DOCUMENT 009100

ADDENDA

ADDENDUM NUMBER TWO (002)

DATE: November 29, 2024

PROJECT: **Two State Buildings Renovations**

PROJECT NUMBER: Artifex Project No. 2022147; BGS Project No. 3561 & 3562

CLIENT: Bureau of General Services
111 Sewall Street
Augusta, ME 04333

ARCHITECT: Artifex AE

TO: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated November 7, 2024, with amendments and additions noted below.

The Bidder is to acknowledge receipt of this Addendum in the space provided in the Bid Form of the Project Manual. Failure to do so may disqualify the Bidder.

This Addendum consists of two **(2)** pages, plus noted attachments and specifications.

1.0 **Questions Received**

1.01 **Question:** *Who is responsible for paying for the building permits?*
Answer: **Contractors will pay for and pickup building permits.**

1.02 **Question:** *The replacement sash units are called out to be fixed units. A rendering of the building shows the original windows as 8 lites, but the specs say 2 lites. What configuration should these windows be?*
Answer: **Historical documents support windows with 2 lites for the Nash basement. Basement windows at Nash are to be fixed units per the drawings and specs.**

1.03 **Question:** *The plans call for the replacement of the existing basement windows and there is a Specification for Pella two-lite clad windows, can you clarify the intent to match historic (6-8 lite fixed or hoppers) or to replace with 2-lite matching existing?*
Answer: **See Question 1.02.**

1.04 **Question:** *When can construction start?*
Answer: **Construction is expected to start January 2025. Substantial Completion is expected on or before December 15th, 2025.**

1.05 **Question:** *Will furniture be moved prior to start?*
Answer: **Yes. Owner will move furniture prior to start.**

2.0 **Changes to General Documents:**

REVISION TO	00 01 10	TABLE OF CONTENTS
REVISION TO	00 11 13	NOTICE TO CONTRACTORS
ADD SECTION	00 31 32	GEOTECHNICAL DATA

3.0 **Changes to the specifications:**

NONE

4.0 **Changes to the Plans:**

NONE

5.0 **Attachments:**

5.01 Specification Sections:

00 01 10	TABLE OF CONTENTS
00 11 13	NOTICE TO CONTRACTORS
00 31 32	GEOTECHNICAL DATA
	GEOTECHNICAL REPORT – NASH
	GEOTECHNICAL REPORT – McLEAN

-- END OF DOCUMENT --

SECTION 00 01 10 – TABLE OF CONTENTS

END OF DOCUMENT 00 01 10

00 11 13
Notice to Contractors

Two State Buildings Renovations BGS project #: 3561 & 3562

Renovations at two buildings in Augusta, Maine: McLean House, 193 State Street; and Nash School, 103 Sewall Street. Common to each building are a variety of building system upgrades, including the building envelope; restoration of select historic elements; and limited interior alterations. Nash School includes a building addition for Accessibility including a new elevator

The contract shall designate the Substantial Completion Date on or before *15 December 2025*, and the Contract Final Completion Date on or before *31 December 2026*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13), provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: BGS.Architect@Maine.gov, so as to be received no later than **2:00:00 p.m.** on *17 December 2024*. The email subject line shall be marked "**Bid for *Two State Buildings Renovations***".

   Bid submissions will be opened and read aloud at the time and date noted above at the Bureau of General Services office, accessible as a video conference call. Those who wish to participate in the call must submit a request for access to BGS.Architect@Maine.gov.

   Any bid received after the noted time will not be considered a valid bid and will remain unopened. Any bid submitted by any other means will not be considered a valid bid. In certain circumstances, the Bureau of General Services may require the Bidder to surrender a valid paper copy of the bid form or the bid security document. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

2. Questions and comments on the *bid opening process* shall be addressed to: Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, ATTN: Deane Rykerson, Deane.Rykerson@maine.gov.

3. Questions and comments regarding the *project* design specifications or drawings shall be directed in writing to the Consultant during the bid period prior to the question and comment deadline of 5:00 p.m. on *12 December 2024*

   Artifex AE
   Ellen Angel
   eangel@artifexae.com

4. ☒ Bid security is required on this project.
   The Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.
   or
   ☐ Bid security is <u>not</u> required on this project.

00 11 13
Notice to Contractors

5. ☒ Performance and Payment Bonds are required on this project.
   If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds $125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.
   or
   ☐ Performance and Payment Bonds are not required on this project.

6. Filed Sub-bids *are not required* on this project.

7. ☐ Pre-qualified General Contractors are utilized on this project.
   insert the company name, city and state for each
   or
   ☒ Pre-qualified General Contractors are not utilized on this project.

8. ☒ An on-site pre-bid conference (☒ *mandatory* or ☐ *optional*) will be conducted for this project. The pre-bid conference is intended for General Contractors. Subcontractors and suppliers are welcome to attend. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding.
   10:30AM, 18 November 2024
   193 State Street Augusta, ME 04330

   or
   ☐ An on-site pre-bid conference will not be conducted for this project.

9. Bid Documents - full sets only - will be available on or about *1 November 2024* and may be obtained *digitally at no cost* from:
   Artifex AE
   175 Exchange Street
   Bangor, ME 04401
   eangel@artifexae.com

10. Bid Documents may be examined at:
    AGC Maine
    188 Whitten Road, Augusta, ME 04330
    207-622-4741

    Construction Summary
    734 Chestnut Street, Manchester, NH 03104
    603-627-8856

DOCUMENT 00 31 32 - GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. Two geotechnical investigation reports, prepared by S.W. Cole Engineering, Inc., are available for viewing as appended to this Document
   1. The report for the Nash School, dated December 27, 2023
   2. The report for the McLean House, dated December 27, 2023

C. Related Requirements:

   1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
   2. Document 003119 "Existing Condition Information" for information about existing conditions that is made available to bidders.
   3. Document 003126 "Existing Hazardous Material Information" for hazardous materials reports that are made available to bidders.

END OF DOCUMENT 00 31 32

S.W.COLE ENGINEERING, INC.

REPORT

23-1854

December 27, 2023

Explorations and Geotechnical Engineering Services

Proposed Building Addition
Nash School
103 Sewall Street
Augusta, Maine

Prepared For:
Artifex Architects-Engineers
Attention: Rayshelly Lizotte, P.E.
175 Exchange Street
Bangor, Maine 04401

Prepared By:
S. W. Cole Engineering, Inc.
26 Coles Crossing Drive
Sidney, ME 04330-6700
T: 207.626.0600

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23-1854

December 27, 2023

Artifex Architects-Engineers
Attention: Rayshelly Lizotte, P.E.
175 Exchange Street
Bangor, ME 04401

Subject: Explorations and Geotechnical Engineering Services
Proposed Building Addition
Nash School
103 Sewall Street
Augusta, Maine

Dear Shelly:

In accordance with our Proposal, dated October 3, 2023, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations, and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork associated with the proposed construction. Our scope of services included three test borings, soils laboratory testing, a geotechnical analysis of the subsurface findings, and preparation of this report.

1.2 Site and Proposed Construction

The site is located in the southeasterly quadrant of the intersection at Capital Street and Sewall Street. The site is bound to the north by Capital Street, west by Sewall Street, and the south and east by State of Maine parking areas. The Nash School is located in the northwestern corner of the lot with paved parked on the south and southeasterly sides of

the building. Existing grades are relatively flat at about elevation 136 to 137 feet adjacent to the existing school, however overall grading generally slopes downward from west to east.

