Sustainable
Structural
Mechanical
Fire Protection
Electrical
Civil
Controls
Architecture

47A York St
Portland, Maine
04101 USA
colbycoengineering.com

October 23, 2024

Addendum 1:

Sebago Lake State Park
Bathhouses (2), Pole Barn, Entrance Booth, & Amphitheater Upgrades
BGS project number: 3637

Previous Addendum 1 dated October 10, 2024, Attached.

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Portland, Maine
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~~October 9, 2024~~ October 10,2024

Addendum 1:
Bid Clarifications and Responses to
Bidder Requests for Information (pre-Bid RFIs)

Sebago Lake State Park
Bathhouses (2), Pole Barn, Entrance Booth, & Amphitheater Upgrades
BGS project number: 3637

Bidders are to prepare bids based on the following responses to pre-Bid RFIs, and Additional Clarifications:

RFI 1: Confirm the size of the handholes at Bathhouse A, and at the Entrance Booth
Response: Provide type 5, see civil detail 7 on sheet C-503.

RFI 2: Entrance Booth - We would…typically avoid installing R-29 Densepack in an unvented Roof Cavity (unless you plan to vent it above the sheathing). This configuration is an invitation for moisture issues and does not meet code. I also don't understand why they are bothering to specify the R-6 Continuous at the outside of the Exterior Walls when not insulating the roof to code.
Response: See attached updated details. The bid set documents are code compliant per the relevant codes and their applicability for the Entrance Booth Project.

RFI 3: Who is providing the PV equipment for the PoleBarn?
Response: The contractor is to provide the PV equipment.

RFI 4: I have a question about the Campground Upgrade Alternate. I see the plan has an alternate to upgrade additional campsites along with the ones labeled as base bid. The Bid form only has one alternate for campground upgrades which I assume is the whole volume 2-5 planset. How is the alternate within the plan set to be priced?
Response: The Bid Form is revised (a revised bid form is included in Addendum 1).

RFI 5: Are we to provide cameras for the entrance booth? If so, is there some info on what is required?
Response:
Cameras will be provided by State Park OIT. See note 2 on sheet E-131. Provide wiring pathways (conduits, conduit connections, and junction boxes) from wall cabinet in storage room 104 to outlets and devices location. Provide type EMT conduit, minimum 3/4 inch size.

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RFI 6: I see the plans for the bath house in Volume 1-1 for the above referenced project requires structural fill below slabs. The notes reference a geotechnical report by R.W. Gillespie. Is this available/provided to bidders? If not, what is the required gradation for structural fill?

Response: The geotech report will be provided in the final construction documents; the structural fill requires are as follows:

Only structural fill should be used as fill below foundations, ground floor slabs, and as backfill within 2 feet of footings, piers, and foundation walls. Structural fill should be a well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay, and meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 – 100
No. 4	35 – 70
No. 40	5 – 35
No. 200	0 – 5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

In open areas, structural fill should be placed in level, uniform lifts not exceeding 12 inches in uncompacted thickness and be compacted with self-propelled compaction equipment. In confined areas and within 4 feet of foundation walls, structural fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be structural fill compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))*.

RFI 7: bathhouse B calls out for the gravel road to be regraded, while the bathhouse A plan just calls out the gravel road detail. Do you know if these roads are getting full depth boxcut with the full section of new gravel? Or are these roads just getting shimmed up to the design elevations?

Response: Provide full depth construction per the gravel road sections on drawings C-503 and C-512, respectively.

RFI 8: Are there any specs for the plastic slat benches

Response: Provide Timberform 2042-6 Wall-mount Seat (Recycled Plastic Slats) or approved equal.

RFI 9: Are there utility allowances for CMP on any of these projects? Looks like they will be involved.

Response: Bidders do not have to include CMP allowances in their bids.

RFI 10: Are there any details on dishwashing stations? Countertop type? Brackets?

Response: The requirements for the exterior sinks are per the plumbing fixture schedule on drawing P-601; refer to tags KS-1, and KS-1A.

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RFI 11: The sink is labeled for dishwashing but it doesn't call out anything for what the countertop is and how its built?

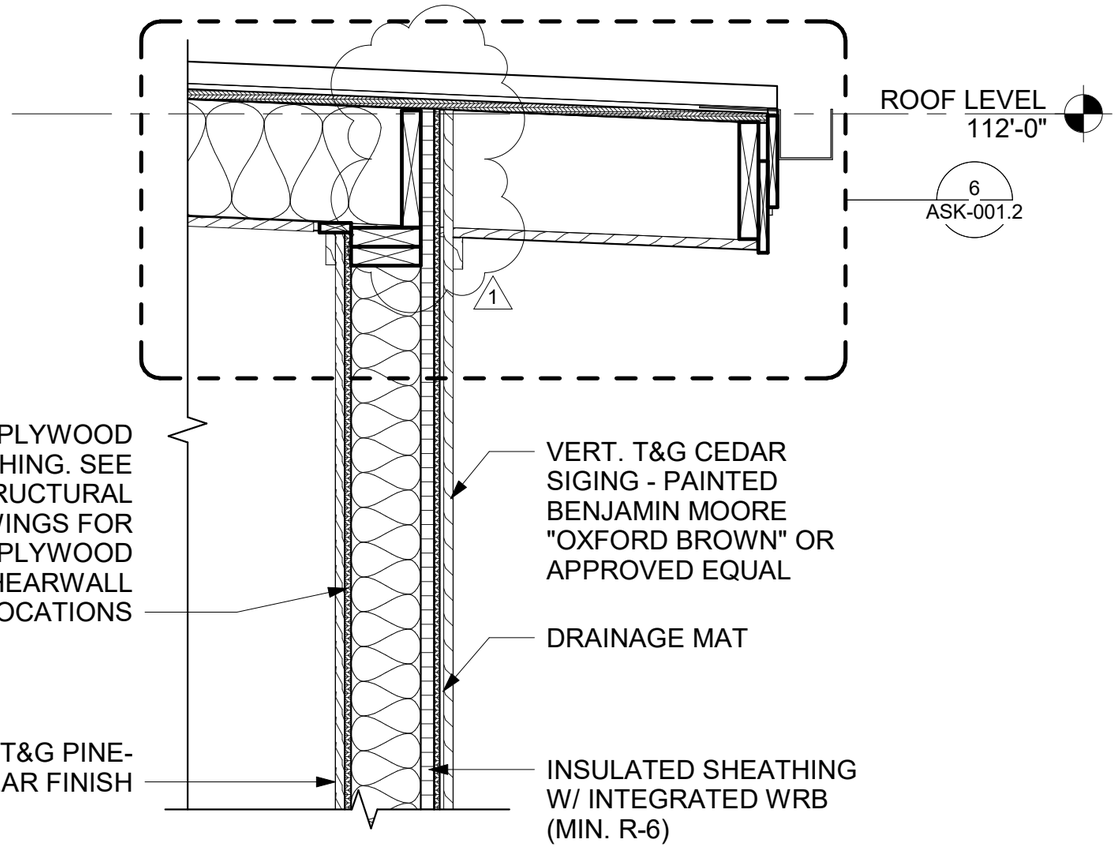
Response: The countertop is integral to the sink/backsplash and constructed of stainless steel; refer to the attached sketches for basis-of-design information; contractor is to submit shop drawings for review and approval by the owner and engineer.

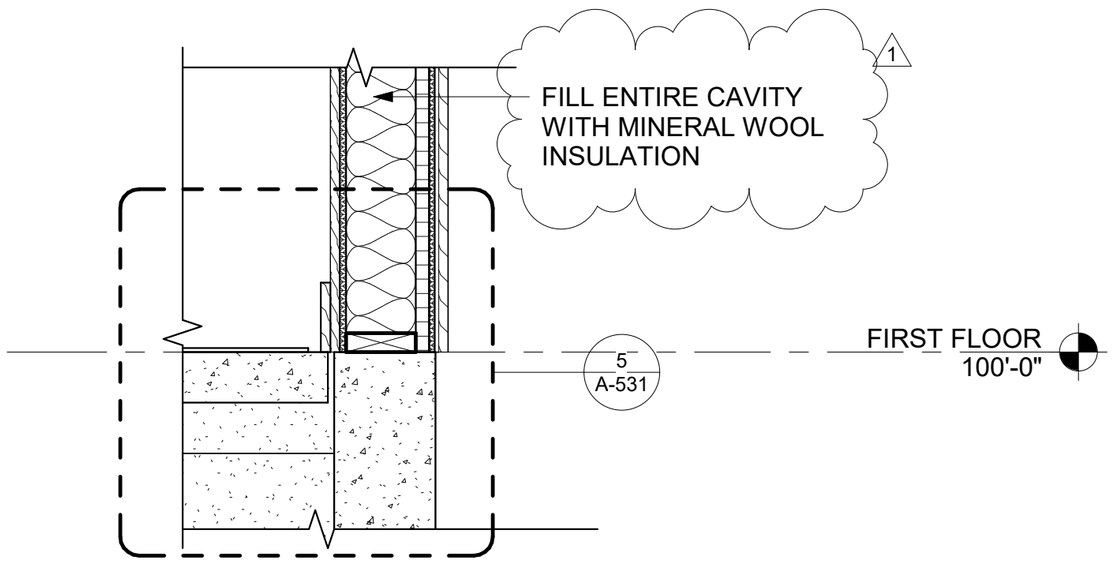
Additional Drawing Clarifications:

- Drawing A-401: Revise key note #13 to say "36" wide shower curtain rod with vinyl curtain"
- Drawing A-411: Revise key note #13 to say "36" wide shower curtain rod with vinyl curtain"

Additional Specification Clarifications:

1. Snow Plowing and Sanding is to be bid as an Alternate Bid; refer to revised Contractor Bid Form.
2. The geotechnical report will be included in the project specifications; this report is also included with this addendum for immediate reference.





7
ASK-001.1

WALL SECTION

SCALE: 1" = 1'-0"

REPLACES SECTION 7/A-231

0 1/2' 1' 2'

Scale: 1" = 1'-0"

MAINE BUREAU OF PARKS & LANDS
22 STATE HOUSE STATION, AUGUSTA MAINE

SEBAGO LAKE STATE PARK (BGS 3637)

EXTERIOR ELEVATIONS & BUILDING SECTIONS

REV	DESCRIPTION	DWN	APP	DATE
1	ADDENDUM 1	SMH	GRC	10/09/24

PLEASE NOTE: THIS DOCUMENT MAY NOT ACCURATELY REPRESENT THE FINAL DOCUMENT. ONLY AN ENGINEER, ARCHITECT OR SURVEYOR SIGNED, SEALED AND DATED PAPER COPY, PROVIDED BY THIS OFFICE, MAY BE UTILIZED FOR BIDDING OR CONSTRUCTION PURPOSES.

