CGC, Inc.
Construction • Geotechnical
Consulting Engineering/Testing

November 5, 2020
C20051-14

Mr. Chris Petykowski
City of Madison Engineering Dept.
City-County Building, Room 115
210 Martin Luther King, Jr. Blvd.
Madison, WI 53703-3345

Re: Geotechnical Services
Davies Street Area
Madison, Wisconsin

Dear Mr. Petykowski:

CGC, Inc. has completed our geotechnical services for the above-referenced project. At your request, twelve soil borings were drilled along Davies Street between Buckeye Road and Maher Avenue (B1, B2, B4 and B5); Major Avenue between East Lakeview Avenue and Davies Street (B3) Maher Avenue between Lake Edge Boulevard and Davies Street (B6, B7 and B7X) as well as along Dempsey Road between Maher Avenue and Cottage Grove Road (B8, B9, B10 and B11). Please note that an additional boring was performed at B7 after the initial attempt (B7X) resulted in auger refusal prior to achieving the requested depth. Also note that B8, B9 and B11 were performed previously for the City during investigations for Davidson Street Area (CGC Project No. C17051-31 and Cottage Grove Road/Dempsey Road (CGC Project No. C14051-35).

The borings were performed on October 19, 2020 (B1-B7 and B10), November 14, 2018 (B8 and B9) and on November 3, 2014 (B11), at locations selected by City personnel. Proposed boring locations were marked out in the field by CGC personnel prior to drilling and are shown on a boring location map (copy attached in Appendix A). Note that actual boring locations are indicated by direction and distance in feet from the nearest intersecting roadway on the individual boring logs. Elevations at the boring locations were estimated using topographic information obtained from Dane County DCi Map, which should be considered approximate. The following paragraphs discuss our observations and provide opinions relative to pavement/utility construction.

SUBSURFACE PROGRAM & OBSERVATIONS

The borings were drilled to depths selected by City personnel utilizing the services of Badger State Drilling (under subcontract to CGC) using a truck-mounted, rotary CME 55 drill rig equipped with hollow-stem augers. Note that B7X terminated short of the requested depth in very dense conditions due to auger refusal on a presumed boulder. Standard Penetration Test (SPT) drilling techniques (ASTM D1586) were used for the full exploration depth at the boring locations. This method consists of driving a 2-inch outside diameter split-barrel sampler using a 140-pound weight falling freely through a distance of 30 inches. The sampler is first seated 6 inches into the material to be

2921 Perry Street, Madison WI 53713
Telephone: 608/288-4100
FAX: 608/288-7887

sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the log of borings and is known as the Standard Penetration Resistance (commonly referred to as the N-value).

During the field exploration program, the driller visually classified the soils and prepared a field log. Water level observations were made within the borings during and shortly after drilling, which are shown on the bottom of each boring log. Note groundwater was encountered between 12 and 14 ft below existing grades at B5, B6, B7 and B8. Groundwater levels are anticipated to fluctuate based on seasonal variations in precipitation, infiltration, nearby Lake Monona stages, as well as other factors. Upon completion of drilling, the borings were backfilled to satisfy WDNR requirements (including surface patching) and the soil samples delivered to our laboratory for classification. The soils were visually classified by CGC and reviewed by a geotechnical engineer using the Unified Soil Classification System (USCS). The final logs prepared by the engineer and a description of the USCS are presented in Appendix A.

The attached boring logs indicate that significantly variable soil conditions exist beneath the pavement/base course at the boring locations. In general, 4 to 5.5 in. of asphalt pavement was present atop 6 to 9 in. of base course. The base course was underlain by 2 to 4.5 ft of clay soils resting atop 9.5 to 12 ft of granular soils which extended to the full boring depth. As an exception approximately two feet of silty fill was sandwiched between the base course and underlying clay soils at B3. Note that the bottom 2 to 7 feet of granular soils at B1, B2 and B5 was considered to be sandstone bedrock. While the bedrock did not result in spoon/auger refusal at the boring locations, more competent zones may exist within the project limits. Also note that extending B7 to the requested depth required significant effort including a damaged drill bit. It has been CGC's experience that numerous large boulders are present within the granular soils near the intersection of Maher Avenue and Lake Edge Boulevard. Please refer to the final logs included in Appendix A for additional information specific to a boring location.

