

CBC Engineers & Associates, Ltd.

125 Westpark Road
Centerville, OH 45459
(P) (937) 428-6150 / (F) (937) 428-6154

BORING LOG

CLIENT: Crawford, Murphy & Tilly 84 Remick Blvd., Springboro, Ohio		REPORT NO.: 25320		BORING NO.: CBC-1				
PROJECT: GEI-Extension of Towne Center Blvd., and Grandin Road, Warren County, OH		DATE STD.: 11/7/22		DATE FINISHED: 11/7/22				
LOCATION: As Shown on the Boring Location Plan		DRILLERS: EnviroCore		GROUND ELEV.: 821.8				
		METHOD: 2 1/4" HSA						
SCALE, FT.	STRATUM DEPTH, FT.	CLASSIFICATION OF MATERIAL		SAMPLE NUMBER & SAMPLE TYPE	DEPTH OF SAMPLE, FT.		BLOWS ON SAMPLER PER SPT (6" INTER-VAL)	SPT "N", OR RECOVERY (IN. FOR SHELBY TUBES, % FOR ROCK CORE)
		Major Soil Components:	Minor Component Term		FROM	TO		
		Gravel Sand	Silt Clay					
			Trace 1-10% Some 11-35% And 36-50%					
0.0	0.0	ASPHALT						
	9"	GRAVEL BASE						
1.0	11"	ORIGINAL, soft, brown, silty CLAY, trace sand and gravel (moist)		1A	1.0	2.5	2-3-3	6
2.0								
3.0								
4.0		becomes stiff at 3.5 feet		2A	3.5	5.0	3-5-5	10
5.0								
6.0	6.0	Stiff, brown/gray, silty CLAY, some sand and gravel (moist)		4A	6.0	7.5	5-7-10	17
7.0								
8.0								
9.0								
10.0								
11.0								
12.0								
13.0								
14.0	13.5	SHALE AND LIMESTONE ROCK (weathered on top)		6A	13.5	15.0	45-34-38	72
15.0		BOTTOM OF BORING AT 15.0 FEET						
16.0								
17.0								
18.0								
19.0								
20.0								
WATER LEVEL OBSERVATIONS		BORING METHOD			TYPE SAMPLE		*These Shelby Tube	
Noted on rods 9.0 ft.		HSA	Hollow Stem Auger	MD	Mud Drilling	A	Split Spoon	Samples Obtained In An
At completion 9.0 ft.		CFA	Continuous Flight Auger	RC	Rock Coring	B	Rock Core	Auxiliary Boring Drilled A
After -- hours -- ft.		DC	Driven Casing	CA	Casing Advancer	C	Shelby Tube	Few Feet From This Boring
						D	Other	

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BORING LOG

CLIENT: Crawford, Murphy & Tilly 84 Remick Blvd., Springboro, Ohio	REPORT NO.: 25320 DATE STD.: 11/7/22 DRILLERS: EnviroCore	BORING NO.: CBC-2 DATE FINISHED: 11/7/22 GROUND ELEV.: 816.5
PROJECT: GEI-Extension of Towne Center Blvd., and Grandin Road, Warren County, OH	METHOD: 2 1/4" HSA	
LOCATION: As Shown on the Boring Location Plan		

SCALE, FT.	STRATUM DEPTH, FT.	CLASSIFICATION OF MATERIAL		SAMPLE NUMBER & SAMPLE TYPE	DEPTH OF SAMPLE, FT.		BLOWS ON SAMPLER PER SPT (6" INTER-VAL)	SPT "N", OR RECOVERY (IN. FOR SHELBY TUBES, % FOR ROCK CORE)
		Major Soil Components:	Minor Component Term		FROM	TO		
0.0	0.0	Gravel	Silt					
	8"	Sand	Clay					
		TOPSOIL						
1.0		ORIGINAL, soft, brown, silty CLAY, trace sand and gravel (moist)		1A	1.0	2.5	2-2-2	4
2.0								
3.0								
4.0	3.5	Medium stiff, brown/gray, clayey SILT, trace sand and gravel (moist)		2A	3.5	5.0	2-3-3	6
5.0								
6.0	6.0	Stiff, brown/gray, silty CLAY, some sand and gravel (moist)		4A	6.0	7.5	3-6-8	14
7.0								
8.0								
9.0								
10.0								
11.0								
12.0								
13.0								
14.0	13.5	SHALE AND LIMESTONE ROCK (weathered on top)		6A	13.5	15.0	24-41-49	90
15.0		BOTTOM OF BORING AT 15.0 FEET						
16.0								
17.0								
18.0								
19.0								
20.0								

WATER LEVEL OBSERVATIONS

Noted on rods 14.0 ft.
 At completion 14.0 ft.
 After -- hours -- ft.

BORING METHOD

HSA	Hollow Stem Auger	MD	Mud Drilling
CFA	Continuous Flight Auger	RC	Rock Coring
DC	Driven Casing	CA	Casing Advancer

TYPE SAMPLE

A - Split Spoon
 B - Rock Core
 C - Shelby Tube
 D - Other

*These Shelby Tube Samples Obtained In An Auxiliary Boring Drilled A Few Feet From This Boring

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BORING LOG

CLIENT: Crawford, Murphy & Tilly 84 Remick Blvd., Springboro, Ohio	REPORT NO.: 25320 DATE STD.: 11/7/22 DRILLERS: EnviroCore	BORING NO.: CBC-3 DATE FINISHED: 11/7/22 GROUND ELEV.: 790.9
PROJECT: GEI-Extension of Towne Center Blvd., and Grandin Road, Warren County, OH	METHOD: 2 1/4" HSA	
LOCATION: As Shown on the Boring Location Plan		

SCALE, FT.	STRATUM DEPTH, FT.	CLASSIFICATION OF MATERIAL		SAMPLE NUMBER & SAMPLE TYPE	DEPTH OF SAMPLE, FT.		BLOWS ON SAMPLER PER SPT (6" INTER-VAL)	SPT "N", OR RECOVERY (IN. FOR SHELBY TUBES, % FOR ROCK CORE)
		Major Soil Components:	Minor Component Term		FROM	TO		
0.0	0.0							
	6"							
1.0		TOPSOIL		1A	1.0	2.5	3-4-4	8
2.0		ORIGINAL, medium stiff, brown, silty CLAY, trace sand and gravel (moist) becomes stiff at 3.5 feet						
3.0								
4.0				2A	3.5	5.0	5-6-7	13
5.0								
6.0	6.0	Stiff, brown/gray, silty CLAY, trace sand and gravel (moist)		4A	6.0	7.5	3-5-6	11
7.0								
8.0								
9.0				5A	8.5	10.0	4-4-5	9
10.0								
11.0								
12.0								
13.0				6A	13.5	15.0	34-50/3"	100+
14.0	13.5			SHALE AND LIMESTONE ROCK (weathered on top)				
15.0		BOTTOM OF BORING AT 15.0 FEET						
16.0								
17.0								
18.0								
19.0								
20.0								

<u>WATER LEVEL OBSERVATIONS</u>	<u>BORING METHOD</u>	<u>TYPE SAMPLE</u>	*These Shelby Tube
Noted on rods Dry ___ ft.	HSA Hollow Stem Auger MD Mud Drilling	A - Split Spoon	Samples Obtained In An
At completion Dry ___ ft.	CFA Continuous Flight Auger RC Rock Coring	B - Rock Core	Auxiliary Boring Drilled A
After ___ hours ___ ft.	DC Driven Casing CA Casing Advancer	C - Shelby Tube	Few Feet From This Boring
		D - Other	

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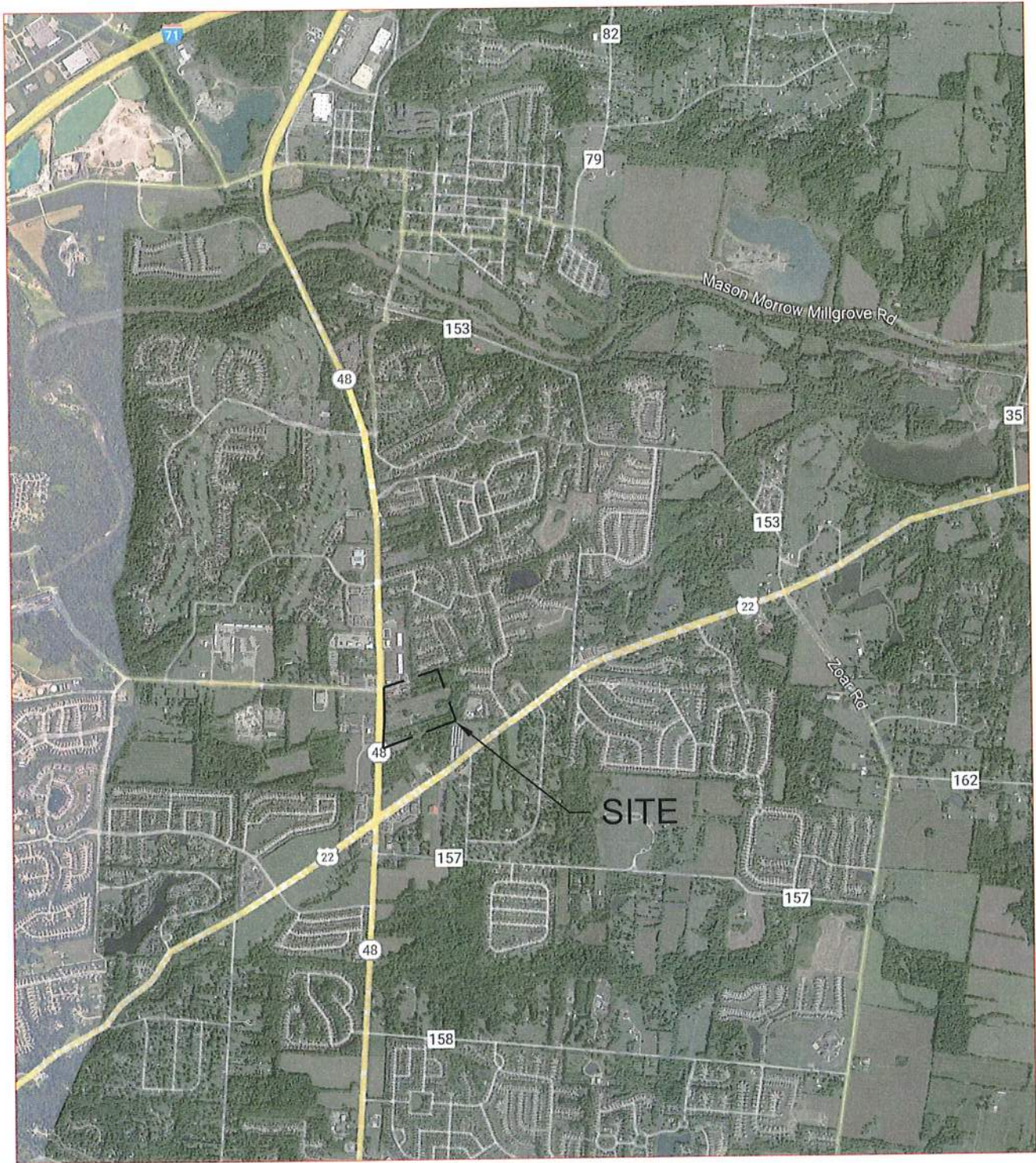
BORING LOG

CLIENT: Crawford, Murphy & Tilly 84 Remick Blvd., Springboro, Ohio		REPORT NO.: 25320		BORING NO.: CBC-4				
PROJECT: GEI-Extension of Towne Center Blvd., and Grandin Road, Warren County, OH		DATE STD.: 11/7/22		DATE FINISHED: 11/7/22				
LOCATION: As Shown on the Boring Location Plan		DRILLERS: EnviroCore		GROUND ELEV.: 787.8				
		METHOD: 2 1/4" HSA						
SCALE, FT.	STRATUM DEPTH, FT.	CLASSIFICATION OF MATERIAL		SAMPLE NUMBER & SAMPLE TYPE	DEPTH OF SAMPLE, FT.		BLOWS ON SAMPLER PER SPT (6" INTERVAL)	SPT "N", OR RECOVERY (IN. FOR SHELBY TUBES, % FOR ROCK CORE)
		Major Soil Components:	Minor Component Term		FROM	TO		
0.0	0.0	Gravel Sand	Silt Clay					
	10"	TOPSOIL						
1.0		ORIGINAL, soft, brown, silty CLAY, trace sand and gravel (moist)		1A	1.0	2.5	2-2-3	5
2.0								
3.0								
4.0		becomes stiff at 3.5 feet		2A	3.5	5.0	3-3-6	9
5.0								
6.0	6.0	Stiff, brown/gray, silty CLAY, trace sand and gravel (moist)		4A	6.0	7.5	3-6-7	13
7.0								
8.0								
9.0								
10.0								
11.0								
12.0								
13.0								
14.0	13.5	SHALE AND LIMESTONE ROCK (weathered on top)		5A	8.5	10.0	4-6-8	14
15.0		BOTTOM OF BORING AT 15.0 FEET		6A	13.5	15.0	36-23-48	71
16.0								
17.0								
18.0								
19.0								
20.0								

<u>WATER LEVEL OBSERVATIONS</u>	<u>BORING METHOD</u>	<u>TYPE SAMPLE</u>	*These Shelby Tube
Noted on rods <u> </u> ft.	HSA Hollow Stem Auger MD Mud Drilling	A - Split Spoon	Samples Obtained In An
At completion <u> </u> ft.	CFA Continuous Flight Auger RC Rock Coring	B - Rock Core	Auxiliary Boring Drilled A
After <u> </u> hours <u> </u> ft.	DC Driven Casing CA Casing Advancer	C - Shelby Tube	Few Feet From This Boring
		D - Other	

TABLE 1
RESULTS OF NATURAL MOISTURE CONTENT TESTS (ASTM D-4643)

BORING NO.	DEPTH INCREMENT, (FT.)	NATURAL MOISTURE CONTENT, %
CBC-1	1.0 – 2.5	22.5
CBC-1	3.5 – 5.0	24.8
CBC-1	6.0 – 7.5	14.0
CBC-2	1.0 – 2.5	22.9
CBC-2	3.5 – 5.0	22.5
CBC-2	6.0 – 7.5	18.9
CBC-2	8.5 – 10.0	18.1
CBC-3	1.0 – 2.5	14.1
CBC-3	3.5 – 5.0	17.7
CBC-3	6.0 – 7.5	25.6
CBC-3	8.5 – 10.0	25.0
CBC-4	1.0 – 2.5	23.0
CBC-4	3.5 – 5.0	20.9
CBC-4	6.0 – 7.5	19.6
CBC-4	8.5 – 10.0	25.6
CBC-4	13.5 – 15.0	11.5



VICINITY MAP

GEOTECHNICAL ENGINEERING INVESTIGATION
 FOR THE PROPOSED EXTENSION
 OF TOWNE CENTER BLVD.
 AND GRANDIN ROAD
 WARREN COUNTY, OHIO

Project No.
CBC-25320

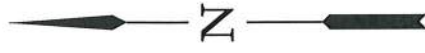
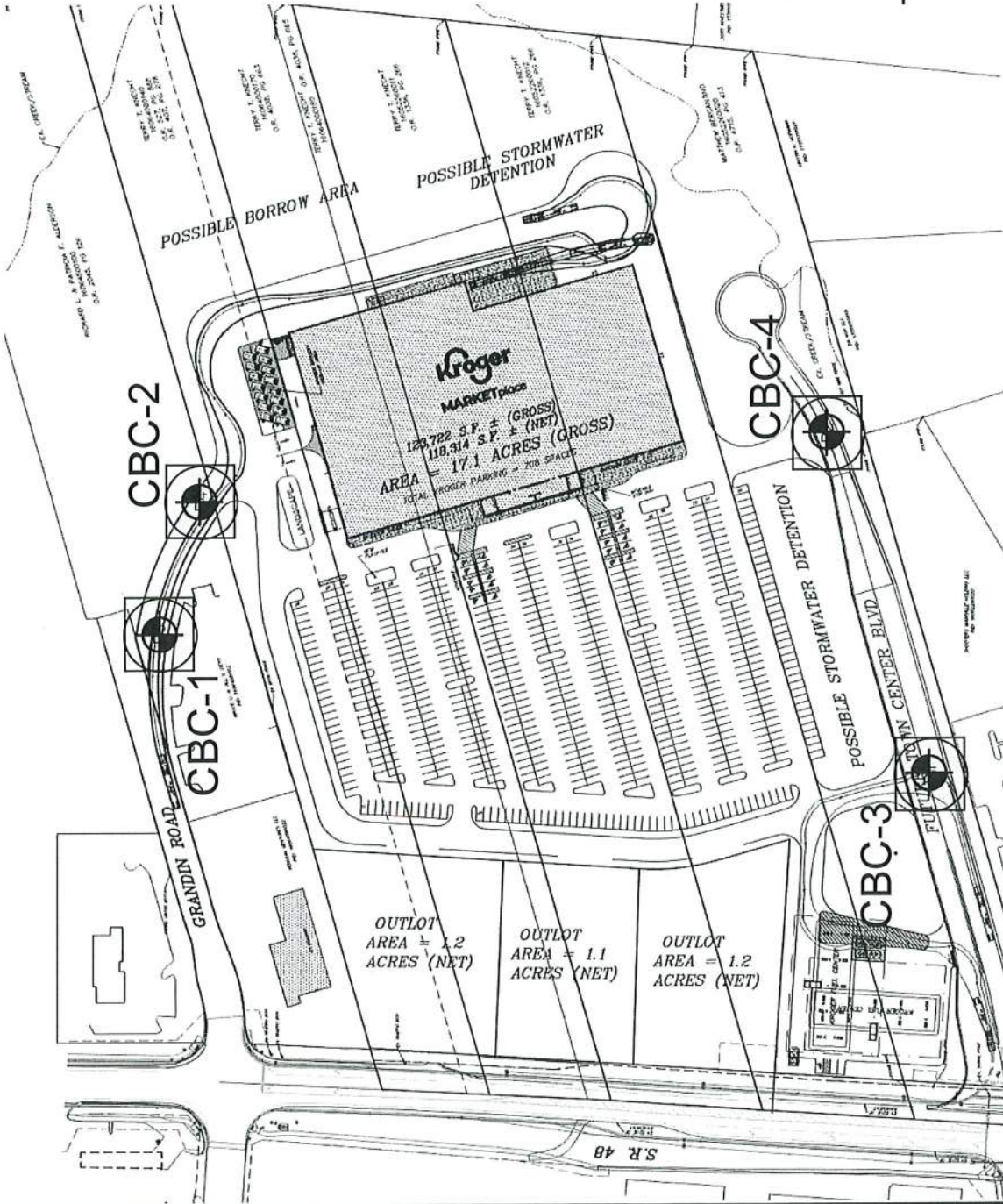
Scale
1" = 3000'

Date:
11/10/22



Rev No.
0

Figure No.
1



LEGEND

CBC-1 = BORING LOCATION

BORING LOCATION PLAN
 GEOTECHNICAL ENGINEERING INVESTIGATION
 FOR THE PROPOSED EXTENSION OF TOWNE CENTER BLVD.
 AND GRANDIN ROAD
 WARREN COUNTY, OHIO

Project No.
CBC-25320

Scale
N.T.S.

Date:
11/10/22

CBC Engineers
 KOONTZ
 BRYANT
 JOHNSON
 WILLIAMS
 Company

Rev No. **0**
 Figure No. **2**