

Mr. William Funk
Bath Township Zoning Office
3864 West Bath Road
Akron, Ohio 44333
(330) 666-4007
wfunk@bathtownship.org

RE: Private Residence
4081 Derrwood Drive
Akron, Ohio 44333

May 22, 2025

We are submitting this Conditional Use Application along with the accompanying drawings and documentation for your review and approval.

We are requesting conditional use approval under Sections 802 – Steep Slope Regulations of the Bath Township Zoning Resolution, specifically pertaining to the standards for development on steep slope areas. The proposed new residence at 4081 Derrwood Drive extends approximately 48 feet into the 50-foot steep slope setback, as defined in Section 802-C. Importantly, the proposed building footprint does not extend into the steep slope area itself.

To support the feasibility of development on this site, we have retained the services of SME. A summary of their geotechnical evaluation report indicates favorable soil conditions, with an allowable bearing capacity of 3,500 psf. The report recommends minimum wall footing dimensions of 18 inches and minimum isolated footing dimensions of 30 inches. Slope stability calculations indicate a factor of safety greater than 1.5, which is commonly considered acceptable for construction on sloped terrain.

Additionally, we have instructed SME to conduct a more detailed soil stability study to corroborate these initial findings. We will provide that report as soon as it becomes available.

Sincerely



Anthony Majc, AIA NCARB

ONYX CREATIVE, INC.



BATH TOWNSHIP ZONING

Summit County, Ohio

3864 West Bath Road - P.O. Box 1188 - Bath, Ohio - 44210-1188
Phone: 330.666.4007 - Fax: 330.666.0305
www.bathtownship.org

CONDITIONAL USE APPLICATION

| | | |
|----------------------|---------------|---------------|
| For office use only: | ARC File No.: | BZA File No.: |
| Associated permits: | | |

Applicant Data

Name: Anthony Majc

Company Name: Onyx Creative

Address: 25001 Emery Rd. Suite 400, Cleveland, OH 44128

Telephone No.: (216)223-3200 Email: amajc@onyxcreative.com

Property Data

Zoning District: (circle one) R-1 **R-2** R-3 R-4 B-1 B-2 B-3 B-4 B-5

Corner Lot: Yes No Note: Corner lots are required to meet the front setback on both streets.

Property Address: 4081 Derrwood Dr. Akron, OH 44333 Parcel No.: 0406677

Allotment Name: N/A Lot No.: N/A

Owner(s): Joey and Kim Lojek

Owner Address: 3083 Oxbow Rd Richfield OH 44286

Telephone No.: 216-214-3000

Conditional Use(s) Requested

Below list the specific section of the Zoning Resolution referencing the conditional use being sought as well as a description of each use. The Zoning Resolution is available online at www.bathtownship.org through the zoning link.

1. Section: 802-C Description: New Residence impacting the "steep slope" set back

2. Section: 802-D Description: Development of hillside impacting the "steep slope" set back

Contiguous Property Owners

The Township will notify all property owners within a 300' buffer of the parcel in question.

Required Materials:

1. Six (6) copies of site plan and plans along with a digital copy (ex: .pdf) of site plan and plans (11 x 17 preferred). The site plan must show the following:

- A North arrow and scale
- Existing structures and dimensions
- Driveway and road access locations (existing and/or proposed)
- Proposed structure(s) and dimensions
- All setbacks
- Roads
- Lot dimensions
- Easements and details
- Septic system and well location (if applicable)
- Indicate the location of lakes, ponds, wetlands, ravines, or other unusual topography
- Riparian Corridor(s) must be clearly indicated on all lots containing applicable watercourses

All slopes greater than 18% must be indicated on a two (2) foot contour interval map with the contours extending at least 100 feet beyond the lot lines.

2. If applicable, six (6) copies of the building/construction plans along with a digital copy (ex: .pdf) showing major details including height data must be submitted with the application (11 x 17 preferred).

3. A statement supported by substantiating evidence regarding the requirements enumerated in Article 3, Section 309:

(1) The use is a conditional use, permitted with approval by the BZA, in the district where the subject lot is located;

(2) The use is in accordance with the objectives of the Bath Township Comprehensive Plan and zoning resolution; and

(3) The conditional use will not substantially and/or permanently injure the appropriate use of neighboring properties and will serve the public convenience and welfare.

(4) The BZA shall also consider the following as applicable to the subject application:

(A) The comparative size, floor area and mass of the proposed structure(s) in relationship to adjacent structures and buildings in the surrounding properties and neighborhood;

(B) The frequency and duration of various indoor and outdoor activities and special events and the impact of these activities on the surrounding area;

(C) The number of transit movements generated by the proposed use and relationship to the amount of traffic on abutting streets and on minor streets in the surrounding neighborhood;

(D) The capacity of adjacent streets to handle increased traffic in terms of traffic volume;

(E) The added noise level created by activities associated with the proposed use and the impact of the ambient noise level of the surrounding area and neighborhood;

(F) The requirements for public services where the demands of the proposed use are in excess of the individual demand of adjacent land uses in terms of police and fire protection, and the presence of any potential fire or other hazards created by the proposed use;

(G) The general appearance of the neighborhood will not be adversely affected by the location of the proposed use on the parcel;

(H) The impact of night lighting in terms of intensity and duration and frequency of use as it impacts adjacent properties and in terms of presence in the neighborhood;

(I) The impact of the landscaping of the proposed use in terms of maintained landscaped areas versus areas to remain in a natural state, and the openness of landscape versus the use of buffers and screens;

(J) The impact of a significant amount of hard-surfaced areas for building, sidewalks, drives, parking areas and service areas in terms of noise transfer, water runoff and heat generation;

(K) The potential for the proposed use to remain in existence for a reasonable period of time and not become vacant or unused. Consideration should also be given to unusual single purpose structures or components of a more temporary nature; and

(L) Any other physical or operational feature or characteristic that may affect the public health, safety and welfare.

4. Applicant shall state a reasonable time to complete development plans or proposed structure.
5. The recommendations of the Appearance Review Commission if applicable.
6. Digital copy of all required documents (i.e. email .pdf file).

Applicant Certification

Applicant Signature: Anthony F. Mijic Date: May 22, 2025

Fee – due at time of application (make check payable to Bath Township Trustees)

- for residential applications – two hundred and fifty dollars (\$250.00)
- for commercial/business applications – three hundred and fifty dollars (\$350.00)

For Office Use Only

Appearance Review Commission File No.: ARC - -

Board of Zoning Appeals File No.: BZA - -

Hearing Date: _____ Public Notice Date: _____

Published In: _____ Abutting Property Owners Notification Date: _____

- Approved
 Approved with Conditions
 Denied

Comments: _____

Zoning Inspector Signature: _____ Date: _____



GEOTECHNICAL EVALUATION REPORT

THE PRESERVE
AKRON, OHIO

SME Project Number: 099307.00
May 5, 2025





9375 Chillicothe Road
Kirtland, OH 44094-8501

T (440) 256-6500

www.sme-usa.com

May 5, 2025

Mr. Pat Horsburgh
Brookes & Henderson Building & Services Co.
16710 W Park Circle Dr.
Chagrin Falls, OH 44023

Via E-mail: path@brookes-henderson.com

RE: Geotechnical Evaluation Report
The Preserve
4081 Derrwood Drive
Akron, Ohio 44333
SME Project No. 099307.00

Dear Mr. Horsburgh:

We have completed our geotechnical evaluation for The Preserve project. This report presents the results of our observations and analyses, our geotechnical recommendations, and a discussion of potential construction considerations based on the information disclosed by the borings.

We appreciate this opportunity to be of service. If you have questions or require additional information, please contact me.

Sincerely,

SME

A handwritten signature in blue ink, appearing to read "J. Corrigan", is positioned above the typed name.

Joseph Corrigan, PE
Project Engineer

Enclosure: SME Geotechnical Evaluation Report; Dated May 5, 2025

TABLE OF CONTENTS

| | |
|---|----------|
| 1. INTRODUCTION | 1 |
| 1.1 SITE CONDITIONS | 2 |
| 1.2 PROJECT DESCRIPTION | 2 |
| 1.3 SUBSURFACE CONDITIONS | 3 |
| 2. ANALYSIS AND RECOMMENDATIONS | 4 |
| 2.1 SLOPE STABILITY CONSIDERATIONS | 4 |
| 2.2 SITE PREPARATION AND EARTHWORK | 4 |
| 2.2.1 GENERAL SITE SUBGRADE PREPARATION | 4 |
| 2.2.2 SUBGRADE PREPARATION FOR FLOOR SLABS | 5 |
| 2.2.3 ENGINEERED FILL REQUIREMENTS | 5 |
| 2.3 FOUNDATIONS | 6 |
| 2.3 BACKFILL FOR RETAINING WALLS AND BASEMENT WALLS | 7 |
| 3. EXCAVATION AND GROUNDWATER MANAGEMENT | 8 |
| 4. EVALUATION PROCEDURES | 8 |
| 4.1 FIELD EXPLORATION | 8 |
| 4.1.1 BORINGS | 8 |
| 4.2 LABORATORY TESTING | 8 |
| 5. SIGNATURES | 9 |

APPENDIX A

BORING LOCATION DIAGRAM

BORING LOG TERMINOLOGY

BORING LOGS (B1 THROUGH B7)

LABORATORY TEST RESULTS

APPENDIX B

FIELD TEST PROCEDURES

LABORATORY TESTING PROCEDURES

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

APPENDIX C

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT

GENERAL COMMENTS

1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the planned residence at 4081 Derrwood Drive. This evaluation was conducted in general accordance with the scope of services outlined in SME Proposal No. P00595.25, dated March 5, 2025. Our services for this evaluation were authorized by Mr. Pat Horsburgh with Brookes & Henderson Building Co.

SME received the following information which was used in the evaluation and preparation of this report:

- Design Development Master Plan Concept by Aristotle Design Group dated February 19, 2025, which includes a plan view of the proposed house, driveway, and other site features.
- Design Development plan by Aristotle Design Group dated January 21, 2025, showing Option 1 for placement of the house.
- Proposed Building Sections (undated), which shows typical building sections.
- An ALTA survey by Wellert Engineers and Surveyors dated July 23, 2024, showing the property boundaries and existing structures.
- A Master Plan Slope Study, by others, dated February 19, 2025, showing steep and severe slope areas with minimum setbacks as defined in Sections 802B and 802C of the Bath Township Steep Slope Regulations.

SME completed seven borings at the project site between March 19 and 21, 2025. Refer to the boring logs included in Appendix A for the depth and conditions encountered at each individual boring. The approximate boring locations are depicted on the Boring Location Diagram (Figure 1) located in Appendix A and on Image 1. Soil descriptions and the field and laboratory test results are presented on the boring logs. Exploration and laboratory testing procedures are presented in Section 4.



IMAGE NO. 1: Excerpt from Figure 1 in Appendix A: Boring Location Diagram

1.1 SITE CONDITIONS

The project site located at 4081 Derrwood Drive in Akron, Ohio, consists of an approximately 27-acre parcel, mostly covered with grass, and with three existing masonry buildings including a residence, barn, and garage. Access is via asphalt and concrete drives extending from the end of Derrwood Drive. Historical aerial imagery indicates the present structures were built between about 2000 and 2004, and the site has remained essentially unchanged since that time.

On the south and west sides of the existing residence there are 20- and 40-foot-high slopes. The south slope is the steepest of the two at an average 3.8H:1V ratio, and the west slope is at an average 5.6H:1V ratio. Based on the provided topographic map, ground surface elevations for the west slope range from about 1030 feet at the head of the slope to 990 feet at the toe of the slope.

1.2 PROJECT DESCRIPTION

The project will consist of demolishing the existing residence and constructing a new residence near the west slope. The new residence will include a basement level with a walkout at the southwest end, garage and arrival courts on the north side, and a pool terrace to the south. Based on the site topography and an assumed Finished Floor Elevation of about 1028 feet, cuts and fills of less than about 3 feet will be required to establish the majority of the design subgrade level surrounding the residence.

Image 2 shows a preliminary site plan and areas where the new construction would intrude into the steep slope setbacks. The red shaded area on the west slope is identified as a “steep slope area” based on the Bath Township regulations, having a slope of 18 percent or steeper and requires a 50-foot setback from the edge of this area, as indicated by the blue shaded area. The red shaded area on the south slope is identified as a “severe slope area” based on the Bath Township regulations, having a slope of 30 percent or steeper and requires a 100-foot setback from the edge of this area, as indicated by the blue shaded area.

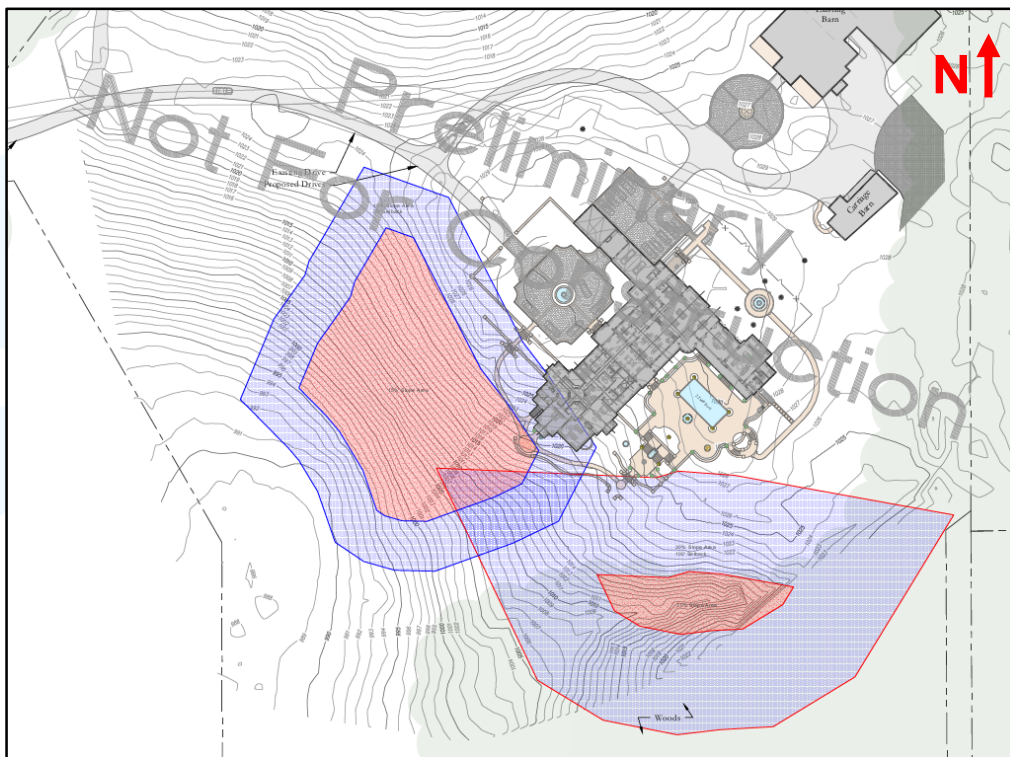


IMAGE NO. 2: Site plan with existing topography and proposed residence layout

No other information was provided to SME for use in preparation of this report. The recommendations of this report are based on the information provided above and the results of the field and laboratory evaluation. Contact SME if the final design information is different than discussed herein.

