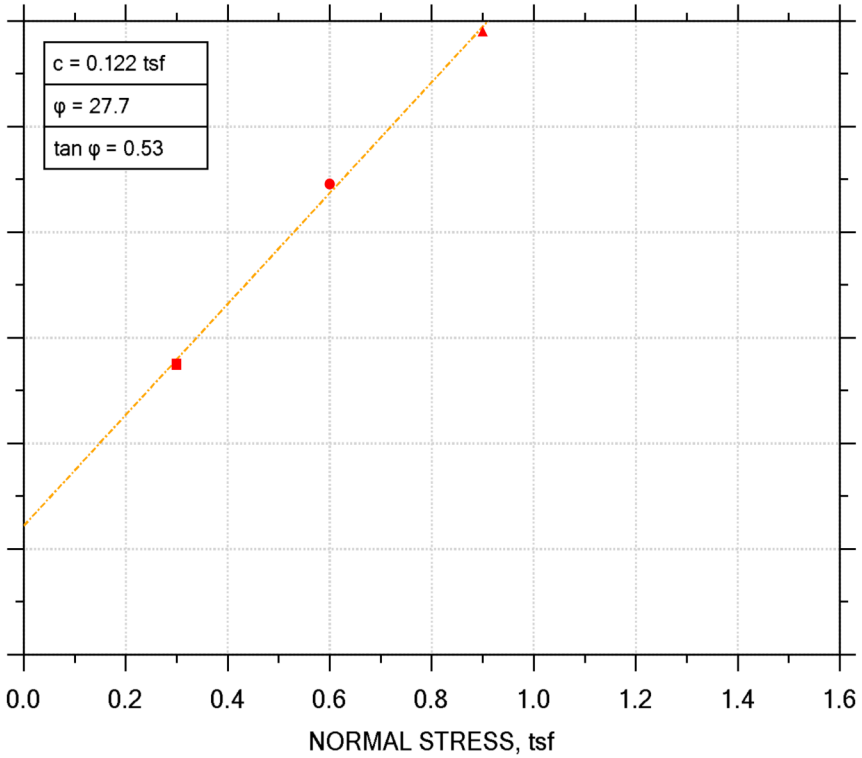
Sample Type: 3.0" ST TRIMMED

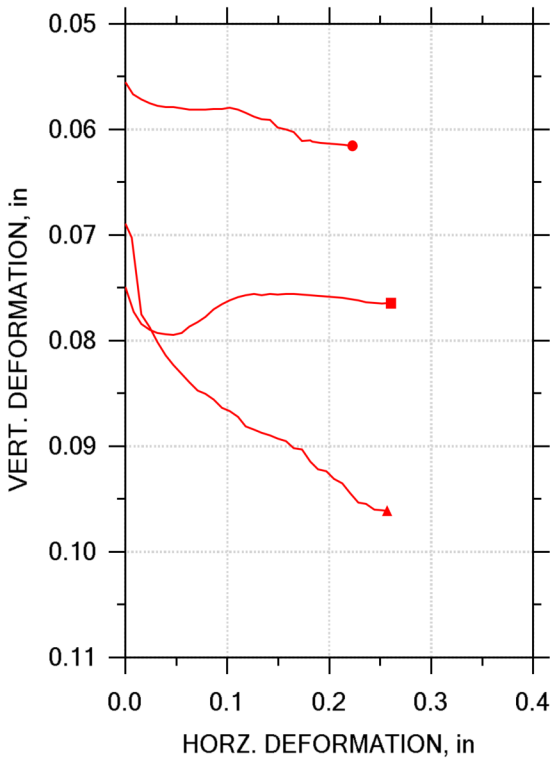
Remarks: TEST PERFORMED PER ASTM D3080 Qp = 0.75 tsf

DIRECT SHEAR TEST by ASTM D3080

Terracon
Consulting Engineers & Scientists







Symbol		■	●	▲	
Test No.		0.3 tsf	0.6 tsf	0.9 tsf	
Sample No.		S-3	S-3	S-3	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5004	2.5	
	Area, in²	4.9087	4.9103	4.9087	
	Height, in	1.0039	1.0047	1.0043	
	Water Content, %	33.61	35.47	38.38	
	Dry Density, pcf	81.53	79.06	75.30	
	Saturation, %	88.19	87.58	86.35	
	Void Ratio	0.99088	1.0531	1.1557	
Consol. Height, in		0.92905	0.94922	0.93542	
Consol. Void Ratio		0.84237	0.93967	1.0078	
Final	Water Content, %	32.76	36.46	38.21	
	Dry Density, pcf	88.25	84.23	83.26	
	Saturation, %	101.48	102.27	104.63	
	Void Ratio	0.83925	0.92694	0.94941	
Normal Stress, tsf		0.29938	0.59936	0.89972	
Max. Shear Stress, tsf		0.27488	0.44561	0.59018	
Ult. Shear Stress, tsf		0.24348	0.44561	0.59018	
Time to Failure, min		1166.9	1088.8	1088.9	
Disp. Rate, in/min		8.6614e-05	0.00017339	0.00024508	
Estimated Specific Gravity		2.60	2.60	2.60	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	
Plasticity Index		---	---	---	