PAVEMENT/UTILITY CONSTRUCTION

General

In our opinion, the generally clayey soils encountered beneath the base course may prove *generally* satisfactory for proposed roadway support. Where areas of softer clays are encountered (such as where pocket penetrometer values are near 1 tsf or less), they may need to be undercut/removed and replaced with granular fill or additional base course. Furthermore, exposure to wet weather combined with significant construction traffic could destabilize the existing materials and increase the potential for undercuts. Granular materials should be thoroughly compacted and evaluated for stability before the placement of additional fill and/or base course. Pockets of excessively organic soil should also be removed. Standard earthwork-related techniques that should be used during roadway construction include:

- Proof-rolling of the exposed subgrades;
- Undercutting and/or stabilization in soft areas; and
- Compaction control of fill/backfill materials.

As stated, weathered to competent bedrock was encountered beginning as shallow as 8 ft below ground surface at B1, B2 and B5. Additionally, numerous cobbles and boulders should be expected at times within some of the sands, especially near B7. *Special rock excavation measures could be necessary to accomplish some utility installations*, depending on the quantity/size of boulders, degree of weathering within bedrock and the invert elevations. For convenience we have included Rock Excavation Considerations in Appendix C. Furthermore, dewatering could be necessary during some utility installations. Pumping from sump pits is typically acceptable for drawdowns of about two feet or less, whereas well points are generally needed for drawdowns greater than two feet. Additional details can be provided upon request.

Pavement Design

Clays will control the pavement design, as we anticipate that the pavement subgrades will generally consist of clay soils. The following *generalized* parameters should be used to develop the design pavement section:

AASHTO classification	A-6
Frost group index	F-3
Design group index	14
Soil support value	3.9
Subgrade modulus, k (pci)	125
Estimated percent shrinkage	20 - 30
Estimated CBR value	2-5

Assuming Davies Street and Dempsey Road are considered local business/arterial streets, we estimate they could receive between 51 to 275 ESALs (18,000 pound Equivalent Single Axle Loads). A typical pavement design per WisDOT Standard Specifications should meet MT (E-3) requirements. If traffic volumes along one or more of the roadways encompassed by this project (such as Maher Avenue and Major Avenue) are less than 3000 cars and 100 trucks per day per design lane, a typical pavement design per WisDOT Standard Specifications should meet LT (E-1) requirements.

Compaction Requirements

Regarding utility construction, we anticipate that imported sands will at times be required for use as backfill which is a typical requirement for City projects. On-site sands could be considered for reuse as trench backfill but they should be separated from clay soils and selectively stockpiled. Boulders should be removed from material used as backfill. Excavated bedrock could also be considered for reuse as backfill provided it is sufficiently crushed and well graded (e.g. 50% sand-sized particles and smaller) such that excessive voids do not exist following placement. Moisture conditioning could be necessary to achieve desired compaction levels. We recommend that at least a level of 95% compaction be achieved within backfill material placed within the final 3 feet below finished subgrades (including undercut backfill - if any), with 90% compaction required at depths greater than 3 feet. The specified levels of compaction are based on modified Proctor methods (ASTM D1557). In addition, the backfill material should be placed and compacted in accordance with our Recommended Compacted Fill Specifications presented in Appendix B.

*****

We appreciate the opportunity to be of service on this project and look forward to working with you as it proceeds. Other information regarding this report and its limitations is included in Appendix D.

We trust this report addresses your present needs. If you have any questions, please contact us.

Sincerely,

CGC, Inc.