1.3 SUBSURFACE CONDITIONS

Refer to the boring logs for the soil conditions at the boring locations. In summary, the soil conditions observed in the borings generally consisted of surficial topsoil over natural clays and silts extending to the explored depths of the borings.

At the surface of our borings, we encountered 4 to 7 inches of topsoil. Below the topsoil, we encountered lean clays to the termination depths of the borings. The clays throughout the site contained relatively small amounts of gravel, sand, and silt, and exhibited a medium to hard consistency. In B5, we encountered a layer of very stiff silt with clay over medium dense, wet silty sand between depths of about 30.5 to 38.5 feet below surface grade.

Groundwater was observed in the borings as summarized in Table 1.

TABLE NO 1: GROUNDWATER SUMMARY TABLE

| BORING NO. | INITIAL DEPTH OF G.W. (feet) | G.W. DEPTH UPON COMPLETION OF DRILLING (feet) | INITIAL G.W. ELEVATION (feet) | G.W. ELEVATION UPON COMPLETION OF DRILLING (feet) |
|------------|------------------------------|---|-------------------------------|---|
| B1 | --- | --- | --- | --- |
| B2 | --- | --- | --- | --- |
| B3 | 20 | --- | 1009 | --- |
| B4 | --- | --- | --- | --- |
| B5 | 7 | *--- | 1014 | --- |
| B6 | 40 | --- | 982 | --- |
| B7 | 17.5 | 18.5 | 1009 | 1008 |
| Min. | 7 | --- | 982 | --- |
| Max. | 40 | 18.5 | 1014 | 1008 |

*While no groundwater was observed upon completion of drilling, a cave-in occurred in B5 at a depth of 34 feet below grade.

In cohesive soils (clays and silts), a long time may be required for the groundwater level in the borehole to reach equilibrium. Therefore, the use of piezometers is necessary to accurately determine the groundwater level within cohesive soils as observed at this site. However, a change in color from brown to gray may be an indicator of the long-term groundwater level. This color change was observed at B5, B6, and B7 below depths ranging from about 10 to 18 feet below the ground surface (below between about elevations 1011 to 1004 feet).

Refer to the Field-Testing Procedures in Appendix B for additional information about groundwater level measurements. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

2. ANALYSIS AND RECOMMENDATIONS

2.1 SLOPE STABILITY CONSIDERATIONS

We performed preliminary slope stability calculations to estimate the factor of safety of the slopes south and west of the proposed home footprint. Laboratory data on similar soils from nearby projects were used to estimate the shear strength of soils on this property. Based on our calculations, we estimate the south slope has a factor of safety greater than two and the west slope has a factor of safety of greater than three. When building structures on or near slopes using conventional shallow foundations, an important consideration for slope stability is to achieve a factor of safety of at least 1.5 against damage to a structure caused by slope failure. This is a commonly accepted criteria, which does not prevent a slope failure, but merely means that there is an acceptable margin of safety against damage to the structure in the event that the slope fails. Based on our preliminary calculations, we estimate that both slopes exceed this criteria.

Do not place fill on or near the existing slopes and do not stockpile excavated soils or other materials near slopes. Notify SME if any cuts or excavations other than for the house walkout are planned on or near the slopes.

2.2 SITE PREPARATION AND EARTHWORK

2.2.1 GENERAL SITE SUBGRADE PREPARATION

During demolition of the existing residence, remove all below-grade portions of the building, including floor slabs, foundations, foundation walls, basement walls, and utilities. After demolition, clear the proposed building area of building materials, vegetation, topsoil, and other deleterious materials to expose suitable underlying inorganic subgrade soils. Completely remove tree root mats, if any. Extend the clearing and stripping a minimum of 5 feet beyond the limits of the proposed home footprint, pavement areas, and areas to receive engineered fill.

Based on the boring information, we expect lean clay will be exposed after clearing and stripping the project site. Some of the clays in the upper few feet of subgrade had moisture contents that appeared to be over optimum (e.g. above 20%). In these areas, moisture conditioning and/or undercutting may be necessary to stabilize the ground surface.

The on-site soils will be sensitive to disturbances during construction. The contractor should remove ponded surface water and prevent run-off from reaching foundation excavations and areas of prepared ground surface. The contractor should also establish positive surface drainage at the onset of construction to mitigate the potential for disturbance. To reduce the potential of ground surface disturbance across the site, restrict construction traffic to dedicated areas of the site that can be controlled and stabilized as needed.

Proofroll the exposed ground surface in areas to receive engineered fill, slabs-on-grade, or pavements in the presence of SME. The purpose of the proofroll is to locate areas of unstable soil. Mechanically improve areas of unstable soil revealed during proofrolling by compaction in-place, if feasible. Soils that cannot be improved in-place must be removed and replaced with engineered fill. Perform proofrolling with a fully loaded, tandem-axle truck or other suitable-sized pneumatic-tire construction equipment.

After the exposed ground surface is proofrolled and improved as needed, and after the surface is thoroughly compacted, engineered fill may be placed on the prepared soil to establish final ground surface levels. Refer to Section 2.2.3 of this report for materials and compaction requirements for engineered fill.

2.2.2 SUBGRADE PREPARATION FOR FLOOR SLABS

The final floor slab subgrade for the proposed residence should consist of natural lean clays which have been evaluated and which have passed proofroll testing, or engineered fill placed over those soils. We recommend a subgrade modulus of 150 pci to design floor slabs supported on properly prepared subgrade described herein. This value of subgrade modulus is based on correlations with soil type from plate load tests, and is the ratio of load in pounds per square-inch to a 0.05-inch deflection of a 30 inch-diameter bearing plate.

We recommend at least 4 inches of granular base material, consisting of #8, #9, or #57 washed gravel or crushed stone, below floor slabs to provide a leveling surface for construction of the slab and a capillary break between the slab and the underlying soils. Do not use slag or shale as base material.

Place a vapor retarder below floor slabs intended to receive an impermeable floor finish/seal or a floor covering which would retard vapor transmission. The location of the vapor retarder (relative to the subbase) needs to be determined by the design Architect/Engineer based on the intended floor usage, planned finishes, and ACI recommendations.

Separate floor slabs by isolation joints from structural walls and columns to permit relative movement. Allow a minimum of 6 inches of engineered fill between the bottom of the slab and the top of the shallow foundation below.

Protect the slab-on-grade subgrade soils from frost action during winter construction. Frozen soils must be thawed, moisture conditioned, and compacted or removed and replaced prior to slab-on-grade construction.

2.2.3 ENGINEERED FILL REQUIREMENTS

Engineered fill should be free of frozen soil, organics, construction debris, potentially expansive and/or chemically active materials (i.e. shale and slag), and particle sizes hindering compaction (i.e. cobbles and boulders).

Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction, but not exceeding 8 inches thick. Thinner lifts will be required in confined spaces and where compaction is achieved with walk-behind rollers/compactors or plate compactors mounted on a backhoe or excavator. Compact the fill below foundation bearing elevations to at least 100 percent of the maximum dry density as determined in accordance with the standard Proctor test, ASTM D698. Compact the fill below floor slabs and pavement areas to at least 98 percent of the maximum dry density. Adjust the moisture content of the fill to within two percent (+/-) of its optimum moisture content, as determined by the standard Proctor test. Granular soils should be compacted with a vibratory smooth drum roller and cohesive soils should be compacted with a sheepfoot or padfoot roller.

Based on the results of our field and laboratory testing, the existing inorganic natural lean clay soils are considered suitable for reuse as engineered fill for general site grading. The successful reuse of the on-site clay for engineered fill will depend on the time of year and the care the earthwork contractor uses during construction. During cold and wet periods of the year, the subgrade soils can become overly wet and disturbed, and the soils can be difficult to dry. Earthwork at sites with clays are more successfully performed during the warmer and drier months when the likelihood of subgrade disturbance is lower, and the soils are more easily moisture conditioned. Import material if drying of the existing soils cannot be accomplished due to weather or schedule considerations. Imported fill needs to be sampled at the source, tested, and approved prior to importing to the site.

If granular soil is used to backfill utilities or foundation walls, where the excavations are of limited extent and compaction is typically achieved with plate-type compactors, exterior areas should be capped with at least 12 inches of lean clay. This will create uniform subgrade support and reduce the potential for water to penetrate into the granular backfill below. In these instances, we recommend using imported granular backfill such as ODOT Item 703.11.B Structural Backfill Type 2 meeting the gradation with 100% passing the 3/4 inch sieve and consisting of natural crushed granular material (slag, and recycled materials excluded) or #57 crushed limestone aggregate.

2.3 FOUNDATIONS

Shallow spread foundations are recommended for support of the proposed residence. A maximum net allowable bearing pressure of 3,500 pounds per square-foot (psf) can be used to design shallow isolated (column) and continuous (wall) foundations supported on stiff or better lean clay, or engineered fill placed over suitable lean clay.

Once each foundation area is exposed, SME should observe and test foundation bearing conditions to verify suitable soils are encountered or improvements are performed, as needed, prior to foundation construction. Where unsuitable soils are encountered, deepen the foundation excavations to encounter suitable bearing material below. Foundations can then be constructed to bear directly at this lower level where suitable subgrade is encountered, or the design bearing level can be reestablished with lean concrete, low strength mortar (i.e. LSM 100), or engineered fill.

Oversize undercuts that are backfilled with engineered fill to the design bearing level laterally by extending excavations outward on a two vertical to one horizontal slope from the edge of the foundation as shown on Image 3.

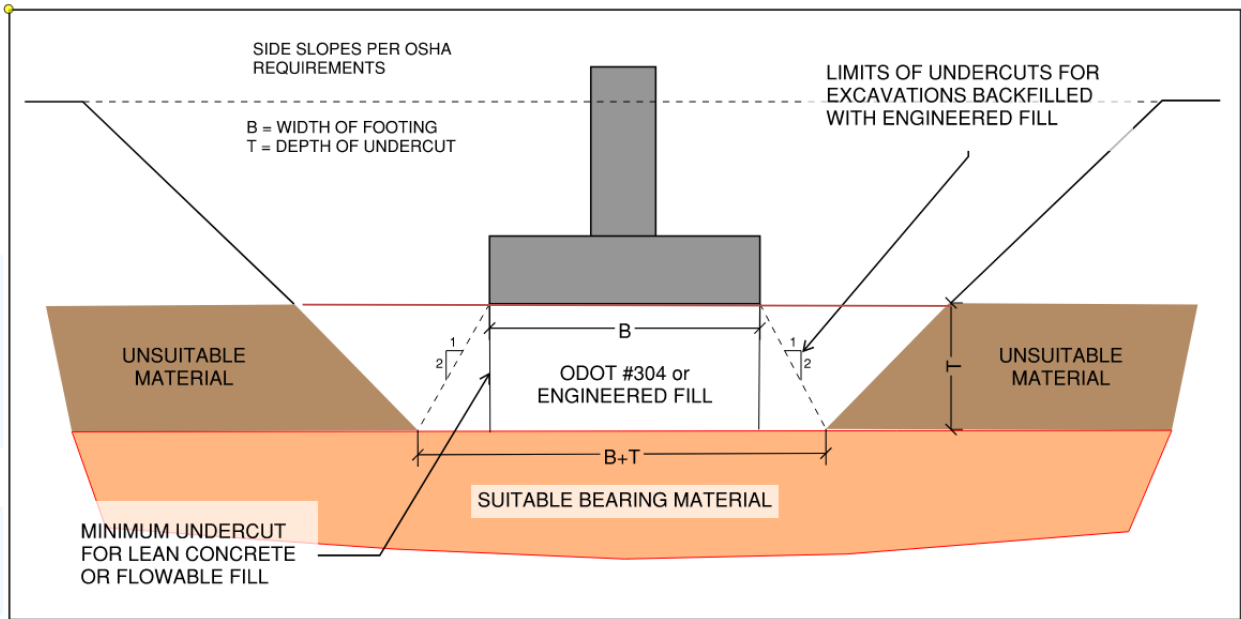


IMAGE NO. 3: Foundation Undercutting Diagram

Exterior foundations should have a minimum embedment of 42 inches below the lowest adjacent exterior grade in unheated areas for protection against frost movement during normal winters. Interior foundations in heated areas can be constructed at shallower levels on suitable soils but deeper undercuts through disturbed or otherwise unsuitable upper soils may be required. Footings should be excavated to a level bearing surface, cleaned of mud and loose cuttings, and protected against water accumulation from rainfall, surface drainage, or excavation sidewall seepage prior to placing concrete. Place foundation concrete as soon as foundation excavations have been completed, and the design bearing pressure is verified to reduce the potential for disturbance of the foundation subgrade. In cases where the excavation will remain exposed for a longer period of time, protect the subgrade soils with a concrete mud mat. Protect the bearing soils from freezing if the work is performed during cold weather.

For frost heave considerations, vertical excavation side-walls must be maintained during foundation concrete placement and the side walls must not be allowed to “mushroom out” near the top. If vertical earthen side-walls cannot be maintained, it will be necessary to slope back the foundation excavations and form foundation side-walls to maintain vertical faces.

Use a minimum width of 18 inches to design continuous (wall) foundations and a minimum dimension of 30 inches to design isolated (column) foundations for bearing capacity and settlement considerations. In cases where structural loading is light, the minimum recommended foundation sizes, and not the design bearing pressure, may govern the sizes of the foundations.

Total settlements for shallow spread foundations bearing on suitable soils are estimated to be 1 inch or less. Differential settlements are estimated to be less than one-half of the total settlement. These settlement estimates are based on the boring information, the design maximum net allowable soil bearing pressure, our experience with similar structures and soil conditions, and field verification of suitable bearing soils by SME.

2.3 BACKFILL FOR RETAINING WALLS AND BASEMENT WALLS

Retaining walls and basement walls should be backfilled with clean, free draining, compacted, crushed aggregate meeting an ODOT #8 or #57 gradation. Do not use slag products or shale. The free-draining fill should be wrapped in a non-woven geosynthetic fabric to prevent migration of fine-grained material into the pore space of the drainage fill. The free-draining fill on the exterior should be capped with at least 12 inches of compacted clay followed by topsoil, which should be graded to direct surface water away from the wall.

The zone of free draining fill should, at a minimum, begin at the base of the wall and extend upward and outward at a 2V:1H ratio. Positive gravity drainage should be provided at the bottom of the free draining fill. If gravity drainage is not possible, a sump system should be used to maintain drainage of the fill. The drainage backfill should be placed in lifts and consolidated until no further densification is noted. Compaction equipment should be sized so the walls are not damaged during construction.

Basement walls are restrained at the top and bottom and are not free to rotate. If the walls are backfilled as described in this report, they can be designed for an equivalent fluid density of 50 pcf, plus the effects of any surcharges. Surcharges result in a uniform lateral loading on the wall equal to 0.4 times the vertical surcharge with its resultant acting at mid-height.