We understand development plans call for construction of a new elevator addition with associated utility upgrades. We understand the proposed addition will be located on the southeasterly corner of the existing building. We anticipate the proposed addition will be two stories with basement access. We anticipate the building addition will be a combination of steel and wood framing with masonry exterior. We anticipate the addition will be supported on spread footing foundations. We anticipate the new addition will match the finish floor elevations of the existing building.

Proposed and existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Three test borings (B-101 through B-103) were made at the site on November 1 and 2, 2023, by S. W. Cole Explorations, LLC. The exploration locations were selected by Artifex Architects-Engineers and established in the field by S. W. Cole Engineering, Inc. (S.W.COLE) using measurements from existing site features. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

2.2 Field Testing

The test borings were drilled using a combination of hollow-stem augers, cased wash-boring, and NQ rock coring techniques. The soils were sampled at 2-to-5-foot intervals using a split-spoon sampler and Standard Penetration Testing (SPT) methods. Upon encountering refusal, borings B-101 and B-102 were advanced 5 feet into bedrock using NQ2 rock core. SPT blow counts, rock core intervals, and Rock Quality Designation (RQD) results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the test borings were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. Gradation test results are provided in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Test borings B-101 through B-103 were made in the area of the proposed elevator addition and encountered a soils profile generally consisting of pavement, overlying granular fill overlying native sand and silt and glacial till overlying refusal surfaces (bedrock). The following is a summary of the principal soils strata encountered.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Pavement: The explorations encountered a 3-to-4-inch-thick surficial layer of pavement

Fill: Below the surficial pavement, the explorations encountered granular fill to a depth of 2.5 to 3.5 feet. The fill generally consisted of loose to medium dense, brown gravelly silty sand. Trace organics (leaf debris) were observed within the fill at B-102.

Sand and Silt: Below the fill, native fine sand and silt, trace gravel was encountered to depths of about 15 to 23 feet. The fine sand and silt was generally loose to medium dense. Trace organics (leaf debris and rootlets) were observed in boring B-101 and B-103 at a depth of about 4 to 5.5 feet.

Glacial Till: Below the sand and silt, glacial till was observed to depths of about 26.5 to 30 feet. The glacial till generally consisted of medium dense to very dense, silty gravelly sand with occasional cobbles.

Refusal: Refusal surfaces (bedrock) were encountered in each test boring at depths of about 26.5 to 30 feet below the existing ground surface. Test borings B-101 and B-102 were advanced about 5 feet into bedrock utilizing rock coring. The bedrock generally consisted of light-gray, medium-grained, granite.

3.2 Groundwater

The soils in the explorations were generally moist from the ground surface. Water was measured in the test borings at depths of about 10 to 15 feet following drilling. It should be noted that water was introduced during drilling at depths of about 10 feet in each boring. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- Spread footing foundations and basement grade floor slabs bearing on properly prepared subgrades appear suitable for the proposed building addition. Footings should bear on at least 6 inches of compacted Crushed Stone overlying non-woven geotextile fabric bearing on undisturbed native sand and silt. Basement grade floor slabs should bear on at least 12 inches of compacted Crushed Stone overlying non-woven geotextile fabric on properly prepared subgrades.

- Perimeter underdrains bedded in Crushed Stone are recommended for the proposed addition.

- We anticipate basement level foundations will extend below the observed fills and native soils with organics encountered. Fills and soils with organics if encountered should be over-excavated and removed below the proposed building addition.

- Subgrades across the site will consist of moisture-sensitive silty sands. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

4.2 Site and Subgrade Preparation

We recommend site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. Surficial

pavement, organics, roots, and topsoil should be completely removed from areas of proposed fill and construction. As much pavement and vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

We recommend footings be excavated using a smooth-edged bucket and that footings be underlain by at least 6 inches of compacted Crushed Stone overlying non-woven geotextile filter fabric, such as Mirafi 160N, bearing on native non-organic sand and silt.

4.3 Excavation and Dewatering

Excavations will generally encounter fills and sand and silts. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, and Fall. Construction equipment should not operate directly on the native subgrade soils, when wet. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining the adjacent structure, utilities, and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

We recommend the proposed building addition be supported on spread footings founded on at least 6 inches of Crushed Stone underlain by a non-woven geotextile fabric, such as Mirafi 160N, bearing on undisturbed native, sand and silt. For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth (100-year AFI)	4.5 feet
Net Allowable Soil Bearing Pressure	2.0 ksf
Base Friction Factor	0.35
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	D (IBC 2015)
Estimated Total Settlement	1-inch
Differential Settlement	½-inch

4.5 Foundation Drainage

We recommend an underdrain system be installed on the outside edge of perimeter footings. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drainpipe bedded in Crushed Stone and wrapped in non-woven geotextile fabric, such as Mirafi 160N. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive surface water drainage. General underdrain details are illustrated on the "Foundation Detail Sketch" attached in Appendix B.

4.6 Slab-On-Grade

Basement grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12 inches of compacted Crushed Stone underlain by non-woven geotextile fabric placed over properly prepared subgrades. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material should be placed according to the manufacturer's recommended method, including the taping, and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring, and adhesive materials.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to the building must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full footprint (length and width) of the entrance slab, thereafter, transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are shown on the “Foundation Detail Sketch” attached in Appendix B.

4.8 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in paved and landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow. Where used beneath paved areas, Common Borrow fills with a Plasticity Index greater than 10 shall be capped with a 12 inch layer of Granular Borrow prior to installing Pavement Subbase materials.

Granular Borrow: Fill to raise grades in building and paved areas, as well as to repair soft areas, should be sand or silty sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Structural Fill: Backfill for foundations and material below exterior entrance slabs should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 6

Crushed Stone: Crushed Stone, used beneath foundations and basement slab base material, as well as for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The non-organic on-site soils are unsuitable for reuse in building areas but may be suitable for reuse as Common Borrow in paved and landscape areas, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. To reduce potential for over-stressing basement foundation walls, we recommend backfill for the basement walls be compacted to 92 percent of its maximum dry density as determined by ASTM D-1557. We recommend fill and backfill below the building or in paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations, and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and foundation recommendations have been properly interpreted and implemented.

A construction material testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of foundation bearing surfaces and pavement subgrades, as well as to provide testing and IBC Special Inspection services for soils, concrete, steel, spray-applied fireproofing, fire-stopping, structural masonry and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Michael St. Pierre, P.E.
Senior Geotechnical Engineer

MAS:rec

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Artifex Architects-Engineers for specific application to the proposed Building Addition at the Nash School at 103 Sewall Street in Augusta, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