Michael N Schultz

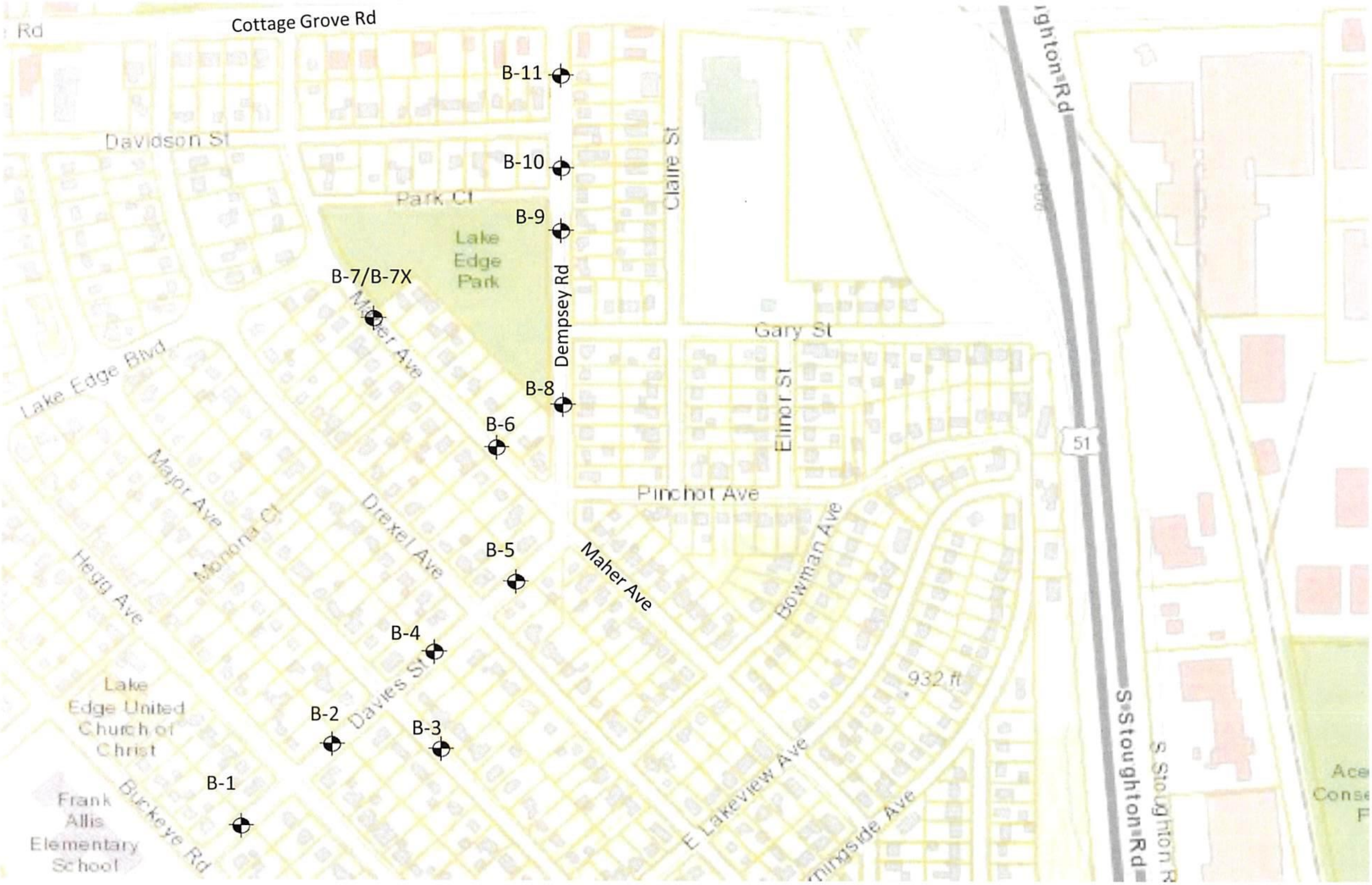
Michael N. Schultz, P.E.
Principal/Consulting Professional

Encl: Appendix A - Soil Boring Location Map
Logs of Test Borings (12)
Log of Test Borings-General Notes
Unified Soil Classification System
Appendix B - Recommended Compacted Fill Specificataions
Appendix C - Rock Excavation Considerations
Appendix D - Document Qualifications

Cc: Ms. Johanna Johnson, City of Madison, Eng. Division
Ms. Christy Bachmann, City of Madison, Eng. Division
Mr. Adam Weiderhoeft, Madison Water Utility