Project: MANUFACTURING DR RECONSTRUCT

Location: McCLURE ENGINEERING

Project No.: 07205036

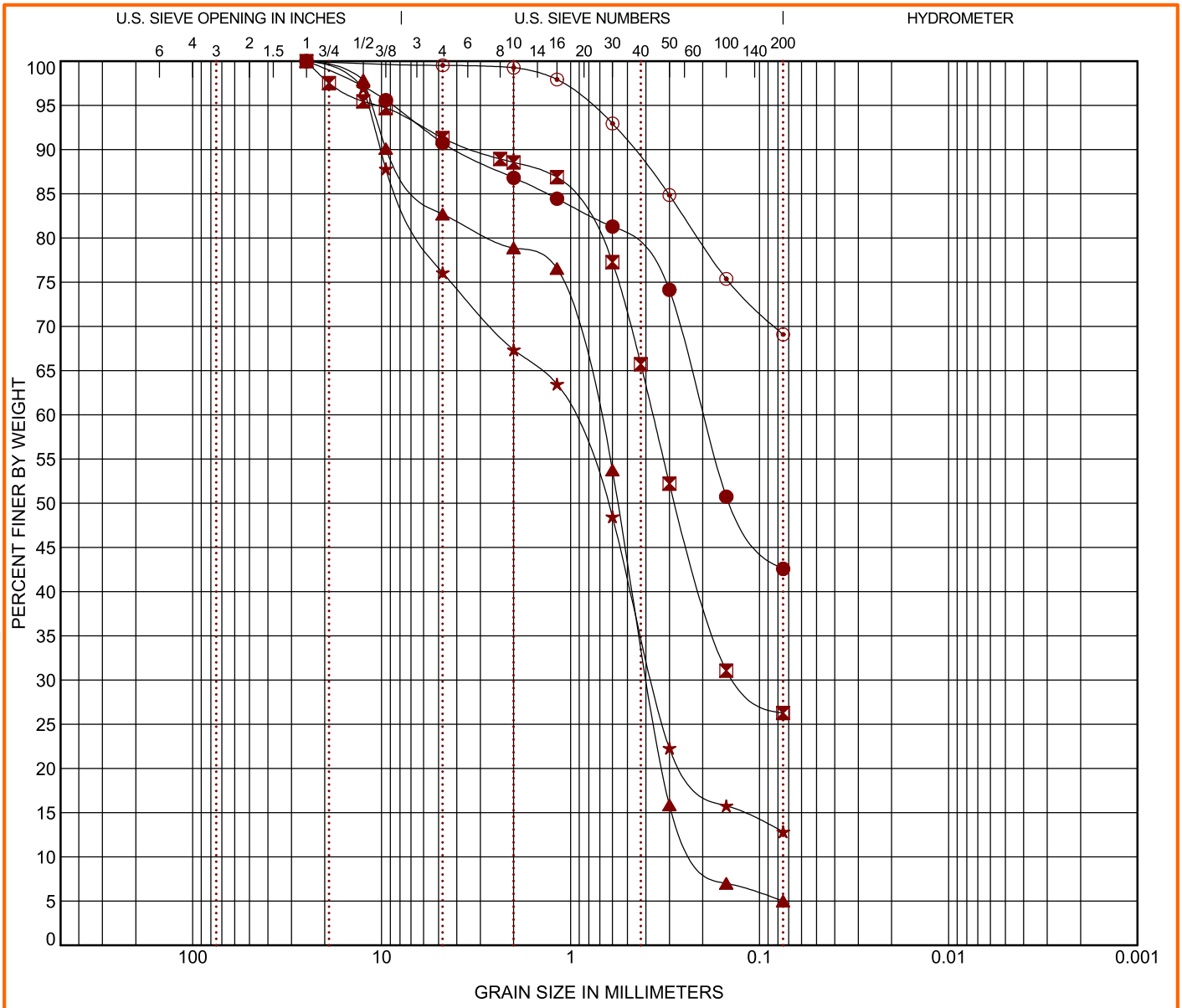
Boring No.: B-0011 Sample 3 5.0'-7.0'

Sample Type: 3.0" ST TRIMMED

Remarks: TEST PERFORMED PER ASTM D3080 Qp=1.5 tsf

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-0001	6 - 8	CLAYEY SAND						
⊠	B-0002	6 - 8	CLAYEY SAND						
▲	B-0002	18.5 - 20	POORLY GRADED SAND with GRAVEL (SP)	15.1				1.10	3.81
★	B-0003	16.5 - 18	CLAYEY SAND (SC)	15.2					
⊙	B-0003	19.5 - 21	SANDY LEAN CLAY (CL)	21.1					

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-0001	6 - 8	25	0.197			0.0	9.3	48.2		42.6	
⊠	B-0002	6 - 8	25	0.367	0.128		0.0	8.7	65.0		26.3	
▲	B-0002	18.5 - 20	25	0.722	0.389	0.19	0.0	17.3	77.7		5.0	
★	B-0003	16.5 - 18	25	1.009	0.368		0.0	23.9	63.2		12.8	
⊙	B-0003	19.5 - 21	25				0.0	0.5	30.4		69.1	