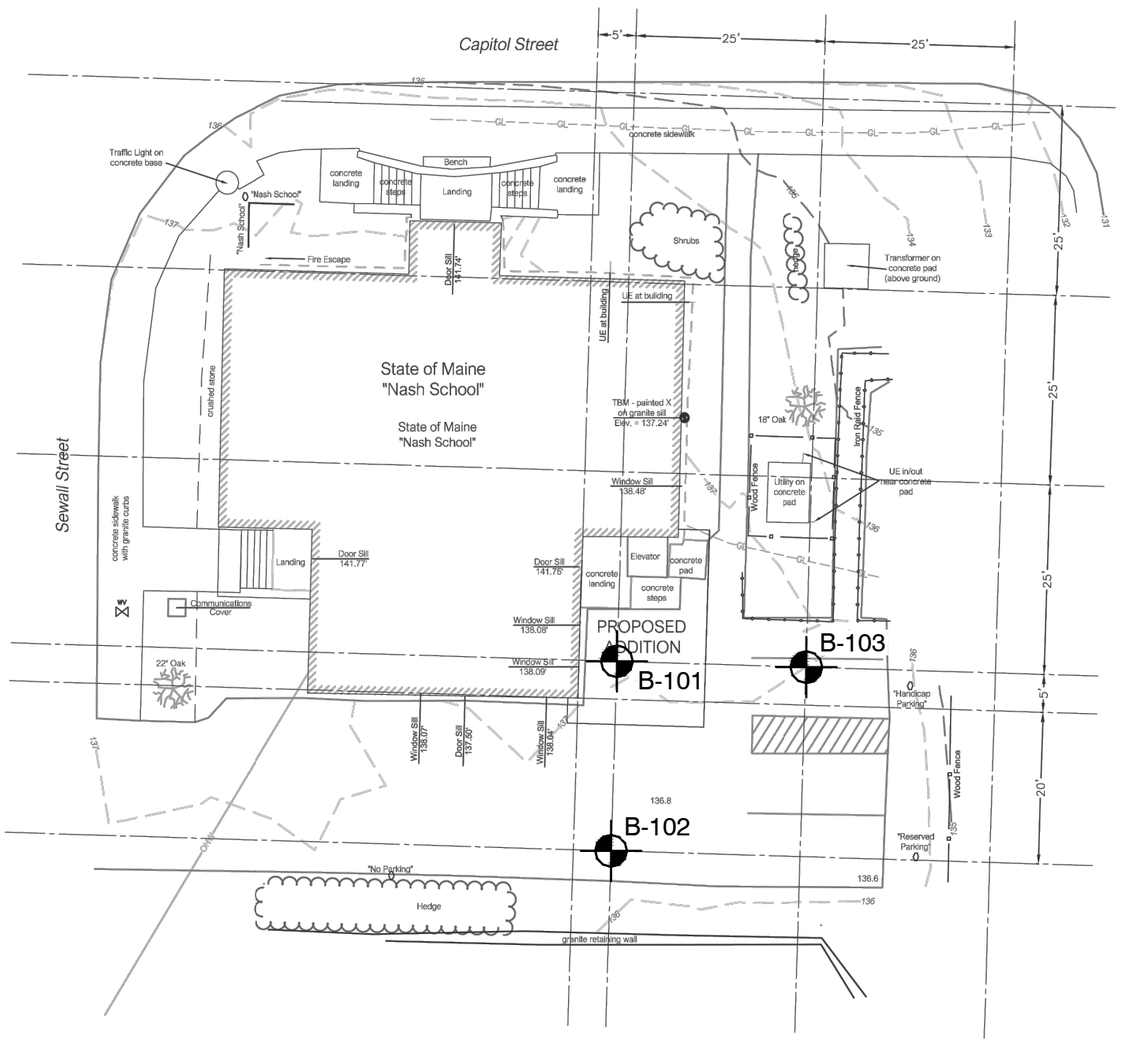
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE TITLED "NASH SCHOOL, TEST BORING LOCATION PLAN," PREPARED BY ARTIFEX ARCHITECTS & ENGINEERS, DATED 9/14/2023.
2. THE BORING LOCATIONS WERE SELECTED BY ARTIFEX AND SUBSEQUENTLY ESTABLISHED IN THE FIELD BY S. W. COLE ENGINEERING, INC.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 20 40 Feet

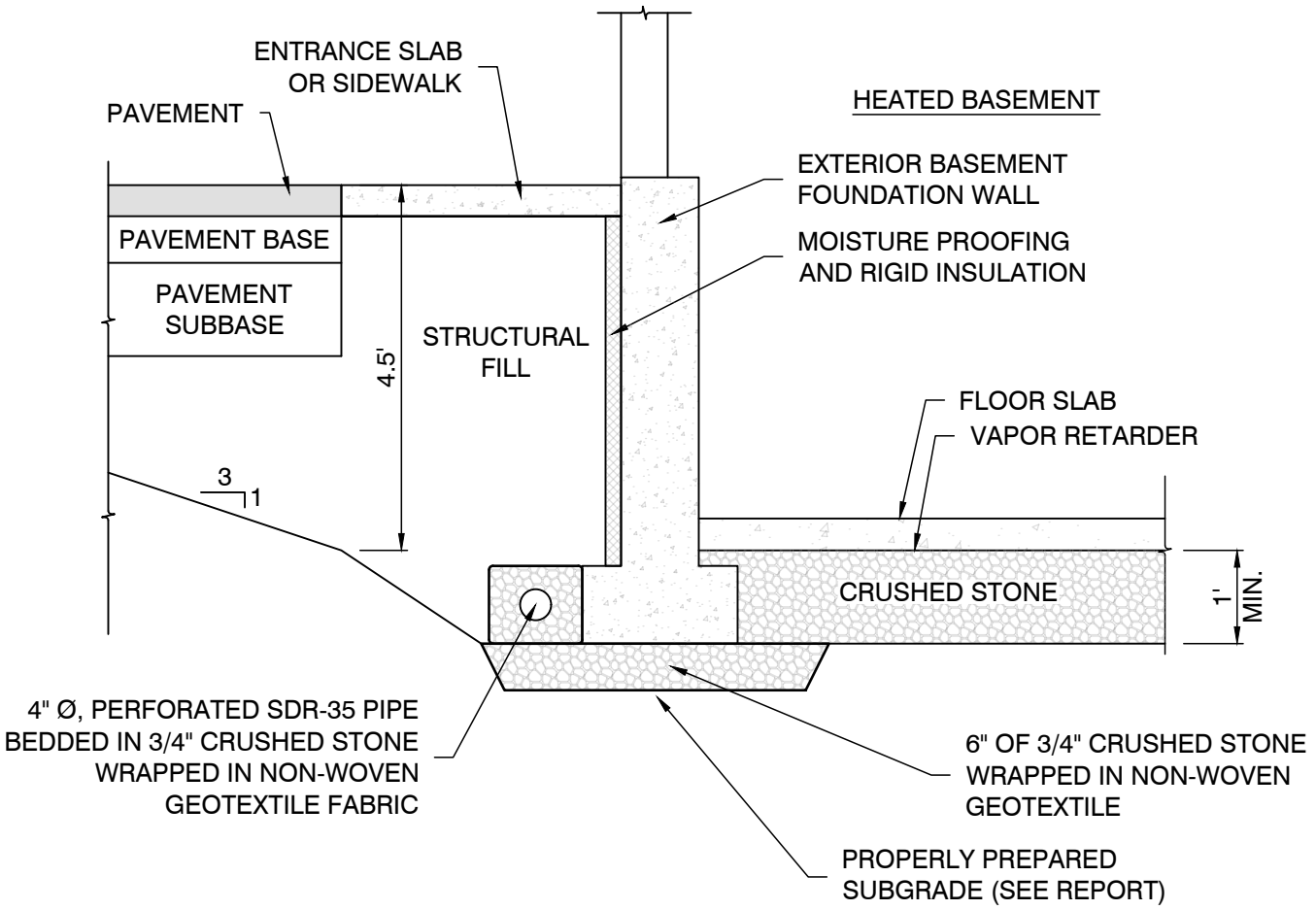
S.W.COLE ENGINEERING, INC.

ARTIFEX ARCHITECTS & ENGINEERS

EXPLORATION LOCATION PLAN

PROPOSED BUILDING ADDITION
NASH SCHOOL
103 SEWALL STREET, AUGUSTA, MAINE

Job No.:	23-1854-02	Scale:	1" = 20'
Date :	12/12/2023	Sheet:	1



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.
2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE ENGINEERING, INC.