APPENDIX A

SOIL BORING LOCATION MAP
LOGS OF TEST BORINGS (12)
LOG OF TEST BORING-GENERAL NOTES
UNIFIED SOIL CLASSIFICATION SYSTEM



Legend

Denotes Boring Location

Notes

1. Boring locations are approximate
2. Soil Borings performed by Badger State Drilling in 2015, 2018 and 2020
3. B8 and B9 performed in 2018; B11 performed 2014 (during previous City projects)

Scale: Reduced

Date: 10/2020	CGC, Inc.	**Soil Boring Location Map** **Davies Street Area** **Madison, WI**
Job No. C20051-14		

LOG OF TEST BORING

CGC Inc.

Project	Davies Street Area
	Davies: 160'NE of Buckeye, 9'NW of CL
Location	Madison, WI

Boring No.	B-1
Surface Elevation (ft)	888±
Job No.	C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/9 in. Base Course					
1		14	M	16		Very Stiff, Brown Lean CLAY (CL)	(2.5)				
2		18	M	17		Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
					5						
3		18	M	17							
4		18	M	24							
					10						
						Weathered to Competent Light Tan to White Sandstone Bedrock					
5		18	M	53							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ⊻ NW Upon Completion of Drilling ______

Time After Drilling ______ ______ ______ ______

Depth to Water ______ ______ ______ ______

Depth to Cave in ______ ______ ______ ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20

Driller BSD Chief MC Rig CME-55

Logger GB Editor ESF

Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Davies: 145'NE of Buckeye, 10'NW of CL
Location: Madison, WI

Boring No. B-2
Surface Elevation (ft) 884±
Job No. C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/8 in. Base Course					
1		18	M	12		Stiff, Brown Lean CLAY (CL)	(1.5)				
2		18	M	16		Medium Dense to Very Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
					5						
3		18	M	61/10"							
4		18	M	49		Weathered to Competent Light Tan to White Sandstone Bedrock					
					10						
5		18	M	58							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ∇ NW   Upon Completion of Drilling ______
Time After Drilling ______
Depth to Water ______
Depth to Cave in ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Major: 230'SE of Davies, 10'SW of CL
Location: Madison, WI

Boring No.: B-3
Surface Elevation (ft): 878±
Job No.: C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/8 in. Base Course					
1		18	M	9		FILL: Loose Dark Brown Silt with Sand and Clay					
						Very Stiff, Brown Lean CLAY (CL)					
2		18	M	12	5		(2.75)				
						Medium Dense to Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		18	M	17							
4		18	M	11	10						
5		18	M	37	15						
						End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling ______
Time After Drilling ______
Depth to Water ______ ▼
Depth to Cave in ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Davies: 140'SW of Drexel, 7'NW of CL
Location: Madison, WI

Boring No. B-4
Surface Elevation (ft) 873±
Job No. C20051-14
Sheet 1 of 1

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SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/7.5 in. Base Course					
1		12	M	12		Very Stiff, Brown Lean CLAY (CL)	(2.25)				
2		18	M	16							
					5	Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		18	M	11							
4		18	M	17		Large Sandstone Cobble Noted Near 9'					
					10						
5		18	M	21							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ∇ NW   Upon Completion of Drilling ______
Time After Drilling ______
Depth to Water ______
Depth to Cave in ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Davies: 140'NE of Drexel, 12'NW of CL
Location: Madison, WI

Boring No.: B-5
Surface Elevation (ft): 872±
Job No.: C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/8 in. Base Course					
1		18	M	9		Stiff to Medium Stiff, Brown Lean CLAY (CL)	(1.5)				
2		18	M	6	5		(0.75)				
3		18	M	24		Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
4		18	M	20	10						
5		18	W	21	15	Weathered to Competent Light Tan to White Sandstone Bedrock					
					20	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.0' | Upon Completion of Drilling ______
Time After Drilling: 15 Min.
Depth to Water: ▼
Depth to Cave in: 12.5'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

LOG OF TEST BORING

CGC Inc.