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

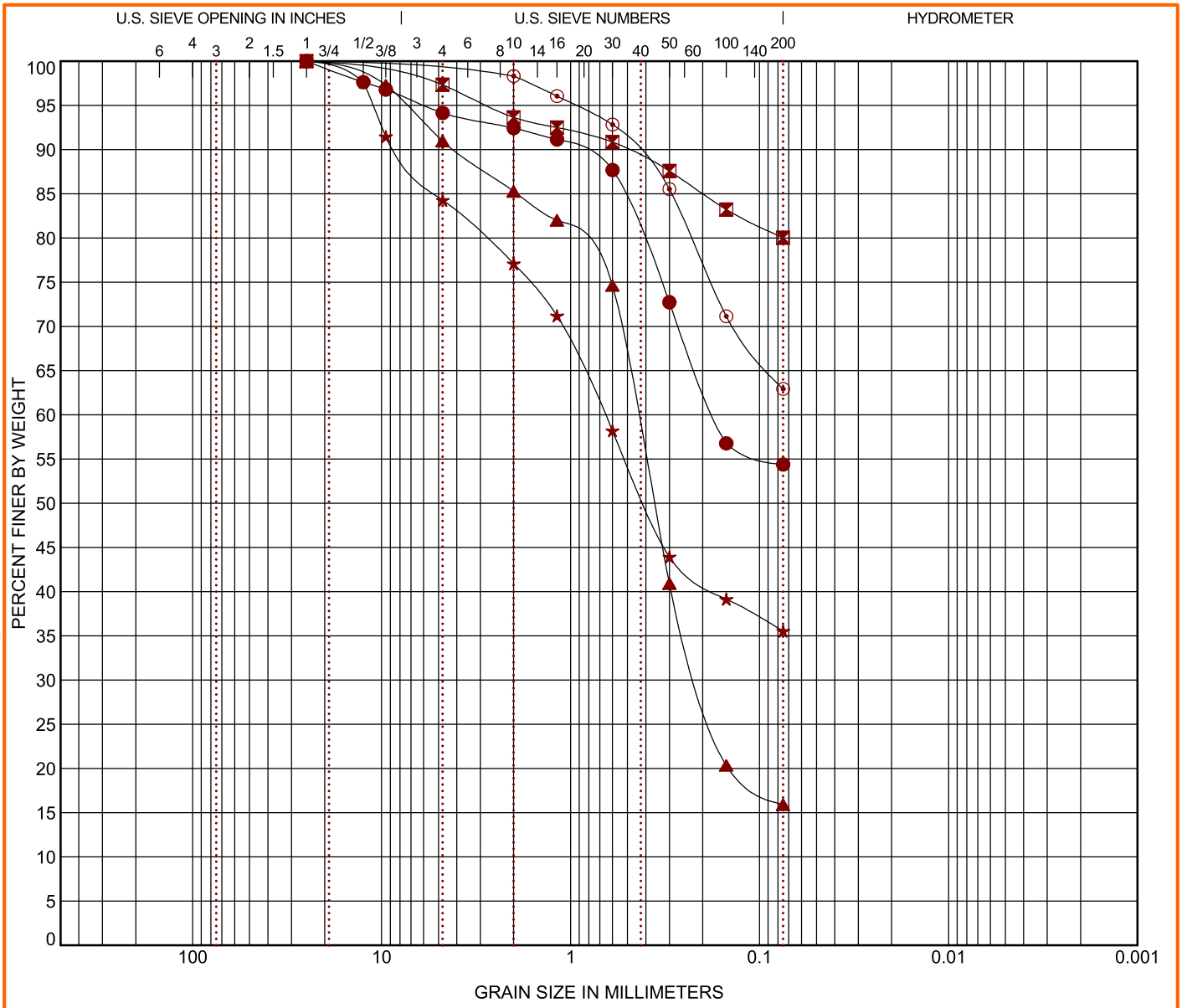
PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 07205036 MANUFACTURING DRI.GPJ TERRACON_DATATEMPLATE.GDT 3/31/21

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-0007	13.5 - 15	SANDY LEAN CLAY (CL)	32.5					
⊠	B-0008	5.5 - 7	LEAN CLAY with SAND	25.6					
▲	B-0008	13.5 - 15	SILTY SAND (SM)	16.3					
★	B-0009	6.5 - 8	SILTY SAND with GRAVEL (SM)	23.2	NP	NP	NP		
⊙	B-0011	13.5 - 15	SANDY LEAN CLAY (CL)	32.0	34	21	13		

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-0007	13.5 - 15	25	0.173			0.0	5.9	39.8		54.4	
⊠	B-0008	5.5 - 7	25				0.0	2.7	17.3		80.0	
▲	B-0008	13.5 - 15	25	0.444	0.208		0.0	9.0	75.0		15.9	
★	B-0009	6.5 - 8	25	0.659			0.0	15.7	48.7		35.5	
⊙	B-0011	13.5 - 15	25				0.0	1.1	36.0		62.9	