ARTIFEX ARCHITECTS & ENGINEERS

FOUNDATION DETAIL SKETCH

PROPOSED BUILDING ADDITION
NASH SCHOOL
103 SEWALL STREET, AUGUSTA, MAINE

Job No.:	23-1854-02	Scale:	Not to Scale
Date :	12/12/2023	Sheet:	2

APPENDIX C

Exploration Logs and Key

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

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

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

BORING LOG

BORING NO.: B-101
SHEET: 1 of 2
PROJECT NO. 23-1854
DATE START: 11/2/2023
DATE FINISH: 11/2/2023

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

Drilling Information

LOCATION: See Exploration Location Plan
ELEVATION (FT): 137' +/-
TOTAL DEPTH (FT): 31.4
LOGGED BY: M. St. Pierre
DRILLING CO.: S. W. Cole Explorations, LLC
DRILLER: Ryan Hackett
DRILLING METHOD: Cased Boring
RIG TYPE: Track Mounted Diedrich D-50
AUGER ID/OD: N/A / N/A
SAMPLER: Standard Split-Spoon
HAMMER TYPE: Automatic / Automatic
HAMMER WEIGHT (lbs): 140 / 140
CASING ID/OD: 3 in / 3 1/2 in
CORE BARREL: NQ2 / 2
HAMMER CORRECTION FACTOR: 1.47
HAMMER DROP (inch): 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils appear saturated below 10 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
										0.3 3.5" of Pavement		Advanced with 2 1/4" Hollow Stem Augers to 10 feet.
			1D		0.8-2.8	24/10	3-2-2-2			Loose, brown, gravelly silty SAND (Fill)		
135			2D		2.8-4.8	24/24	2-1-1-1					
								q_P=4.0ksf		3.5 Stiff, brown, silty CLAY		
	5		3D		5-7	24/24	1-2-3-2			3.8 Loose to medium dense, brown, fine SAND and SILT, trace fine gravel trace organics (leaf debris, rootlets) from ±4 to 5.5 ft		
130			4D		7-9	24/24	2-8-6-4					
	10		5D		10-12	24/20	3-2-3-6	ID 15293A			▽	
125												
	15		6D		15-17	24/15	4-4-3-3					
120												
	20		7D		20-22	24/9	13-10-9-19	ID 15294A		19.6 Medium dense to very dense, brown, silty gravelly SAND (Glacial Till)		
115												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

BORING NO.: B-101
SHEET: 2 of 2
PROJECT NO. 23-1854
DATE START: 11/2/2023
DATE FINISH: 11/2/2023

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			8D		25-26.4	17/5	23-31-50/5"					
110			1R		26.4-31.4	60/57		q_P=70 ksf		26.4 Bedrock Light gray, medium-grained, GRANITE, hard to very hard, fresh, joints are generally horizontal to low angle, close, and tight [HALLOWELL GRANITE].		
	30											

Bottom of Exploration at 31.4 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.: B-102
SHEET: 1 of 2
PROJECT NO. 23-1854
DATE START: 11/1/2023
DATE FINISH: 11/1/2023

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 136.5' +/- | **TOTAL DEPTH (FT):** 32.7 | **LOGGED BY:** M. St. Pierre
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Ryan Hackett | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Diedrich D-50 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic / Automatic | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 3 in / 3 1/2 in | **CORE BARREL:** NQ2 / 2
HAMMER CORRECTION FACTOR: 1.47 | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils appear saturated below 10 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
										0.3 4" of Pavement		Advanced with 2 1/4" Hollow Stem Augers to 10 feet.
135			1D		0.5-2.5	24/10	6-5-4-3			Medium dense to loose, brown, gravelly silty SAND, trace organics (leaf debris) (Fill)		
			2D		2.5-4.5	24/24	1-1-1-2			3.0 Loose to medium dense, brown, fine SAND and SILT, trace fine gravel		
	5		3D		5-7	24/10	1-2-2-7					
130												
	10		4D		10-12	24/24	4-3-4-4				▽	
125												
	15		5D		15-17	24/11	17-19-27-16			15.0 Dense to very dense, brown and gray, silty gravelly SAND (Glacial Till)		
120												
	20		6D		20-22	24/5	15-18-16-14					
115												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

BORING NO.: B-102
SHEET: 2 of 2
PROJECT NO. 23-1854
DATE START: 11/1/2023
DATE FINISH: 11/1/2023

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			7D		25-27	24/2	13-21-23-14					
110												
			1R		27.7-31	40/38	85			27.7 Bedrock Light gray, medium-grained, GRANITE, hard to very hard, fresh, joints are generally horizontal to low angle, close, and tight [HALLOWELL GRANITE].		
	30											
105			2R		31-32.7	20/20	90					

Bottom of Exploration at 32.7 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.:	**B-103**
SHEET:	1 of 2
PROJECT NO.	23-1854
DATE START:	11/2/2023
DATE FINISH:	11/2/2023

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 137' +/- | **TOTAL DEPTH (FT):** 30.2 | **LOGGED BY:** M. St. Pierre
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Ryan Hackett | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Diedrich D-50 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic / Automatic | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 3 in / 3 1/2 in | **CORE BARREL:** N/A
HAMMER CORRECTION FACTOR: 1.47 | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 15 ft Soils appear saturated below 15 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0.4-2.4	24/16	9-9-10-10			0.3 3" of Pavement Medium dense, brown, gravelly silty SAND (Fill)		Advanced with 2 1/4" Hollow Stem Augers to 10 feet.
135			2D		2.4-4.4	24/14	8-6-5-5			2.6 Loose to medium dense, brown, fine SAND and SILT, trace fine gravel trace organics (leaf debris, rootlets) from ±4 to 5.5 ft		
	5		3D		5-7	24/20	2-1-2-2					
130												
	10		4D		10-12	24/24	5-5-3-3					
125												
	15		5D		15-17	24/18	1-1-6-7			Loose, brown, silty fine SAND	▽	
120												
	20		6D		20-22	24/11	2-2-2-2					
115										24.0 Medium dense to dense, brown, silty gravelly SAND (Glacial Till)		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Addition
LOCATION: Nash School, 103 Sewall Street, Augusta, Maine

BORING NO.: B-103
SHEET: 2 of 2
PROJECT NO. 23-1854
DATE START: 11/2/2023
DATE FINISH: 11/2/2023

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			7D		25-27	24/10	26-8-14-16					
110												
	30		8D		30-30.2	2/1	50/2"			Split Spoon Refusal at 30.2 feet Probable Bedrock		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

