



Legend

☉ Denotes Boring Location



Notes

1. Boring locations are approximate
2. Soil Borings performed by Badger State Drilling in November 2020

Scale: Reduced

Date: 11/2020	
Job No. C20051-28	

**Soil Boring Location Map
Forster Drive
Madison, WI**



LOG OF TEST BORING

Project Forster Drive
225'S of Troy, 10'E of Centerline
 Location Madison, WI

Boring No. 1
 Surface Elevation (ft) 856±
 Job No. C20051-28
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	w	LL	PL	LI
					5.5 in. Asphalt Pavement/5 in. Sandy Base Course					
1	10	M	9		FILL: Stiff Brown and Gray Clay with Occasional Sand and Gravel	(1.75)				
2	14	M	4		Stiff, Dark Gray to Black Silty CLAY (CL-ML; Probable Buried Topsoil)	(1.5)				
				5	Medium Stiff to Stiff, Bluish-Gray Lean CLAY, Trace to Little Sand (CL)	(1.0)				
3	18	M	7		Occasional Plant Fibers/Roots Near 7'	(0.75)				
4	16	M	21		Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
				10						
5	18	W	20							
				15	End Boring at 15 ft					
					Borehole Backfilled with Bentonite Chips and Asphalt Patch					
				20						

WATER LEVEL OBSERVATIONS				GENERAL NOTES	
While Drilling	▽ 13.5'	Upon Completion of Drilling	11'	Start	11/23/20
Time After Drilling			30 Min	Driller	BSD Chief MC Rig CME-55
Depth to Water			10.5' ▼	Logger	DC Editor ESF
Depth to Cave in			12.4'	Drill Method	2.25" HSA; Autohammer
<small>The stratification lines represent the approximate boundary between soil types and the transition may be gradual.</small>					



LOG OF TEST BORING

Project Forster Drive
95'NE of Becker, 10'NW of Centerline
 Location Madison, WI

Boring No. 2
 Surface Elevation (ft) 855±
 Job No. C20051-28
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					5 in. Asphalt Pavement/7 in. Sandy Base Course					
1	5	M	9		FILL: Stiff Brown and Gray Clay with Occasional Sand and Gravel	(1.5)				
2	18	M	9		Very Stiff, Dark Gray to Black Silty CLAY (CL-ML; Probable Buried Topsoil)	(2.5)				
3	18	M	4		Very Soft to Medium Stiff, Bluish-Gray Lean CLAY, Trace to Little Sand (CL) Occasional Plant Fibers/Roots Near 6'	(0.25)				
4	18	M	4			(0.75)				
5	12	W	20		Medium Dense, Brown Fine to Medium SAND, Trace to Little Silt and Gravel (SP-SM/SM)					
6	14	W	16							
End Boring at 15 ft										
Borehole Backfilled with Bentonite Chips and Asphalt Patch										

WATER LEVEL OBSERVATIONS					GENERAL NOTES				
While Drilling	▽	11.0'	Upon Completion of Drilling	7.9'	Start	11/23/20	End	11/23/20	
Time After Drilling				30 Min	Driller	BSD	Chief	MC	Rig CME-55
Depth to Water				7.1' ▼	Logger	DC	Editor	ESF	
Depth to Cave in				11.5	Drill Method	2.25" HSA; Autohammer			
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.									

LOG OF TEST BORING
General Notes

DESCRIPTIVE SOIL CLASSIFICATION

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse.....	¾" to 3"	¾" to 3"
Fine	4.76 mm to ¾"	#4 to ¾"
Sand: Coarse.....	2.00 mm to 4.76 mm.....	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm.....	#200 to #40
Silt.....	0.005 mm to 0.074 mm.....	Smaller than #200
Clay.....	Smaller than 0.005 mm.....	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

Physical Characteristics
 Color, moisture, grain shape, fineness, etc.
Major Constituents
 Clay, silt, sand, gravel
Structure
 Laminated, varved, fibrous, stratified,
 cemented, fissured, etc.
Geologic Origin
 Glacial, alluvial, eolian, residual, etc.