PROJECT: Manufacturing Drive Reconstruction

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Terracon
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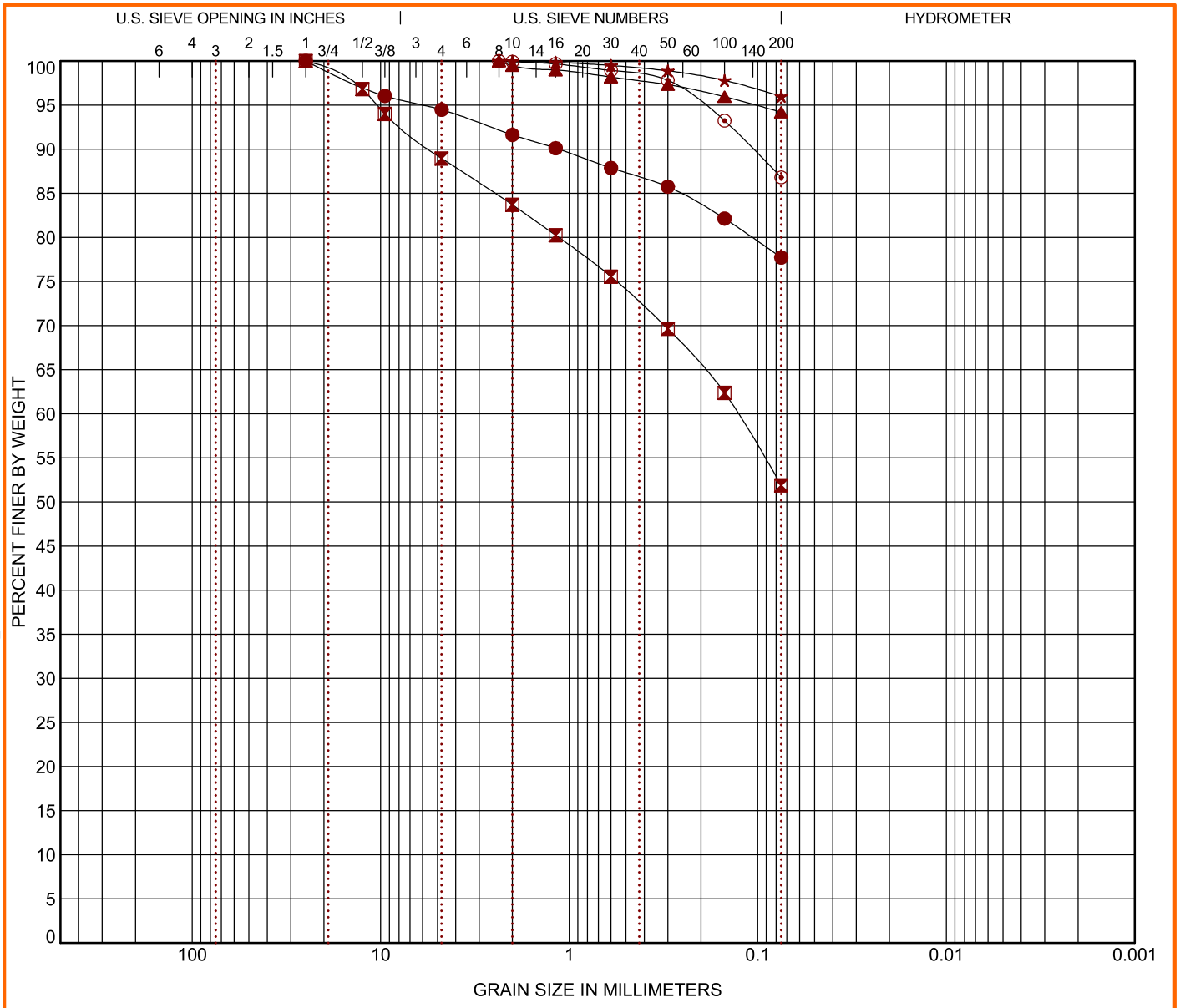
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	B-0012	5.5 - 7	LEAN CLAY with SAND (CL)	33.7	47	23	24		
⊠	B-0012	13.5 - 15	SANDY LEAN CLAY (CL)	32.8	36	22	14		
▲	BULK-13	1 - 5	LEAN CLAY (CL)		49	23	26		
★	BULK-19	1 - 5	FAT CLAY (CH)		58	25	33		
⊙	BULK-22	1 - 5	FAT CLAY (CH)		51	22	29		

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	B-0012	5.5 - 7	25				0.0	5.5	16.8		77.7	
⊠	B-0012	13.5 - 15	25	0.128			0.0	11.0	37.1		51.9	
▲	BULK-13	1 - 5	2.36				0.0	0.0	5.8		94.2	
★	BULK-19	1 - 5	2.36				0.0	0.0	4.0		96.0	
⊙	BULK-22	1 - 5	2.36				0.0	0.0	13.2		86.8	