Cantilever retaining walls that are free to rotate should be designed for an equivalent fluid density of 40 pcf plus the effect of any surcharges. Surcharges behind cantilever walls result in a uniform lateral loading on the wall equal to 0.33 times the vertical surcharge with its resultant acting at mid-height.

3. EXCAVATION AND GROUNDWATER MANAGEMENT

Groundwater seepage into shallow excavations is not anticipated to be a significant factor during construction. However, groundwater infiltration and/or accumulations from rainfall, surface run-off, or perched groundwater conditions could be encountered. Standard sump pit and pumping procedures are expected to be adequate to control these accumulations on a localized basis. A working surface of either crushed aggregate or crushed concrete may be required to protect the exposed subgrade where seepage is encountered.

The contractor must provide safely sloped excavations or adequately constructed and braced shoring systems in accordance with federal, state and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, use appropriate shoring to resist the extra pressure due to the superimposed loads.

4. EVALUATION PROCEDURES

4.1 FIELD EXPLORATION

4.1.1 BORINGS

The proposed number, locations, and depths of the borings were determined by SME. SME located the borings in the field and obtained the existing ground surface elevations at the boring locations using our hand-held global positioning system (GPS), which is typically accurate to the nearest foot. The accuracy at each location is based on the available satellites at the time the measurement was recorded. Overhead interference (e.g. cloudy days or dense tree coverage) will decrease GPS accuracy. Increased accuracy can be obtained by hiring a licensed professional surveyor to measure surface elevations and coordinates at the boring locations.

The borings were advanced using a rotary drill rig equipped with continuous flight augers. The borings included soil sampling based on split-barrel and thin-wall tube sampling procedures. Groundwater level measurements were recorded during and immediately after completion of each boring. After completion of drilling and obtaining groundwater level measurements, the boreholes were backfilled with auger cuttings.

The Field Test Procedures in Appendix B provides more detailed descriptions of field tests performed by SME and referenced in this report.

4.2 LABORATORY TESTING

Soil samples recovered from the field exploration were taken to our laboratory for classification and testing.

The laboratory testing program consisted of visually classifying the recovered samples in accordance with ASTM D-2488, performing moisture content and hand penetrometer tests on portions of cohesive samples obtained, two Atterberg limits tests, two grain size analyses, and two unconfined compressive strength tests. Based on the laboratory testing, we prepared soil descriptions and assigned a group symbol for the various soil strata observed based on the Unified Soil Classification System (USCS).

Upon completion of the laboratory testing, boring logs were prepared and include the soil descriptions, penetration resistances, pertinent field observations, and the results of the laboratory testing. Each log also includes the estimated existing ground surface elevation. Explanations of symbols and terms used on the boring logs are provided on the Boring Log Terminology sheet included in Appendix A.

The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests. The results of the laboratory tests are presented on the boring logs included in Appendix A.

Soil samples are normally retained in our laboratory for 60 days and are then discarded unless instructed otherwise.

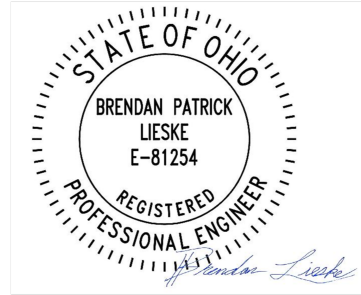
5. SIGNATURES

PREPARED BY:



Joseph Corrigan, PE
Project Engineer

REVIEWED BY:

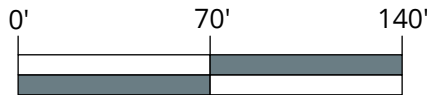
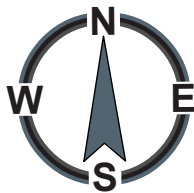


Brendan P. Lieske, PE
Senior Consultant

APPENDIX A
BORING LOCATION DIAGRAM
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B7)
LABORATORY TEST RESULTS



LOCATION MAP
1 inch = 0.7 miles



GRAPHIC SCALE: 1" = 70'

LEGEND

 APPROXIMATE BORING LOCATION

NOTE:
1. AERIAL IMAGE TAKEN FROM GOOGLE EARTH WITH AN IMAGE DATE OF 03-27-2024.

| No. | REVISION DATE | DATE: |
|-----|---------------|-------------------------------------|
| | | 04-16-2025 |
| | | GIS SPECIALIST: T. MAHANY |
| | | DESIGNED BY: J. CORRIGAN |
| | | PROJECT: 099307.00 |

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR A 8.5"X11" SHEET AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA

**BORING LOCATION DIAGRAM
THE PRESERVE
4081 DERRWOOD DRIVE
AKRON, SUMMIT**

NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR CONSENT OF SME



WWW.SME-USA.COM
SME AND THE SME LOGO ARE FEDERALLY REGISTERED MARKS.
© SOIL AND MATERIALS ENGINEERS, INC.

FIGURE NO. 1



BORING LOG TERMINOLOGY

| UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART | | |
|--|---|---|
| COARSE-GRAINED SOIL (more than 50% of material is larger than No. 200 sieve size.) | | |
| Clean Gravel (Less than 5% fines) | | |
| GRAVEL More than 50% of coarse fraction larger than No. 4 sieve size | | GW Well-graded gravel; gravel-sand mixtures, little or no fines |
| | | GP Poorly-graded gravel; gravel-sand mixtures, little or no fines |
| | Gravel with fines (More than 12% fines) | |
| | | GM Silty gravel; gravel-sand-silt mixtures |
| | | GC Clayey gravel; gravel-sand-clay mixtures |
| Clean Sand (Less than 5% fines) | | |
| SAND 50% or more of coarse fraction smaller than No. 4 sieve size | | SW Well-graded sand; sand-gravel mixtures, little or no fines |
| | | SP Poorly graded sand; sand-gravel mixtures, little or no fines |
| | Sand with fines (More than 12% fines) | |
| | | SM Silty sand; sand-silt-gravel mixtures |
| | | SC Clayey sand; sand-clay-gravel mixtures |
| FINE-GRAINED SOIL (50% or more of material is smaller than No. 200 sieve size) | | |
| SILT AND CLAY Liquid limit less than 50% | | ML Inorganic silt; sandy silt or gravelly silt with slight plasticity |
| | | CL Inorganic clay of low plasticity; lean clay, sandy clay, gravelly clay |
| | | OL Organic silt and organic clay of low plasticity |
| SILT AND CLAY Liquid limit 50% or greater | | MH Inorganic silt of high plasticity, elastic silt |
| | | CH Inorganic clay of high plasticity, fat clay |
| | | OH Organic silt and organic clay of high plasticity |
| HIGHLY ORGANIC SOIL | | PT Peat and other highly organic soil |

| OTHER MATERIAL SYMBOLS | | |
|------------------------|--|--|
| | | |
| | | |
| | | |
| | | |

| LABORATORY CLASSIFICATION CRITERIA | |
|------------------------------------|---|
| GW | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3 |
| GP | Not meeting all gradation requirements for GW |
| GM | Atterberg limits below "A" line or PI less than 4 |
| GC | Atterberg limits above "A" line with PI greater than 7 |
| SW | $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3 |
| SP | Not meeting all gradation requirements for SW |
| SM | Atterberg limits below "A" line or PI less than 4 |
| SC | Atterberg limits above "A" line with PI 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:

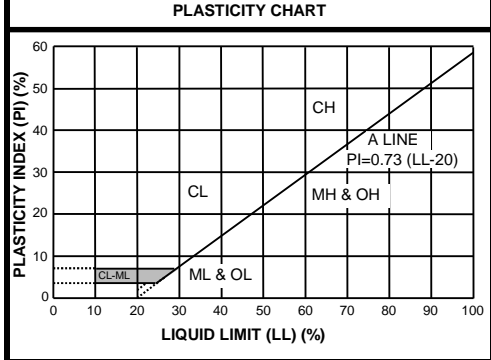
Less than 5 percent.....GW, GP, SW, SP
 More than 12 percent.....GM, GC, SM, SC
 5 to 12 percent.....Cases requiring dual symbols

- SP-SM or SW-SM (SAND with Silt or SAND with Silt and Gravel)
- SP-SC or SW-SC (SAND with Clay or SAND with Clay and Gravel)
- GP-GM or GW-GM (GRAVEL with Silt or GRAVEL with Silt and Sand)
- GP-GC or GW-GC (GRAVEL with Clay or GRAVEL with Clay and Sand)

If the fines are CL-ML:

- SC-SM (SILTY CLAYEY SAND or SILTY CLAYEY SAND with Gravel)
- SM-SC (CLAYEY SILTY SAND or CLAYEY SILTY SAND with Gravel)
- GC-GM (SILTY CLAYEY GRAVEL or SILTY CLAYEY GRAVEL with Sand)

| PARTICLE SIZES | |
|----------------|--------------------------|
| Boulders | - Greater than 12 inches |
| Cobbles | - 3 inches to 12 inches |
| Gravel- Coarse | - 3/4 inches to 3 inches |
| Fine | - No. 4 to 3/4 inches |
| Sand- Coarse | - No. 10 to No. 4 |
| Medium | - No. 40 to No. 10 |
| Fine | - No. 200 to No. 40 |
| Silt and Clay | - Less than (0.074 mm) |



VISUAL MANUAL PROCEDURE

When laboratory tests are not performed to confirm the classification of soils exhibiting borderline classifications, the two possible classifications would be separated with a slash, as follows:

For soils where it is difficult to distinguish if it is a coarse or fine-grained soil:

- SC/CL (CLAYEY SAND to Sandy LEAN CLAY)
- SM/ML (SILTY SAND to SANDY SILT)
- GC/CL (CLAYEY GRAVEL to Gravelly LEAN CLAY)
- GM/ML (SILTY GRAVEL to Gravelly SILT)

For soils where it is difficult to distinguish if it is sand or gravel, poorly or well-graded sand or gravel; silt or clay; or plastic or non-plastic silt or clay:

- SP/GP or SW/GW (SAND with Gravel to GRAVEL with Sand)
- SC/GC (CLAYEY SAND with Gravel to CLAYEY GRAVEL with Sand)
- SM/GM (SILTY SAND with Gravel to SILTY GRAVEL with Sand)
- SW/SP (SAND or SAND with Gravel)
- GP/GW (GRAVEL or GRAVEL with Sand)
- SC/SM (CLAYEY to SILTY SAND)
- GM/GC (SILTY to CLAYEY GRAVEL)
- CL/ML (SILTY CLAY)
- ML/CL (CLAYEY SILT)
- CH/MH (FAT CLAY to ELASTIC SILT)
- CL/CH (LEAN to FAT CLAY)
- MH/ML (ELASTIC SILT to SILT)

| DRILLING AND SAMPLING ABBREVIATIONS | |
|-------------------------------------|--|
| 2ST | - Shelby Tube - 2" O.D. |
| 3ST | - Shelby Tube - 3" O.D. |
| AS | - Auger Sample |
| GS | - Grab Sample |
| LS | - Liner Sample |
| NR | - No Recovery |
| PM | - Pressuremeter |
| RC | - Rock Core diamond bit. NX size, except where noted |
| SB | - Split Barrel Sample 1-3/8" I.D., 2" O.D., except where noted |
| VS | - Vane Shear |
| WS | - Wash Sample |

| OTHER ABBREVIATIONS | |
|---------------------|---------------------------|
| WOH | - Weight of Hammer |
| WOR | - Weight of Rods |
| SP | - Soil Probe |
| PID | - Photo Ionization Device |
| FID | - Flame Ionization Device |

| DEPOSITIONAL FEATURES | |
|-----------------------|---|
| Parting | - as much as 1/16 inch thick |
| Seam | - 1/16 inch to 1/2 inch thick |
| Layer | - 1/2 inch to 12 inches thick |
| Stratum | - greater than 12 inches thick |
| Pocket | - deposit of limited lateral extent |
| Lens | - lenticular deposit |
| Hardpan/Till | - an unstratified, consolidated or cemented mixture of clay, silt, sand and/or gravel, the size/shape of the constituents vary widely |
| Lacustrine | - soil deposited by lake water |
| Mottled | - soil irregularly marked with spots of different colors that vary in number and size |
| Varved | - alternating partings or seams of silt and/or clay |
| Occasional | - one or less per foot of thickness |
| Frequent | - more than one per foot of thickness |
| Interbedded | - strata of soil or beds of rock lying between or alternating with other strata of a different nature |

| DESCRIPTION OF RELATIVE QUANTITIES | |
|---|--|
| The visual-manual procedure uses the following terms to describe the relative quantities of notable foreign materials, gravel, sand or fines: | |
| Trace | - particles are present but estimated to be less than 5% |
| Few | - 5 to 10% |
| Little | - 15 to 25% |
| Some | - 30 to 45% |
| Mostly | - 50 to 100% |

| CLASSIFICATION TERMINOLOGY AND CORRELATIONS | | | |
|---|--|---|--|
| Cohesionless Soils | | Cohesive Soils | |
| Relative Density | N₆₀ (N-Value) (Blows per foot) | Consistency | N₆₀ (N-Value) (Blows per foot) |
| Very Loose | 0 to 4 | Very Soft | <2 |
| Loose | 5 to 10 | Soft | 2 - 4 |
| Medium Dense | 11 to 30 | Medium | 5 - 8 |
| Dense | 31 to 50 | Stiff | 9 - 15 |
| Very Dense | 51 to 80 | Very Stiff | 16 - 30 |
| Extremely Dense | Over 81 | Hard | > 30 |
| | | Undrained Shear Strength (kips/ft²) | |
| | | < 0.25 | 0.25 or less |
| | | > 0.25 to 0.50 | > 0.25 to 0.50 |
| | | > 0.50 to 1.0 | > 0.50 to 1.0 |
| | | > 1.0 to 2.0 | > 1.0 to 2.0 |
| | | > 2.0 to 4.0 | > 2.0 to 4.0 |
| | | > 4.0 or greater | > 4.0 or greater |

Standard Penetration 'N-Value' = Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split barrel sampler, except where noted. N60 values as reported on boring logs represent raw N-values corrected for hammer efficiency only.

