ADDENDUM #2

Date: September 23, 2024

Re: Maine Department of Agriculture, Conservation, and Forestry Bureau of Parks and Lands Swan Lake State Park Facilities and Utilities Upgrades Swanville, Maine

From: Haley Ward, Inc. One Merchants Plaza, Suite 701 Bangor, ME 04401 Owner Project No: BGS Project No: 3556 Project No: 14641.007



To: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the original bidding documents dated August 2024. Contractor is responsible for carefully examining Addenda. Failure to do so may subject the Bidder to disqualification. The original conditions shall govern for all work unless specifically exempted or modified herein.

This Addendum consists of 54 pages (With Attachments: 48 Pages) and is being issued to meet the requirements of the Project Manual.

GENERAL

Answers to Questions that have been asked:

- *Q*: *What is the siding and roofing detail on the proposed Workshop?*
- A: Siding: Stained and Sealed Pine Board and Batten siding over sheathing (See Drawing Sheet SF201 for sheathing requirements). 10" boards, 2" battens. Roofing: Standing seam metal roof over 5/8" CDX Plywood & Underlayment.
- *Q:* Is the septic system disposal field that shows the new 2" force main existing? Is there a new leach field being built?
- A: The proposed 2" force main is going to a proposed new leach field. Contractor shall be responsible for construction of the proposed leach field. See the attached Septic System Design for more information.
- Q: Is this project subject to Build America, Buy America (BABA)?
- A: Yes, this project is subject to BABA requirements. See Article 5 in Specification Section 00 72 14 Supplemental General Conditions for more information on Domestic Preference for Procurements.

- Q: Please provide a spec or basis of design for fiberglass doors. Is the Contractor responsible for warranty issues that may arise from the sliding door design in the entry booth?
- A: Basis of Design: Door slab Jeld-Wen Smooth-Pro Fiberglass door slab. P/N: SP-684-CL. The Contractor is responsible for workmanship warranty and door function. The Contractor is not responsible for warranty related to design.
- *Q*: What kind of fiber optics cabling should be run for the new building? Or is the Contractor only running the conduit for future fiber?
- A: Contractor is not responsible for fiber optics cabling. Contractor shall be responsible for running conduit with pull string to be used for future fiber installation by Others.
- Q: Please advise if glass unit blocks are meant to be 36" wide.
- A: No, the intent is to use nominal width glass blocks to fill the 3'-4" x 8" tall space above the door. Contractor shall fill the space with nominal 4" wide x 4" tall glass blocks above each bathroom door – frosted or translucent.
- Q: Looking at the specs on windows, fiberglass window units are called out and list comparable manufacturers. Mathews Brothers is listed, but they are <u>vinyl</u> framed windows, not fiberglass. Will Mathews Brothers be an acceptable option, or can a fiberglass option from Marvin be allowed even though they are not listed?
- A: Fiberglass from Marvin will be allowed. Vinyl double pane windows will also be allowed Acceptable manufacturers: Mathews Brothers, Anderson, others upon Engineer/Owner approval.
- *Q*: *Will the panel for the day-use shelter be required to be a NEMA3R panelboard?*
- A: Yes, this is required to be a NEMA 3R panelboard.
- *Q:* Specification Section 26 05 19, Article 3.02.F specifies hospital grade MC cable. Would regular MC cable be an acceptable wiring method where concealed?
- A: Yes, regular MC cable is an acceptable wiring method.
- *Q*: Would aluminum conductors be acceptable for feeders and service entrance conductors?
- A: Yes, see Specification Section 26 05 19, Article 3.01. Aluminum conductors are acceptable for feeders and service entrance conductors. Voltage drop calculations and sizing shall be submitted to the Engineer for approval.
- Q: Will a fire alarm system be required for the Workshop building? If so, please provide specifications.
- A: No, a fire alarm system is not required for the proposed Workshop building.
- Q: Please indicate the location and quantity of the cross road drainage units.
- A: There are 6 cross road drainage units along the utility corridor. Contractor shall be responsible for field locating the units during construction.
- Q: Please confirm if the removal of the existing entrance booth should be included in the Base Bid or Bid Alternate 1.
- A: The demolition of the existing entrance booth should be included in Bid Alternate 1.