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

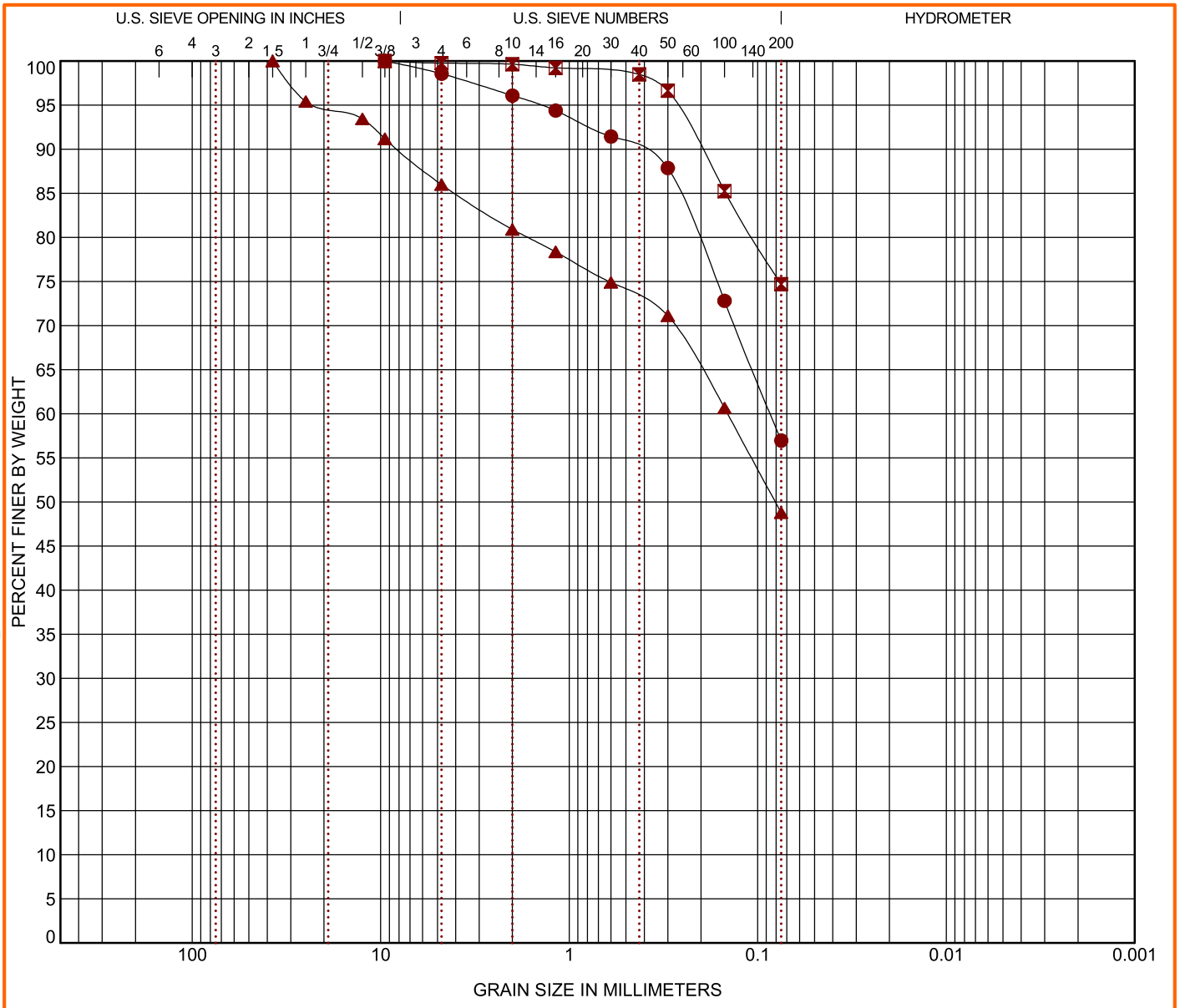
Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	BULK-25	1 - 5	SANDY LEAN CLAY (CL)						
⊠	BULK-29	1 - 5	LEAN CLAY with SAND (CL)		40	20	20		
▲	BULK-31	1 - 5	CLAYEY SAND (SC)						

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
●	BULK-25	1 - 5	9.5	0.086			0.0	1.4	41.6		57.0	
⊠	BULK-29	1 - 5	9.5				0.0	0.2	25.1		74.7	
▲	BULK-31	1 - 5	37.5	0.144			0.0	14.0	37.2		48.8	

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

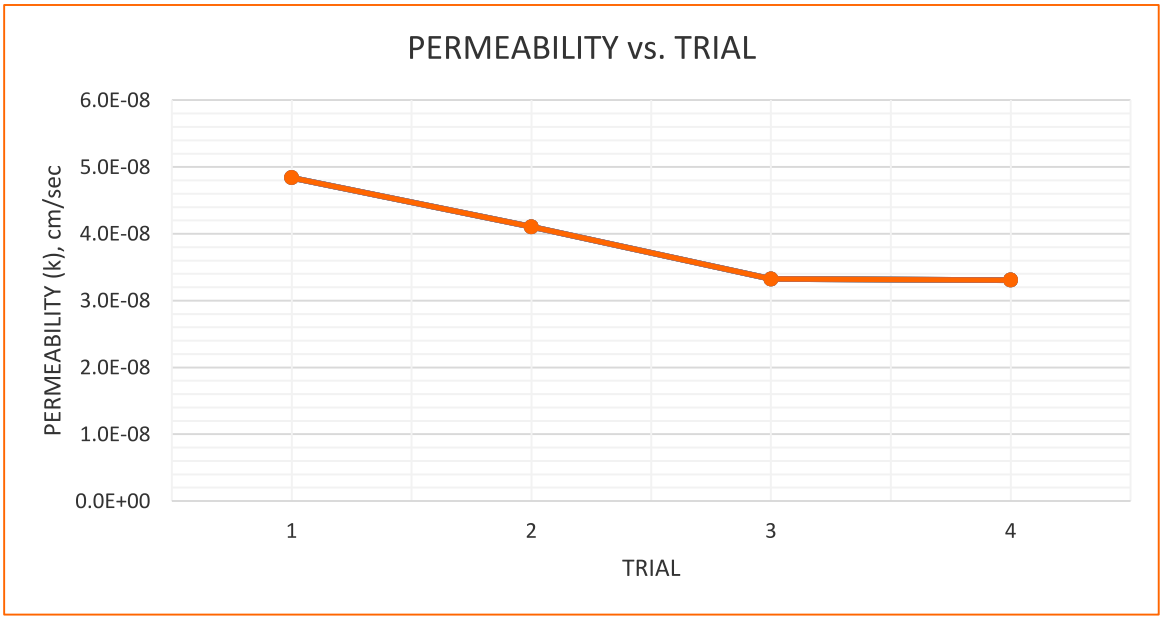
Hydraulic Conductivity
ASTM D5084, Method A

Sample Location:	B-0017, S-2		
Sample Depth	3.0-5.0		
Sample Type:	Shelby Tube	Sample Date:	
Sample Type:	Dark Brown/Gray Lean to Fat Clay trace Sand trace organics		
Sample Notes:			

Sample Diameter, cm	7.24	Proctor Density, pcf	NA
Sample Area, cm^2	41.17	Optimum Moisture, %	NA
Sample Height, cm	7.47	Dry Density, pcf	94.0
Sample Weight, grams	593.6	Moisture, %	28.3
Burrete Factor	1.00	Compaction, %	NA

Average Permeability of the Sample
3.9E-08 cm/sec.