Project: Davies Street Area
Maher: 350'NW of Dempsey, 8'SW of CL
Location: Madison, WI

Boring No. B-6
Surface Elevation (ft) 868±
Job No. C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5 in. Asphalt Pavement/7 in. Base Course					
1		18	M	6		Medium Stiff, Brown Lean CLAY (CL)	(0.75)				
2		16	M	14		Medium Dense to Dense, Brown Fine to Coarse SAND and GRAVEL, Some Silt, Scattered Cobbles and Boulders (SM/GM)					
					5						
3		18	M	39							
4		18	M	31							
					10						
					▼						
5		18	W	15							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 12.0' Upon Completion of Drilling ______
Time After Drilling: 15 Min.
Depth to Water: 12' ▼
Depth to Cave in: 12'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Maher: 205'SE of Lake Edge, 8'SW of CL
Location: Madison, WI

Boring No. B-7
Surface Elevation (ft) 868±
Job No. C20051-14
Sheet 1 of 1

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

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/7 in. Base Course					
1		18	M	7		Stiff, Brown Lean CLAY (CL) Sandy with Depth	(1.25)				
2		18	M	14		Medium Dense to Dense, Brown Fine to Coarse SAND and GRAVEL, Some Silt Numerous Cobbles and Boulders (SM/GM)					
3		18	M	43	5	Rough/Hard Drilling from 7'-13' Resulting in Broken Auger Bit					
4		18	M	42	10						
5		18	W	26	15						

End Boring at 15 ft

Borehole backfilled with bentonite chips and asphalt patch

Initial attempt to drill BH-7 resulted in auger-refusal on presumed boulder at 8'. Initial boring renamed BH-7X. Moved 5'SE and advanced BH-7 to requested depth with much difficulty.

WATER LEVEL OBSERVATIONS

While Drilling ∇ 14.5' Upon Completion of Drilling ____
Time After Drilling ____
Depth to Water ____
Depth to Cave in ____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

LOG OF TEST BORING

CGC Inc.

Project	Davies Street Area
	Maher: 200'SE of Lake Edge, 8'SW of CL
Location	Madison, WI
Boring No.	B-7X
Surface Elevation (ft)	868±
Job No.	C20051-14
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.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						5 in. Asphalt Pavement/8 in. Base Course					
1		18	M	8		Stiff, Brown Lean CLAY (CL)	(1.25)				
2		18	M	11	5	Medium Dense to Dense, Brown Fine to Coarse SAND and GRAVEL, Some Silt, Numerous Cobbles and Boulders (SM/GM)					
3		15	M	48		Rough/Hard Drilling from 7'-9'					
4		0	-	50/0"		End Boring at 9 ft Due to Auger Refusal on Presumed Boulder					
					10	Borehole backfilled with soil cuttings and asphalt patch					
						Initial attempt to drill BH-7 resulted in auger-refusal on presumed boulder at 8'. Initial boring renamed BH-7X. Moved 5'SE and advanced BH-7 to requested depth with much difficulty.					
					15						
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ⊻ NW Upon Completion of Drilling ______

Time After Drilling ______ ______ ______ ______

Depth to Water ______ ______ ______ ______ ▼

Depth to Cave in ______ ______ ______ ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20

Driller BSD Chief MC Rig CME-55

Logger GB Editor ESF

Drill Method 2.25" HSA; Autohammer

LOG OF TEST BORING

CGC Inc.

Project: Davies Street Area
180'S of Gary St., Near Centerline
Location: Madison, WI

Boring No. B-8
Surface Elevation (ft) 871±
Job No. C20051-14
Sheet 1 of 1

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

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						5 in. Asphalt Pavement/6 in. Base Course					
1		4	M	17		Very Stiff, Brown Lean CLAY (CL)	(3.5)				
2		10	M	14	5	Medium Dense to Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
3		18	M	33							
4		15	M	25	10						
5		12	W	26	15	Medium Dense, Brown Fine to Coarse SAND, Some Gravel, Trace to Little Silt (SP/SP-SM)					
					20, 25	End Boring at 15 ft Borehole Backfilled with Bentonite Chips and Asphalt Patch *Boring Performed in 2018 as Part of "Davidson St. Area Additional Borings" (CGC Project No. C17051-31).					