- *Q:* Please confirm if the Contractor is required to provide the 500-gallon propane tank shown as part of Bid Alternate 2 on Drawing Sheet C104.
- A: Yes, see Drawing Sheet MP101 in the Workshop set. The Contractor is required to provide the proposed propane tank for the Workshop as part of Bid Alternate 2.
- *Q:* Please advise if a ledge removal allowance should be carried. How is the Contractor to handle any ledge encountered? Specification Section 31 23 18, Article 1.7.C indicates an allowance should be included.
- A: There is not an allowance for ledge removal being provided for this project. It is not anticipated that ledge will be encountered during trenching or excavation. If ledge is encountered during construction, as indicated in Specification Section 31 23 18, Article 1.7.C, Contractor and Engineer shall "agree to the quantity of rock that is to be removed." Owner shall then issue a Change Order with an agreed upon cost for any necessary ledge removal.
- Q: Please advise if a geotechnical report will be made accessible to Bidders prior to bidding.
- A: See Attachment 2. Contractor shall note that the geotechnical investigation was conducted only at locations local to the entrance booth, proposed bath house, and proposed workshop.
- *Q:* Please confirm if the American Concrete standard bollard is an acceptable bollard in place of the custom bollard required by the current detail as shown in the Drawings.
- A: The American Concrete standard bollard is acceptable.
- Q: In Specification Section 22 11 16, Article 1.3.A, please confirm coordination drawings are required for this project. If they are required, please confirm which trades and identify lead coordinator.
- A: Coordination Drawings will not be required for this project.
- *Q*: *If coordination drawings are required, will the digital REVIT/CAD files be issued?*
- A: Coordination drawings are not required.
- *Q*: *Will there be a spec for Signage and/or Toilet Bathroom Accessories?*
- A: See Drawing Sheets A202 & A203 for the equipment schedule for bathroom accessory manufacturers and model numbers. Specification Section 10 14 00 Signage has been added to the Contract Documents, as well, and is attached to this Addendum.
- *Q:* On Drawing A101, Toilet 109 references elevation views on Drawing A203, but the elevations do not appear to be there. Please advise.
- A: The elevations for Toilet 109 are on Drawing Sheet A203, which is attached to this Addendum.

- Q: Drawings do not show hot water to the lavatories or instantaneous hot water heaters at the lavatory locations. This appears to be a plumbing code violation. Uniform plumbing code: "In occupancies where plumbing fixtures are installed for public use, hot water shall be required for bathing and washing purposes." Please advise.
- A: The Bureau of Parks and Lands has requested that we only provide cold water to the public at this facility. This has been discussed with the Swanville Code Enforcement Officer – Robert Hatch, who will be issuing the plumbing permit. He has indicated that this is acceptable and that hot water will not be required to the lavatories or outdoor showers as shown on the Contract Drawings.
- *Q*: *Will an alternate lighting package be acceptable?*
- A: Lighting package substitutions are allowed on this Project upon approval. Contractor shall submit proposed lighting package to the Engineer for review and approval.
- *Q:* On S100 of the BH Slab Plan, for the catch basin, what is the thickness of the concrete slab? Is this to be 4"?
- A: Correct, the proposed catch basin slab is 4" thick.
- *Q:* On S101 of the BH Slab Plan, can you please clarify the material composition of "non frost susceptible soil"?
- A: Sand or gravel consisting of hard durable particles which are free from vegetable matter, lumps, or balls of clay, and other deleterious substances. The gradation of the portion which will pass a 3 inch sieve is to meet the grading requirements of the following table:

sieve size	weight passing (%)
1/4"	25-70
NO. 40	0-30
NO. 200	0-7

- *Q:* On A202 of the Bath House Interior Elevations, Elevation 8/A202-Toilet 102, please confirm what the box on the wall represents.
- A: Contractor is advised to disregard the box on the wall in this view.
- *Q:* On A302 of Bath House Wall Sections, at section 2 & 3 / A302, please confirm the wall sheathing on the interior portion of the framing. Are there any finishes required to be installed above the CMU framing?
- A: Finishes are only required on the bathroom side per note on right side of View 2 on Drawing Sheet A302. V-match or other finishes/sheathing is not required on the interior plumbing chase side of the wall.
- Q: There was a note referring to elevations found on Sheet A203 on Sheet A401 BH Enlarged Plans, however, we did not find A203 included as part of the set. Please clarify and include.
- A: See attached Drawing Sheet A203.
- *Q:* We see the tag FPHB on Sheet PS101 for the Bath House Plumbing Domestic Floor Plan next to Door 101A. However, there is no FPHB specified on the plumbing schedule. Please confirm the fixture tag type.
- A: The FPHB shall be a Woodford Manufacturing Wall Hydrant, Model B65.