APPENDIX D

Laboratory Test Results

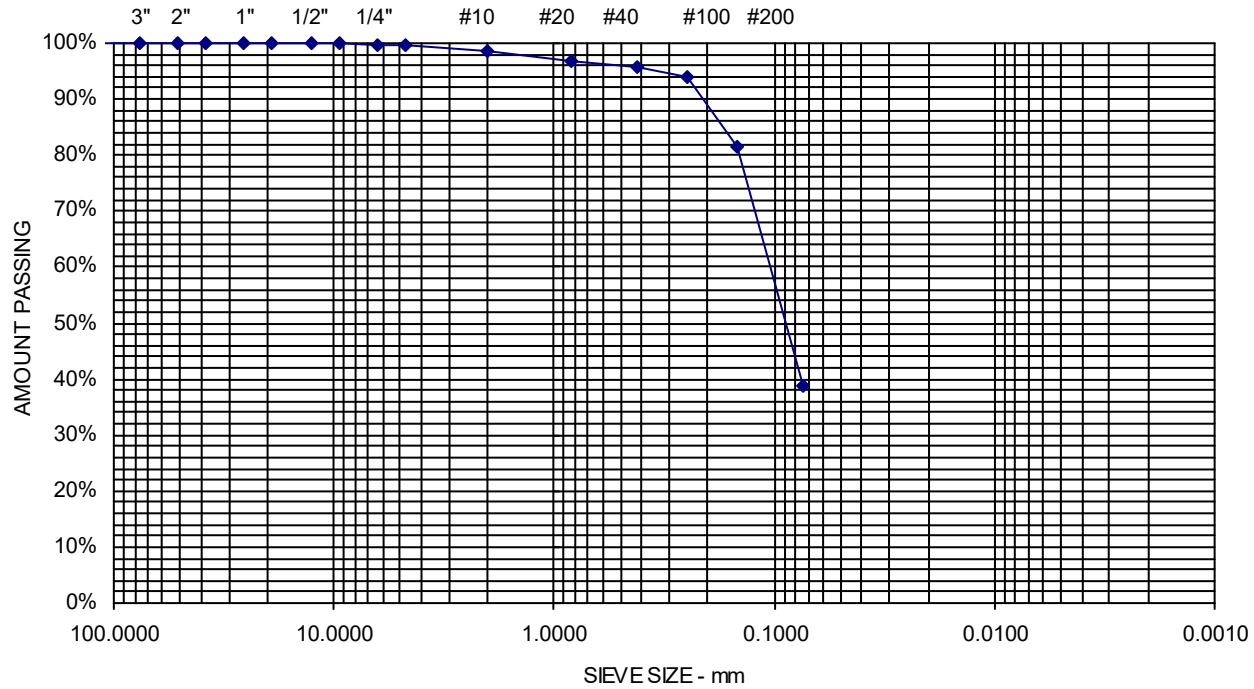
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	AUGUSTA ME - CAPITOL STREET BUILDING RENOVATIONS AND ADDITIONS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING	Project Number	23-1854
Client	AMES ASSOCIATES, LLC	Lab ID	15293A
Exploration	**NASH SCHOOL**	Date Received	12/11/2023
Material Source	**B-101, 4D, 10-12 FT**	Date Completed	12/14/2023
		Tested By	BRANDON CHAPUT

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**99**	0.5% Gravel
2.00 mm	**No. 10**	**98**	
850 um	**No. 20**	**97**	
425 um	**No. 40**	**96**	60.6% Sand
250 um	**No. 60**	**94**	
150 um	**No. 100**	**82**	
75 um	**No. 200**	**38.9**	38.9% Fines



Comments:

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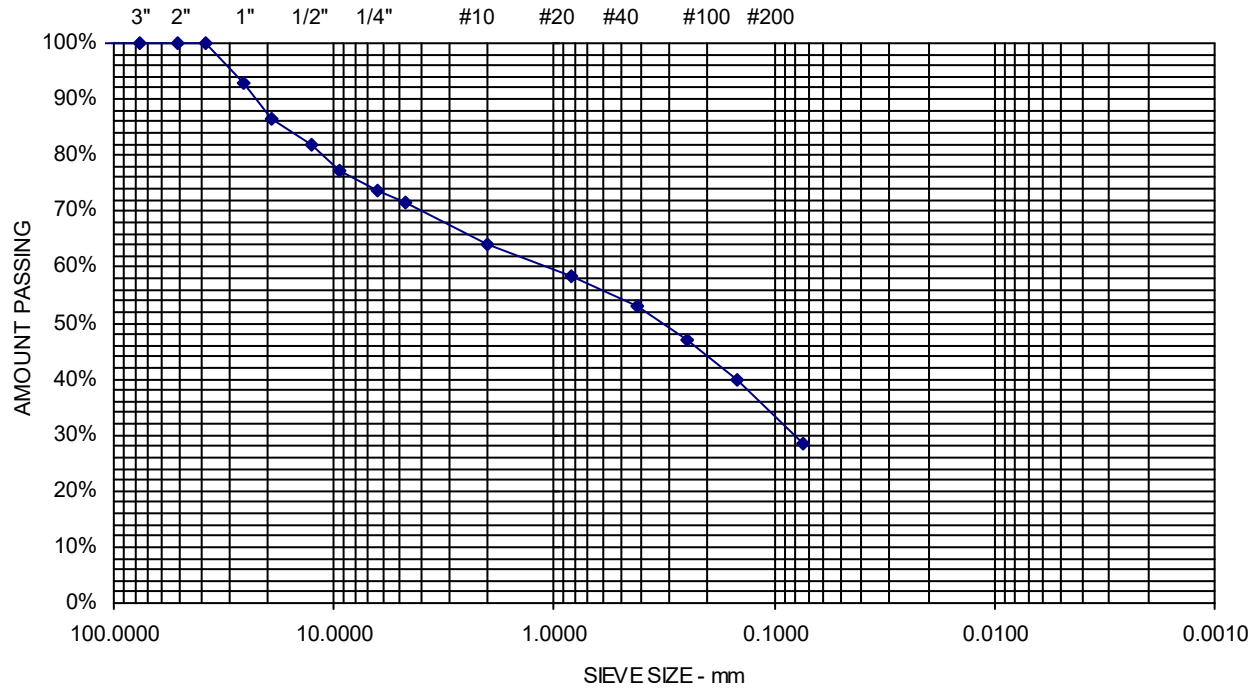
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	AUGUSTA ME - CAPITOL STREET BUILDING RENOVATIONS AND ADDITIONS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING	Project Number	23-1854
Client	AMES ASSOCIATES, LLC	Lab ID	15294A
Exploration	**NASH SCHOOL**	Date Received	12/11/2023
Material Source	**B-101, 7D, 20-22 FT**	Date Completed	12/14/2023
		Tested By	NEIL DAVIS

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**93**	
19.0 mm	**3/4"**	**86**	
12.5 mm	**1/2"**	**82**	
9.5 mm	**3/8"**	**77**	
6.3 mm	**1/4"**	**74**	
4.75 mm	**No. 4**	**71**	28.6% Gravel
2.00 mm	**No. 10**	**64**	
850 um	**No. 20**	**59**	
425 um	**No. 40**	**53**	42.9% Sand
250 um	**No. 60**	**47**	
150 um	**No. 100**	**40**	
75 um	**No. 200**	**28.5**	28.5% Fines



Comments:

Sheet

REPORT

23-1854

December 27, 2023

Explorations and Geotechnical Engineering Services

Proposed Building Addition
McLean House
193 State Street
Augusta, Maine

Prepared For:
Artifex Architects-Engineers
Attention: Rayshelly Lizotte, P.E.
175 Exchange Street
Bangor, Maine 04401

Prepared By:
S. W. Cole Engineering, Inc.
26 Coles Crossing Drive
Sidney, ME 04330-6700
T: 207.626.0600

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23-1854

December 27, 2023

Artifex Architects-Engineers
Attention: Rayshelly Lizotte, P.E.
175 Exchange Street
Bangor ME 04401

Subject: Explorations and Geotechnical Engineering Services
Proposed Building Addition
Mclean Housing
193 State Street
Augusta, Maine

Dear Shelly:

In accordance with our Proposal, dated October 3, 2023, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations, and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork associated with the proposed construction. Our scope of services included two test borings, soils laboratory testing, a geotechnical analysis of the subsurface findings, and preparation of this report.

1.2 Site and Proposed Construction

The site is 193 State Street located on the southeasterly quadrant of the intersection at State Street and Child Street. The site is bound to the west by State Street, north by Child Street, south by Capital Street, and east by the Daschlager Building. The McLean Building is located in the northwesterly corner of the lot with paved area to the east and lawn area

to the south. Existing grades generally slope downward from west to east from about elevation 123 to 117 feet across the site.