5/15/25 2:27:02 PM



BORING B 1

PAGE 1 OF 1

BORING DEPTH: 10 FEET

PROJECT NAME: The Preserve - Bath Township
CLIENT: Brookes & Henderson Building Company, LLC

PROJECT NUMBER: 099307.00
PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/21/25
DRILLER: RM/ WI

COMPLETED: 3/21/25
RIG NO.: 635 (CME 55)

BORING METHOD: 3 3/4" Hollow-stem Augers
LOGGED BY: CKW

CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- O | DRY DENSITY (pcf) -- ■ | | | MOISTURE & ATTERBERG LIMITS (%) | | | | REMARKS |
|------------------|--------------|-----------------------------|---|--------------------------|--------------------------|--------------------------|--|------------------------|------|-----|---------------------------------|----|----|----|---------|
| | | | | | | | | 90 | 100 | 110 | 120 | PL | MC | LL | |
| 1030 | 0 | | 0.4 5 inches of TOPSOIL 1030.1 | | | | | | | | | | | | |
| | | | Sandy LEAN CLAY- Brown- Stiff (CL) | SB1 | 18 | 4 4 5 | 12 | 23 | 4.5+ | | | | | | |
| | | | LEAN CLAY with Gravel- Brown- Very Stiff to Hard (CL) | SB2 | 18 | 7 9 14 | 32 | 16 | 4.5+ | | | | | | |
| | | | | SB3 | 18 | 7 10 11 | 29 | 18 | 4.5+ | | | | | | |
| | | | | SB4 | 18 | 7 11 14 | 35 | 16 | 4.5+ | | | | | | |
| 1020 | 10 | END OF BORING AT 10.0 FEET. | | | | | | | | | | | | | |

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

5/15/25 2:27:05 PM



BORING B 3

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: The Preserve - Bath Township

PROJECT NUMBER: 099307.00

CLIENT: Brookes & Henderson Building Company, LLC

PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/21/25

COMPLETED: 3/21/25

BORING METHOD: 3 3/4" Hollow-stem Augers

DRILLER: RM/ WI

RIG NO.: 635 (CME 55)

LOGGED BY: CKW

CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | ELEVATION: 1029 FT PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- O | DRY DENSITY (pcf) -- ■ | | | MOISTURE & ATTERBERG LIMITS (%) PL MC LL | STRENGTH (KSF) 1 2 3 4 | REMARKS |
|------------------|--------------|------------------|---|-----------------------------|--------------------------|--------------------------|--|------------------------|-----|---------|---|---------------------------|---------|
| | | | | | | | | 90 | 100 | 110 120 | | | |
| 0 | 0.5 | | 6 inches of TOPSOIL | | | | | | | | | | |
| 1025 | 5 | | Sandy LEAN CLAY- Brown- Stiff to Very Stiff (CL) | SB1 | 18 | 4 4 5 | 12 | | 20 | | | 4.5+ | |
| | | | | SB2 | 18 | 4 5 7 | 17 | | 16 | | | 4.5+ | |
| 1020 | 10 | | LEAN CLAY with Trace Gravel- Brown- Very Stiff (CL) | SB3 | 18 | 4 6 9 | 21 | | 17 | | | 4.5+ | |
| | | | | SB4 | 18 | 6 7 8 | 21 | | 19 | | | 4.5+ | |
| | | | | 3ST5 | | | | | | | | | |
| 1015 | 15 | | | SB6 | 18 | 7 9 12 | 29 | | 20 | | | 4.5+ | |
| 1010 | 20 | | END OF BORING AT 20.0 FEET. | SB7 | 18 | 6 7 9 | 22 | | 19 | | | | |

| GROUNDWATER & BACKFILL INFORMATION | | |
|--|------------|-----------|
| | DEPTH (FT) | ELEV (FT) |
| ▽ DURING BORING: | 19.8 | 1009.2 |
| ▽ AT END OF BORING: | Note 3 | |
| BACKFILL METHOD: Auger Cuttings | | |

- NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
 3. Groundwater not encountered upon completion of drilling.

5/15/25 2:27:07 PM



BORING B 4

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: The Preserve - Bath Township
CLIENT: Brookes & Henderson Building Company, LLC

PROJECT NUMBER: 099307.00
PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/21/25
DRILLER: RM/ WI

COMPLETED: 3/21/25
RIG NO.: 635 (CME 55)

BORING METHOD: 3 3/4" Hollow-stem Augers
LOGGED BY: CKW

CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | ELEVATION: 1029.5 FT PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- ○ | DRY DENSITY (pcf) -- ■ | | | MOISTURE & ATTERBERG LIMITS (%) | | | | REMARKS |
|------------------|--------------|------------------|---|-----------------------------|--------------------------|--------------------------|--|------------------------|-----|-----|---------------------------------|----|----|----|---------|
| | | | | | | | | 90 | 100 | 110 | 120 | PL | MC | LL | |
| | 0 | | 4 inches of TOPSOIL | | | | | | | | | | | | |
| | 0.3 | | 1029.2 | | | | | | | | | | | | |
| | 3.0 | | 1026.5 | SB1 | 18 | 4 | 12 | | | | | | | | |
| | 5 | | | SB2 | 18 | 5 | 21 | | | | | | | | |
| 1025 | 9 | | | SB3 | 18 | 7 | 32 | | | | | | | | |
| | 10 | | | SB4 | 18 | 8 | 32 | | | | | | | | |
| 1020 | 12 | | | 3ST5 | 12 | 8 | | | | | | | | | |
| | 15 | | | SB6 | 18 | 8 | 33 | | | | | | | | |
| 1015 | 14 | | | | | 10 | | | | | | | | | |
| | 20 | | 1009.5 | SB7 | 8 | 14 | 44 | | | | | | | | |
| | 20.0 | | 1009.5 | | | 15 | | | | | | | | | |
| | | | END OF BORING AT 20.0 FEET. | | | 17 | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | |

| |
|---|
| GROUNDWATER & BACKFILL INFORMATION |
| GROUNDWATER WAS NOT ENCOUNTERED |
| BACKFILL METHOD: Auger Cuttings |

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

5/15/25 2:27:10 PM



BORING B 5

PAGE 1 OF 2

BORING DEPTH: 60 FEET

PROJECT NAME: The Preserve - Bath Township
CLIENT: Brookes & Henderson Building Company, LLC

PROJECT NUMBER: 099307.00
PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/19/25
DRILLER: RM/ WI

COMPLETED: 3/19/25
RIG NO.: 635 (CME 55)

BORING METHOD: 3 3/4" Hollow-stem Augers
LOGGED BY: CKW

CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | ELEVATION: 1021 FT PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- O | DRY DENSITY (pcf) -- ■ | | | | MOISTURE & ATTERBERG LIMITS (%) | | | | REMARKS |
|------------------|--------------|------------------|---|--------------------------|--------------------------|--------------------------|--|------------------------|-----|-----|-----|---------------------------------|----|----|----|---------|
| | | | | | | | | 90 | 100 | 110 | 120 | PL | MC | LL | SH | |
| 1020 | 0.6 | | 7 inches of TOPSOIL | | | | | | | | | | | | | |
| 1020 | | | Sandy LEAN CLAY with Gravel-Brown- Stiff to Very Stiff (CL) | SB1 | 18 | 3 | 10 | | | | | | | | | |
| | | | | SB2 | 18 | 3 | 17 | | | | | | | | | |
| | | | | SB3 | 10 | 50/4" | 8 | | | | | | | | | |
| 1015 | | | Sandy LEAN CLAY with Gravel-Brown- Hard (CL) | SB4 | 18 | 22 | 33 | | | | | | | | | |
| 1010 | | | | SB5 | 18 | 4 | 17 | | | | | | | | | |
| 1010 | | | Sandy LEAN CLAY with Gravel-Gray- Very Stiff (CL) | SB6 | 18 | 6 | 26 | | | | | | | | | |
| 1005 | | | | SB7 | 18 | 4 | 17 | | | | | | | | | |
| 1005 | | | LEAN CLAY- Gray- Very Stiff (CL) | 3ST8 | 20 | | | | | | | | | | | |
| 1000 | | | | SB9 | 18 | 5 | 24 | | | | | | | | | |
| | | | | SB10 | 18 | 5 | 19 | | | | | | | | | |
| 995 | | | | SB11 | 18 | 4 | 21 | | | | | | | | | |
| | | | | SB12 | 18 | 4 | 21 | | | | | | | | | |

Drillers reported sand seams and cobbles near depth of 7 feet.

Sandy Silt Layer at 13.5'.

| GROUNDWATER & BACKFILL INFORMATION | | |
|------------------------------------|----------------|-----------|
| | DEPTH (FT) | ELEV (FT) |
| ▽ DURING BORING: | 7.0 | 1014.0 |
| ▽ AT END OF BORING: | Note 3 | |
| ▽ .25 HRS AFTER BORING: | 26.5 | 994.5 |
| CAVE-IN OF BOREHOLE AT: | 34.0 | 987.0 |
| BACKFILL METHOD: | Auger Cuttings | |

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
 3. Groundwater not encountered upon completion of drilling.

5/15/25 2:27:15 PM



BORING B 6

PAGE 1 OF 2

BORING DEPTH: 60 FEET

PROJECT NAME: The Preserve - Bath Township
CLIENT: Brookes & Henderson Building Company, LLC

PROJECT NUMBER: 099307.00
PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/20/25
DRILLER: RM/ WI

COMPLETED: 3/20/25
RIG NO.: 635 (CME 55)

BORING METHOD: 3 3/4" Hollow-stem Augers
LOGGED BY: CKW

CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | ELEVATION: 1022 FT PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- O | DRY DENSITY (pcf) -- ■ | | | | MOISTURE & ATTERBERG LIMITS (%) | | | | SHEAR STRENGTH (KSF) | REMARKS |
|------------------|--------------|------------------|---|-----------------------------|--------------------------|--------------------------|--|------------------------|-----|-----|-----|---------------------------------|----|----|---|----------------------|---------|
| | | | | | | | | 90 | 100 | 110 | 120 | PL | MC | LL | 1 | | |
| 1022 | 0.3 | | 4 inches of TOPSOIL | | | | | | | | | | | | | | |
| 1020 | 3.0 | | LEAN CLAY- Brown- Stiff (CL) | SB1 | 14 | 4 | 12 | | | | | | | | | | |
| | | | | SB2 | 18 | 4 | 26 | | | | | | | | | | |
| | | | | SB3 | 18 | 6 | 28 | | | | | | | | | | |
| | | | | SB4 | 18 | 6 | 33 | | | | | | | | | | |
| | | | | SB5 | 18 | 7 | 22 | | | | | | | | | | |
| | | | | SB6 | 18 | 7 | 25 | | | | | | | | | | |
| | | | | SB7 | 18 | 7 | 21 | | | | | | | | | | |
| | | | | SB8 | 18 | 4 | 12 | | | | | | | | | | |
| | | | | SB9 | 18 | 4 | 10 | | | | | | | | | | |
| | | | | 3ST10 | 24 | 4 | | | | | | | | | | | |
| | | | | SB11 | 18 | 4 | 12 | | | | | | | | | | |
| | | | | SB12 | 18 | 3 | 10 | | | | | | | | | | |

| GROUNDWATER & BACKFILL INFORMATION | | |
|--|------------|-----------|
| | DEPTH (FT) | ELEV (FT) |
| ▽ DURING BORING: | 40.0 | 982.0 |
| ▽ AT END OF BORING: | Note 3 | |
| BACKFILL METHOD: Auger Cuttings | | |

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
 3. Groundwater not encountered upon completion of drilling.

5/15/25 2:27:18 PM



BORING B 7

PAGE 1 OF 1

BORING DEPTH: 20 FEET

PROJECT NAME: The Preserve - Bath Township
CLIENT: Brookes & Henderson Building Company, LLC

PROJECT NUMBER: 099307.00
PROJECT LOCATION: Akron, Ohio

DATE STARTED: 3/21/25
DRILLER: RM/ WI

COMPLETED: 3/21/25
RIG NO.: 635 (CME 55)

BORING METHOD: 3 3/4" Hollow-stem Augers
LOGGED BY: CKW

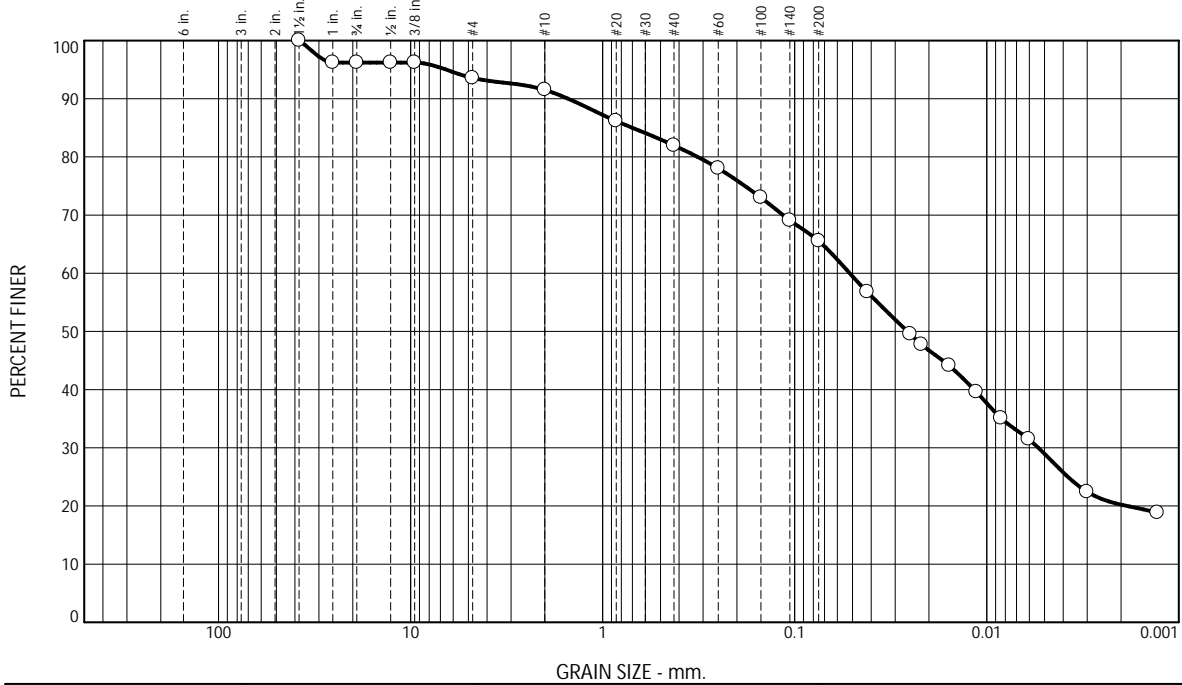
CHECKED BY: BPL

| ELEVATION (FEET) | DEPTH (FEET) | SYMBOLIC PROFILE | ELEVATION: 1026.5 FT PROFILE DESCRIPTION | SAMPLE TYPE/NO. INTERVAL | RECOVERY LENGTH (INCHES) | SPT BLOWS PER SIX INCHES | HAMMER EFFICIENCY: 83% DATE: 10/16/2024 N ₆₀ -- ○ | DRY DENSITY (pcf) -- ■ | | MOISTURE & ATTERBERG LIMITS (%) PL MC LL | ▼ HAND PENE. ■ TORVANE SHEAR ○ UNC. COMP. □ VANE SHEAR (PK) × VANE SHEAR (REM) ◆ TRIAXIAL (UU) SHEAR STRENGTH (KSF) 1 2 3 4 | REMARKS |
|------------------|--------------|------------------|---|-----------------------------|--------------------------|--------------------------|--|------------------------|-------------|---|--|---------|
| | | | | | | | | 90 | 100 110 120 | | | |
| 1026.5 | 0.4 | | 5 inches of TOPSOIL | | | | | | | | | |
| 1025 | 5 | | Sandy LEAN CLAY- Brown and Gray- Stiff (CL) | SB1 | 14 | 3 | 10 | | 26 | | | |
| | | | | SB2 | 18 | 3 | 12 | | 24 | | | |
| 1020 | 5.5 | | LEAN CLAY with Trace Gravel- Brown- Very Stiff to Hard (CL) | SB3 | 18 | 6 | 24 | | 15 | | | 4.5+ |
| | | | | SB4 | 18 | 7 | 32 | | 17 | | | 4.5+ |
| 1015 | 17.5 | | LEAN CLAY with Trace Gravel- Gray- Very Stiff (CL) | SB5 | 13 | 8 | 40 | | 18 | | | 4.5+ |
| 1010 | 20.0 | | END OF BORING AT 20.0 FEET. | SB6 | 18 | 5 | 19 | | 17 | | | |
| 1005 | | | | | | | | | | | | |
| 1000 | | | | | | | | | | | | |
| 1026.5 | 0 | | | | | | | | | | | |

| GROUNDWATER & BACKFILL INFORMATION | | |
|--|------------|-----------|
| | DEPTH (FT) | ELEV (FT) |
| ▽ DURING BORING: | 17.5 | 1009.0 |
| ▽ AT END OF BORING: | 18.5 | 1008.0 |
| BACKFILL METHOD: Auger Cuttings | | |