Trial No.	Q cm^3	Time sec.	Head cm	Temp. C	v Q/AT	i h/l	k cm/sec	k ft/day
1	1.8	19200	351.5	21	2.28E-06	48.55	4.84E-08	1.37E-04
2	5.2	65400	351.5	21	1.93E-06	48.55	4.10E-08	1.16E-04
3	6.8	105600	351.5	21	1.56E-06	48.55	3.32E-08	9.42E-05
4	4.4	68700	351.5	21	1.56E-06	48.55	3.31E-08	9.37E-05



Terracon GeoReport

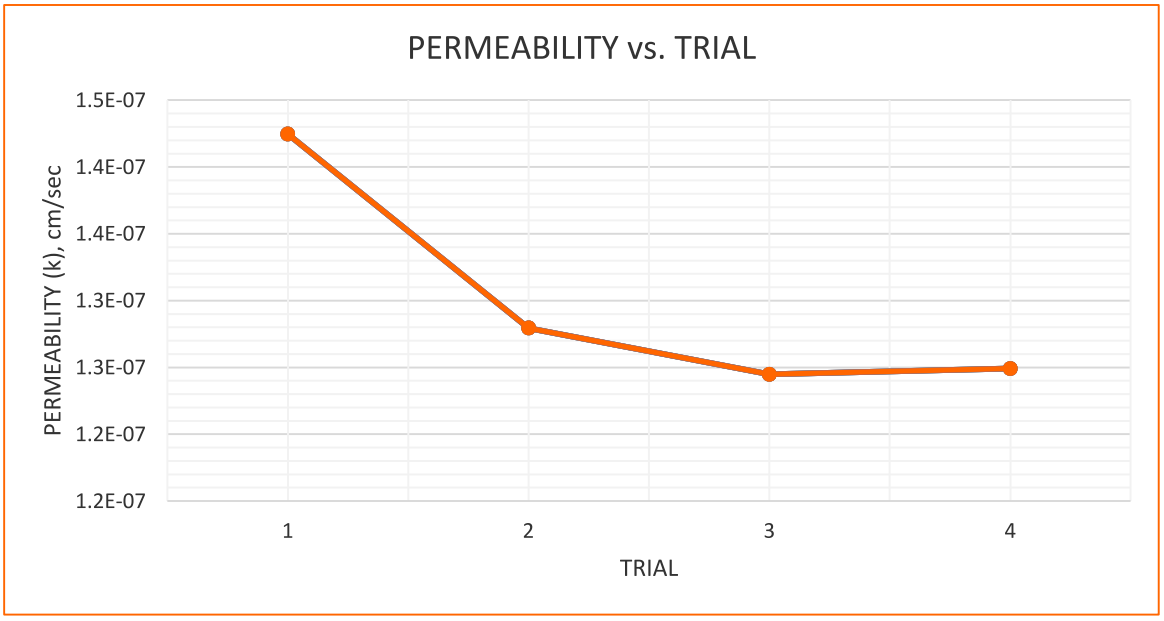
Hydraulic Conductivity
ASTM D5084, Method A

Sample Location:	B-0018, S-3		
Sample Depth	6.0-8.0		
Sample Type:	Shelby Tube	Sample Date:	
Sample Type:	Brown/Gray Silty Clay trace Sand trace rootlets		
Sample Notes:			

Sample Diameter, cm	7.16	Proctor Density, pcf	NA
Sample Area, cm^2	40.26	Optimum Moisture, %	NA
Sample Height, cm	7.59	Dry Density, pcf	93.1
Sample Weight, grams	603.4	Moisture, %	32.2
Burrete Factor	1.00	Compaction, %	NA

Average Permeability of the Sample
1.3E-07 cm/sec.

Trial No.	Q cm^3	Time sec.	Head cm	Temp. C	v Q/AT	i h/l	k cm/sec	k ft/day
1	5.1	19200	351.5	21	6.60E-06	49.09	1.42E-07	4.04E-04
2	15.6	65400	351.5	21	5.92E-06	49.09	1.28E-07	3.63E-04
3	24.3	104700	351.5	21	5.76E-06	49.09	1.24E-07	3.53E-04
4	16.0	68700	351.5	21	5.78E-06	49.09	1.25E-07	3.54E-04