WATER LEVEL OBSERVATIONS

While Drilling	∇ 13.5'	Upon Completion of Drilling			
Time After Drilling				15 Min.	
Depth to Water				12'	▼
Depth to Cave in				14'	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	11/14/18	End	11/14/18		
Driller	BSD	Chief	MC	Rig	CME-55
Logger	MG	Editor	ESF		
Drill Method	2.25" HSA; Autohammer				

LOG OF TEST BORING

CGC Inc.

Project	Davies Street Area
	75'S of Park Ct., Near Centerline
Location	Madison, WI
Boring No.	B-9
Surface Elevation (ft)	873±
Job No.	C20051-14
Sheet	1 of 1

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

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						5.5 in. Asphalt Pavement/6 in. Base Course					
1		10	M	10		Soft to Stiff, Brown Lean CLAY (CL)	(0.5-1.0)				
2		12	M	36		Dense to Very Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
					5						
3		12	M	49							
4		9	M	50/11"							
					10						
5		12	M/W	28		Medium Dense Near 14 ft					
					15	End Boring at 15 ft					
						Borehole Backfilled with Bentonite Chips and Asphalt Patch					
						*Boring Performed in 2018 as Part of "Davidson St. Area Additional Borings" (CGC Project No. C17051-31).					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ∇ NW Upon Completion of Drilling ________

Time After Drilling

Depth to Water

Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 11/14/18 End 11/14/18

Driller BSD Chief MC Rig CME-55

Logger MG Editor ESF

Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Dempsey: 105'S of Davidson,
Location: Madison, WI

Boring No. B-10
Surface Elevation (ft) 873±
Job No. C20051-14
Sheet 1 of 1

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

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
					5 in. Asphalt Pavement/7 in. Base Course					
1	18	M	7		Medium Stiff, Brown Lean CLAY (CL)	(0.75)				
2	10	M	91/8"		Very Dense to Medium Dense, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
				5						
3	18	M	33							
4	18	M	22							
				10						
5	18	M/W	21							
				15	End Boring at 15 ft Borehole backfilled with bentonite chips and asphalt patch					
				20						
				25						

WATER LEVEL OBSERVATIONS

While Drilling ∇ NW   Upon Completion of Drilling ______
Time After Drilling ______
Depth to Water ______
Depth to Cave in ______

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 10/19/20 End 10/19/20
Driller BSD Chief MC Rig CME-55
Logger GB Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Davies Street Area
Dempsey: 285'S of Cottage Grove, 5'W of CL
Location: Madison, WI

Boring No. B-11
Surface Elevation (ft) 868±
Job No. C20051-14
Sheet 1 of 1

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

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						4 in. Asphalt Pavement/6 in. Base Course					
1		6	M	11		Very Stiff, Brown Lean CLAY, Trace Sand (CL)	(2.75)				
2		7	M	11	5	Medium Dense, Brown Clayey Fine to Medium SAND (SC)					
3		16	M	18		Medium Dense to Dense, Gray to Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles and Boulders (SM)					
4		6	M	31	10						
5		9	M/W	11	15						
					20	End Boring at 15 ft Borehole Backfilled with Bentonite Chips and Asphalt Patch *Boring Performed as Part of "Cottage Grove Road and Dempsey Road" (CGC Project No. C14051-35).					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling ______
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 11/3/14 End 11/3/14
Driller BSD Chief JF Rig CME-55
Logger MG Editor ESF
Drill Method 2.25" HSA; Autohammer

CGC, Inc.

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_a – 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

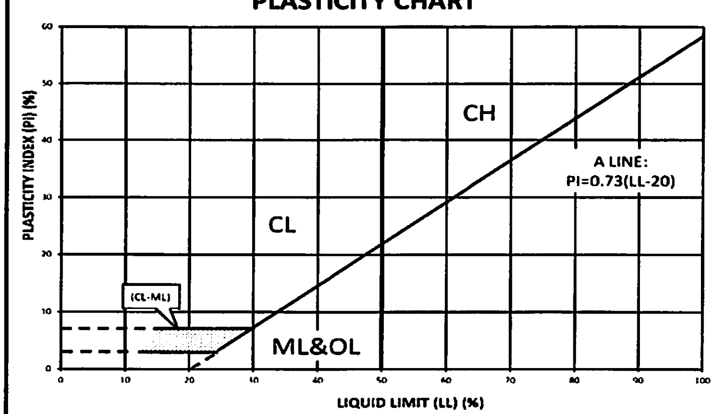
LABORATORY CLASSIFICATION CRITERIA

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 limts below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limts above "A" line or P.I. greater than 7	
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	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line with P.I. greater than 7	

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:

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

PLASTICITY CHART



APPENDIX B

RECOMMENDED COMPACTED FILL SPECIFICATIONS

APPENDIX B

CGC, INC.