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
 2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 3.8 | 2.6 | 2.1 | 9.5 | 16.5 | 45.3 | 20.2 |

| Test Results (ASTM D6913 and D7928) | | | |
|-------------------------------------|-----------|-------------|------------------|
| Sieve Size or Diam. (mm.) | Finer (%) | Spec. * (%) | Out of Spec. (%) |
| 1 1/2 | 100.0 | | |
| 1 | 96.2 | | |
| 3/4 | 96.2 | | |
| 1/2 | 96.2 | | |
| 3/8 | 96.2 | | |
| #4 | 93.6 | | |
| #10 | 91.5 | | |
| #20 | 86.2 | | |
| #40 | 82.0 | | |
| #60 | 78.0 | | |
| #100 | 73.0 | | |
| #140 | 69.1 | | |
| #200 | 65.5 | | |
| 0.0419 mm. | 56.8 | | |
| 0.0250 mm. | 49.5 | | |
| 0.0219 mm. | 47.7 | | |
| 0.0157 mm. | 44.1 | | |
| 0.0113 mm. | 39.6 | | |
| 0.0084 mm. | 35.1 | | |
| 0.0060 mm. | 31.5 | | |
| 0.0030 mm. | 22.4 | | |
| 0.0013 mm. | 18.8 | | |

(no specification provided)

Material Description

Sandy LEAN CLAY

Atterberg (ASTM D4318)

PL= 16 LL= 24 PI= 8

Coefficients

D₉₀= 1.5113 D₈₅= 0.7002

D₆₀= 0.0517 D₅₀= 0.0259

D₃₀= 0.0054 D₁₅=

D₁₀=

C_u= C_c=

Sieve Test (ASTM D6913)

Test Date: 4-11-25 Technician: EY

Test Notes

Hydrometer Test (ASTM D7928)

Test Date: 4-10-25 Technician: EY

Test Notes

USCS (ASTM D2487)

CL

Date Sampled: 3-20-25

Date Received: 3-20-25

Checked By: SM

Title: _____

Source of Sample: B6 Depth: 11.0-12.5
 Sample Number: SB5



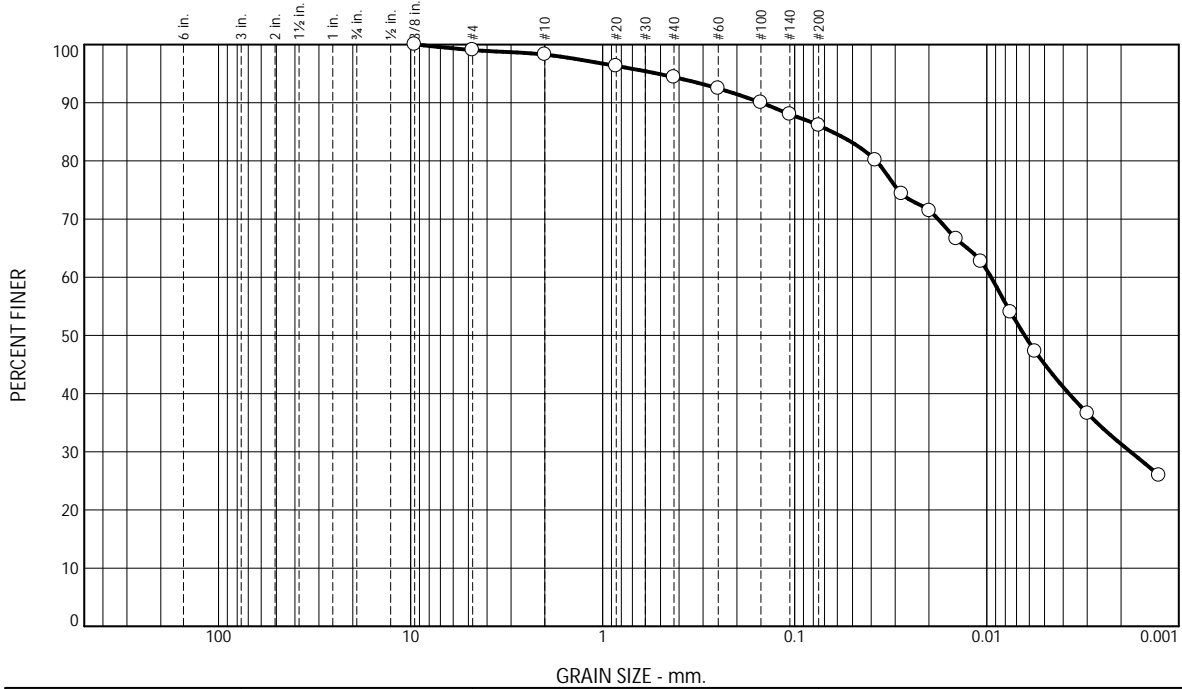
Client: Brookes & Henderson Building Company, LLC

Project: The Preserve - Bath Township

Project No: 099307.00

Figure

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 0.7 | 3.9 | 8.3 | 54.8 | 31.3 |

| Test Results (ASTM D6913 and D7928) | | | |
|-------------------------------------|-----------|-------------|------------------|
| Sieve Size or Diam. (mm.) | Finer (%) | Spec. * (%) | Out of Spec. (%) |
| 3/8 | 100.0 | | |
| #4 | 99.0 | | |
| #10 | 98.3 | | |
| #20 | 96.3 | | |
| #40 | 94.4 | | |
| #60 | 92.4 | | |
| #100 | 90.0 | | |
| #140 | 88.0 | | |
| #200 | 86.1 | | |
| 0.0380 mm. | 80.2 | | |
| 0.0277 mm. | 74.4 | | |
| 0.0199 mm. | 71.5 | | |
| 0.0144 mm. | 66.6 | | |
| 0.0107 mm. | 62.7 | | |
| 0.0075 mm. | 54.0 | | |
| 0.0056 mm. | 47.3 | | |
| 0.0030 mm. | 36.6 | | |
| 0.0013 mm. | 26.0 | | |

(no specification provided)

Material Description

LEAN CLAY

Atterberg (ASTM D4318)

PL= 15 LL= 28 PI= 13

Coefficients

D₉₀= 0.1491 D₈₅= 0.0640

D₆₀= 0.0095 D₅₀= 0.0064

D₃₀= 0.0018 D₁₅=

D₁₀=

C_u= C_c=

Sieve Test (ASTM D6913)

Test Date: 4-11-25 Technician: EY

Test Notes

Hydrometer Test (ASTM D7928)

Test Date: 4-10-25 Technician: EY

Test Notes

USCS (ASTM D2487)

CL

Date Sampled: 3-20-25

Date Received: 3-20-25

Checked By: SM

Title: _____

Source of Sample: B6 Depth: 31.0-32.5
Sample Number: SB13



Client: Brookes & Henderson Building Company, LLC

Project: The Preserve - Bath Township

Project No: 099307.00

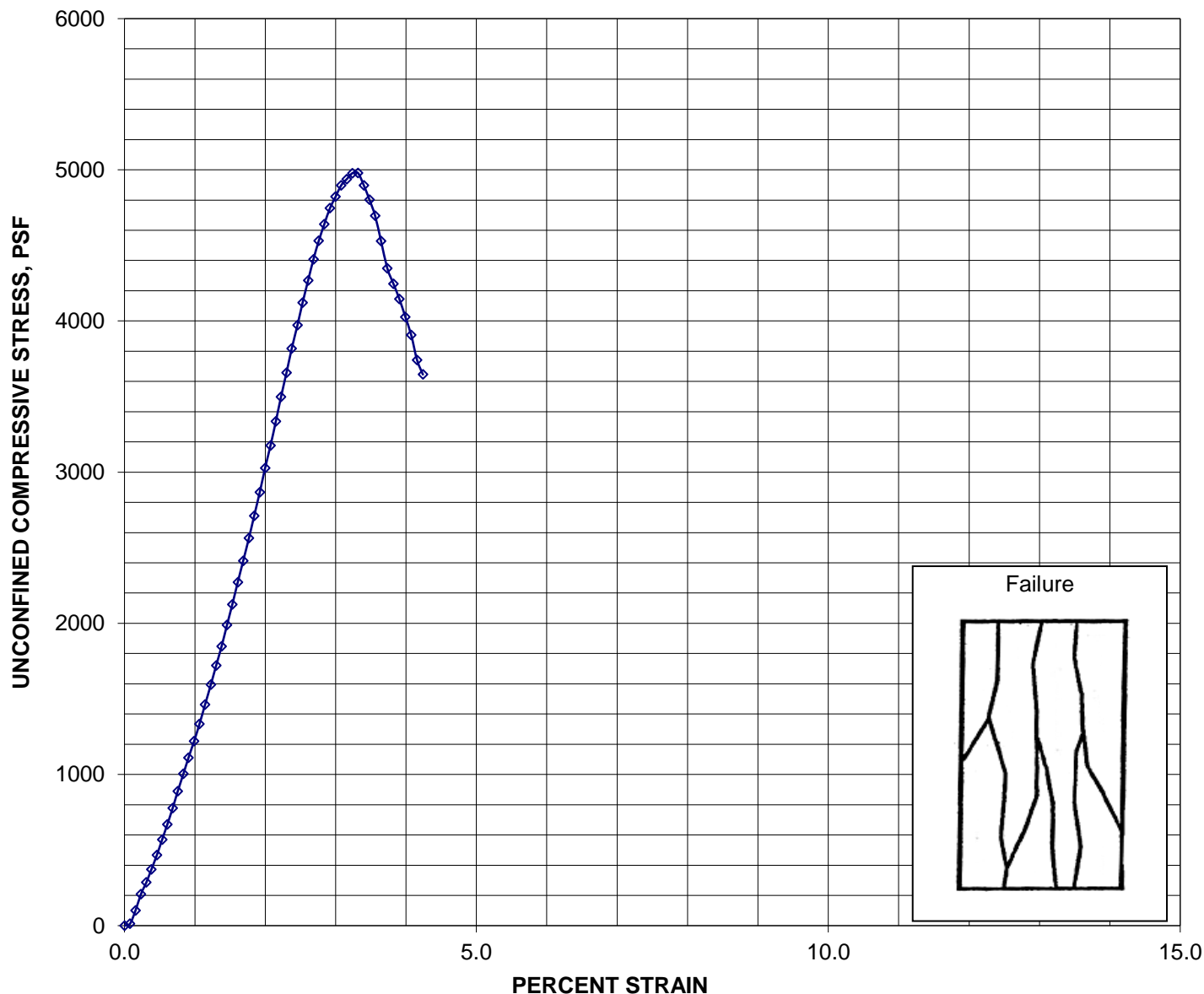
Figure



**UNCONFINED COMPRESSIVE STRENGTH OF
COHESIVE SOIL
ASTM D2166**

9375 CHILLICOTHE ROAD, KIRTLAND, OH 44094
PHONE: 440-256-6500 FAX: 440-256-6507

Project: The Preserve
Project Location: Akron, OH
Project #: 099307.00
Date: April 7, 2025



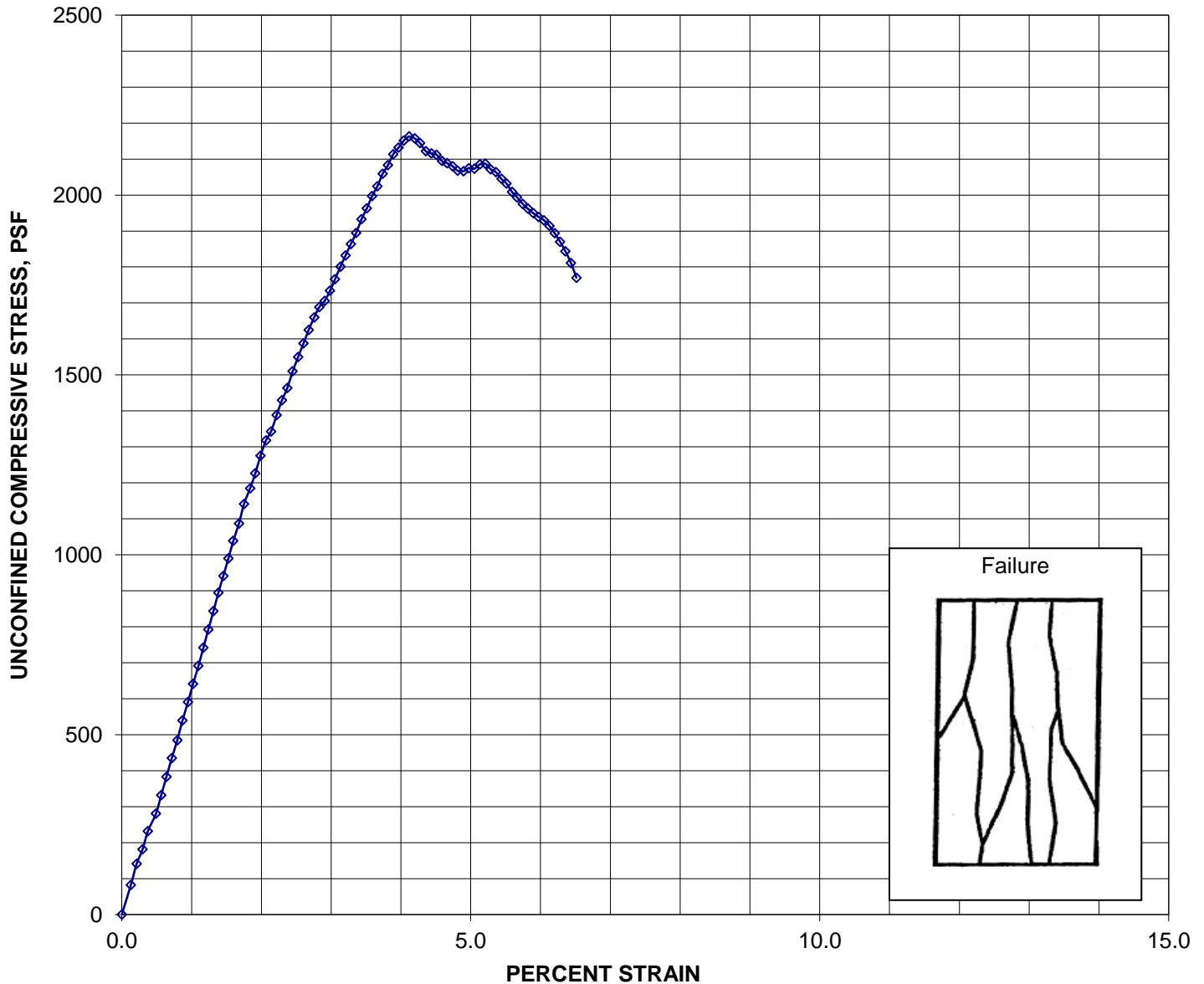
| SAMPLE INFORMATION | | TEST RESULTS | |
|-------------------------------|-----------|---|-------|
| Sample Description: | LEAN CLAY | Unconfined Compressive Strength (psf): | 4980 |
| Sample Location: | B-2 | Strain at Failure (%): | 3.3 |
| Sample Depth: | 5.0-7.0' | Water Content (after shear) (%): | 16.8 |
| USCS Classification: | CL | Dry Density (pcf): | 115.1 |
| Height (in): | 5.69 | Average Strain Rate (%/min): | 0.9 |
| Diameter (in): | 2.85 | Pocket Penetrometer (TSF): | 4.5+ |
| Height/Diameter Ratio: | 2.0 | Torvane (TSF): | |