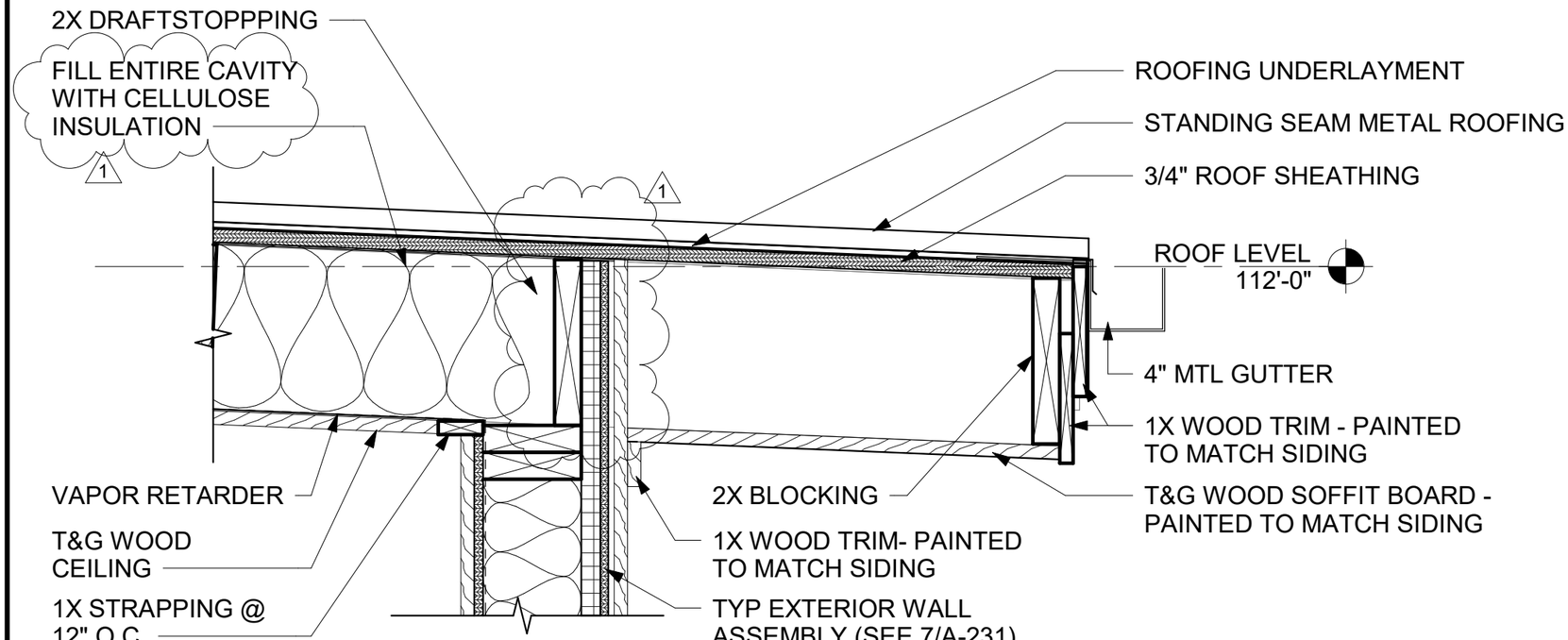
CCE COLBY COMPANY, LLC Engineering & Design
47A York Street
Portland, Maine 04101
207.553.7753
colbycoengineering.com

SIZE:	AS NOTED
DATE:	10/04/24
DES BY:	EAC
DWN BY:	SMH
CKD BY:	EAC

PROJECT NO. 163.010.001

SHEET 1 OF 2

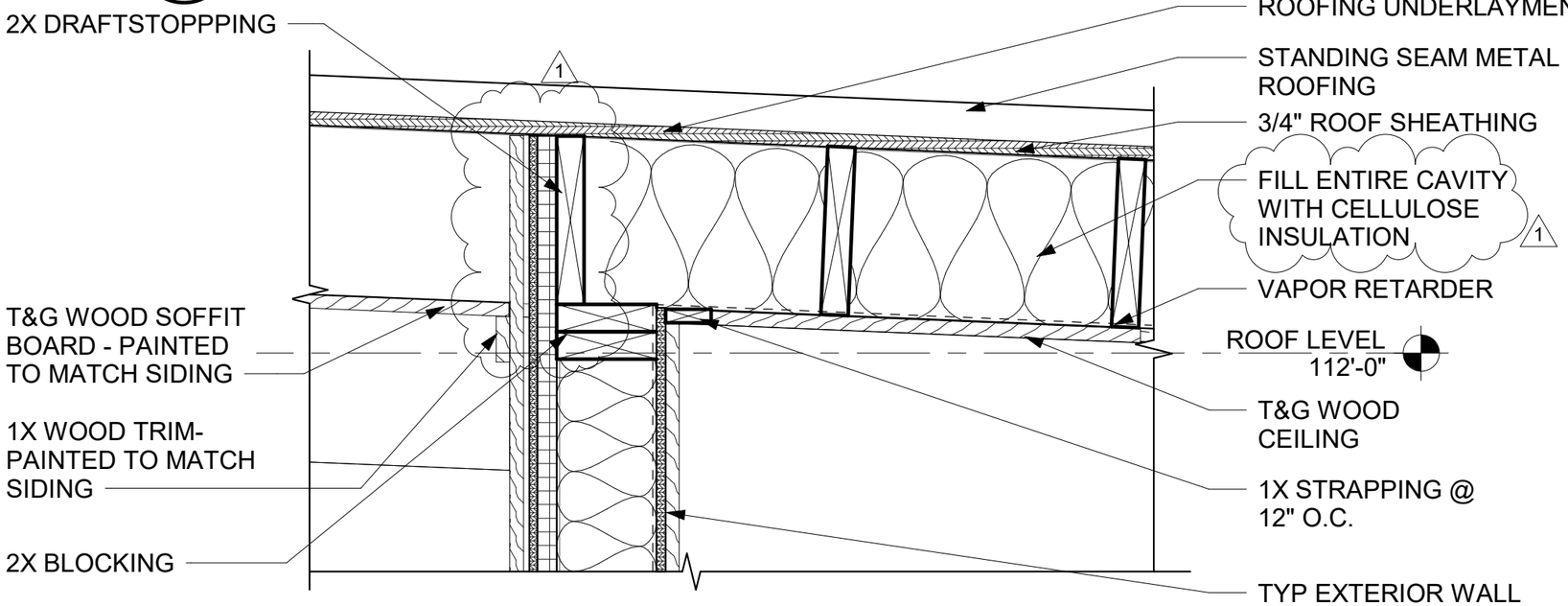
DRAWING NO. ASK-001.1



6
ASK-001.2

SECTION DETAIL

SCALE: 1 1/2" = 1'-0"



4
ASK-001.2

SECTION DETAIL

SCALE: 1 1/2" = 1'-0"

REPLACES DETAIL 6-A/531 AND 4-A/531

0 1/2' 1' 1 1/2'

Scale: 1 1/2" = 1'-0"

MAINE BUREAU OF PARKS & LANDS
22 STATE HOUSE STATION, AUGUSTA MAINE

SEBAGO LAKE STATE PARK (BGS 3637)

PARTITION TYPES AND DETAILS

REV	DESCRIPTION	DWN	APP	DATE
1	ADDENDUM 1	SMH	GRC	10/09/24

CCE COLBY COMPANY, LLC Engineering & Design
47A York Street
Portland, Maine 04101
207.553.7753
colbycoengineering.com

SIZE:	AS NOTED
DATE:	10/04/24
DES BY:	EAC
DWN BY:	SMH
CKD BY:	EAC

PROJECT NO. 163.010.001

SHEET 2 OF 2

DRAWING NO. ASK-001.2

00 41 13
Contractor Bid Form

Sebago Lake State Park Bid Package #1:
Bathhouses (2), Pole Barn, and Entrance Booth BGS project number: 3637

Bid Form submitted by: *email only to email address below*

Bid Administrator:
Paul R. Barber BGS.Architect@Maine.gov
Bureau of General Services
111 Sewall Street, Cross State Office Building, 4th floor
77 State House Station
Augusta, Maine 04333-0077

Bidder:

Signature: _____

Printed name and title: _____

Company name: _____

Mailing address: _____

City, state, zip code: _____

Phone number: _____

Email address: _____

State of incorporation, if a corporation: _____

List of all partners, if a partnership: _____

The Bidder agrees, if the Owner offers to award the contract, to provide any and all bonds and certificates of insurance, as well as Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers if required by the Owner, and to sign the designated Construction Contract within twelve calendar days after the date of notification of such acceptance, except if the twelfth day falls on a State of Maine government holiday or other closure day, or a Saturday, or a Sunday, in which case the aforementioned documents must be received before 12:00 noon on the first available business day following the holiday, other closure day, Saturday, or Sunday.

As a guarantee thereof, the Bidder submits, together with this bid, a bid bond or other acceptable instrument as and if required by the Bid Documents.

00 41 13
Contractor Bid Form

1. The Bidder, having carefully examined the *Sebago Lake State Park:Bathhouses (2), Pole Barn, and Entrance Booth* Project Manual dated *12 September 2024*, prepared by *Colby Company Engineering*, as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

   $ _____ .00

2. Allowances *are not included* on this project.
   No Allowances

   $ *0*.00

3. Alternate Bids *are included* on this project.
   Alternate Bids are as shown below
   Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **$0.00**.