Terracon GeoReport

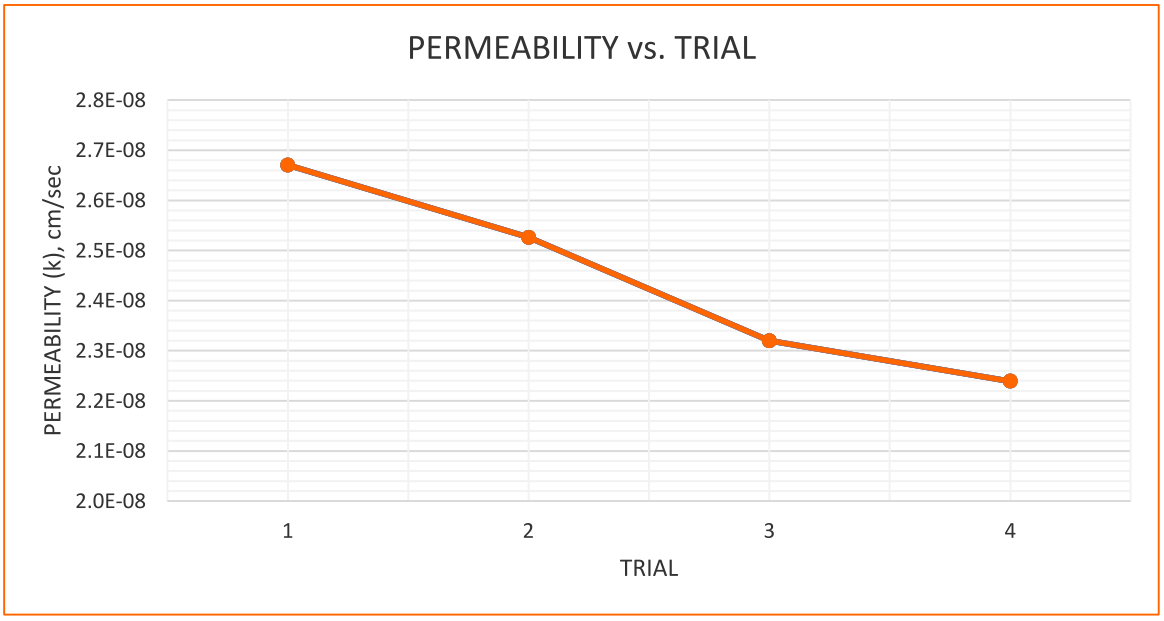
Hydraulic Conductivity
ASTM D5084, Method A

Sample Location:	B-0020, S-2		
Sample Depth	3.0-5.0		
Sample Type:	Shelby Tube	Sample Date:	
Sample Type:	Brown/Gray Silty Clay trace Sand trace organics		
Sample Notes:			

Sample Diameter, cm	7.11	Proctor Density, pcf	NA
Sample Area, cm^2	39.70	Optimum Moisture, %	NA
Sample Height, cm	7.95	Dry Density, pcf	80.7
Sample Weight, grams	565.7	Moisture, %	38.5
Burrete Factor	1.00	Compaction, %	NA

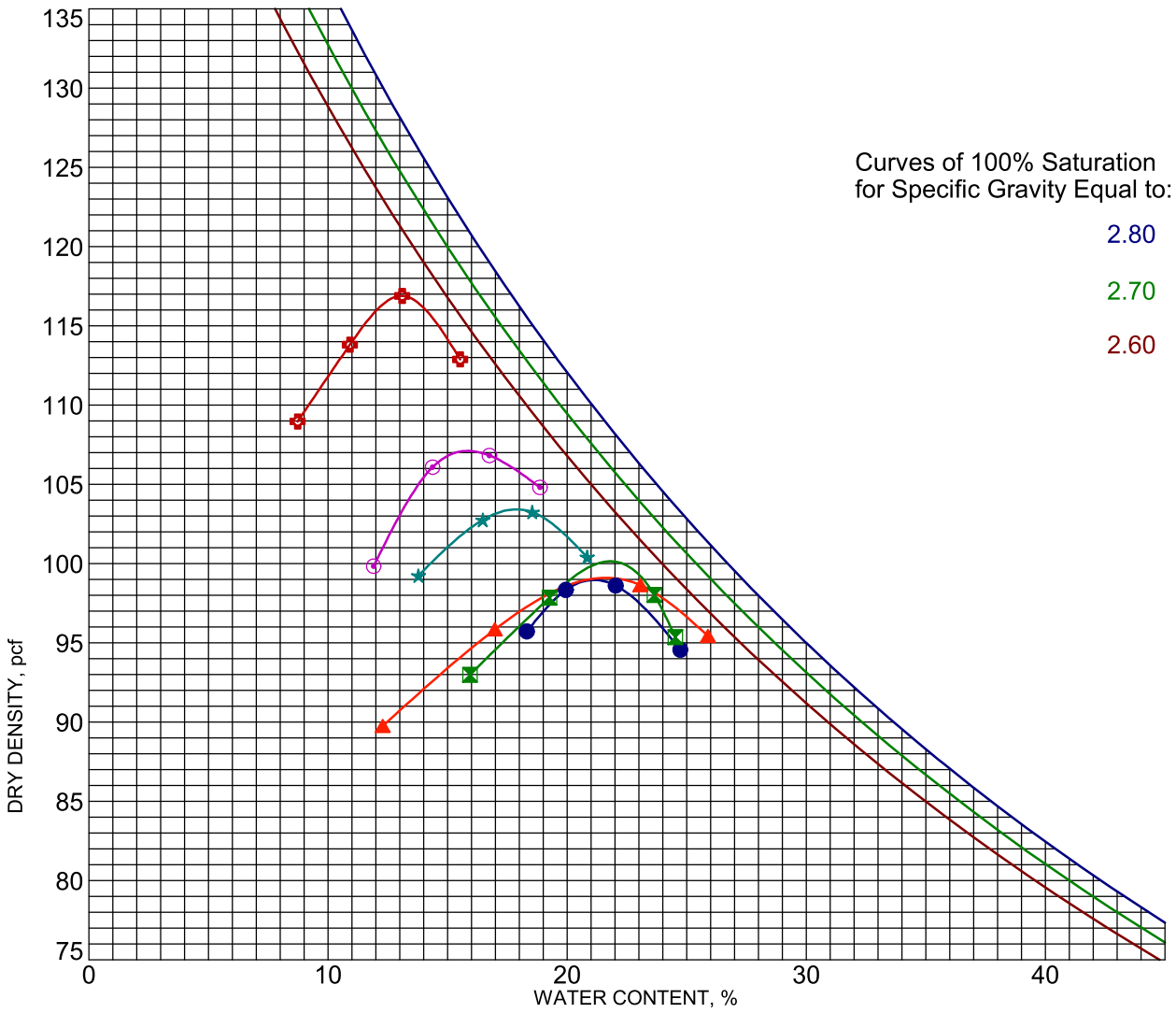
Average Permeability of the Sample
2.4E-08 cm/sec.