**UNCONFINED COMPRESSIVE STRENGTH OF
COHESIVE SOIL
ASTM D2166**

9375 CHILLICOTHE ROAD, KIRTLAND, OH 44094
PHONE: 440-256-6500 FAX: 440-256-6507

Project: The Preserve
Project Location: Akron, OH
Project #: 099307.00
Date: April 7, 2025



| SAMPLE INFORMATION | | TEST RESULTS | |
|-------------------------------|------------|---|-------|
| Sample Description: | LEAN CLAY | Unconfined Compressive Strength (psf): | 2160 |
| Sample Location: | B-4 | Strain at Failure (%): | 4.1 |
| Sample Depth: | 11.5-12.5' | Water Content (after shear) (%): | 17.5 |
| USCS Classification: | CL | Dry Density (pcf): | 108.2 |
| Height (in): | 5.75 | Average Strain Rate (%/min): | 1.0 |
| Diameter (in): | 2.80 | Pocket Penetrometer (TSF): | 3.75 |
| Height/Diameter Ratio: | 2.1 | Torvane (TSF): | |

APPENDIX B
FIELD TESTING PROCEDURES
LABORATORY TESTING PROCEDURES
LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

FIELD TESTING PROCEDURES

STANDARD PENETRATION TESTS

The Standard Penetration Tests (SPT) generally follow the American Standard Test Method (ASTM) D-1586 "Standard Test Method for SPT and Split-Barrel Sampling of Soils". It is typically performed using a 2-inch O.D. split-spoon sampler, which is driven to obtain samples at selected intervals. The number of blows of a 140-pound hammer dropping 30 inches is recorded for each of three or four, 6-inch penetration intervals for an 18 or 24-inch drive at each sample location. The sum of blow counts for the second and third 6-inch penetration intervals equals the raw (uncorrected) N-value for a given sample interval (i.e. 5-4-2, N = 6). We periodically calibrate SME's drill rig auto-hammers. The hammer efficiency determined from this calibration is used to calculate the corrected N-values (N_{60}), as reported on the logs. When sampling in rock or hard soil, where a penetration of 6 inches or less was obtained for 50 hammer blows, the actual blow count and depth of penetration in inches for that interval is recorded (i.e. 50/2"). When sampling in very loose or very soft soil, where a penetration of more than 6 inches is obtained for a single hammer blow, the actual depth of penetration for that hammer blow is recorded (i.e. 1-0-0). Where the sampling equipment advanced under its own weight, "WOH" (weight of hammer) and the corresponding penetration depth are shown on the boring logs.

LABORATORY TESTING PROCEDURES

VISUAL ENGINEERING CLASSIFICATION

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

MOISTURE CONTENT

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

HAND PENETROMETER TESTS

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

TORVANE SHEAR TESTS

In the Torvane test, the shear strength of a low strength, cohesive soil sample is estimated by measuring the resistance of the sample to a torque applied through vanes inserted into the sample. The undrained shear strength of the samples is measured from the maximum torque required to shear the sample and is reported in units of kips per square-foot (ksf).

ATTERBERG LIMITS TESTS

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a 1/2-inch thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool 1/2 inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content, and the corresponding number of blows is plotted. The liquid limit is defined as the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.

GRAIN SIZE DISTRIBUTION ANALYSIS

COARSE-GRAINED (GRANULAR) SAMPLES WITH LOW FINES CONTENT

Grain size distribution tests performed on granular samples involves oven-drying a representative sample of soil and washing out the fines (passing the No. 200 sieve) with tap water. The sample retained on the No. 200 sieve is then oven-dried, cooled and sieved on a series of stacked sieves beginning with the largest sieve on top and progressing to the smallest on the bottom. The portions of the sample retained on each sieve are then weighed and used to develop the grain size distribution curve in the report for each sample tested.

FINE-GRAINED (SILT OR CLAY) SAMPLES OR COARSE-GRAINED SAMPLES WITH HIGH FINES CONTENT

Particle size distribution tests performed on fine-grained or coarse-grained samples with a high fines content involves oven-drying a representative sample and mixing the sample with a liquid deflocculant to disperse the soil particles. The slurry is placed in a graduated cylinder and shaken to suspend the soil particles in the slurry. The graduated cylinder is then placed on a tabletop; a calibrated hydrometer is floated in the slurry to determine its density. The hydrometer measurements are made at selected time intervals as the soil in the cylinder settles and slurry density decreases. When the hydrometer measurements are completed, the slurry is poured onto a No. 200 sieve and the fines are washed out with tap water. The sample retained on the No. 200 sieve is then oven-dried, cooled and sieved on a series of stacked sieves beginning with the largest sieve on top and progressing to the smallest on the bottom. The portions of the sample retained on each sieve are then weighed and used with the hydrometer data to develop the grain size distribution curve in the report for each sample tested.

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

GROUNDWATER

Hydrostatic groundwater levels, and perched groundwater conditions, will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the logs represent conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

SUBSURFACE PROFILE

The profile described in this report and included on the logs is a generalized description of the conditions observed. The stratification depths described in this report and shown on the logs indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. Refer to the logs for the soil descriptions, rock descriptions (when applicable), and results of the field and laboratory tests at the specific exploration locations.

If only borings with hollow-stem or solid-stem augers are performed, consider thickness measurements of surficial materials reported on the logs (e.g., gravel, asphalt, concrete, aggregate base) to be approximate since mixing of the surface materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Perform additional evaluations for more accurate measurements of surface materials, such as test pits for topsoil and gravel thicknesses, coring for pavement thicknesses, and hand sampling for aggregate thickness.

APPENDIX C
IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT
GENERAL COMMENTS

Important Information about This 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.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the 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.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- 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;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the 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. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' 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.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering 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 subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

GENERAL COMMENTS

BASIS OF GEOTECHNICAL REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and/or other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing.

The discussions and recommendations contained in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME must be contacted to reevaluate the recommendations of this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of geotechnical engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs. The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

Retain SME to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME needs to be retained to continue our services through construction so we may observe and evaluate the actual subsurface conditions relative to the recommendations made in this report, and so we can verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

PROJECT INFORMATION FOR CONTRACTOR

This report and any future addenda or other reports regarding this site needs to be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor needs to promptly describe the nature and extent of the differing conditions in writing and SME needs to be notified so we can verify those conditions. The construction contract needs to include provisions for dealing with differing conditions, and contingency funds for potential

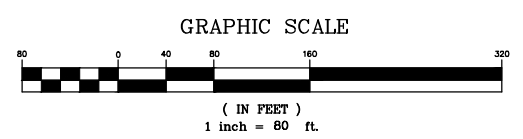
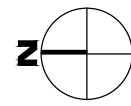
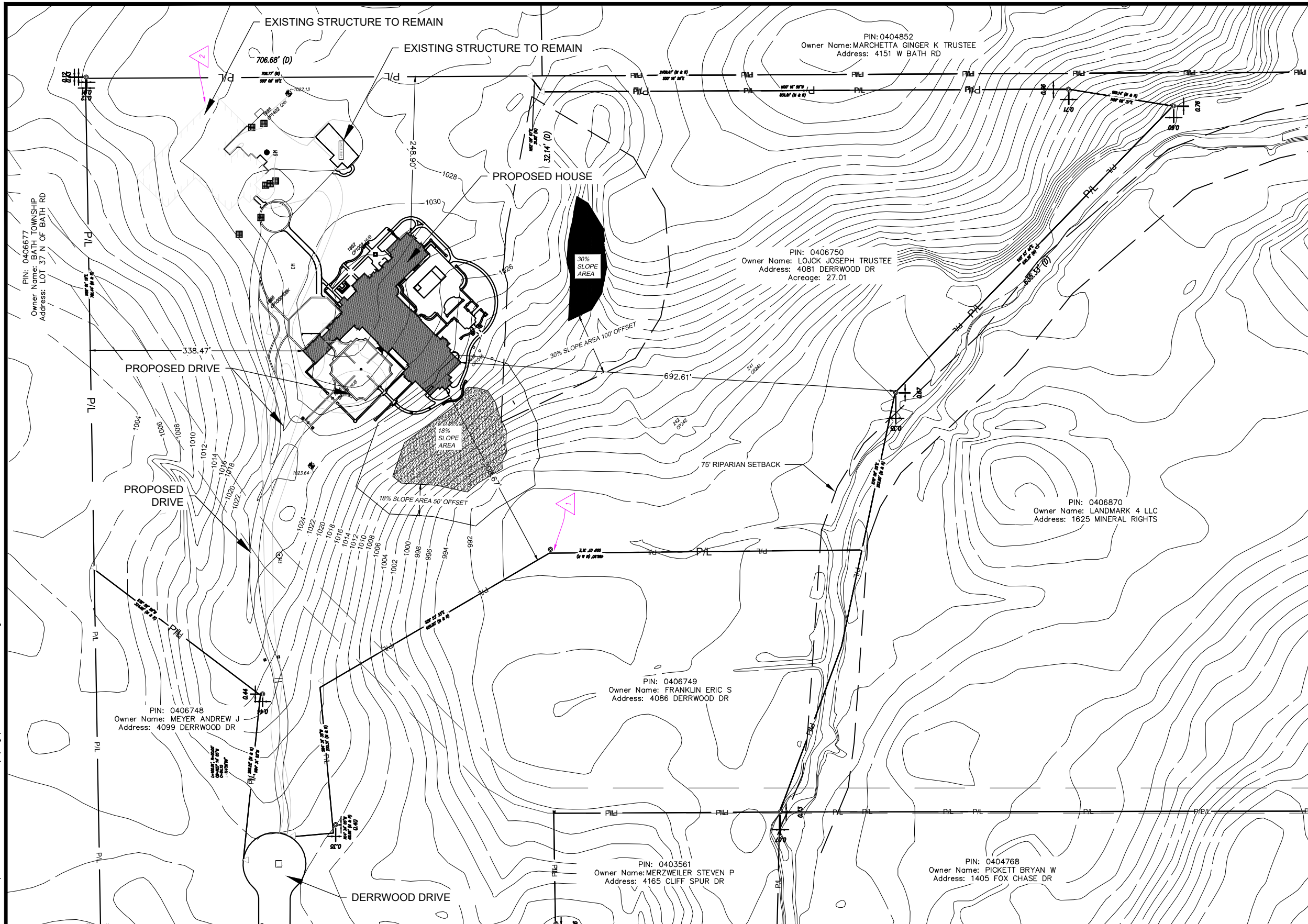
problems during earthwork and foundation construction. We would be pleased to assist with the development of contract provisions based on our experience.

The contractor needs to be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site need to be made available for review by bidders and the successful contractor.

THIRD PARTY RELIANCE/REUSE OF THIS REPORT

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.

1/7/2025 1:50:07 PM F:\Land Projects (C-3D)\Brookes & Henderson\252589 The Preserve-Bath\Twp\DWG\The Preserve - Civil Site.dwg



buckleygroup
engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 564-8008 - www.buckleygroup

PREPARED UNDER THE SUPERVISION OF:

The Preserve - Civil Site Design

LOCATION PLAN

SITUATED:
Bath Township, Summit County, State of Ohio

PREPARED FOR:

Brookes & Henderson
Building Co.
16710 W Park Circle Dr.
Chagrin Falls, OH 44023

Contact Person:
Pat Horsburgh
440-488-2798

DATE 05/21/25

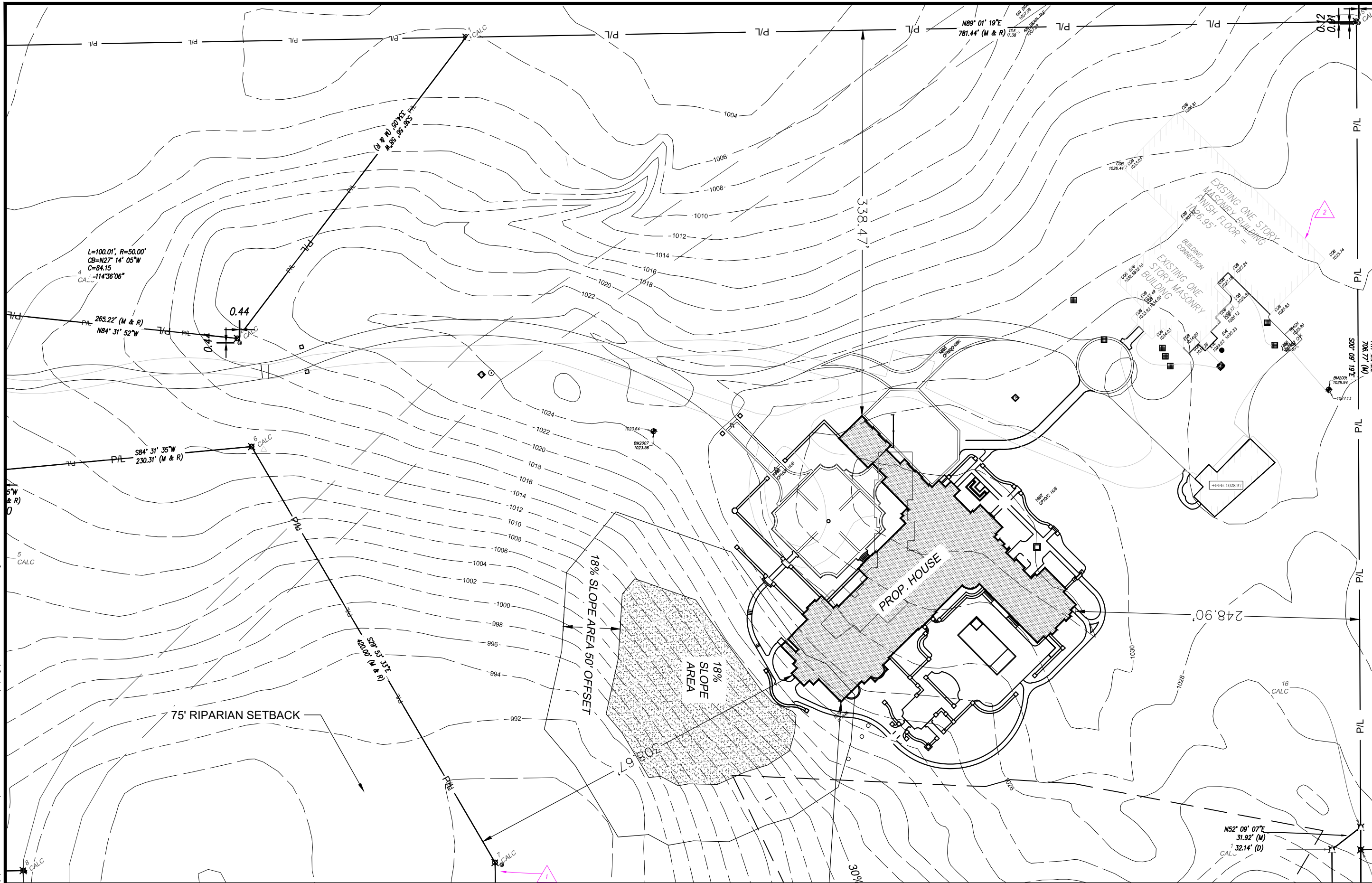
SCALE 1"=80' H.
N/A V.