RECOMMENDED COMPACTED FILL SPECIFICATIONS

General Fill Materials

Proposed fill shall contain no vegetation, roots, topsoil, peat, ash, wood or any other non-soil material which by decomposition might cause settlement. Also, fill shall never be placed while frozen or on frozen surfaces. Rock, stone or broken concrete greater than 6 in. in the largest dimension shall not be placed within 10 ft of the building area. Fill used greater than 10 ft beyond the building limits shall not contain rock, boulders or concrete pieces greater than a 2 sq ft area and shall not be placed within the final 2 ft of finish subgrade or in designated utility construction areas. Fill containing rock, boulders or concrete pieces should include sufficient finer material to fill voids among the larger fragments.

Special Fill Materials

In certain cases, special fill materials may be required for specific purposes, such as stabilizing subgrades, backfilling undercut excavations or filling behind retaining walls. For reference, WisDOT gradation specifications for various types of granular fill are attached in Table 1.

Placement Method

The approved fill shall be placed, spread and leveled in layers generally not exceeding 10 in. in thickness before compaction. The fill shall be placed at moisture content capable of achieving the desired compaction level. For clay soils or granular soils containing an appreciable amount of cohesive fines, moisture conditioning will likely be required.

It is the Contractor's responsibility to provide all necessary compaction equipment and other grading equipment that may be required to attain the specified compaction. Hand-guided vibratory or tamping compactors will be required whenever fill is placed adjacent to walls, footings, columns or in confined areas.

Compaction Specifications

Maximum dry density and optimum moisture content of the fill soil shall be determined in accordance with modified Proctor methods (ASTM D1557). The recommended field compaction as a percentage of the maximum dry density is shown in Table 2. Note that these compaction guidelines would generally not apply to coarse gravel/stone fill. Instead, a method specification would apply (e.g., compact in thin lifts with a vibratory compactor until no further consolidation is evident).

Testing Procedures

Representative samples of proposed fill shall be submitted to CGC, Inc. for optimum moisture-maximum density determination (ASTM D1557) prior to the start of fill placement. The sample size should be approximately 50 lb.

CGC, Inc. shall be retained to perform field density tests to determine the level of compaction being achieved in the fill. The tests shall generally be conducted on each lift at the beginning of fill placement and at a frequency mutually agreed upon by the project team for the remainder of the project.

Table 1
Gradation of Special Fill Materials

Material	WisDOT Section 311	WisDOT Section 312	WisDOT Section 305			WisDOT Section 209		WisDOT Section 210
	Breaker Run	Select Crushed Material	3-in. Dense Graded Base	1 1/4-in. Dense Graded Base	3/4-in. Dense Graded Base	Grade 1 Granular Backfill	Grade 2 Granular Backfill	Structure Backfill
Sieve Size	Percent Passing by Weight							
6 in.	100							
5 in.		90-100						
3 in.			90-100					100
1 1/2 in.		20-50	60-85					
1 1/4 in.				95-100				
1 in.					100			
3/4 in.			40-65	70-93	95-100			
3/8 in.				42-80	50-90			
No. 4			15-40	25-63	35-70	100 (2)	100 (2)	25-100
No. 10		0-10	10-30	16-48	15-55			
No. 40			5-20	8-28	10-35	75 (2)		
No. 100						15 (2)	30 (2)	
No. 200			2-12	2-12	5-15	8 (2)	15 (2)	15 (2)

Notes:
1. Reference: Wisconsin Department of Transportation *Standard Specifications for Highway and Structure Construction.*
2. Percentage applies to the material passing the No. 4 sieve, not the entire sample.
3. Per WisDOT specifications, both breaker run and select crushed material can include concrete that is 'substantially free of steel, building materials and other deleterious material'.