We understand development plans call for construction of a new elevator addition with associated utility upgrades. We anticipate the proposed addition will be located on the northeasterly corner of the existing building. We anticipate the proposed addition will be two stories with basement access. We anticipate the building addition will be a combination of steel and wood framing. We anticipate the addition will be supported on spread footing foundations. We anticipate the new addition will match the finish floor elevations of the existing building.

Existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Two test borings (B-301 and B-302) were made at the site on October 31, 2023, and November 1, 2023, by S. W. Cole Explorations, LLC. The exploration locations were selected by Artifex Architects-Engineers and established in the field, where access allowed, by S. W. Cole Engineering, Inc. (S.W.COLE) using measurements from existing site features. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

2.2 Field Testing

The test borings were drilled using a combination of hollow-stem augers, and cased wash-boring techniques. The soils were sampled at 2-to-5-foot intervals using a split-spoon sampler and Standard Penetration Testing (SPT) methods. Pocket Penetrometer Tests (PPT) were performed where stiffer cohesive soils were encountered. SPT blow counts and PPT results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the test borings were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. Gradation test results are provided in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Test borings B-301 and B-302 were made in the area of the proposed elevator addition and encountered a soils profile generally consisting of pavement or topsoil overlying granular fill, overlying native fine sand and silt transitioning to silty clay with depth. The following is a summary of the principal soils strata encountered.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: Below the surficial layer of pavement at boring B-301 and topsoil at B-302, the explorations encountered granular fill to depths of about 2.5 to 3 feet. The fill generally consisted of medium dense to loose, brown gravelly silty sand.

Fine Sand and Silt: Below the fill, native fine sand and silt was encountered extending to a depth of about 25 to 30 feet. The fine sand and silt was typically medium dense to loose.

Silty Clay: Below the fine sand and silt, gray, silty clay was encountered in each boring. The silty clay was about 5 feet thick at boring B-301, where penetrated, Boring B-302 was terminated in the silty clay at a depth of 32 feet.

Silty Sand: Below the silty clay in boring B-301, medium dense brown and gray silty sand was encountered to the bottom of exploration at 32 feet.

3.2 Groundwater

The soils in the explorations were generally moist from the ground surface. Water was measured in the test borings at depths of about 10 feet following drilling. It should be noted that water was introduced during drilling at depths of about 10 feet in each boring. Long term groundwater information is not available. It should be anticipated that groundwater levels

will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- Spread footing foundations and basement grade floor slabs bearing on properly prepared subgrades appear suitable for the proposed building. Footings should bear on at least 6 inches of compacted Crushed Stone overlying non-woven geotextile fabric bearing on undisturbed native fine sand and silt. Basement grade floor slabs should bear on at least 12 inches of compacted Crushed Stone overlying non-woven geotextile fabric on properly prepared subgrades.

- Perimeter underdrains bedded in Crushed Stone are recommended for the proposed addition.

- We anticipate basement level foundations will extend below the observed fills into native soils. Fills and soils with organics if encountered should be over-excavated and removed below the proposed building addition.

- Subgrades across the site will consist of moisture-sensitive fine sand and silts. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

4.2 Site and Subgrade Preparation

We recommend site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. Surficial pavement, organics, roots, and topsoil should be completely removed from areas of proposed fill and construction. As much pavement and vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

We recommend footings be excavated using a smooth-edged bucket and that footings be underlain by at least 6 inches of compacted Crushed Stone overlying non-woven geotextile filter fabric, such as Mirafi 160N, bearing on native non-organic fine sand and silt.

4.3 Excavation and Dewatering

Excavations will generally encounter fills and fine sand and silts. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, and Fall. Construction equipment should not operate directly on the native subgrade soils, when wet. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining the adjacent structure, utilities, and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

We recommend the proposed building addition be supported on spread footings founded on at least 6 inches of Crushed Stone underlain by a non-woven geotextile fabric, such as Mirafi 160N, bearing on undisturbed native, fine sand and silt. For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth (100 year AFI)	4.5 feet
Net Allowable Soil Bearing Pressure	2.0 ksf
Base Friction Factor	0.35
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	E (IBC 2015)
Estimated Total Settlement	1-inch
Differential Settlement	½-inch

4.5 Foundation Drainage

We recommend an underdrain system be installed on the outside edge of perimeter footings. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drainpipe bedded in Crushed Stone and wrapped in non-woven geotextile fabric, such as Mirafi 160N. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive surface water drainage. General underdrain details are illustrated on the "Foundation Detail Sketch" attached in Appendix B.

4.6 Slab-On-Grade

Basement grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12 inches of compacted Crushed Stone underlain by non-woven geotextile fabric placed over properly prepared subgrades. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material should be placed according to the manufacturer's recommended method, including the taping, and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring, and adhesive materials.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to the building addition must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full footprint (length and width) of the entrance slab, thereafter, transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are shown on the "Foundation Detail Sketch" attached in Appendix B.

4.8 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in paved and landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow. Where used beneath paved areas, Common Borrow fills with a Plasticity Index greater than 10 shall be capped with a 12 inch layer of Granular Borrow prior to installing Pavement Subbase materials.

Granular Borrow: Fill to raise grades in building and paved areas, as well as to repair soft areas, should be sand or silty sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Structural Fill: Backfill for foundations and material below exterior entrances slabs should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 6

Crushed Stone: Crushed Stone, used beneath foundations and basement slab base material, as well as for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The non-organic on-site soils are unsuitable for reuse in building areas but may be suitable for reuse as Common Borrow in paved and landscape areas, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. To reduce potential for over-stressing basement foundation walls, we recommend backfill for the basement walls be compacted to 92 percent of its maximum dry density as determined by ASTM D-1557. We recommend fill and backfill below the building or in paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations, and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and foundation recommendations have been properly interpreted and implemented.

A construction material testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of

foundation bearing surfaces and pavement subgrades, as well as to provide testing and IBC Special Inspection services for soils, concrete, steel, spray-applied fireproofing, fire-stopping, structural masonry and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Michael St. Pierre, P.E.
Senior Geotechnical Engineer

MAS:rec

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Artifex Architects-Engineers for specific application to the proposed Building Addition at the McLean House at 193 State Street in Augusta, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

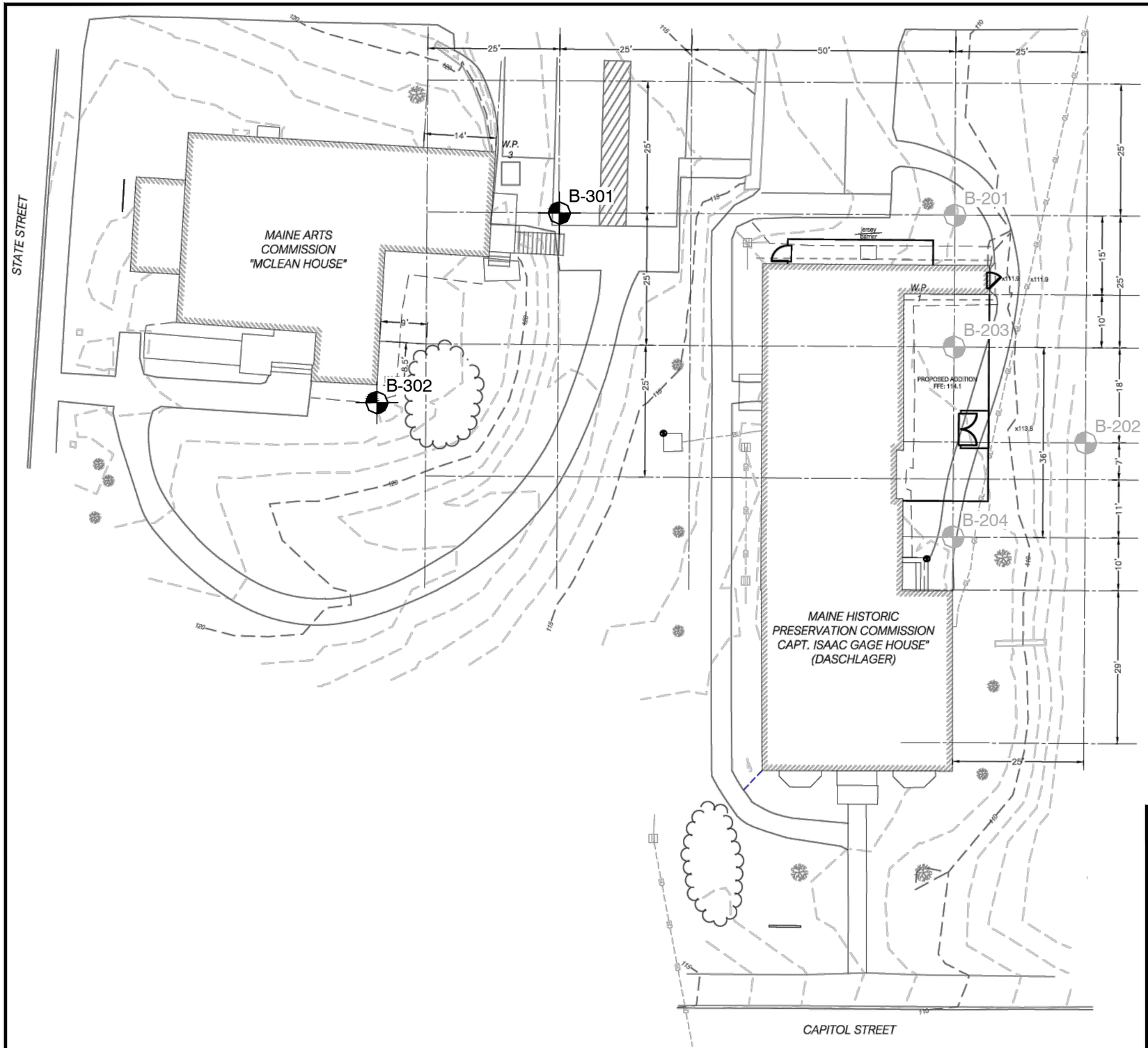
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE TITLED "DASCHLAGER / MCLEAN, TEST BORING LOCATION PLAN," PREPARED BY ARTIFEX ARCHITECTS & ENGINEERS, DATED 9/14/2023.
2. THE BORING LOCATIONS WERE SELECTED BY ARTIFEX AND SUBSEQUENTLY ESTABLISHED IN THE FIELD BY S. W. COLE ENGINEERING, INC.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 20 40 Feet

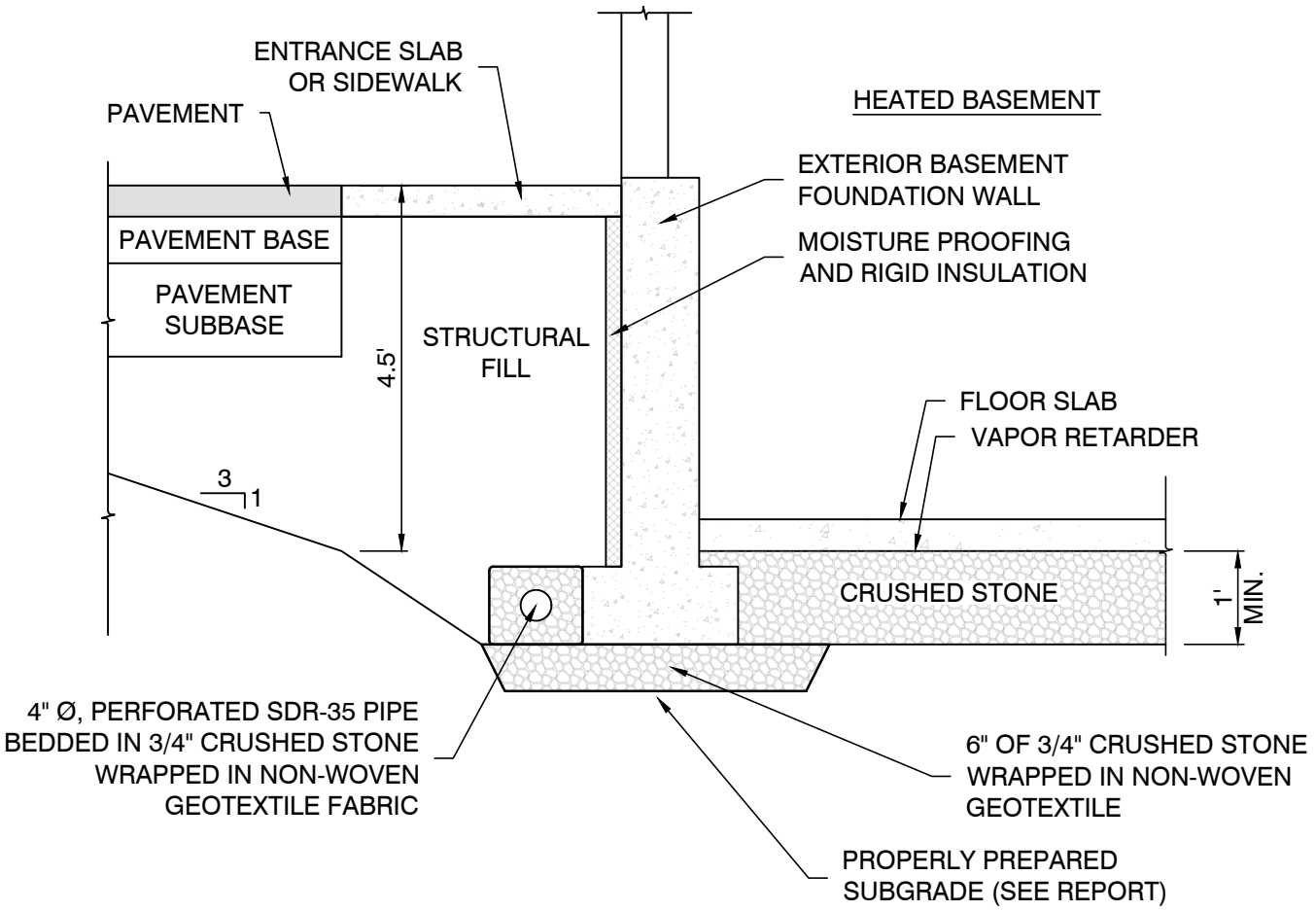
S.W.COLE ENGINEERING, INC.

ARTIFEX ARCHITECTS & ENGINEERS

EXPLORATION LOCATION PLAN

PROPOSED BUILDING ADDITION
MCLEAN HOUSE
193 STATE STREET, AUGUSTA, MAINE

Job No.:	23-1854-01	Scale:	1" = 20'
Date :	12/12/2023	Sheet:	1



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.
2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE ENGINEERING, INC.

ARTIFEX ARCHITECTS & ENGINEERS

FOUNDATION DETAIL SKETCH

PROPOSED BUILDING ADDITION
MCLEAN HOUSE
193 STATE STREET, AUGUSTA, MAINE

Job No.:	23-1854-01	Scale:	Not to Scale
Date :	12/12/2023	Sheet:	2

APPENDIX C

Exploration Logs and Key

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

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

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

BORING LOG

BORING NO.: B-301
SHEET: 1 of 2
PROJECT NO. 23-1854
DATE START: 10/31/2023
DATE FINISH: 10/31/2023

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Renovations and Additions
LOCATION: McLean House, 193 State Street, Augusta, Maine

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 117' +/- | **TOTAL DEPTH (FT):** 32.0 | **LOGGED BY:** Bryce Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Ryan Hackett | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Diedrich D-50 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic / Automatic | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 3 in / 3 1/2 in | **CORE BARREL:** N/A
HAMMER CORRECTION FACTOR: 1.47 | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 10 ft Soils appear saturated below 10 feet.
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0.5-2.5	24/4	10-4-4-2			0.3 3" of Pavement Medium dense, brown, gravelly silty SAND (Fill)		Advanced with 2 1/4" Hollow Stem Augers to 10 feet.
115			2D		2.5-4.5	24/18	3-3-7-7			3.0 Medium dense to loose, brown, fine SAND and SILT		
	5		3D		5-7	24/21	4-4-5-5					
110												
	10		4D		10-12	24/17	3-2-3-4	ID 15298A w =20.2 %			▽	
105												
	15		5D		15-17	24/10	4-5-5-8					
100												
	20		6D		20-22	24/15	4-6-9-8					
95												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Renovations and Additions
LOCATION: McLean House, 193 State Street, Augusta, Maine

BORING NO.: B-301
SHEET: 2 of 2
PROJECT NO. 23-1854
DATE START: 10/31/2023
DATE FINISH: 10/31/2023

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			7D		25-27	24/24	1/12"-1-2	q_P=0.5-1.0 ksf		25.0 Medium stiff to soft, gray, silty CLAY, some fine sand		
90												
	30		8D		30-32	24/16	12-13-14-15			30.0 Medium dense, brown to gray, fine SAND, some silt		
85										Bottom of Exploration at 32.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG

BORING NO.:	**B-302**
SHEET:	1 of 2
PROJECT NO.	23-1854
DATE START:	11/1/2023
DATE FINISH:	11/1/2023

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Renovations and Additions
LOCATION: McLean House, 193 State Street, Augusta, Maine

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** 122' +/- **TOTAL DEPTH (FT):** 32.0 **LOGGED BY:** M. St. Pierre
DRILLING CO.: S. W. Cole Explorations, LLC **DRILLER:** Ryan Hackett **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Diedrich D-50 **AUGER ID/OD:** N/A / N/A **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic / Automatic **HAMMER WEIGHT (lbs):** 140 / 140 **CASING ID/OD:** 3 in / 3 1/2 in **CORE BARREL:** N/A
HAMMER CORRECTION FACTOR: 1.47 **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft):
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/5	3-5-6-5			0.2 Topsoil Medium dense to loose, brown, gravelly SAND, some silt (Fill)		Advanced with 2 1/4" Hollow Stem Augers to 10 feet.
120			2D		2-4	24/9	2-3-2-3			2.5 Medium dense, red-brown, fine SAND and SILT		
	5		3D		5-7	24/20	2-5-6-12			Medium dense, brown, fine SAND and SILT		
115												
	10		4D		10-12	24/24	6-6-7-8					
110												
	15		5D		15-17	24/10	6-8-9-10					
105												
	20		6D		20-22	24/11	4-6-8-8					
100												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Artifex Architects-Engineers
PROJECT: Proposed Building Renovations and Additions
LOCATION: McLean House, 193 State Street, Augusta, Maine

BORING NO.: B-302
SHEET: 2 of 2
PROJECT NO. 23-1854
DATE START: 11/1/2023
DATE FINISH: 11/1/2023

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			7D		25-27	24/15	8-7-8-6					
95												
	30		8D		30-32	24/24	1/18"-1			30.0 Medium stiff to soft, gray, silty CLAY, some fine sand		
90												

Bottom of Exploration at 32.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

APPENDIX D

Laboratory Test Results

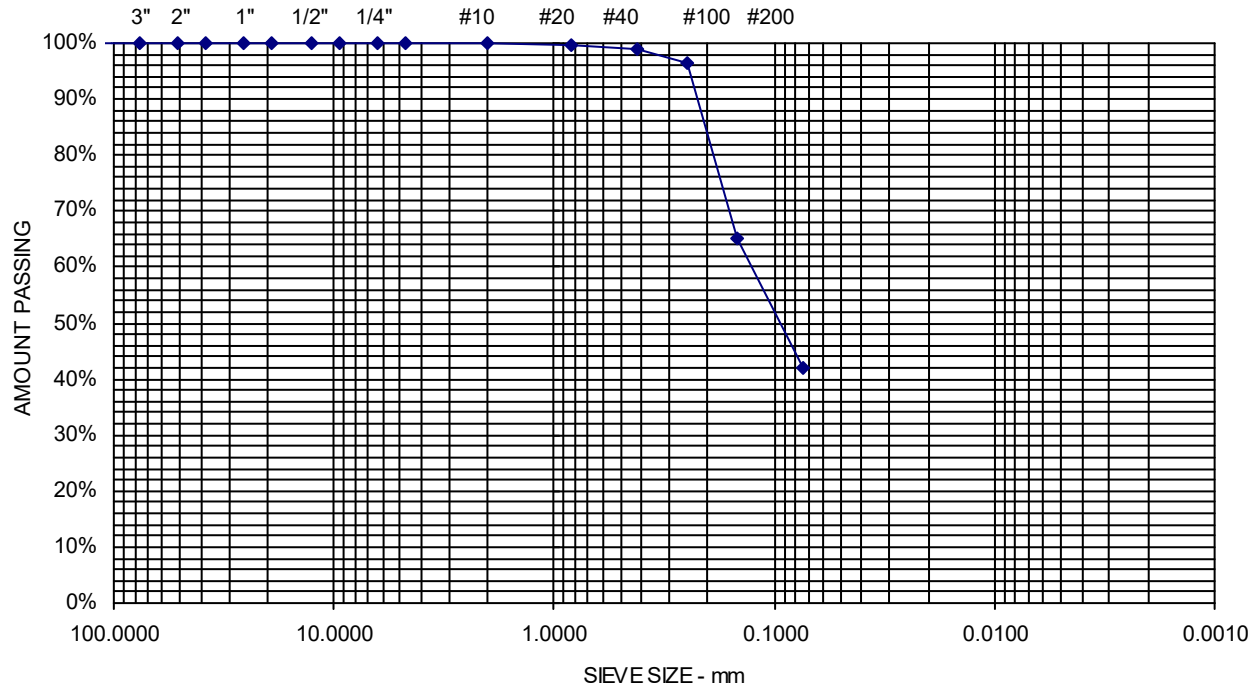
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	AUGUSTA ME - CAPITOL STREET BUILDING RENOVATIONS AND ADDITIONS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING	Project Number	23-1854
Client	AMES ASSOCIATES, LLC	Lab ID	15298A
Exploration	**MCLEAN HOUSE**	Date Received	12/11/2023
Material Source	**B-301, 4D, 10-12 FT**	Date Completed	12/14/2023
		Tested By	BRANDON CHAPUT

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**100**	0% Gravel
2.00 mm	**No. 10**	**100**	
850 um	**No. 20**	**99**	
425 um	**No. 40**	**99**	58% Sand
250 um	**No. 60**	**96**	
150 um	**No. 100**	**65**	
75 um	**No. 200**	**42.0**	42% Fines



Comments:

Sheet