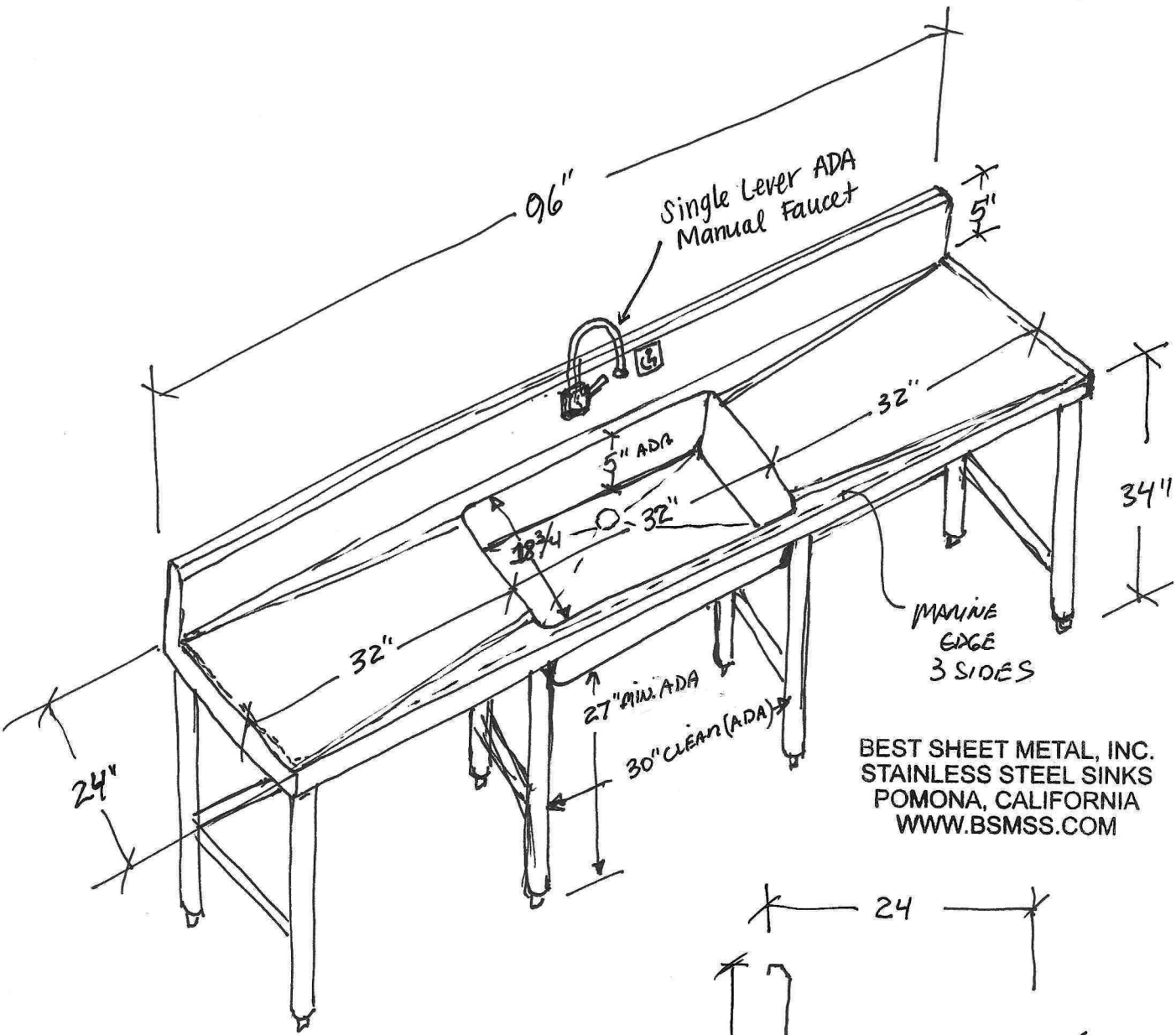
1	*Central Bath House B (west)*	$ _____ .00
2	*Pole Barn*	$ _____ .00
3	*Renovation of Campground Entrance Booth*	$ _____ .00
4	*Amphitheater Upgrades*	$ _____ .00
5	*Contractor to provide snow plowing and sanding of park road(s) for access to the job sites.*	$ _____ .00

4. Bid security *is required* on this project.
   If noted above as required, or if the Base Bid amount exceeds $125,000.00, the Bidder shall include with this bid form a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with this completed bid form submitted to the Owner.

5. Filed Sub-bids *are not required* on this project.
   If noted above as required, the Bidder shall include with this bid form a list of each Filed Sub-bidder selected by the Bidder on the form provided (section 00 41 13F).

BEST SHEET METAL, INC.
STAINLESS STEEL SINKS
POMONA, CALIFORNIA
WWW.BSMSS.COM

Colby Company LLC.
By: Amanda Vogler
Project: Maine State Parks
Date: MAY 13, 2024



BEST SHEET METAL, INC.
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POMONA, CALIFORNIA
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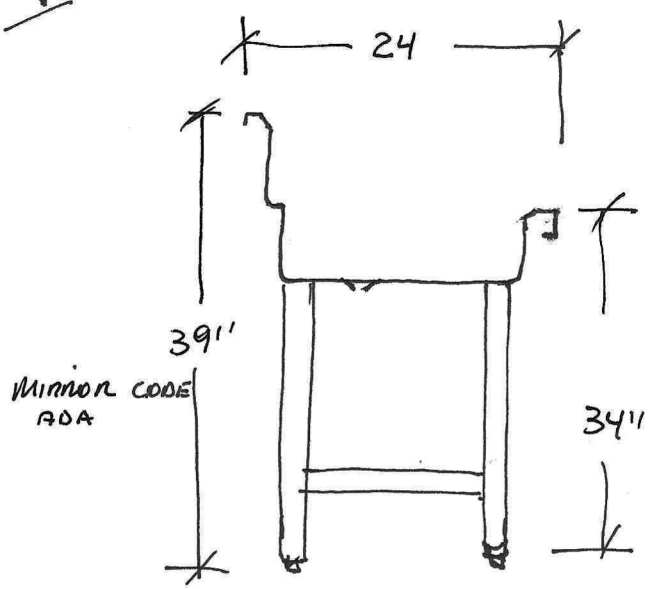


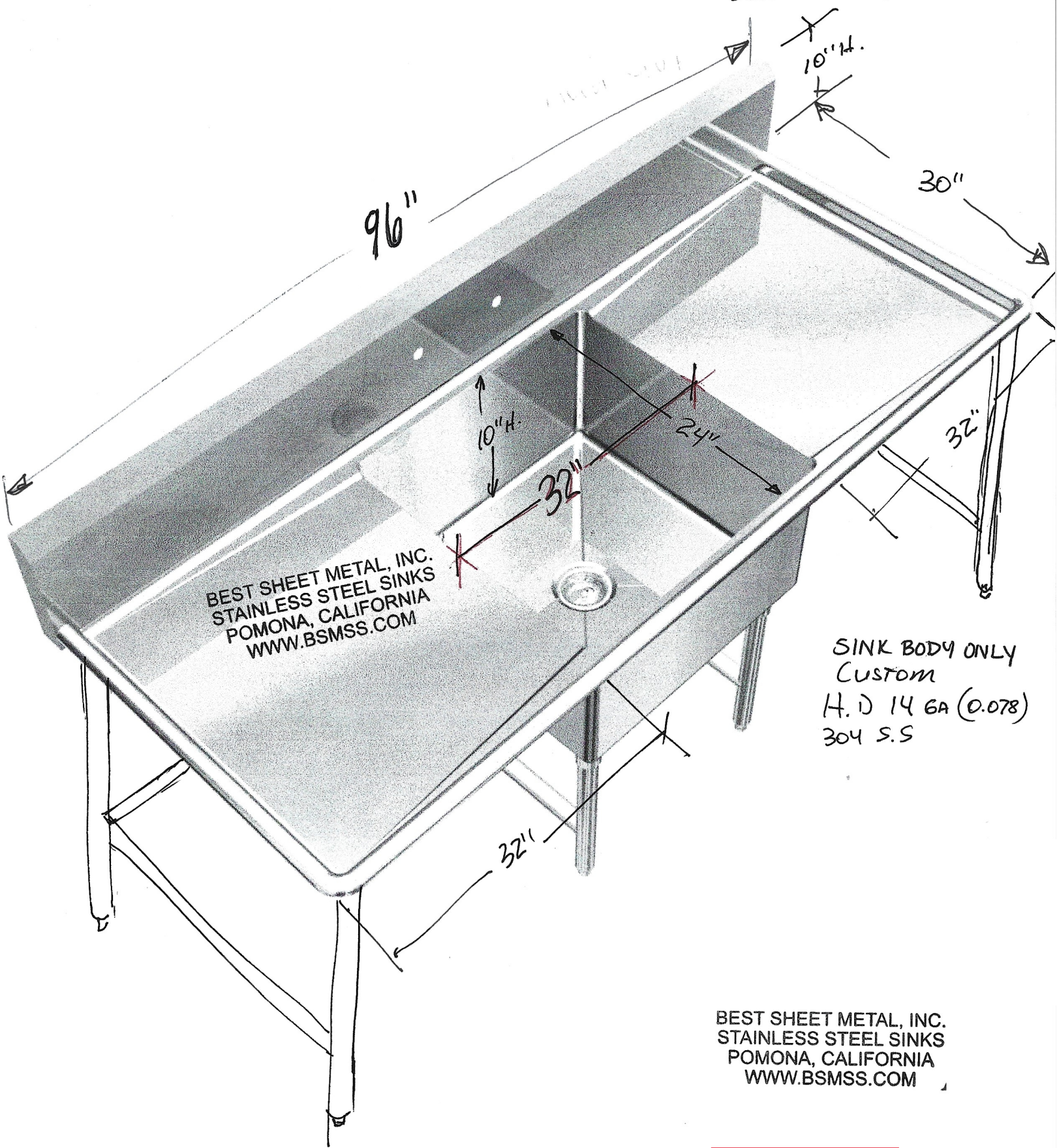
ADA H.D. CUSTOM 14 GA (0.078)
304 S.S. ADA SINK

BEST SHEET METAL, INC.
STAINLESS STEEL SINKS
POMONA, CALIFORNIA
WWW.BSMSS.COM

KS-1

BEST SHEET METAL, INC.
STAINLESS STEEL SINKS
POMONA, CALIFORNIA
WWW.BSMSS.COM

Colby Company LLC.
By: Amanda Vogler
Project: Maine State Parks
Date: MAY 13, 2024



BEST SHEET METAL, INC.
STAINLESS STEEL SINKS
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SINK BODY ONLY
Custom
H.D 14 GA (0.078)
304 S.S

BEST SHEET METAL, INC.
STAINLESS STEEL SINKS
POMONA, CALIFORNIA
WWW.BSMSS.COM

KS-1A

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Environmental Consulting • Materials Testing Services

11 June 2024

Gary Collette
Colby Co. Engineering
47A York Street
Portland, Maine 04101

VIA EMAIL: garyc@colbycoengineering.com

Subject: Geotechnical Engineering Evaluation Report
Proposed Improvements – Lake Sebago State Park
Naples, Maine
RWG&A Project No. 1564-041

Dear Mr. Collette:

R.W. Gillespie & Associates, Inc. (RWG&A) is pleased to present the results of the geotechnical engineering evaluation for the design and construction of bath houses and a storage barn at Lake Sebago State Park in Naples, Maine. This evaluation was performed in general accordance with RWG&A Proposal No. P-11583.GI, dated 21 December 2023. The purpose of the services is to obtain information regarding subsurface conditions and soil properties to base recommendations for design and construction of building foundations and ground floor slabs and to determine site seismic characteristics for use in building design. The attached report presents the results of RWG&A's subsurface explorations, laboratory testing, engineering evaluations, and geotechnical engineering design recommendations for the planned bath houses and storage barn building.

RWG&A has enjoyed working with Colby Co. Engineering on this project. If you have any questions, or if we may be of further service, please contact us.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.

Marc Grenier P.E
Senior Geotechnical Engineer

MRG:fg

G:\PROJECTS\1500\1564\1564-041 Sebago Lake SP GI\Report\2024-06-11 GI Report 1564-041.docx

R.W. Gillespie & Associates, Inc.

Report
of

GEOTECHNICAL ENGINEERING EVALUATION

for

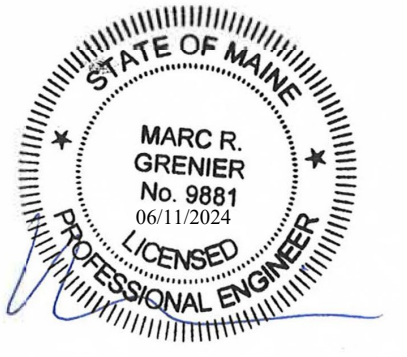
PROPOSED BATH HOUSES AND STORAGE BARN
LAKE SEBAGO STATE PARK
NAPLES, MAINE

Prepared
for

COLBY CO. ENGINEERING
PORTLAND, MAINE

Prepared
by

R. W. GILLESPIE & ASSOCIATES, INC.
BIDDEFORD, MAINE



Marc R. Grenier, P.E.
State of Maine License No. 9881

TABLE OF CONTENTS

1.0 INTRODUCTION

1.01 Background

The project site is located at Lake Sebago State Park in Naples, Maine as shown in Figure 1, *Locus Map*. The proposed construction consists of two replacement bath houses and a 5-bay pole barn storage building. The bath houses will be relatively small, one-story above-grade buildings replacing existing bath houses and the pole barn would be about 25 feet by 50 feet in plan dimension. RWG&A's understanding of site conditions and proposed construction is based on communications with Colby Co. Engineering, and a review of the documents in the email dated 15 December 2023; 11:13 AM. Information provided included the following drawings:

- Sketch in the file *Topographic Survey by HEB 1994 Subcontracts (002).pdf*, which shows existing conditions annotated with the locations of the proposed bath house buildings.
- Drawing set titled *Storage Barn Design for Maine State Parks* (28 pages), dated 16 July 2023, prepared by Pinnacle Hill Engineering.
- Drawing C-101 with title *Bath house A-Existing condition* dated 02 February 2024, prepared by Colby Co. Engineering.
- Drawing C-111 with title *Bath house B-Existing condition* dated 02 February 2024, prepared by Colby Co. Engineering.
- File titled *Sebago State Park – Geotech Explorations.pdf* showing as-marked explorations.
- Seismic Design Category information from Colby Co. Engineering.

1.02 Scope of Services

This evaluation was performed to develop site-specific soil and laboratory data, and to make geotechnical evaluations for the proposed construction, and was completed in general accordance with RWG&A's Proposal No. P-11583.GI, dated 21 December 2023. Refer to Appendix A for limitations and use of this report. As performed, RWG&A's scope of services included the following items:

1. Reviewed project information, readily available published subsurface information, geologic mapping, and visited the site to observe surface conditions.
2. Prepared a geotechnical subsurface exploration and sampling program to obtain subsurface information for use in soil and foundation evaluations.
3. Marked the exploration area for DigSafe and OK-to-DIG registered utility clearance by tape survey methods from features visible at ground surface and shown on provided plans.

4. Arranged to have the soil borings performed by a local drilling contractor as a subcontractor to RWG&A. Provided technical monitoring of exploration activities so that depths, locations, and sampling methods could be modified in response to the subsurface conditions encountered. Observed, logged, and sampled the explorations.

5. Performed laboratory tests on selected soil samples recovered from the subsurface explorations to aid in soil description and determination of engineering properties needed for foundation design.

6. Conducted engineering evaluations of the geotechnical engineering aspects of the proposed project. Emphasis was placed on foundation type, allowable foundation loads, ground floor slabs, lateral load resistance, seismic site coefficient, perimeter foundation drainage, and excavations.

7. Prepared this report presenting the findings, conclusions, and recommendations of the geotechnical evaluation.

2.0 SUBSURFACE EXPLORATIONS

The subsurface exploration program consisted of six soil borings designated B-1 through B-6. The soil borings were drilled 16 April 2024 by Northern Test Boring of Gorham, Maine, using a track-mounted drill rig. Figure 2, *Exploration Location Plan*, shows the locations of the explorations. The subsurface exploration program is summarized below:

Feature	Exploration Designations	Exploration Depth (feet)
Bath House A	B-3 and B-4	28.5 to 29
Bath House B	B-1 and B-2	20 to 32.5
Storage Barn	B-5 and B-6	17 to 32

The soil borings were advanced using 2-1/4 inch inside diameter hollow-stem augers. Split-barrel sampling with standard penetration testing (*ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*) was generally performed at about 5-foot intervals in the borings. A refusal surface was encountered at about 28.5 feet below ground surface in soil boring B-3 at Bath House A.

The soils encountered in the explorations were described in general accordance with *ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).* Logs of the soil borings are included in Appendix B. Stratification lines shown on the exploration logs represent the estimated boundaries between the different soil types encountered and approximate refusal depths; the actual transitions will be more gradual and vary over short distances. Subsurface information should only be considered representative of subsurface conditions encountered within the vertical reach of the explorations on the date the explorations were made.

Proposed soil boring locations were selected by Colby Co. Engineering. RWG&A marked out the boring locations using tape or similar survey methods, using features shown on plans provided to RWG&A. Elevations in the logs were estimated using ground elevation contours shown in the plans provided. Locations and elevations should be considered accurate only to the degree implied by the methodology used to determine them.

3.0 LABORATORY TESTING

Laboratory testing was performed to assist in describing and estimating the engineering properties of the soils. The laboratory testing program consisted of three particle-size distribution tests with natural moisture content determination. The tests were performed in general accordance with the following methods and procedures:

- *ASTM D6913/6913M, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.*

- *ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*.

Moisture content test results are presented in the exploration logs. Results of other tests are presented in Appendix C, *Laboratory Test Results*. Tests were conducted at the RWG&A soil and materials testing laboratory in Biddeford, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

The following paragraphs summarize the subsurface conditions encountered at the bath houses and storage barn site. Please refer to the exploration logs in Appendix B for detailed descriptions of conditions encountered at specific locations. Generalized soil information is contained in the following paragraphs.

4.01 Subsurface Soils

Bath House A:

The subsurface conditions at the proposed Bath House A site consisted of topsoil or fill over naturally deposited sand and silty clay. The encountered fill thickness is about 2 feet below ground surface and consisted of coarse to fine sand with little silt and gravel. The underlying naturally deposited soils consisted of very loose to loose, coarse to fine sand, with few gravel over soft clay, with some silt and few sand. Probe refusal surfaces were encountered at about 28.5 feet to 29 feet below ground surface. Refusal surfaces were generally interpreted to represent bedrock but might have been on a boulder.

Bath House B:

The subsurface conditions at the proposed Bath House B site consisted of fill over naturally deposited sand, silty sand and silty clay. The encountered fill thickness is about 2 feet below ground surface and consisted of coarse to fine sand with few silt and gravel. The underlying naturally deposited soils consisted of loose, coarse to fine sand, with trace silt and gravel over very loose, silty sand with some silt and few clay; soft clayey silt, silt, varying amount of clay, little sand, gray becomes soft, silty clay with some silt and trace sand, wet, dark gray. A probe refusal surface was encountered at about 32.5 feet below ground surface. Refusal surfaces were generally interpreted to represent bedrock but might have been on a boulder.

Storage Barn:

The subsurface conditions at the proposed storage barn site consisted of topsoil over naturally deposited sand, sand to sand with silt, silt and silty clay. The underlying naturally deposited soils consisted of very loose, coarse to fine sand, with varying amounts of silt, loose to medium dense, silt with varying amounts of sand, over soft to very soft, silty clay, with some silt and few sand, wet, gray. A probe refusal surface was encountered at about 32 feet below ground surface. Refusal surfaces were generally interpreted to represent bedrock but might have been on a boulder.

4.02 Groundwater

Free water was observed about 1 to 1.5 feet below current ground surface in the proposed Bath House A borings, about 5 feet below ground surface at proposed Bath House B borings, and about 6 to 10 feet below current ground surface at the proposed Storage Barn borings. Water levels observed during the subsurface exploration program were influenced by the exploration methods (e.g., slow groundwater response due to low soil permeability) and are not considered representative of stabilized groundwater levels. Groundwater levels at the site will fluctuate due to season, temperature, rainfall and construction activity in the area; therefore, water levels during and following construction will vary from those observed in the explorations.

5.0 EVALUATION OF GEOTECHNICAL DATA

5.01 General

Engineering evaluations for this project are based on the subsurface explorations, laboratory testing data, and the design information currently available to RWG&A. Should different information become known before or during construction, these evaluations should be reviewed by RWG&A to confirm their continued applicability.

5.02 Proposed Construction

The proposed construction consists of two bath houses and a 5-bay pole barn storage building. The bath houses will be relatively small one-story above-grade buildings and the pole barn would be about 25 feet by 50 feet in plan dimension. Ground surface at the proposed bath houses are relatively flat with elevation about 269 feet. Proposed grading for bath houses and storage

barn sites and structural load information and tolerable settlement amounts were unavailable to RWGA during the preparation of this report.

Geotechnical engineering evaluations for the bath houses and storage barn were based on the following structural loads. A grade change of less than 2 feet above existing elevation was used for the bath houses and storage barn site.

- Interior walls: 4 to 5 kips per linear feet
- Column loads: 50 kips

Tolerable total post-construction settlement amounts between adjacent foundations of about 1 inch and angular distortions less than 1/400 were used in RWG&A's evaluations. The building's designers should review the structural loads, grade change thickness and tolerable settlements used in the evaluations; RWG&A should be notified if loads, grade change thickness and tolerable settlement amounts used in the evaluations vary from those used in the evaluations.

5.03 Foundation and Ground Floor Slab

With proper site preparation, the proposed bath houses and storage barn building may be supported by shallow foundations consisting of spread and/or continuous footings and have slab-on-grade floors, all bearing on naturally deposited inorganic soil or newly compacted structural fill. Total construction settlement and angular distortions is about 1-inch and 1/400, respectively, should be anticipated for relatively uniformly loaded foundations. Most settlement is expected to occur within weeks after loads are applied. RWG&A should be notified if estimated settlement amounts exceed tolerable amounts.

5.04 Construction Considerations

Site Preparation: Fill and/or reworked native soils were encountered in the proposed bath house building area borings. Preparation of the site before the fill's placement, the fill's composition, and the methods used to place and compact the fill are uncertain. The fill is considered undocumented and unsuitable to support ground floor slabs and foundations. For planning and budgeting purposes, it should be anticipated that fill will need to be removed down to naturally deposited inorganic soil and replaced with compacted structural fill below foundations.

Construction Dewatering: The on-site naturally deposited soils at proposed bath houses and storage barn building areas are sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, it will be important to divert runoff, provide positive grading to shed seepage and runoff from flat areas, and compact exposed soils to reduce rutting, ponding, and surface water infiltration. RWG&A anticipates that if groundwater is encountered during construction, then groundwater control can be accomplished through the use of ditches, sumps, and open pumping.

Use of On-site Soils: It is anticipated the surficial topsoil will be stripped and be either incorporated into proposed landscaped areas, where practicable, or hauled off-site. Topsoil and organic materials are not considered suitable for use as common fill. The subsurface soils from

foundation and site work excavations will generally consist of sand at the proposed bath house sites, and subsurface soils from foundation and site work excavations will generally consist of sand to sand with silt, and silt at the proposed storage barn site.

Visual-manual descriptions and laboratory tests indicate existing fill and naturally deposited soils are unsuitable for use as compacted structural fill beneath the proposed buildings. Naturally deposited soil with percentage by weight passing sieve No. 200 lesser than 5% can be used as backfill around foundations but is expected to be difficult to compact. With proper moisture conditioning and earthwork handling, existing fill might be able to be used as common fill in landscaped areas. If on-site soils are proposed for use other than common fill, the soil should be stockpiled separately and tested to determine if it meets specification requirements for its intended use.

6.0 RECOMMENDATIONS

The recommendations presented below are provided for use in design and construction of the proposed bath houses and storage barn. Subsurface conditions at the project site will greatly influence foundation design and site work construction. RWG&A recommends foundation design and construction comply with the requirements of all applicable ordinances, regulations, and rules. When this report was prepared, the applicable building code in Naples, Maine, was the Maine Uniform Building and Energy Code, which adopts *2015 International Building Code*® by reference. However, it is understood that the project is being designed to be in accordance with *2021 International Building Code*®.

6.01 Site Preparation

1. All topsoil, fill, organic material, debris, rubbish, frozen soils, muck, loose, or disturbed soils and other unsuitable materials, including asphaltic pavement, should be removed from proposed construction areas. Unsuitable materials include uncontrolled fills (i.e., fills placed without systematic densification and moisture control to acceptable percent compaction) and deleterious substances.

2. Due to the previously developed nature of the proposed bath house sites, the Project Contractor and their Subcontractors should be sensitive to the potential of encountering obstructions, such as remnants from prior structures and buildings, associated foundations, and underground utilities (note: both active and abandoned) during site and earthwork activities. It is anticipated that obstructions may include, but are not limited to, pipes, concrete footings, masonry block, rubble, dry wells, and buried utilities. Where such items are encountered beneath the proposed building limits, they should be excavated to their full extent, removed, and replaced with compacted structural fill. The ends of underground pipes and utility conduits outside the proposed building footprints that will be abandoned in place should be filled with concrete and capped to prevent erosion of material into the conduit or pipe.

3. Surface grading should provide positive drainage away from constructed facilities both during and after construction. Dewatering requirements will vary across the site based on

groundwater levels encountered during construction and soil types. In general, it should be practical to accomplish construction dewatering from within excavations using open pumping methods to a depth of one to two feet below groundwater surface. Surface runoff and groundwater infiltration should be controlled so excavation, filling, and foundation construction can be completed in-the-dry.

6.02 Site Filling

4. Only structural fill should be used as fill below foundations, ground floor slabs, and as backfill within 2 feet of footings, piers, and foundation walls. Structural fill should be a well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay, and meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 – 100
No. 4	35 – 70
No. 40	5 – 35
No. 200	0 – 5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

5. In open areas, structural fill should be placed in level, uniform lifts not exceeding 12 inches in uncompacted thickness and be compacted with self-propelled compaction equipment. In confined areas and within 4 feet of foundation walls, structural fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be structural fill compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))*.

6.03 Foundations

6. The proposed bath houses and storage barn should be designed to withstand lateral, uplift, and overturning forces due to earthquakes. In accordance with the *2021 International Building Code®*, the proposed bath houses and storage barn sites are classified as Site Class D and Colby Co. Engineering has indicated the buildings would be in Seismic Design Category B. Per building code seismic design; category B does not require liquefaction assessment or mitigation. However, a change in the building's use could affect the seismic design category, which will require a liquefaction assessment and subsurface mitigation as appropriate and affect the structural design.

7. The proposed buildings may be supported on spread and/or continuous footings bearing on the inorganic naturally deposited soils or compacted structural fill. The footings should be proportioned for an allowable contact pressure of 2,000 pounds per square foot. The estimated total and differential settlement is about 1 inch and 1/400, respectively.

8. Minimum footing width should be in accordance with concrete design and building code requirements, and no less than 2 feet. For footings having a least lateral dimension less than 3 feet, the above allowable pressure should be taken as 1/3 of the above value times the least dimension in feet.

9. A 1-foot thick overexcavation and replacement with compacted structural fill or 3/4-inch crushed stone is recommended for footings to protect naturally deposited soil subgrade from excessive disturbance during construction. Crushed stone should be separated from adjacent soil with a geotextile fabric (Mirafi 160N or equivalent). Crushed stone or structural fill should extend one foot outside the limits of the foundation.

   Crushed stone should meet the requirements of *State of Maine Department of Transportation (MaineDOT) Standard Specifications November 2014 Edition Section 703 – Aggregates, 703.13 Crushed Stone ¾-Inch.* Particle-size distribution of crushed stone shall be tested for compliance with MaineDOT requirements by *ASTM Designation: C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate*. In confined areas, within 4 feet of foundation walls, crushed stone should be placed in lifts not exceeding 6 inches in loose lift thickness and be compacted with a minimum of six complete coverages with a reversible vibratory plate compactor with an operating weight of 600 pounds, minimum.

10. Excavation of footing and ground floor slab-bearing surfaces in soil or fill should be performed by earthwork equipment fitted with smooth-edged buckets. Final subgrade preparation should include compaction of fill or naturally deposited soil subgrades with hand-guided, vibratory compaction equipment. Following compaction and before concrete placement, care should be taken to limit disturbance of the bearing surfaces. Any loose, softened, or disturbed material due to construction traffic should be removed before concrete placement and backfilled with compacted structural fill.

11. It is recommended that design bottom of footing level for exterior building footings bearing on structural fill or naturally deposited soil be a minimum of 4 feet below lowest adjacent ground surface exposed to freezing temperatures. At heated interior locations, footings may be designed to bear a minimum of 2 feet below top of ground floor slab. If exposure to freezing temperatures is anticipated, either during or following construction, then interior footings should be lowered in accordance with the recommendations for exterior footings.

12. The integrity of natural soils and structural fill must be maintained during cold weather conditions. Footing and slab subgrades should not be allowed to freeze. The naturally deposited soils are considered highly frost-susceptible. Freezing of subgrade soils beneath footings and floor slabs may result in heaving and post-construction settlement. The Contractor should make every effort to prevent freezing of subgrade soils. In the

event frost penetration occurs, all frozen and previously frozen soils should be removed and replaced with compacted structural fill. At no time should frozen material be placed as fill.

13. Lateral loads from wind and earthquake may be resisted by friction between the foundation bottoms and supporting foundation-bearing material, and earth pressure against the sides of foundations. The following lateral bearing pressure and sliding resistance are recommended for anticipated foundation bearing materials:

Foundation Bearing Material	Lateral Bearing Pressure (pounds per square foot per foot below finished grade)	Coefficient of Friction	Cohesion (pound per square foot)
Compacted Structural Fill Compacted Crushed Stone	200	0.35	--
Naturally Deposited Soil	100	0.25	---

6.04 Foundation Drainage

14. Perimeter footing drains should be installed at the perimeter of the proposed buildings. The drains should be installed at the exterior bottom of footing level or at least 18 inches below the adjacent finished floor level, whichever is lower. The drains should consist of perforated pipe bedded in 2 cubic feet of underdrain stone per linear foot. Underdrain stone should consist of *MaineDOT, Standard Specifications Revision of December 2014, 703.22 Underdrain Backfill Material Type C*. The underdrain stone should be encapsulated in a filter fabric.

15. Flow from the foundation drains should be conveyed by gravity to a surface drainage feature or storm drain that will be free-flowing at all times and under all conditions. Existing foundation drains should not convey flow from the new foundation drains without verifying that existing foundation drains will meet recommended drainage criteria for new foundation drains.

    Multiple outlets should be provided so as not to be dependent on a single flow path. Surface water drainage features, including roof drains, pipes, catch basins, manholes, drip edges, and infiltration trenches and basins, should direct water away from foundation drainage at all times and locations. Existing and new roof drains should not be connected to the foundation drains.

6.05 Ground Floor Slabs

16. Interior floors may be slab-on-grade construction based on a subgrade modulus of 150 pounds per cubic inch. The slab should be underlain by a minimum of 12 inches of compacted structural fill. A vapor retarder should be provided below the ground floor slab to reduce moisture infiltration. Concrete slab-on-grade floors, regardless of their design or construction, are prone to some cracking and the use of control joints and

concrete reinforcing are methods to reduce random patterned cracking. It is anticipated design and construction details of the floor slab, including concrete thickness, reinforcing, bedding, control joint depth and spacing, and the vapor retarder type and thickness, will be provided by the project Structural Engineer.

17. Exterior slabs at entrances and other locations sensitive to frost action should be underlain by a minimum of 5 feet of underdrain stone. The underdrain stone should be completely wrapped in a filter fabric to prevent the migration of surrounding soils into the stone. Slabs at locations where frost heaving is tolerable should be underlain by a minimum of 24 inches of structural fill. The surrounding area should be pitched to drain away to reduce available moisture for ice and frost lens generation.

6.06 Temporary Excavations

18. Soils encountered at the project consisted of sand, silty sand, clayey silt, and silty clay. We anticipate that foundation and utility excavations can be accomplished using sloped, open-cut techniques. It is also anticipated that dewatering can be accomplished using sumps and open pumping methods.

    The Contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

    As a safety measure, it is recommended all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the slope height. Exposed slope faces should be protected against the elements.

6.07 Geotechnical Observation

The geotechnical recommendations provided as the basis for design of this project were developed using a limited number of observations and tests. The Owner should be sensitive to the potential need for adjustment in the field. We recommend that the Owner retain RWG&A to observe geotechnical construction aspects of the project. These services should include observing general compliance with the design concepts, specifications and recommendations, and assisting in development of design changes should subsurface conditions differ from those anticipated before the start of construction. Observation improves the likelihood that the design intent will be carried out during construction. In addition, it allows RWG&A to confirm its design recommendations. For this project, geotechnical observation of the following aspects is recommended:

- Site stripping
- Removal of unsuitable fills

- Structural fill placement and compaction
- Preparation of foundation subgrades

In addition to geotechnical observation, RWG&A can also provide full-service construction inspection and materials testing. This would include soils, portland cement and asphaltic concrete, structural steel and welding inspections, destructive and non-destructive testing, and special inspection services in fulfillment of building code requirements.

7.0 CLOSURE

This report has been prepared for specific application to the design and construction of bath houses and a storage barn at Lake Sebago State Park in Naples, Maine, for the exclusive use of Colby Co. Engineering. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event any changes are made in the nature, design, or location of the proposed construction, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of widely spaced explorations. The nature of variations between the explorations may not become evident until construction has begun. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A requests an opportunity for a general review of the final design and specifications to determine that earthwork and foundation recommendations have been interpreted in the manner in which they were intended.

0 2000 3000 4000

SCALE, FEET

SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF NAPLES, ME, DATED 2021.

FIGURE 1
LOCUS MAP
GEOTECHNICAL EVALUATION
PROPOSED IMPROVEMENTS
SEBAGO LAKE STATE PARK
CASCO, MAINE

MAY 2024 PROJECT NO. 1564-041

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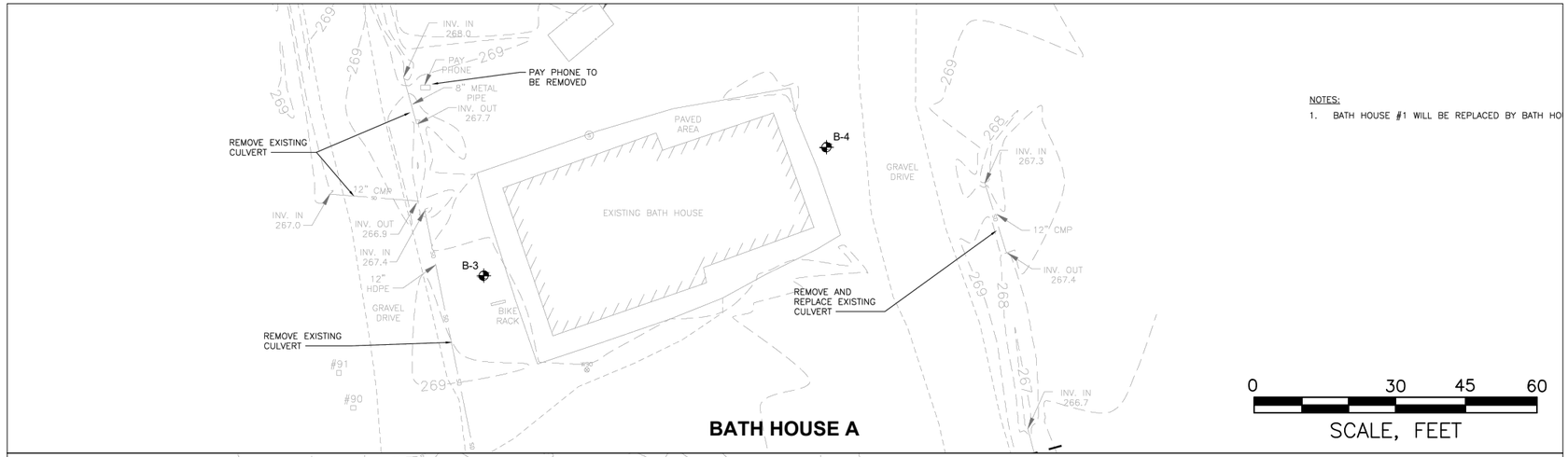
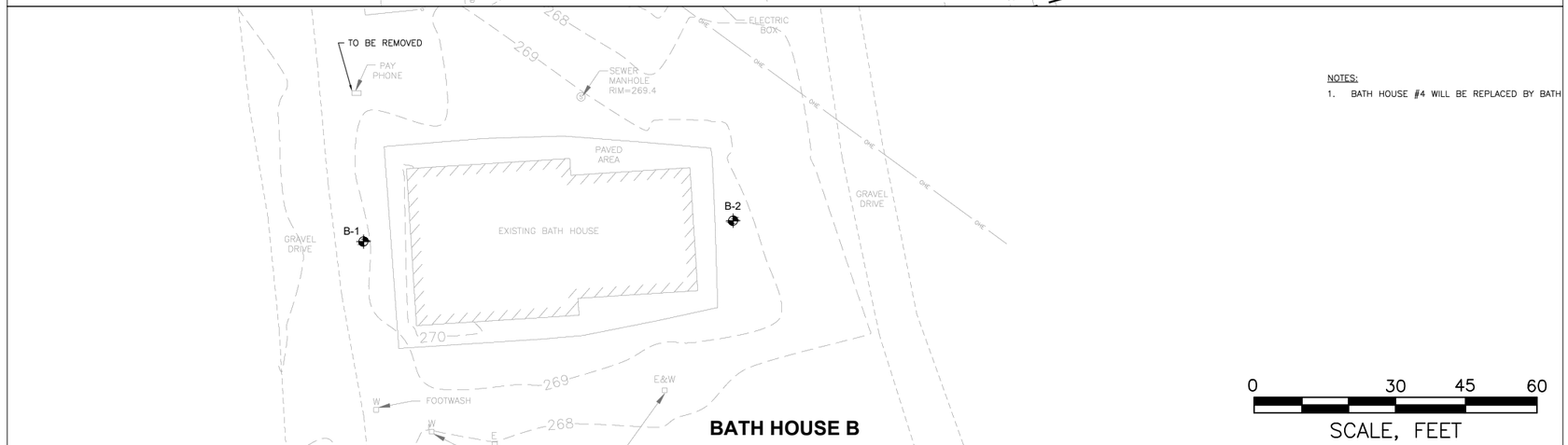
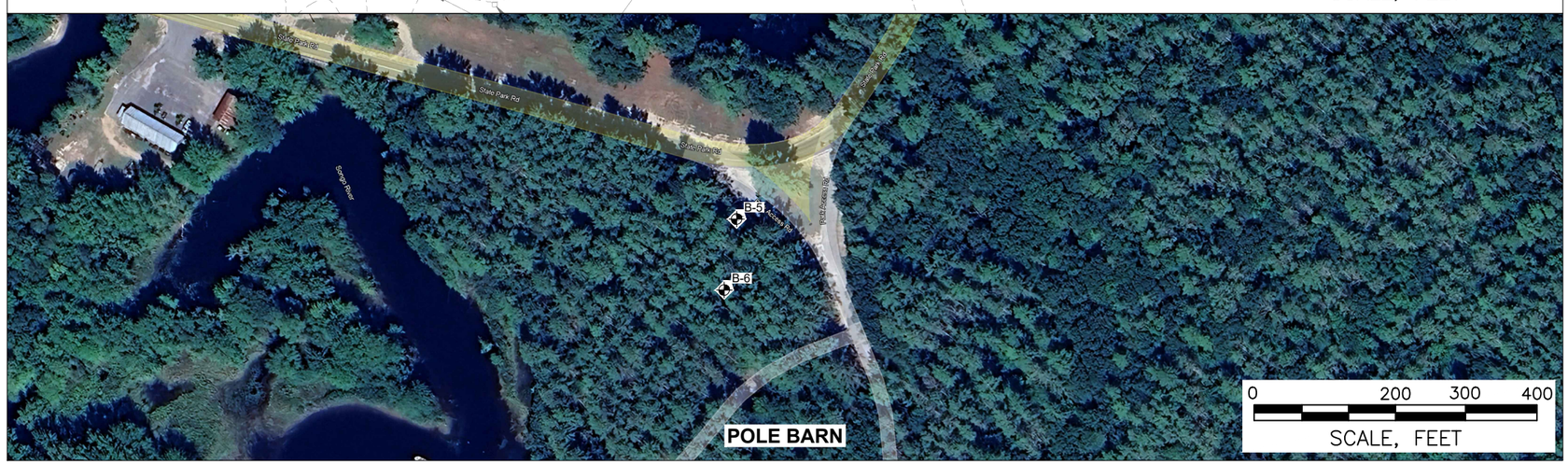
Geotechnical Engineering ● Materials Testing Services
Environmental Consulting ● www.rwgillespie.com







LEGEND:

B-1 APPROXIMATE LOCATION OF SOIL BORING DRILLED 16 APRIL 2024.

SOURCE:

1. DRAWING NO. C-101, TITLED "BATH HOUSE A - EXISTING CONDITIONS", PREPARED BY COLBY COMPANY, LLC, DATED 02/08/2024, MARKED "15% SUBMISSION, 02/23/24".
2. DRAWING NO. C-111, TITLED "BATH HOUSE B - EXISTING CONDITIONS", PREPARED BY COLBY COMPANY, LLC, DATED 02/08/2024, MARKED "15% SUBMISSION, 02/23/24".
3. © GOOGLE EARTH 2020 IMAGE.

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FIGURE 2
EXPLORATION LOCATION PLAN
GEOTECHNICAL EVALUATION
PROPOSED IMPROVEMENTS
SEBAGO LAKE STATE PARK
CASCO, MAINE

MAY 2024 PROJECT NO. 1564-041

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APPENDIX A

LIMITATIONS

Geotechnical Engineering Evaluation
Proposed Bath Houses and Storage Barn
Lake Sebago State Park
Naples, Maine

LIMITATIONS

This evaluation has been limited considering the geotechnical engineering aspects of the proposed bath houses and storage barn at Lake Sebago State Park in Naples, Maine. The primary purpose of the evaluation was to obtain information regarding subsurface conditions and soil properties to base recommendations for design and construction of building foundations and ground floor slab and to determine site seismic characteristics for use in building design. This report identifies construction considerations intended to solely assist engineers that will design the project and monitor its construction, and not to the benefit of others, including but not limited to the Contractor. This report is not a technical specification, nor intended to be used as a specification for bidding or building the project.

This geotechnical evaluation might also aid contractors responsible for constructing the proposed buildings. However, the recommendations and comments provided in this report are not intended to be instructions or directives to the project Contractors. The project Contractors must evaluate construction issues encountered in the work based on their experience with similar projects, considering their methods and procedures.

RWG&A has not considered the construction from a worker safety perspective. Construction safety is the project Contractor's responsibility, who is solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to Colby Co. Engineering. Under no circumstances should this information be interpreted to mean that RWG&A, Colby Co. Engineering, and/or the Owner assume responsibility for construction site safety or the Contractor's activities; such responsibility is not implied and should not be inferred.

RWG&A's services excludes:

- Any environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. (Note: any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment.)

- Any service to investigate or detect the presence of mold or other biological contaminants or any service designed or intended to prevent or lower the risk of an infestation of mold or other biological contaminants (MOBC infestation).

- Any service to evaluate shoreline stability or erosion potential, maximum sea levels, or sea level rise relative to the proposed construction.

- Any service to investigate or detect the presence of potentially hazardous subsurface vapor sources or any service designed or intended to prevent or lower the risk of vapor intrusion.

APPENDIX B

EXPLORATION LOGS

Geotechnical Engineering Evaluation
Proposed Bath Houses and Storage Barn
Lake Sebago State Park
Naples, Maine

RWG&A, Inc. soil descriptions are based on the following criteria. Descriptive terminology is used to denote the grain size and percentage of each component. The soil descriptions are based on visual-manual classification procedures, Standard Penetration Test results, and the results of laboratory testing on selected soil samples, where available. The Unified Soil Classification Group Symbol will be indicated in capital letters.

COMPONENT DEFINITIONS BY GRADATION SIEVE LIMITS

Materials	Definitions	Fractions	Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			
Cobbles	Material passing through a 12 in. opening and retained on the 3 in. sieve.			
Gravel	Material passing the 3 in. sieve and retained on 1/4" (No. 4 sieve).	Coarse Fine	3 in. 3/4 in.	3/4 in. 1/4 in.
Sand	Material passing the No. 4 sieve and retained on the No. 200 sieve.	Coarse Medium Fine	No. 4 (1/4") No. 10 (1/8") No. 40 (1/32")	No. 10 (1/8") No. 40 (1/32") No. 200
Silt	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

SOIL DESCRIPTION

General

Soils are described as to the Unified Soil Classification Systems Group Symbol, density or consistency, color, grain size distribution and other pertinent properties such as plasticity and dry strength. The RWG&A order of descriptors is as follows:

1. USCS Group Name and Symbol, or Fill
2. Density or Consistency
3. Moisture
4. Grain Size & Constituent percentages
5. Other pertinent descriptors
6. Color

DESCRIPTIVE TERMINOLOGY DENOTING COMPONENT PROPORTIONS

Descriptive Terms	Range of Proportions
Noun (major component)	∃50%
Adjective (secondary component)	20 - 50%
Some (third component)	25 - 45%
Little (second or third component)	15 - 25%
Few (second or third component)	5 - 15%
Trace	0 - 5%
With	Amount of component not determined. Used as a conjunction only. Does not indicate component percentile

OTHER DESCRIPTIVE TERMS

Where appropriate, geological classifications are also used (Glacial Till, etc.)

TYPICAL DESCRIPTIONS

SAND WITH SILT (SP-SM): Medium dense, moist, coarse to medium sand, few silt, brown.
FILL; Loose, dry, fine sand, some gravel and silt, with brick and concrete fragments, dark brown.
SILTY CLAY (CL); Very stiff, moist, silty clay, olive-brown.

DENSITY OR CONSISTENCY OF SOILS

COHESIVE SOILS

Consistency of Cohesive Soils	Standard Penetration Test (Blows Per Foot) (N)	Undrained Shear Strength (TSF)
Very Soft	0 - 2	Below 0.13 (250 psf)
Soft	2 - 4	0.13 to 0.25 (to 500 psf)
Medium	4 - 8	0.25 to 0.5 (to 1,000 psf)
Stiff	8 - 15	0.5 to 1.0 (to 2,000 psf)
Very Stiff	15 - 30	1.0 to 2.0 (to 4,000 psf)
Hard	Over 30	over 2.0 (over 4,000 psf)

Consistency of cohesive soils is based upon field vane shear, torvane, or pocket penetrometer, or laboratory vane shear or Unconsolidated-Undrained Triaxial Compression tests. Consistency of cohesive soils is based upon the Standard Penetration test when no other data is available.

COHESIONLESS SOILS

Density of Cohesionless Soils	Standard Penetration Test (Blows per Foot) (in)
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	over 50

PENETRATION RESISTANCE

STANDARD PENETRATION TEST (ASTM D1586) - a 2.0-inch diameter, 1-3/8 inch inside diameter split barrel sample is driven into soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The total number of blows required for penetration from 6 to 18 inches is the Standard Penetration Resistance (N).

COBBLES AND BOULDERS

The percentage of cobbles and boulders is estimated visually where possible.

Descriptive Term	Estimated Percentage
Very Few	0 - 10%
Few	10 - 25%
Common	25 - 40%
Numerous	40 - 50%

If the percentage cannot be determined, as in a typical test boring, then use “with” to indicate the presence of cobbles and/or boulders. (i.e., gravelly sand with cobbles and boulders).

FILLS

The following terminology is used to denote size range of man-made materials within fill deposits:

Size Range	Comparative Soil Terms
<No. 200 Sieve	Silt - size
No. 200 to 1/4 in.	Sand - size
1/4 in. to 3 in.	Gravel - size
3 in. to 12 in.	Cobble - size
>12 in.	Boulder - size

SUPPLEMENTAL SOIL DESCRIPTION TERMINOLOGY

Term	Example	
Seam	Typically 1/16 to 1/2 inch thick	1/4 inch sand seams
Layer	Greater than 1/2 inch thick	2-inch sand layers
Occasional	One or less per foot of thickness	
Frequent	More than one per foot of thickness	
Interbedded	Alternating soil layers of different composition	
Varved	Alternating thin seams of silt and clay	
Mottled	Variations in color	

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Boring Log: B-1
Total Depth (ft): 20
Sheet 1 of 1

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 5'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	FILL; Sand with silt and gravel, moist, coarse to fine sand, few silt, few fine gravel, brown.	12	3 3 3 3	6	7.8	GS MC
				SAND (SP); Loose, moist to wet, coarse to medium sand, trace silt, tan.					
5 ▽			S-2		13	2 2 3 3	5		
10			S-3	Coarse sand.	20	7 7 7 7	14		
				Some gravel.					
15			S-4		20	1/12"	1		
				SILTY SAND WITH CLAY (SM); Very loose, wet, fine sand, some silt, few clay, gray.		1/12"			
			N/A	Advanced rod probe with hydraulic push. Recorded blow counts through sand to 20'.	N/A	48 52 52 47			
20				Bottom of exploration at 20.0'; Not refusal.					
25									
30									

Notes:

R.W. Gillespie & Associates
- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2
Total Depth (ft): 32.5
Sheet 1 of 2

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 5'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	FILL; Sand with silt and gravel, moist, coarse to fine sand, little silt, little gravel, brown.	10	2 3 3 3	6		
				SAND (SP); Loose, moist to wet, medium sand, trace silt, stratified, tan.					
5 ▽			S-2		12	2 2 2 2	4		
10			S-3	Coarse sand.	15	3 3 4 7	7		
15			S-4		16	1/24"		46.3	GS MC
				CLAYEY SILT WITH SAND TO SILTY CLAY (ML to CL); Very soft, wet, silt, little medium to fine sand, gray to very soft, wet, silty clay, some silt, few sandy seams, gray.					
20			S-5		20	1/24"			
				Advanced rod probe with hydraulic push.					
25									
30									

Notes:

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- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2

Total Depth: 32.5

Sheet 2 of 2

Project Name: Proposed Improvements - Sebago Lake State Park
Location: Casco Maine
Client: Colby Company Engineering
Observed Water Depth: 5'

RWG&A Project No. 1564-041-24
Surface Elevation: 269 Feet
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
30				Bottom of exploration at 32.5'; Rod probe refusal on firm strata.					
35									
40									
45									
50									
55									
60									

Notes:

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- Environmental Consulting
- Materials Testing Services

Boring Log: B-3
Total Depth (ft): 28.5
Sheet 1 of 1

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 1'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (4 inches).	7	2 2 2 1	4		
				SAND (SP); Loose, moist to wet, coarse sand, few fine gravel, tan.					
5			S-2		15	4 5 5 5	10		
10			S-3	Fine sand, no gravel.	18	5 4 3 2	7		
15			S-4		15	1 1 1 1	2		
				SILTY CLAY (CL); Soft, wet, clay, some silt, few sand seams, gray. Advanced rod probe with hydraulic push.					
20									
25									
30				Bottom of exploration at 28.5'; Rod probe refusal on possible cobbles, boulders, bedrock.					

Notes:

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- Environmental Consulting
- Materials Testing Services

Boring Log: B-4

Total Depth (ft): 29

Sheet 1 of 1

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 1.5'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	FILL; Sand with silt and gravel, moist, coarse to fine sand, little silt, little gravel, brown.	12	4 4 2 2	6		
				SAND (SP); Loose to very loose, wet, coarse to medium sand, few gravel, tan.					
5			S-2		12	4 4 3 4	7		
10			S-3	Medium to fine sand.	3	1 1 1 2	2		
15			S-4		14	1 1 2 2	3		
				Advanced rod probe with hydraulic push.					
20									
25									
30				Bottom of exploration at 29.0'; Rod probe refusal on firm strata.					

Notes:

R.W. Gillespie & Associates
- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-5
Total Depth (ft): 32
Sheet 1 of 2

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	15	2 2 2 3	4		
				SAND WITH SILT (SP-SM); Very loose, moist, medium to fine sand, few silt, orange.					
5			S-2	SILT (ML); Medium dense, moist to wet, silt, trace medium to fine sand, gray.	16	5 5 5 5	10	30.2	GS MC
10			S-3		16	3 4 6 7	10		
15			S-4	SILTY CLAY (CL); Wet, clay, some silt, few sand seams, gray.	20	3 2 2 2	4		
				Advanced rod probe with hydraulic push.					
20									
25									
30									

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-5

Total Depth: 32

Sheet 2 of 2

Project Name: Proposed Improvements - Sebago Lake State Park
Location: Casco Maine
Client: Colby Company Engineering
Observed Water Depth: 10'

RWG&A Project No. 1564-041-24
Surface Elevation: 269 Feet
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
30				Bottom of exploration at 32.0'; Rod probe refusal on firm strata.					
35									
40									
45									
50									
55									
60									

Notes:

R.W. Gillespie & Associates

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-6

Total Depth (ft): 17

Sheet 1 of 1

Project Name: Proposed Improvements - Sebago Lake State Park
RWG&A Project No. 1564-041-24
Location: Casco, Maine
Client: Colby Company Engineering
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 6'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber
Driller Rep.: Mike Nadeau
Date Started: 04/16/24
Date Completed: 04/16/24
Surface Elevation: 269 Feet
Drilling Method: 2 1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	18	1 1 2 2	3		
				SAND (SP); Very loose, moist, coarse to fine sand, few fine gravel, tan.					
5			S-2	Fine sand, orange and gray, highly oxidized.	15	4 4 4 4	8		
10			S-3		15	3 3 4 3	7		
				SILT (ML); Loose to medium dense, wet, silt, trace medium to fine sand, gray.					
15			S-4		20	4 5 7 8	12		
				Bottom of exploration at 17.0'; Not refusal.					
20									
25									
30									

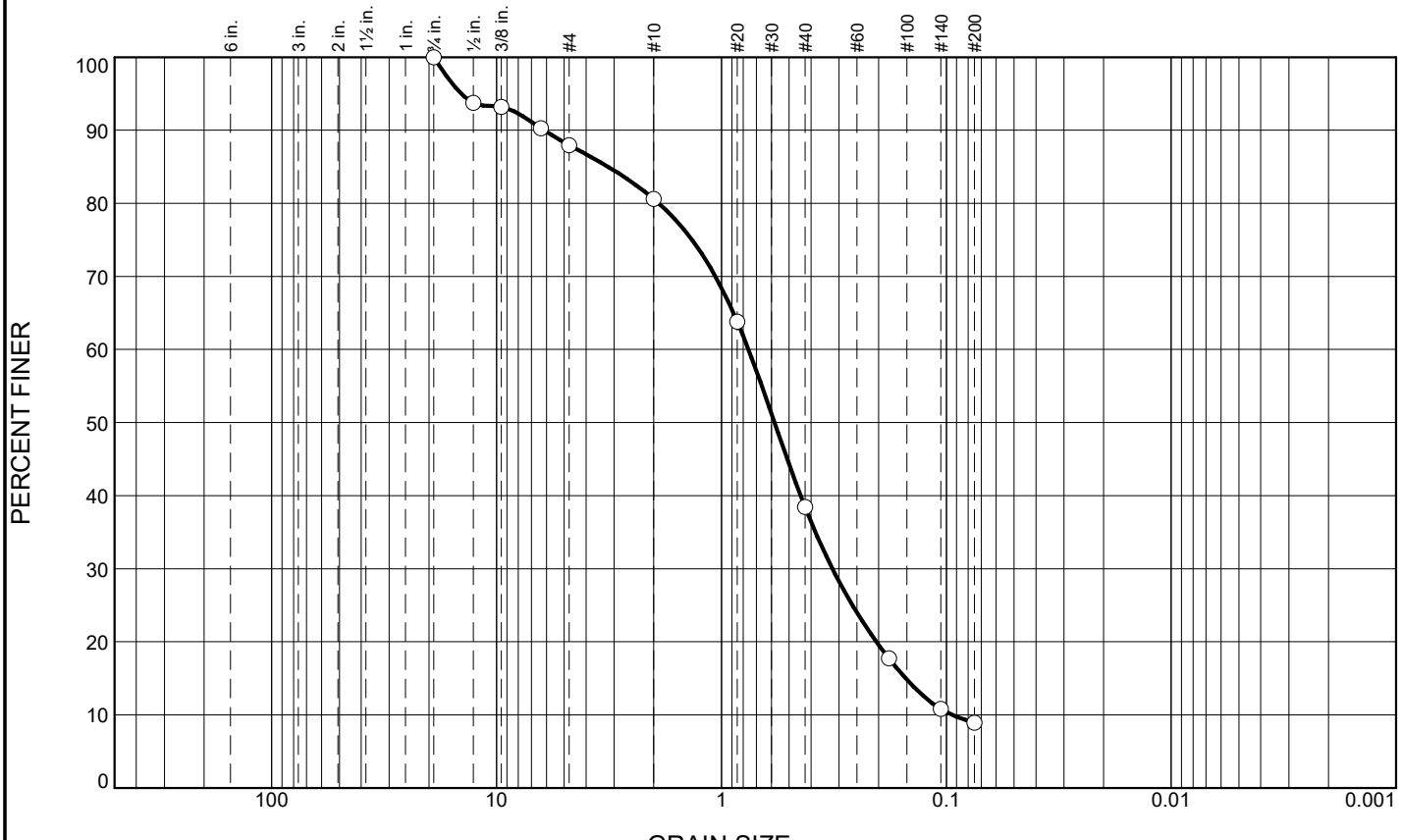
Notes:

APPENDIX C

LABORATORY TEST RESULTS

Geotechnical Engineering Evaluation
Proposed Bath Houses and Storage Barn
Lake Sebago State Park
Naples, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.0	7.4	42.1	29.6	8.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	93.7		
3/8"	93.2		
1/4"	90.3		
#4	88.0		
#10	80.6		
#20	63.8		
#40	38.5		
#80	17.7		
#140	10.8		
#200	8.9		

* (no specification provided)

Soil Description

well-graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 6.1575 D_{85}= 3.1962 D_{60}= 0.7589
D_{50}= 0.5805 D_{30}= 0.3211 D_{15}= 0.1516
D_{10}= 0.0942 C_u= 8.06 C_c= 1.44

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Moisture Content: 7.8%

Location: B-1
Sample Number: S-1 **Depth:** 0-2' **Date:** 05/01/2024

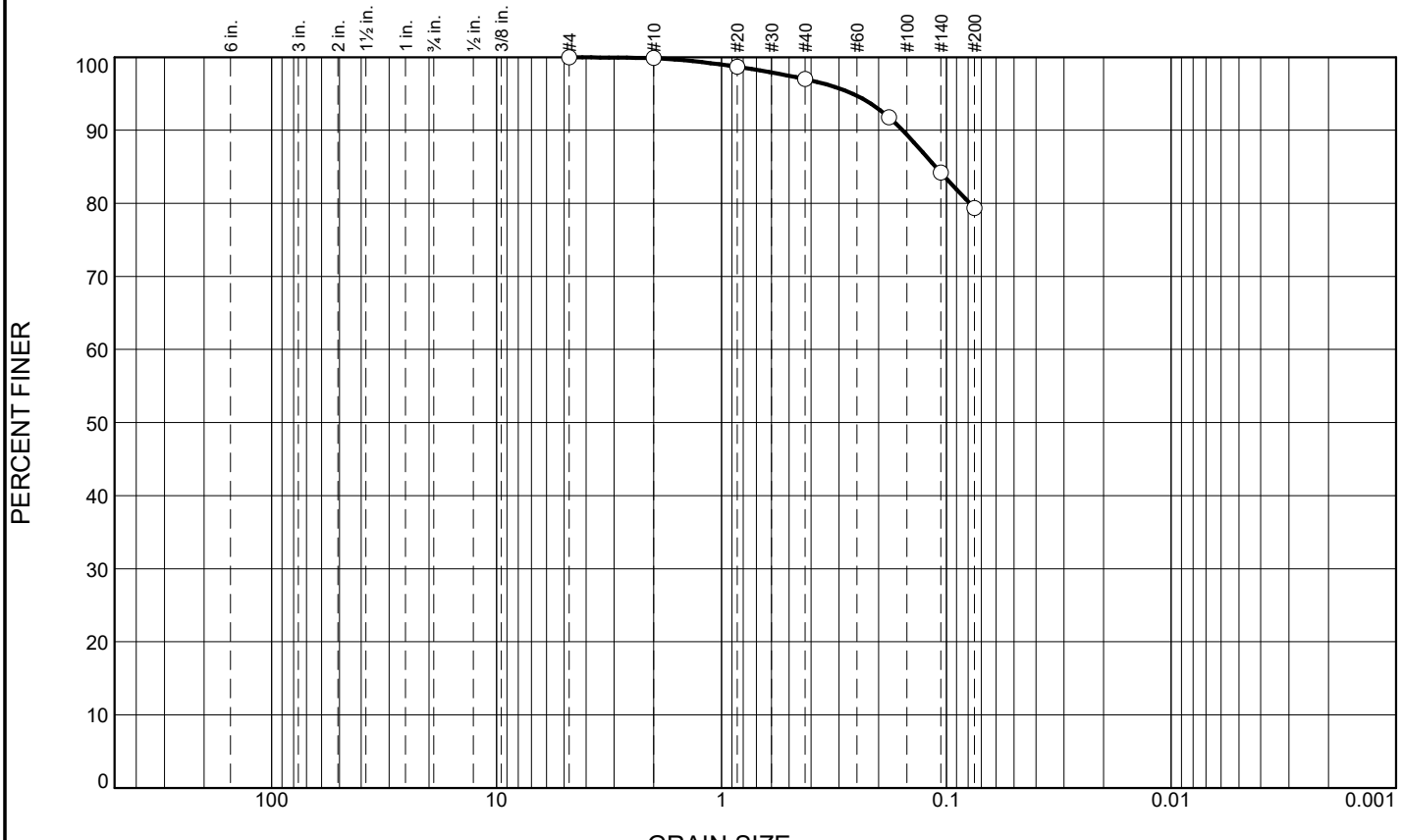
R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Colby Company, LLC
Project: Proposed Improvements - Sebago Lake State Park
Project No: 1564-041 **Lab No.** 17974-01

Tested By: JMT/CAG **Checked By:** MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	2.9	17.6	79.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	98.7		
#40	97.0		
#80	91.8		
#140	84.2		
#200	79.4		

* (no specification provided)

Soil Description

silt with sand

Atterberg Limits

PL= LL= NV PI=

Coefficients

D_{90}= 0.1565 D_{85}= 0.1118 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Moisture Content: 46.3%

Location: B-2
Sample Number: S-5 **Depth:** 20-22' **Date:** 05/01/2024

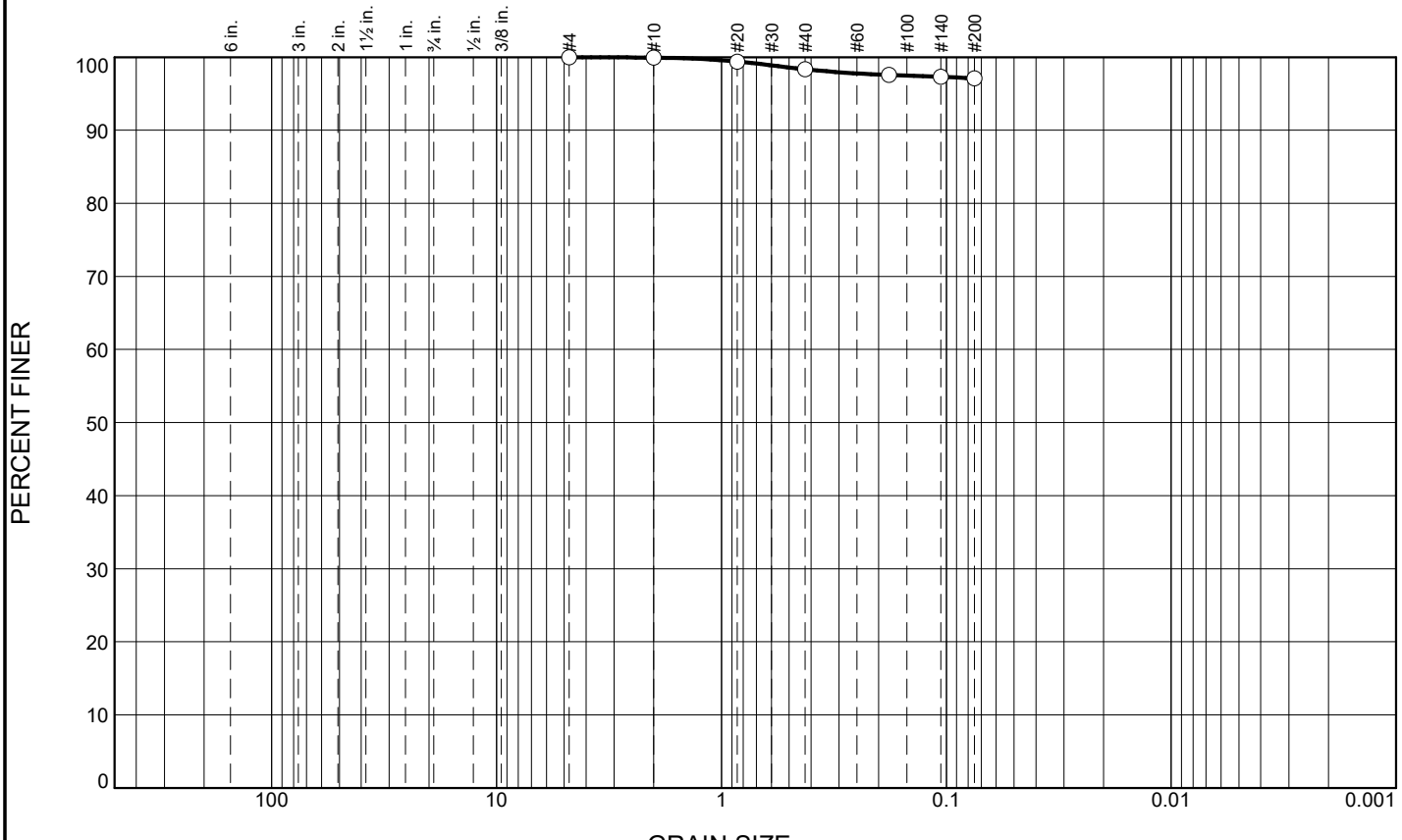
R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Colby Company, LLC
Project: Proposed Improvements - Sebago Lake State Park
Project No: 1564-041 **Lab No.** 17974-02

Tested By: JMT/CAG **Checked By:** MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	1.6	1.2	97.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.4		
#40	98.3		
#80	97.6		
#140	97.3		
#200	97.1		

* (no specification provided)

Soil Description

silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Moisture Content: 30.2%

Location: B-5
Sample Number: S-2 **Depth:** 5-7' **Date:** 05/01/2024

R.W. Gillespie & Associates, Inc.
Biddeford, Maine

Client: Colby Company, LLC
Project: Proposed Improvements - Sebago Lake State Park
Project No: 1564-041 **Lab No.** 17974-03

Tested By: JMT/CAG **Checked By:** MTG

MTG