DRWN. TAP |CHK. GJH

JOB NO. 252589

SHEET NO. C3

1/7/2025 1:50:07 PM
 F:\Land Projects (C-3D)\Brookes & Henderson\252589 The Preserve-Bath Twp\DWG\The Preserve - Civil Site.dwg



buckleygroup
 engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 564-8008 - www.buckleygroup

The Preserve - Civil Site Design

EXISTING CONDITIONS

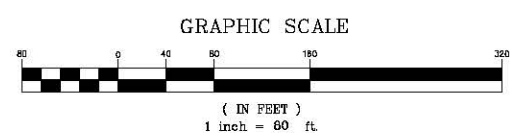
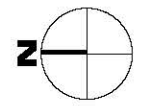
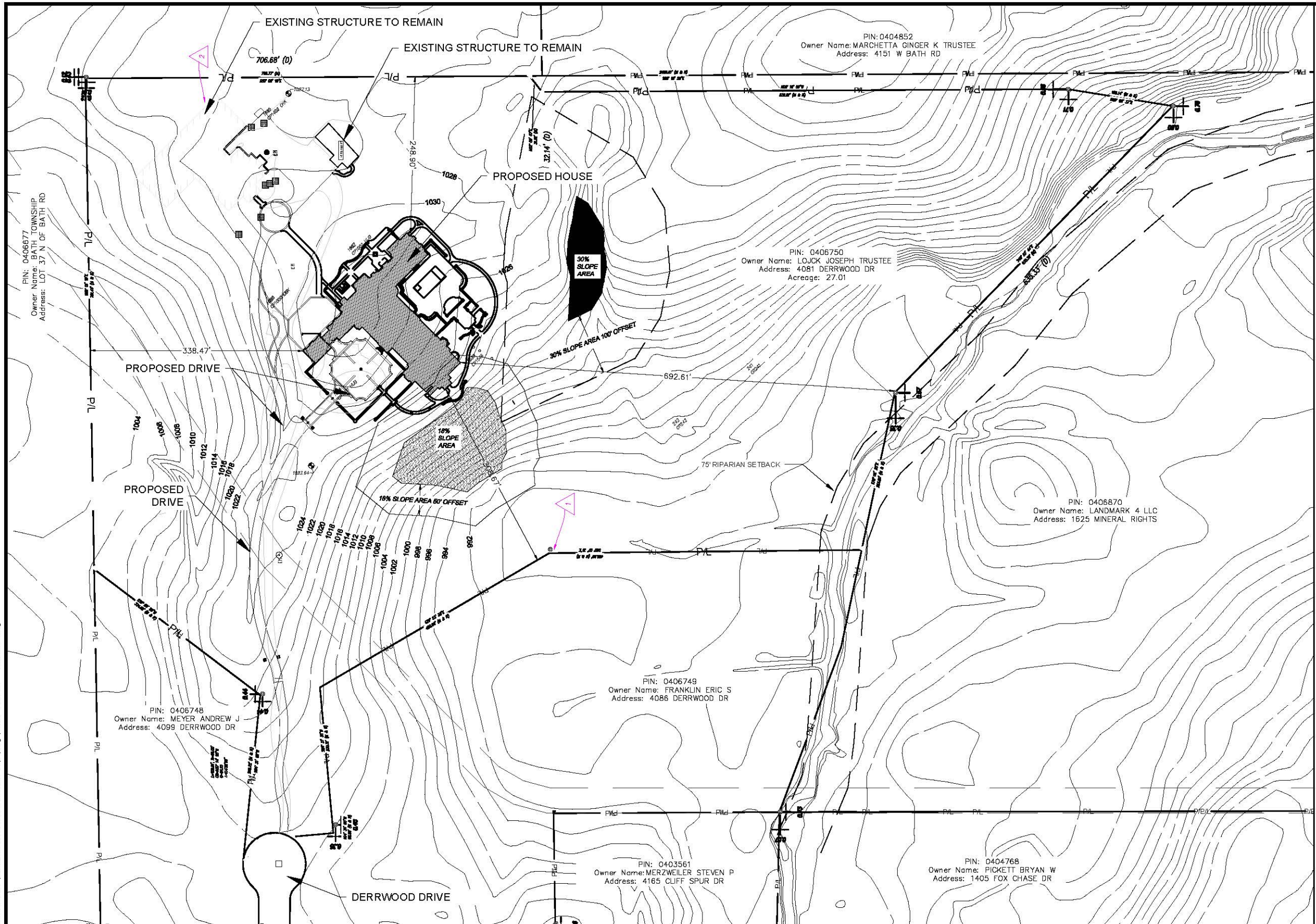
SITUATED:
 Bath Township, Summit County, State of Ohio

PREPARED FOR:
 Brookes & Henderson

Contact Person:
 Pat Horsburgh
 440-488-2798

DATE: 5/20/25
 SCALE: 1"=40' H.
 N/A V.
 DRWN. G3 | CHCK. GJH
 JOB NO. 252589
 SHEET NO. C1

1/17/2025 1:50:07 PM
 F:\Land Projects (CSD)\Brookes & Henderson\252589 The Preserve-Bath Twp\DWG\The Preserve - Civil Site.dwg



buckleygroup
 engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 584-8008 — www.buckleygroup

PREPARED UNDER THE SUPERVISION OF:

The Preserve - Civil Site Design

LOCATION PLAN

SITUATED:
 Bath Township, Summit County, State of Ohio

PREPARED FOR:

Brookes & Henderson
 Building Co.
 16710 W Park Circle Dr.
 Chagrin Falls, OH 44023

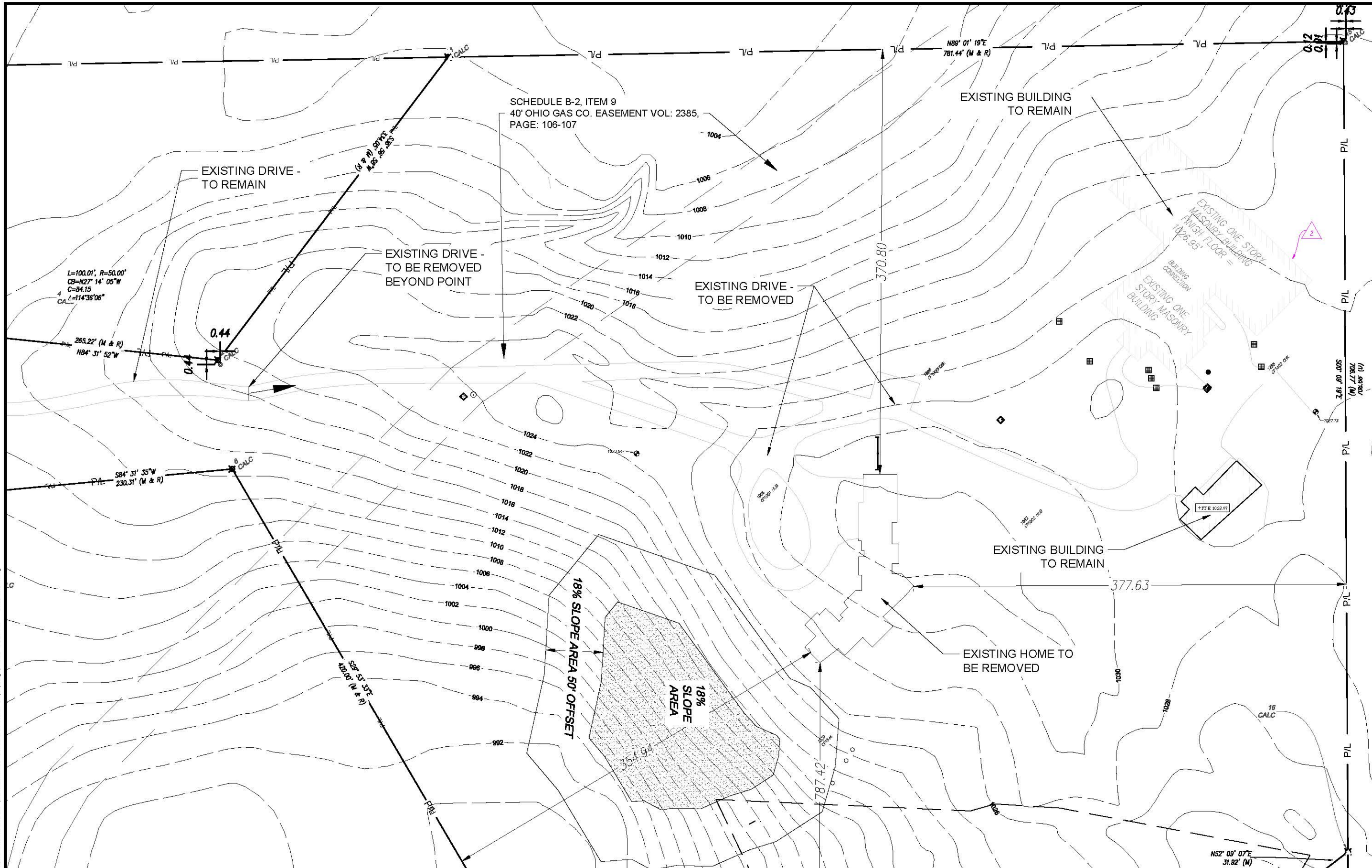
Contact Person:
 Pat Horsburgh
 440-488-2798

DATE 05/21/25

SCALE 1"=80' H.
 N/A V.

DRWN. TAP | CHCK. GJH
 JOB NO. 252589
 SHEET NO. C3

1/17/2025 1:50:07 PM
 F:\Land Projects (C3D)\Brookes & Henderson\252589 The Preserve-Bath Twp\DWG\The Preserve - Civil Site.dwg



SCHEDULE B-2, ITEM 9
 40' OHIO GAS CO. EASEMENT VOL: 2385,
 PAGE: 106-107

$L=100.01'$, $R=50.00'$
 $CB=N27° 14' 05\"W$
 $C=84.15$
 $\Delta=114° 36' 06\"$
 CALC

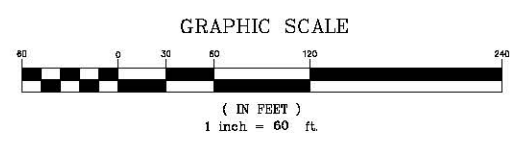
0.44

0.44

8 CALC

16 CALC

$N52° 09' 07\"E$
 $31.92'$ (M)



buckleygroup
 engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 584-8008 - www.buckleygroup

PREPARED UNDER THE SUPERVISION OF:

The Preserve - Civil Site Design

EXISTING CONDITIONS

SITUATED:
 Bath Township, Summit County, State of Ohio

PREPARED FOR:

Brookes & Henderson
 Building Co.
 16710 W Park Circle Dr.
 Chagrin Falls, OH 44023

Contact Person:
 Pat Horsburgh
 440-488-2798

DATE 5/20/25

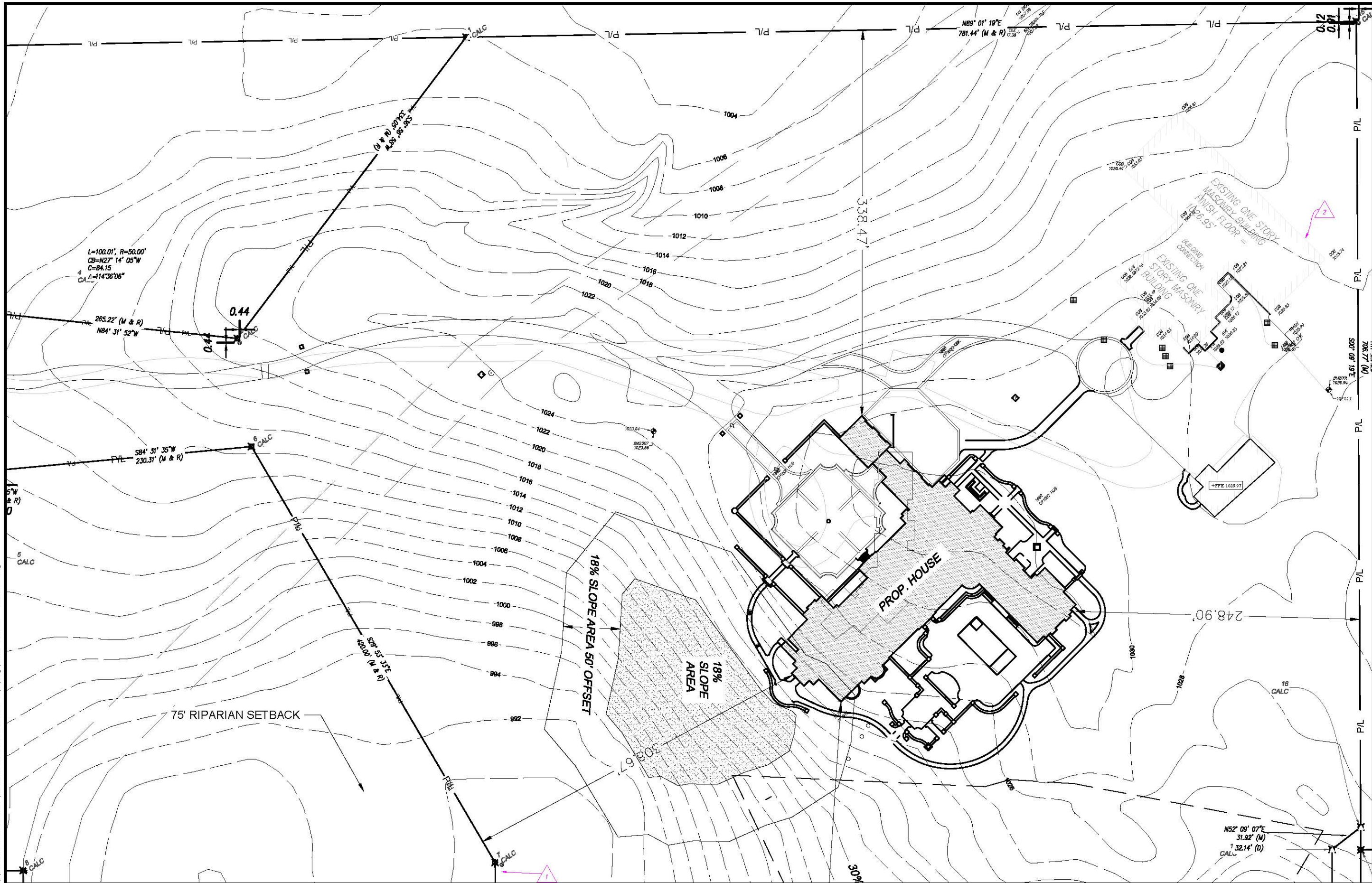
SCALE 1"=60' H.
 N/A V.