Relative Density

Term	"N" Value
Very Loose.....	0 - 4
Loose.....	4 - 10
Medium Dense.....	10 - 30
Dense.....	30 - 50
Very Dense.....	Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace.....	0% - 5%
Little	5% - 12%
Some.....	12% - 35%
And	35% - 50%

Consistency

Term	q _u -tons/sq. ft
Very Soft.....	0.0 to 0.25
Soft.....	0.25 to 0.50
Medium.....	0.50 to 1.0
Stiff.....	1.0 to 2.0
Very Stiff.....	2.0 to 4.0
Hard.....	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic.....	Less than 4%
Organic Silt/Clay.....	4 - 12%
Sedimentary Peat.....	12% - 50%
Fibrous and Woody Peat...	More than 50%

Plasticity

Term	Plastic Index
None to Slight.....	0 - 4
Slight.....	5 - 7
Medium.....	8 - 22
High to Very High ..	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

Drilling and Sampling

- CS – Continuous Sampling
- RC – Rock Coring: Size AW, BW, NW, 2"W
- RQD – Rock Quality Designation
- RB – Rock Bit/Roller Bit
- FT – Fish Tail
- DC – Drove Casing
- C – Casing: Size 2 ½", NW, 4", HW
- CW – Clear Water
- DM – Drilling Mud
- HSA – Hollow Stem Auger
- FA – Flight Auger
- HA – Hand Auger
- COA – Clean-Out Auger
- SS - 2" Dia. Split-Barrel Sample
- 2ST – 2" Dia. Thin-Walled Tube Sample
- 3ST – 3" Dia. Thin-Walled Tube Sample
- PT – 3" Dia. Piston Tube Sample
- AS – Auger Sample
- WS – Wash Sample
- PTS – Peat Sample
- PS – Pitcher Sample
- NR – No Recovery
- S – Sounding
- PMT – Borehole Pressuremeter Test
- VS – Vane Shear Test
- WPT – Water Pressure Test

Laboratory Tests

- q_a – Penetrometer Reading, tons/sq ft
- q_u – Unconfined Strength, tons/sq ft
- W – Moisture Content, %
- LL – Liquid Limit, %
- PL – Plastic Limit, %
- SL – Shrinkage Limit, %
- LI – Loss on Ignition
- D – Dry Unit Weight, lbs/cu ft
- pH – Measure of Soil Alkalinity or Acidity
- FS – Free Swell, %

Water Level Measurement
















- ▽ - Water Level at Time Shown
- NW – No Water Encountered
- WD – While Drilling
- BCR – Before Casing Removal
- ACR – After Casing Removal
- CW – Cave and Wet
- CM – Caved and Moist

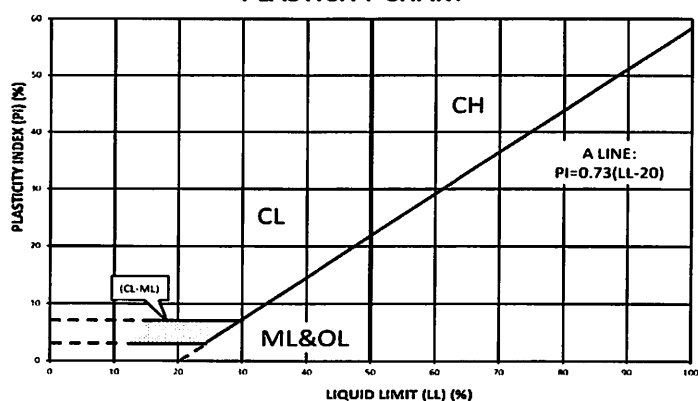
Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

CGC, Inc.

Madison - Milwaukee

Unified Soil Classification System

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	 GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	 GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	 GM	Silty gravels, gravel-sand-silt mixtures
	 GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	 SW	Well-graded sands, gravelly sands, little or no fines
	 SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	 SM	Silty sands, sand-silt mixtures
	 SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	 ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	 CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	 OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	 MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	 CH	Inorganic clays of high plasticity, fat clays
	 OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	 PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA	
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
GP	Not meeting all gradation requirements for GW
GM	Atterberg limits below "A" line or P.I. less than 4
GC	Atterberg limits above "A" line or P.I. greater than 7
Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
SP	Not meeting all gradation requirements for GW
SM	Atterberg limits below "A" line or P.I. less than 4
SC	Atterberg limits above "A" line with P.I. greater than 7
Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	
<p>Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:</p> <p>Less than 5 percent GW, GP, SW, SP More than 12 percent GM, GC, SM, SC 5 to 12 percent Borderline cases requiring dual symbols</p>	
PLASTICITY CHART	
 <p>The Plasticity Chart plots Plasticity Index (PI) on the y-axis (0 to 60) against Liquid Limit (LL) on the x-axis (0 to 100). A diagonal A-line is defined by the equation PI = 0.73(LL - 20). A horizontal U-line is at PI = 0.25(LL - 20). The region between the A-line and U-line is shaded. Classification regions are: CH (above A-line, LL > 50), CL (between A-line and U-line, LL > 40), ML&OL (below U-line, LL > 40), and (CL-ML) (below U-line, LL < 40).</p>	