Table 2
Compaction Guidelines

Area	Percent Compaction (1) Clay/Silt	Percent Compaction (1) Sand/Gravel
Within 10 ft of building lines		
Footing bearing soils	93 - 95	95
Under floors, steps and walks		
- Lightly loaded floor slab	90	90
- Heavily loaded floor slab and thicker fill zones	92	95
Beyond 10 ft of building lines		
Under walks and pavements		
- Less than 2 ft below subgrade	92	95
- Greater than 2 ft below subgrade	90	90
Landscaping	85	90

Notes:
1. Based on Modified Proctor Dry Density (ASTM D 1557)

APPENDIX C

ROCK EXCAVATION CONSIDERATIONS

APPENDIX C

ROCK EXCAVATION CONSIDERATIONS

In order to minimize probable "rock" excavation expenses during construction, we suggest that project specifications incorporate the following:

A. It is assumed that all excavations to levels and dimensions required by the Contract Documents are earth excavation. Earth excavation includes removal and disposal of all materials encountered except rock/sound bedrock which is defined as natural materials which:

   1. Cannot be excavated with a minimum 3/4 cubic yard capacity backhoe without drilling and blasting;

   2. Cannot be economically removed with a one-tooth ripper on a D8 cat (or equivalent);

   3. Requires the use of special equipment such as a pneumatic hammer;

   4. Requires the use of explosives (after obtaining written permission of the owner).

B. Examples of material classified as rock are boulders 1/2 cubic yard or more in volume, bedrock, rock in ledges, and rock-hard cementitious aggregate deposits.

C. Do not proceed with rock excavation work until architect, engineer and/or testing firm (i.e., CGC) has taken the necessary measures to determine quantity of rock excavation required to complete the work. Measurements will be taken after properly stripped of earth by the contractor. Contractor will be paid the difference between the cost of rock and earth excavation based on an agreed upon unit price established prior to starting rock excavation.

A statement should also be included in the specifications to the effect that: "Stated models of earth excavation equipment are merely for purposes of defining the various excavation categories and are not intended to indicate the brand or type of equipment that is to be used."

APPENDIX D

DOCUMENT QUALIFICATIONS

APPENDIX D
DOCUMENT QUALIFICATIONS

I. GENERAL RECOMMENDATIONS/LIMITATIONS

CGC, Inc. should be provided the opportunity for a general review of the final design and specifications to confirm that earthwork and foundation requirements have been properly interpreted in the design and specifications. CGC should be retained to provide soil engineering services during excavation and subgrade preparation. This will allow us to observe that construction proceeds in compliance with the design concepts, specifications and recommendations, and also will allow design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction. CGC does not assume responsibility for compliance with the recommendations in this report unless we are retained to provide construction testing and observation services.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices and no other warranties are expressed or implied. The opinions and recommendations submitted in this report are based on interpretation of the subsurface information revealed by the test borings indicated on the location plan. The report does not reflect potential variations in subsurface conditions between or beyond these borings. Therefore, variations in soil conditions can be expected between the boring locations and fluctuations of groundwater levels may occur with time. The nature and extent of the variations may not become evident until construction.

II. IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

READ THE FULL REPORT

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *CGC cannot accept responsibility or liability for problems that occur because our reports do not consider developments of which we were not informed.*

SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL OPINION

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgement to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ - sometimes significantly - from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A REPORT'S RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the confirmation-dependent recommendations included in your report. *Those confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgement and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *CGC cannot assume responsibility or liability for the report's confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

DO NOT REDRAW THE ENGINEER'S LOGS

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

GIVE CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

READ RESPONSIBILITY PROVISIONS CLOSELY

Some clients, design professionals, and constructors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineer's responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

OBTAIN PROFESSIONAL ASSISTANCE TO DEAL WITH MOLD

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

RELY ON YOUR GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE

Membership in the Geotechnical Business Council (GBC) of Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of GBC, for more information.

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