DRWN. G3 | CHCK. GJH

JOB NO. 252589

SHEET NO. C4

1/17/2025 1:50:07 PM
 F:\Land Projects (CSD)\Brookes & Henderson\252589 The Preserve-Bath Twp\DWG\The Preserve - Civil Site.dwg



buckleygroup
 engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 564-8008 - www.buckleygroup

The Preserve - Civil Site Design

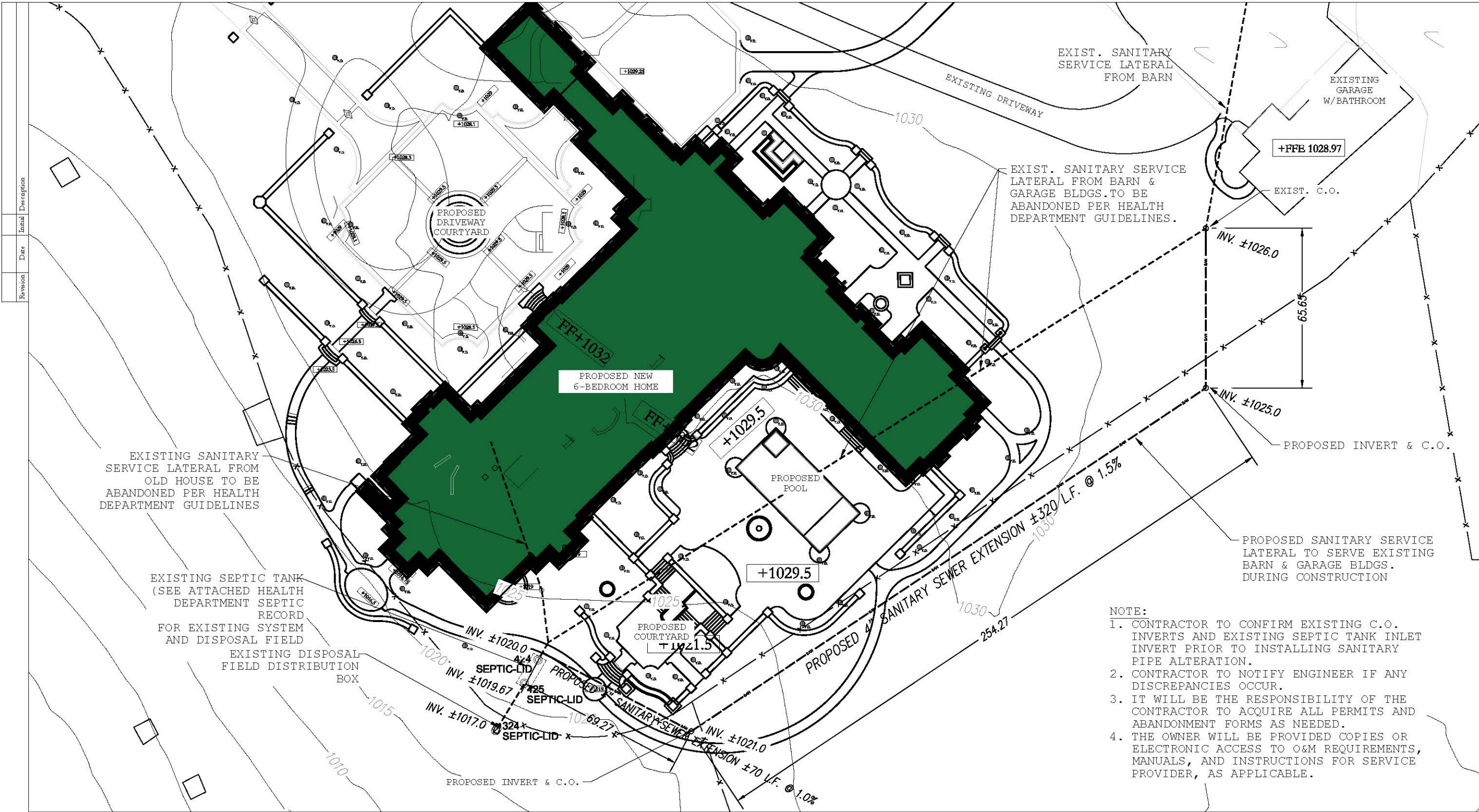
EXISTING CONDITIONS

SITUATED:
 Bath Township, Summit County, State of Ohio

PREPARED FOR:
 Brookes & Henderson

Contact Person:
 Pat Horsburgh
 440-488-2798

DATE: 5/20/25
 SCALE: 1"=40' H.
 N/A V.
 DRWN. G3 | CHCK. GJH
 JOB NO. 252589
 SHEET NO. C1



| Revision | Date | Initial | Description |
|----------|------|---------|-------------|
| | | | |

buckleygroup
engineering + surveying

12121 KINSMAN ROAD, NEWBURY OH 44065 (440) 564-8008 - www.buckleygroup

PREPARED UNDER THE SUPERVISION OF:

JOSEPH LOJCK RESIDENCE
HOME SEWAGE TREATMENT SYSTEM(HSTS)-ALTERATION
PROJECT AREA PLAN

SITUATED:
Parcel ID #0406750
4081 Derrwood Drive
Bath Twp., Summit County, State of Ohio

- NOTE:
1. CONTRACTOR TO CONFIRM EXISTING C.O. INVERTS AND EXISTING SEPTIC TANK INLET INVERT PRIOR TO INSTALLING SANITARY PIPE ALTERATION.
 2. CONTRACTOR TO NOTIFY ENGINEER IF ANY DISCREPANCIES OCCUR.
 3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACQUIRE ALL PERMITS AND ABANDONMENT FORMS AS NEEDED.
 4. THE OWNER WILL BE PROVIDED COPIES OR ELECTRONIC ACCESS TO O&M REQUIREMENTS, MANUALS, AND INSTRUCTIONS FOR SERVICE PROVIDER, AS APPLICABLE.

PROJECT AREA PLAN - SEPTIC ALTERATION
Scale: 1" = 20'

NOTE:
PER SUMMIT COUNTY HEALTH DEPARTMENT, A COMPLETELY NEW HSTS AND DISPOSAL FIELD OR OFFLOT DISCHARGE WILL BE APPLIED FOR AND EXISTING SEPTIC TANKS & DISPOSAL FIELD WILL BE ABANDONED PER HEALTH DEPARTMENT GUIDELINES.

map limit

map limit

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

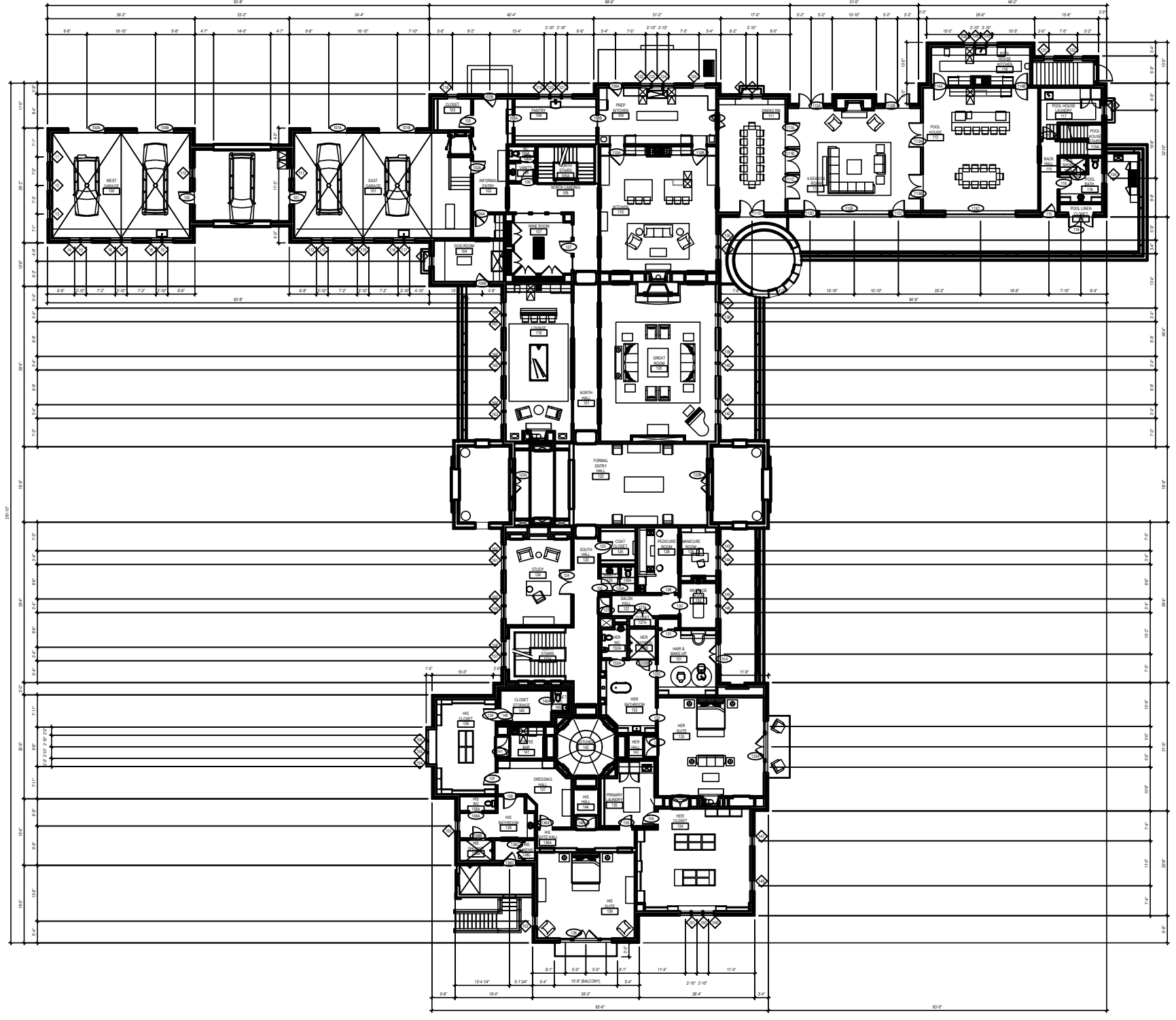
Scale: 1"=20' (full size-22x34 print)
Scale: 1"=40' (half size-11x17 print)

Project Name and Address:
Joseph Lojck Residence
4081 Derrwood Drive
Bath Township
Summit County-State of Ohio

builder:
Brookes & Henderson
Building Co.
16710 W Park Circle Dr.
Chagrin Falls OH 44023
Contact:
Pat Horsburgh-Project Executive
ph. 440-543-9140
e-mail:
path@brookes-henderson.com

| | |
|-----------|---------------------|
| DATE | APRIL/2025 |
| SCALE | 1"=50' H. N/A V. |
| DRWN. MT | CHCK. GJH |
| JOB NO. | 252589 |
| SHEET NO. | 2 of 2 |

GENERAL NOTES & REFERENCES:
BOUNDARY LINES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY, AND DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY.



2 | FIRST FLOOR

1/32"=1'-0"

THE PRESERVE

4081 DERRWOOD DRIVE
BATH, OH 44333

| | |
|-----------|----------|
| Date: | 05-22-25 |
| Proj. No. | 25.0023 |
| Drawn By: | SJM |



2 | EAST ELEVATION

1/16"=1'-0"



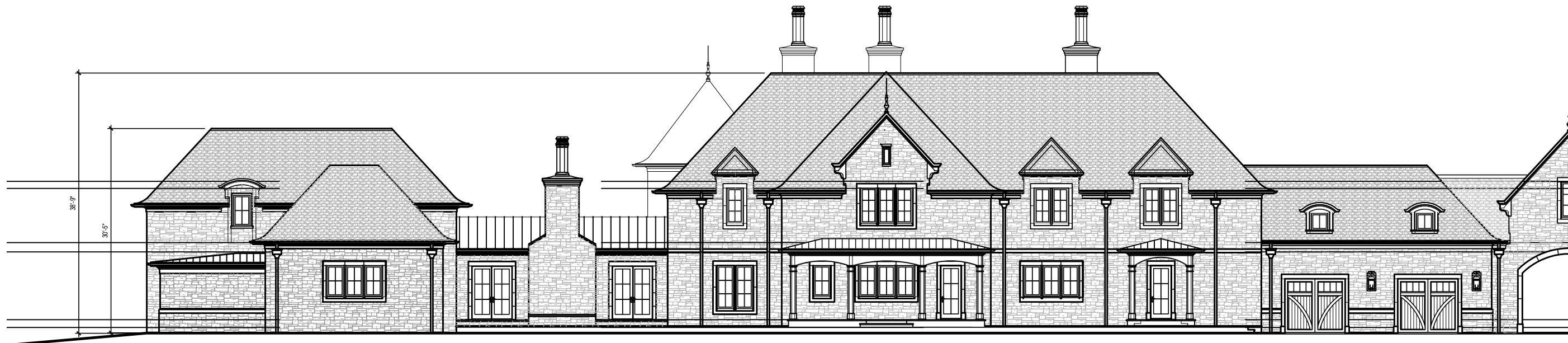
1 | WEST ELEVATION

1/16"=1'-0"



4 | SOUTH ELEVATION

1/16"=1'-0"



3 | NORTH ELEVATION

1/16"=1'-0"