Trial No.	Q cm^3	Time sec.	Head cm	Temp. C	v Q/AT	i h/l	k cm/sec	k ft/day
1	0.9	19200	351.5	21	1.18E-06	49.44	2.67E-08	7.57E-05
2	2.9	65400	351.5	21	1.12E-06	49.44	2.53E-08	7.16E-05
3	4.3	105600	351.5	21	1.03E-06	49.44	2.32E-08	6.58E-05
4	2.7	68700	351.5	21	9.90E-07	49.44	2.24E-08	6.35E-05



MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Boring ID		Depth	Description of Materials
●	BULK-13	1 - 5	LEAN CLAY (CL)
⊠	BULK-19	1 - 5	FAT CLAY (CH)
▲	BULK-22	1 - 5	FAT CLAY (CH)
★	BULK-25	1 - 5	SANDY LEAN CLAY (CL)
⊙	BULK-29	1 - 5	LEAN CLAY with SAND (CL)
✿	BULK-31	1 - 5	CLAYEY SAND (SC)

Boring ID		Depth	Test Method	Fines (%)	LL	PL	PI	Max DD (pcf)	Optimum WC (%)
●	BULK-13	1 - 5	ASTM D698 Method A	94	49	23	26	99.0	21.2
⊠	BULK-19	1 - 5	ASTM D698 Method A	96	58	25	33	100.1	21.8
▲	BULK-22	1 - 5	ASTM D698 Method A	87	51	22	29	99.1	21.5
★	BULK-25	1 - 5	ASTM D698 Method A	57				103.4	17.9
⊙	BULK-29	1 - 5	ASTM D698 Method A	75	40	20	20	107.1	15.9
✿	BULK-31	1 - 5	ASTM D698 Method A	49				116.9	13.1

PROJECT: Manufacturing Drive Reconstruction

SITE: Between US 30 & College Avenue Clinton, Iowa

Terracon
870 40th Ave
Bettendorf, IA

PROJECT NUMBER: 07205036

CLIENT: McClure Engineering Company

SUPPORTING INFORMATION

GENERAL NOTES
DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING	WATER LEVEL	FIELD TESTS
Auger Cuttings Shelby Tube Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			BEDROCK	
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (psf)**	**Standard Penetration or N-Value Blows/Ft.**	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**
Very Loose	0 - 3	Very Soft	less than 500	0 - 1	< 20	Weathered
Loose	4 - 9	Soft	500 to 1,000	2 - 4	20 - 29	Firm
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8	30 - 49	Medium Hard
Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15	50 - 79	Hard
Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30	>79	Very Hard
		Hard	> 8,000	> 30		

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

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]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [$Cc<1$ or $Cc>3.0$] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [$Cc<1$ or $Cc>3.0$] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, 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"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			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	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			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] 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.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% 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.

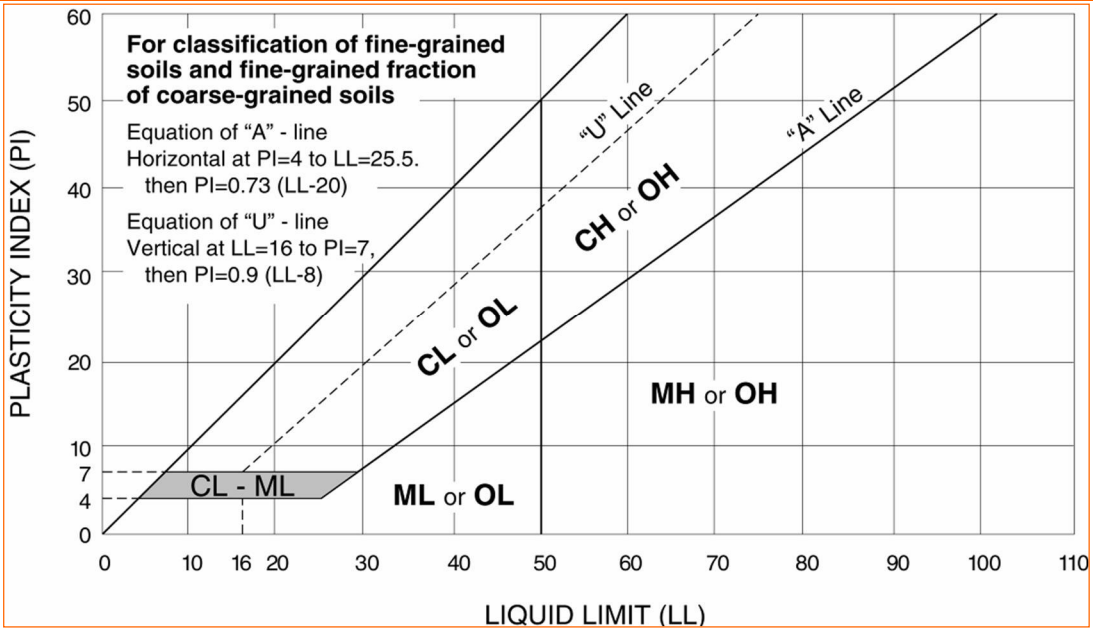
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[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.



DESCRIPTION OF ROCK PROPERTIES

WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements