GME TESTING

Geotechnical Report

GME Project No. G24-032301

Proposed Cranberry Run Storm Sewer Improvements

West Washington Street
Montpelier, OH

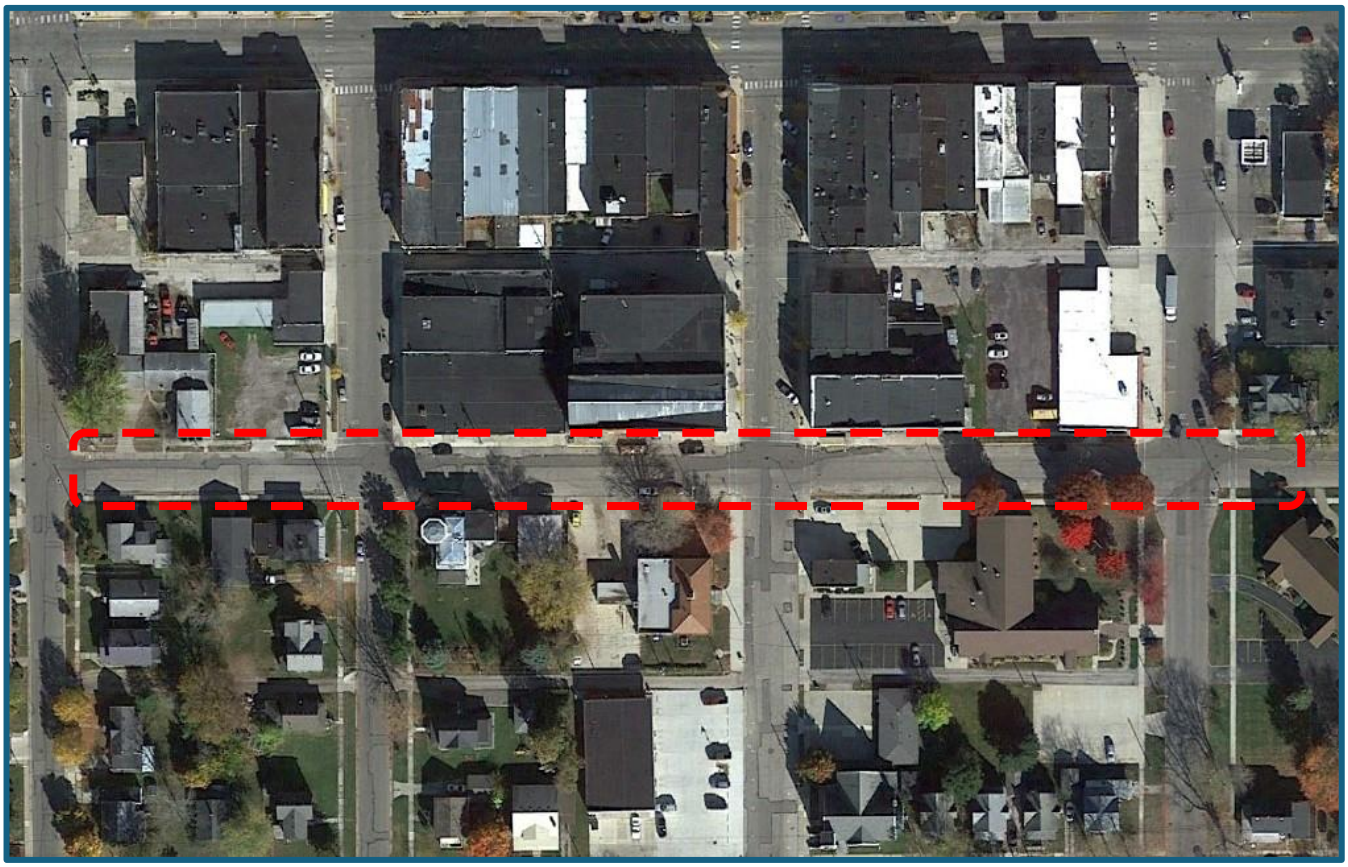
April 17, 2024

Prepared For:

Village of Montpelier
Phone: 419-485-5543
Email: jhouk@montperlieroh.org

Prepared By:

GME Testing
3517 Focus Dr
Fort Wayne, IN 46818



GME TESTING

April 17, 2024
G24-032301

Village of Montpelier
Phone: 419-485-5543
Email: jhouk@montperlieroh.org
Attn: Mr. Justin Houk, Deputy Manager

REF: SUBSURFACE EXPLORATION AND RECOMMENDATIONS
Proposed Cranberry Run Storm Sewer Improvements
West Washington Street
Montpelier, OH

Dear Mr. Justin Houk:

In compliance with your recent request, ***GME Testing*** is pleased to submit our subsurface exploration and preliminary findings for the proposed improvements to the sanitary sewer project located along West Washington Street in Montpelier, Ohio. Our work was performed in accordance with our proposal GMEP 24-030125 dated March 25, 2024.

The purposes of this geotechnical investigation are to evaluate the subsurface conditions and to provide geotechnical data for use by the design engineers and contractors preparing the proposed utility.

The Site is located along residential areas with asphalt-paved surfaces and buried and overhead utilities. Based on the provided preliminary plans dated March 2024, the existing surface elevations of boring locations were approximated and are included on the boring logs in Appendix B for presentation reference only.

Our subsurface exploration consisted of drilling three (3) vertical soil test borings to a maximum depth of 20 feet at the locations marked on-site by the Village of Montpelier. Boring B-1 was terminated at a depth of about 15 feet due to augur refusal on cobbles. Figures 1, included in Appendix A of this report, depict the site vicinity and approximate locations of the test borings. Table 1 below summarizes the boring locations.

Table 1: Summary of Boring Locations				
Boring Number	**Approx. Station Location**	**Surface Elev. (El.), feet**	**Latitude**	**Longitude**
B-1	1+55; 8.5 RT	±854.5	41.585485	-84.611670
B-2	4+78; 1.5 LT	±856.5	41.585520	-84.610489
B-3	7+90; 1.5 LT	±858	41.585528	-84.609360

Our subsurface exploration was performed in accordance with the Standard Penetration Test, ASTM D-1586. The stratification of soils, as shown on the accompanying boring logs, included in Appendix B of this report represents the soil conditions at the drilled borehole locations. All samples were classified in general accordance with ASTM D-2487. Our test results are included on the individual boring logs included in Appendix B.

Project Description

Village of Montpelier, in collaboration with Jones & Henry Engineers, Ltd., is planning the design and construction of the proposed storm sewer improvements consisting of three (3) new manhole structures and cure-in-place pipe lining (CIPP) of the existing 54-inch diameter concrete storm sewer pipes. Based on the provided plans the proposed inverts of the new manhole structures are to bear at a depth of about 15 feet below the existing surface grade at locations in Table 2.

Table 2: Proposed Manhole Structure Locations			
Crossroad	**Approx. Station Location**	**Surface Elev. (El.), feet**	**Invert Elev. (El.), feet**
South Jonesville Street	3+05; 4 RT	±856	±841
Empire Street	6+65; 4 RT	±857.5	±842.5
Broad Street	9+86 ;4 RT	±859	±844

CIPP design and recommendations are not within the scope of our work. CIPP is a method installed and designed by a specialty contractor with expertise and specialized equipment. The specialty contractor should determine the appropriate means and methods of installation and ensure that the CIPP is installed according to the manufacturer's specifications.

We anticipate that the design and construction will be performed according to the requirements of the *Department of Transportation Columbus, Ohio Construction and Materials Specifications* (dated January 1, 2023).

Moreover, it is our understanding that no new utility pipes are planned. The recommendations outlined in this report pertain to the proposed new manhole structures. If significant changes occur or our assumptions are inaccurate, our office should be contacted to determine if any changes to our recommendations will be necessary after our review.

Generalized Soil and Groundwater Conditions

The following discussions are general. A more specific description of the subsurface conditions encountered at the test boring locations is shown on the test boring logs included in Appendix B of this report.

Surficial Materials: Borings B-1 through B-3 disclosed about 8 to 13 inches of asphalt over about 5 to 14 inches of limestone product.

Boring B-1: Below surficial materials, fill material consisting of brown, moist sandy silty clay was disclosed to a depth of 5 feet below the existing ground surface (bgs), where it was underlain by brown and gray, moist to very moist, silty clay to a depth of about 13 feet. Underneath, brown, very stiff silty clay was disclosed to a depth of 15 feet bgs where the boring met auger refusal on large stones and was terminated.

Boring B-2: Below surface materials, fill materials consisting of clay-type soils was underlain at a depth of about 7 feet bgs by gray, and brown, moist, very stiff silty clay to a depth of about 12.5 feet bgs. Underneath, gray, moist, very stiff silty clay extended to the termination depth of the boring.

Boring B-3: Below surface materials, fill material consisting of black, sandy silty clay was disclosed to a depth of about 3 feet bgs. Underneath, brown and gray, moist, stiff to very stiff, silty clay was underlain at a depth of 8.5 feet bgs by primarily gray, very stiff to hard, silty clay that extended to the termination depth of the boring.

The consistencies of the soils were evaluated based on the results of the Standard Penetration Test (SPT), N-values according to ASTM D-1586.

No groundwater was encountered in the test borings during our drilling program. The groundwater depths shown on the boring logs reflect groundwater levels only for the date which the borings were drilled. The groundwater levels beneath the study site will fluctuate with time due to variations in rainfall, lateral drainage conditions, and other factors not evident at the time of this investigation.

Manhole Structure Recommendations

Based on our field and laboratory and test results, the manhole structures can be supported at the anticipated invert depth of 15 feet below the existing surface grade, provided our recommendations are followed. At this depth very stiff to hard clayey soils should be expected to be encountered.

The invert of the manhole structures should bear within firm, approved, native soils or new, compacted engineered fill material extending from approved native soils. The depth to firm, native soils may need to be confirmed at the time of construction by a GME Testing representative.

Provided that our recommendations above are followed, a maximum net allowable soil bearing pressure of **2,000 pounds per square foot** may be used.

If unsuitable soils are encountered at the anticipated invert elevation of the manhole structure, they will need to be removed and replaced. It is recommended that the bottom of the structure be underlain by a uniform layer of bedding materials with adequate thickness as determined by the engineer.

All joints and fittings should also conform to state or applicable local standards, whichever is more stringent. Positive seals must be provided at joints between manhole and pipe interfaces according to the pipe manufacturer’s specifications. Fluids flowing into the pipe will carry fine soil particles with it, thus resulting in voids forming under and around the pipe.

Utility excavations that are properly constructed and designed should be expected to be satisfactory settlement within tolerable limits. Field density compaction testing is critical to minimize pipe backfill movement that will cause settlements. Therefore, it is very critical that all utility backfill and bedding materials are properly controlled and

compacted to achieve the desired density, as recommended in this report and project plans.

Where the proposed manhole structures are planned adjacent to or near existing features that cannot be disturbed such as other utilities, braced excavations will be required. Sheeting or boxes used in trenches should be placed in a manner so as not to disturb the embedment material.

Temporary Excavations

Our study did not include a detailed analysis of slope stability for any excavation condition. Temporary excavations that encounter water seepage may require shoring, bracing and/or lateral supports. All excavations should be monitored by a Competent Person, as defined by the OSHA standard, and appropriate shoring or sloping techniques should be used to prevent cave-ins. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on a description of the soil types encountered. Trenches and/or excavations greater than 20 feet deep, if required, should be designed by the contractor's professional engineer.

Spoils from the trench excavation should not be placed near the edge of the excavation. For open-cut trenches or braced excavations, the spoils should be placed away from the edge of the excavation at a minimum distance equal to the excavation depth. This distance should be evaluated in the field by the contractor's professional engineer and may be exceeded. If spoil piles are placed closer to the recommended distance to the braced excavation, the resulting surcharge loads should be considered in the bracing or trench box design.

Soils exposed at the base of a satisfactory excavation should be protected against any detrimental change in condition, such as from disturbance, rain, and freezing. Surface run-off water should be drained away from the excavation.

The above recommendations should be considered as guidelines only, and an experienced design engineer should be contacted for further recommendations regarding the design of the shoring system.

Bedding Materials

It is important that suitable bedding materials be used under and around the manholes to ensure proper support. Free-draining granular soils, in accordance with section 703.11 of the *Department of Transportation Columbus, Ohio Construction and Materials Specifications,* may be used as bedding materials (e.g. ODOT No. 57 or No. 67). The appropriate type and thickness of the bedding material should be determined by the engineer but should be no less than approximately 4 to 6 inches thick, provided that groundwater-related difficulties, if any, are controllable.

Engineered Fill

All backfill materials used to replace unsuitable materials (if encountered) should consist of structural backfill Type 1 or 2 as outlined in section 611.05 of the *Department of Transportation Columbus, Ohio Construction and Materials Specifications.* All backfill materials should be approved by GME Testing and placed within a moisture content tolerance of about ±2 percent of Optimum Moisture Content (OMC).

Fill material should be mechanically compacted in uniform horizontal lifts at a relative compaction of 95 percent of the maximum Proctor density, in accordance with AASHTO T-99 (Standard Proctor) per section 611.06 of *Department of Transportation Columbus, Ohio Construction and Materials Specifications*.

If any existing pipes are exposed during construction, every effort should be made not to cause damage to the pipe.

To achieve the recommended compaction limit of the fill, the fill material should be placed and compacted in layers not exceeding 8 inches in loose thickness (the loose lift thickness should be reduced to 6 inches when utilizing small hand compactors) and within the specified range of OMC. All fill placements should be monitored by a GME Testing representative.

Restoration of Surfaces

Upon completion of the manhole structure installations, pavement surfaces (if any) and subgrade materials should be restored in accordance with the project specifications. All existing utilities and surfaces should be protected in general accordance with local ordinates and good construction practices.

Construction Monitoring

Our experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of a test borehole made at a specific location. We recommend that a GME Testing geotechnical engineer or designee be retained to continuously evaluate and test the encountered materials on-site during the actual construction.

GENERAL COMMENTS

This field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical investigation report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates drilled, they are not necessarily representative of the subsurface conditions between boring locations or subsurface conditions during other seasons of the year.

The lines of demarcation shown on the logs represent approximate boundaries between the various classifications. The stratification of soils, as shown on the accompanying test borehole logs, represents the soil conditions at the drilled borehole locations, and variations may occur between the boreholes. In-situ strata changes could occur gradually or at different levels. Also, it should be noted that the boreholes depict conditions at the particular-locations and times indicated.

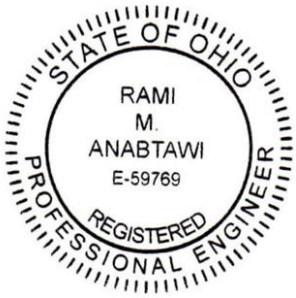
The report was prepared by GME Testing solely for the use of the Client in accordance with an executed contract. The Client's use of or reliance on this report is limited by the terms and conditions of the contract and by the qualifications and limitations stated in the report. It is also acknowledged that the Client's use of and reliance of this report is limited for reasons which include actual site conditions that may change with time; hidden conditions, not discoverable within the scope of the assessment may exist at the site; and the scope of the investigation may have been limited by time, budget and other constraints imposed by the client.

Neither the report nor its contents, conclusions or recommendations are intended for the use of any party other than the Client. GME Testing and the Client assume no liability for any reliance placed on this report by such party. The rights of the client under contract may not be assigned to any person or entity, without the consent of GME Testing which shall not be unreasonably withheld.

Our services have been provided consistent with its professional standards of care. No other warranties are made, either expressed or implied.

Sincerely,
GME Testing

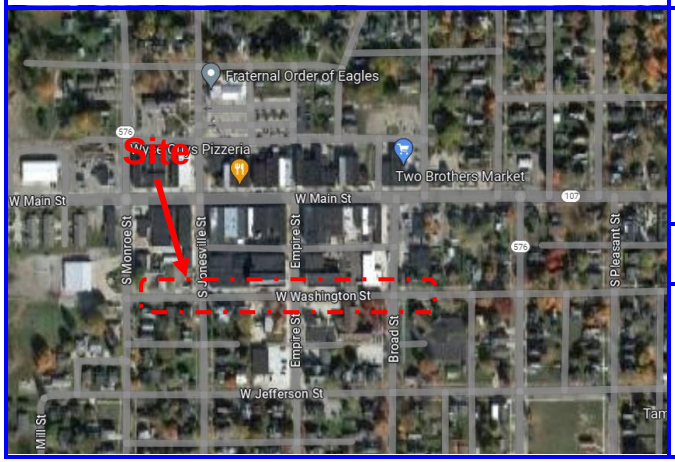
Rami M. Anabtawi, P.E., BC.GE



Moe Kyaw, E.I.

APPENDIX A

VICINITY MAP (NOT TO SCALE)



NOTES

1. The boring locations are approximate.
2. Vicinity map generated using imagery from google.com/maps.

N

LEGEND

B-1
Test Boring Location and Designation

FIGURE 1 – APPROXIMATE BORING LOCATION MAP

Project Name: Proposed Cranberry Run Storm Sewer Improvements

Location: West Washington Street, Montpelier, OH

Client Name: Village of Montpelier

GME Project Number: G24-032301

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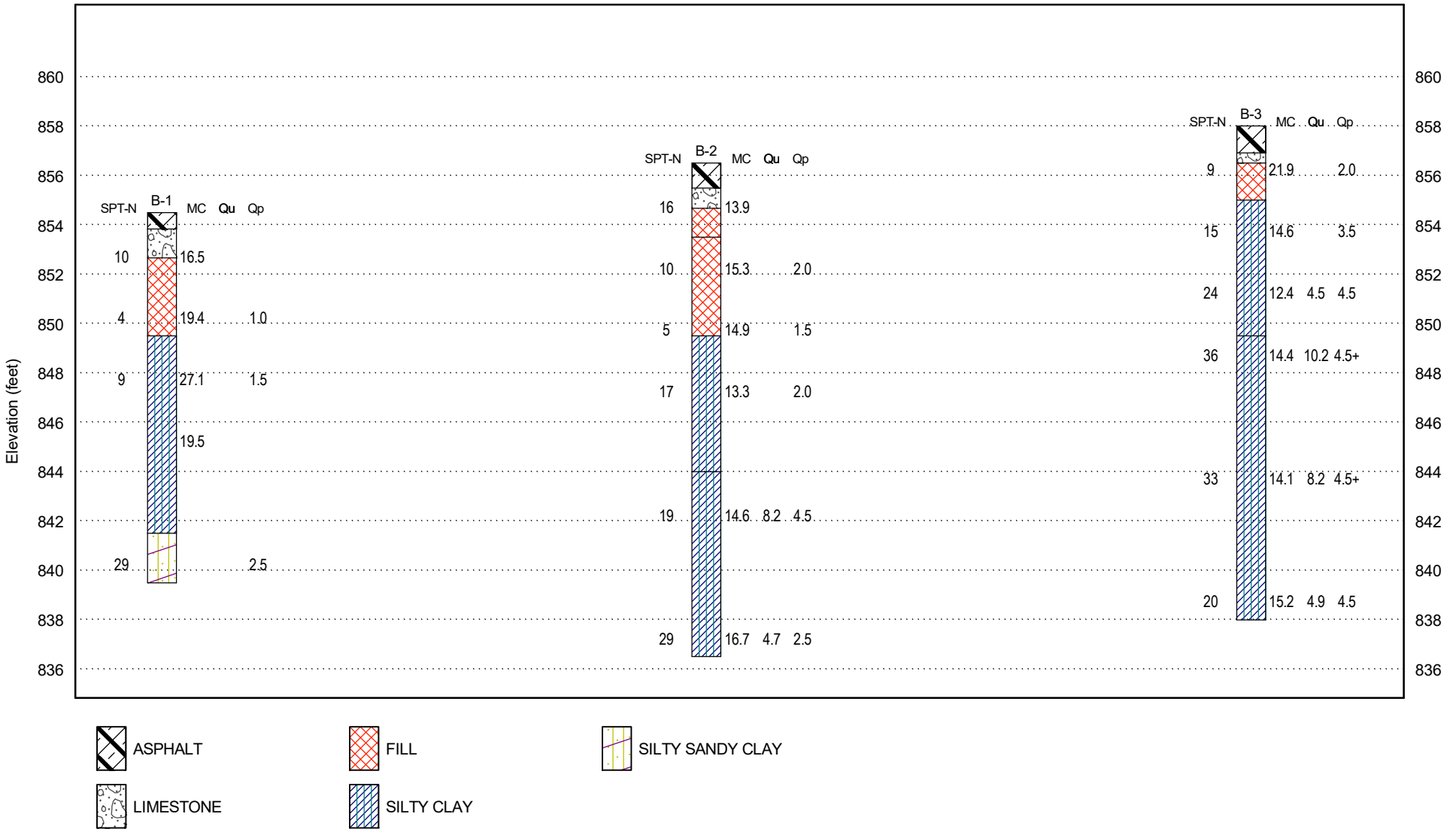
APPENDIX B

SUMMARY OF BORINGS



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CLIENT: Village of Montpelier

GME PROJECT NO: G24-032301

PROJECT TYPE: Proposed Cranberry Run Storm Sewer Improvements

LOCATION: West Washington Street, Montpelier, OH

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TEST BORING LOG

BORING NO.: **B-1**
SHEET 1 OF 1
GME PROJECT NO: G24-032301
STRUCTURE
DATUM :
DATE STARTED : 04-04-24
DRILLER/INSP : DB/DW

CLIENT: Village of Montpelier
PROJECT TYPE : Proposed Cranberry Run Storm Sewer Improvements
LOCATION : West Washington Street, Montpelier, OH

ELEVATION	: 854.5	BORING METHOD	: ASTM D-1586	LATITUDE	: 41.585485
STATION	: 1+55	RIG TYPE	: Skid	LONGITUDE	: -84.61167
OFFSET	: 8.5 ft Left	CASING DIA.	: 3.3 in		
LINE	:	HAMMER	: Auto		
DEPTH	: 15.0 ft				

GROUNDWATER: ▽ Encountered at Dry ▼ At completion Dry

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6" (N)	% RECOVERY	% MOISTURE CONTENT	UNCONF. COMP., tsf	Qp (tsf)	REMARKS
853.8		±8" ASPHALT. 0.7							
852.7		LIMESTONE Product. 1.8							
	2.5		SS 1	4-5-5 (10)	100	16.5			
		FILL: Brown, Moist, Sandy Silty Clay, Trace Gravel.	SS 2	2-2-2 (4)	100	19.4		1.0	
849.5	5.0	5.0							
	7.5		SS 3	3-4-5 (9)	100	27.1		1.5	
		Brown and Gray, Moist to Very Moist, SILTY CLAY, Trace Gravel, Occasional Sand Lenses.	SS 4	35-=-6" ()	100	19.5			
	10.0								
	12.5								
841.5		13.0							
		Brown, SANDY SILTY CLAY, Trace Gravel.	SS 5	19-17-12 (29)	20			2.5	Auger Refusal @ ±15'
839.5	15.0	15.0							
		Bottom of Boring at 15.0 ft							
	17.5								
	20.0								
	22.5								
	25.0								

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TEST BORING LOG

BORING NO.: **B-2**
SHEET 1 OF 1
GME PROJECT NO: G24-032301
STRUCTURE
DATUM :
DATE STARTED : 04-04-24
DRILLER/INSP : DB/DW

CLIENT: Village of Montpelier
PROJECT TYPE : Proposed Cranberry Run Storm Sewer Improvements
LOCATION : West Washington Street, Montpelier, OH

ELEVATION	: 856.5	BORING METHOD	: ASTM D-1586	LATITUDE	: 41.58552
STATION	: 4+78	RIG TYPE	: Skid	LONGITUDE	: -84.610489
OFFSET	: 1.5 ft Right	CASING DIA.	: 3.3 in		
LINE	:	HAMMER	: Auto		
DEPTH	: 20.0 ft				

GROUNDWATER: ▽ Encountered at Dry ▼ At completion Dry

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6" (N)	% RECOVERY	% MOISTURE CONTENT	UNCONF. COMP., tsf	Qp (tsf)	REMARKS
855.5		±12" ASPHALT. 1.0							
854.7		LIMESTONE Product. 1.8	SS 1	8-7-9 (16)	100	13.9			
	2.5	FILL: Brown and Black, Moist, Sandy Silty Clay.							
853.5		3.0	SS 2	4-5-5 (10)	100	15.3		2.0	
	5.0	POSSIBLE FILL: Gray and Dark Brown, Moist, Silty Clay, Occasional Silty Sand Seams.							
849.5		7.0	SS 3	3-3-2 (5)	100	14.9		1.5	
	7.5								
	10.0	Gray and Brown, Moist, SILTY CLAY, Occasional Silty Sand, Trace Gravel.	SS 4	7-8-9 (17)	100	13.3		2.0	
844.0	12.5	12.5							
	15.0		SS 5	8-9-10 (19)	100	14.6	8.2	4.5	
		Gray, Moist, SILTY CLAY, Trace Fine Gravel.							
	17.5								
836.5	20.0	20.0	SS 6	9-13-16 (29)	100	16.7	4.7	2.5	
		Bottom of Boring at 20.0 ft							
	22.5								
	25.0								

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TEST BORING LOG

BORING NO.: **B-3**
SHEET 1 OF 1
GME PROJECT NO: G24-032301
STRUCTURE
DATUM :
DATE STARTED : 04-04-24
DRILLER/INSP : DB/DW

CLIENT: Village of Montpelier
PROJECT TYPE : Proposed Cranberry Run Storm Sewer Improvements
LOCATION : West Washington Street, Montpelier, OH

ELEVATION	: 858.0	BORING METHOD	: ASTM D-1586	LATITUDE	: 41.585528
STATION	: 7+90	RIG TYPE	: Skid	LONGITUDE	: -84.60936
OFFSET	: 1.5 ft Right	CASING DIA.	: 3.3 in		
LINE	:	HAMMER	: Auto		
DEPTH	: 20.0 ft				

GROUNDWATER: ▽ Encountered at Dry ▼ At completion Dry

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6" (N)	% RECOVERY	% MOISTURE CONTENT	UNCONF. COMP., tsf	Qp (tsf)	REMARKS
856.9		±13" ASPHALT. 1.1							
856.5		LIMESTONE Product. 1.5							
	2.5	FILL: Black, Sandy Silty Clay, Trace Gravel.	SS 1	5-4-5 (9)	100	21.9		2.0	
855.0		3.0							
	5.0		SS 2	6-7-8 (15)	100	14.6		3.5	
		Brown and Gray, Moist, SILTY CLAY, Trace Gravel.							
	7.5		SS 3	7-9-15 (24)	100	12.4	4.5	4.5	
849.5		8.5							
	10.0		SS 4	13-17-19 (36)	100	14.4	10.2	4.5+	
	12.5								
		Gray, SILTY CLAY, Trace Sand and Gravel, Brown @ ±18.5'.							
	15.0		SS 5	14-16-17 (33)	100	14.1	8.2	4.5+	
	17.5								
838.0	20.0	20.0	SS 6	7-9-11 (20)	100	15.2	4.9	4.5	
		Bottom of Boring at 20.0 ft							
	22.5								
	25.0								

GENERAL NOTES

SAMPLE IDENTIFICATION

Visual soil classifications are made in general accordance with the United States Soil Classification System on the basis of textural and particle size categorization, and various soil behavior and characteristics. Visual classifications should be made by appropriate laboratory testing when more exact soil identification is required to satisfy specific project applications criteria.

RELATIVE PROPORTIONS OF COHESIONLESS SOILS

Term	Defining Range by % of Weight
Trace	1-10 %
Little	11-20 %
Some	21-35 %
And	36-50 %

WATER LEVEL MEASUREMENT

NE	No Water Encountered
BF	Backfilled upon Completion

ORGANIC CONTENT BY COMBUSTION METHOD

Soil Description	LOI
w/ organic matter	4-15 %
Organic Soil (A-8)	16-30 %
Peat (A-8)	More than 30%

LABORATORY TESTS

Qp	Penetrometer Reading, tsf
Qu	Unconfined Strength, tsf
MC	Moisture Content, %
LL	Liquid Limit, %
PL	Plastic Limit, %
PI	Plastic Index
SL	Shrinkage Limit, %
pH	Measure of Soil Alkalinity/Acidity
γ	Dry Unit Weight, pcf
LOI	Loss of Ignition, %

DRILLING AND SAMPLING SYMBOLS

AS	Auger Sample
BS	Bag Sample
PID	Photo ionization Detector (Hnu meter) volatile vapor level,(PPM)
COA	Clean-Out Auger
CS	Continuous Sampling
FA	Flight Auger
HA	Hand Auger
HAS	Hollow Stem Auger
NR	No Recovery
PT	3” O.D. Piston Tube Sample
RB	Rock Bit
RC	Rock Coring
REC	Recovery
RQD	Rock Quality Designation
RS	Rock Sounding
S	Soil Sounding
SS	2”O.D. Split-Barrel Sample
2ST	2”O.D. Tin-Walled Tube Sample
3ST	3” O.D. Thin-Walled Tube Sample
VS	Vane Shear Test
DB	Diamond Bit
WS	Wash Sample
RB	Roller Bit
ST	Shelby Tube, 2” O.D. or 3” O.D.
CB	Carbide Bit
WOH	Weight of the Hammer

GRAIN SIZE TERMINOLOGY

Soil fraction	Particle size	Us standard sieve size
Boulders	larger than 75 mm	Larger than 3”
Gravel	2mm to 75 mm	#10 to 75 mm
Coarse Sand	0.425 mm to 2 mm	#40 to #10
Fine Sand	0.075mm to 0.425 mm	#200 to #40
Silt	0.002 mm to 0.075 mm	Smaller than #200
Clay	Smaller than 0.002 mm	Smaller than #200

RELATIVE DENSITY

Term	“N” Value
Very Loose	0-5
Loose	6-10
Medium Dense	11-30
Dense	31-50
Very Dense	51+

CONSISTENCY

Term	“N” Value
Very Soft	0-3
Soft	4-5
Medium Stiff	6-10
Stiff	11-15
Very Stiff	16-30
Hard	31+

PLASTICITY

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

Note(s):
The penetration resistance, “N” Value, is the summation of the number of blows required to effect two successive 6-inch penetrations of the 2-inch split-barrel sampler. The sampler is driven with a 140-lb. weight falling 30-inches and is seated to a depth of 6-inches before commencing the standard penetration test.
Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils

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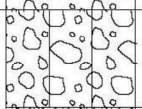
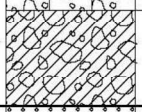
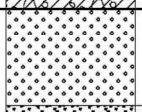
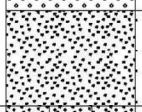
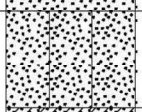
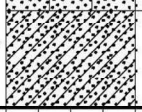
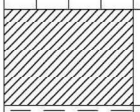
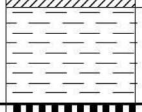
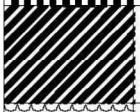
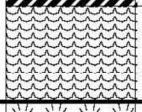
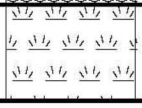
Division of ***GEOTECHNICAL & MATERIALS ENGINEERS, INC.***
www.gmetesting.com

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	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
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

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