- Q: LV-1 Sink: Detail 12/P-501 has a note for TOYO sink. The Bath House Plumbing Schedule on P601 has wall mounted sink: American Standard Decorum. Please confirm specification.
- A: Sink shall be American Standard Decorum. Provide sink with lavatory carrier as shown in the detail.
- *Q:* FD-3" is tagged on Sheet PS-101 in the Mechanical Room. However, the fixture type is not specified on the plumbing schedule Please confirm specification for FD-3".
- A: FD-3": Zurn ZN415-6B 3" floor drain.
- Q: On Sheet M-101, the louvers on the doors are tagged at all toilet rooms. There are no door louvers shown on the double doors for the Mechanical Room. However, the Architectural Door schedule shows louvers on the double doors to the Mechanical Room. Please confirm the double doors should have louvers on them per the Architectural Door Schedule.
- A: The double doors should not have louvers.
- *Q:* On EP101 for the Bath House, at Panel "P1," please confirm the size and specification of the backer panel to be installed. Note on Sheet A101 references the electrical for specifications.
- A: See Specification Section 06 10 00, Article 3.2 B. Oversize backerboard by 12" on all sides of panel.
- *Q:* On S100 for the Entrance Booth, what is the 6" box shown outside on the back wall? The Back Elevation 1/A101 does not show anything and there is no note indicated on this sheet.
- A: Contractor is advised to disregard this 6" box.
- Q: Also on S100 for the Entrance Booth, at the Door Openings for D1, the curb is shown as 3'-0" wide. The door schedule on sheet A100 has slab width to be 3'-2" and door rough width to be 3'-3". Please confirm which dimensions should be utilized.
- A: The curb will have an opening of 3'-0", as shown. The rough width measures to face of jack stud. The jack studs are each pushed in from the 3'-0" curb opening edge by 1.5", enough to fit (2) 1x trim pieces each side of the opening. The door slab is a 3'-2" sliding door and will need 2" overrun to seal the opening.
- *Q: Referring to S101 for the Entrance Booth, there is a gable overhang detail C. Please confirm where this detail is tagged on the structural plans.*
- A: Detail C on Drawing Sheet S101 are to be cut at the plan north and south edges of the roof on 2/S100.
- Q: For Door #D1 on A100 for the Entrance Booth, there is a fiberglass door noted with STL painted finish. What type of glass is to be installed? Please provide the dimensions and specifications.
- A: Provide insulated clear glass (double pane with inert gas). See door schedule for dimensions, and see response above for door basis of design.

- *Q:* On M-101 of the Entrance Booth, mechanical shows the door at the back wall interior to have panic hardware. This is to be a sliding door. Please confirm the door type is not to have push bars.
- A: The entrance booth doors are sliding doors with no panic hardware.
- *Q*: On SC101 of the Workshop, the foundation wall is noted to be 6". The dimensions show 8" as width and 8" above grade. Please confirm the foundation wall size.
- A: Plan note on Drawing Sheet SC101 that states 6" wide foundation wall is incorrect, all foundation walls are 8".
- *Q:* On A-101 Door Schedule for the Workshop, please confirm the glass type to be installed in the doors.
- A: Insulated (double pane with inert gas) clear.
- *Q:* On A-201 for the Workshop, the OUI outside unit is called out to sit on a concrete pad. The elevations show it to be mounted to the building. Please confirm.
- A: The outdoor units shall sit on concrete pads at the workshop per the mechanical drawings.

CHANGES TO DRAWINGS:

Sheet C102

In the existing Bath House Structure Demolition call out, Replace "BACKFILL TANKS WITH GRAVEL." with "CONTRACTOR TO KNOCK SIDES OF TANKS INTO STRUCTURE AND FILL THE REMAINING OPEN EXCAVATION WITH GRAVEL."

Bath House Set - Sheet A203 Drawing Sheet added.

CHANGES TO BID DOCUMENTS:

<u>Specification Section 10 14 00 – Signage</u> Specification Section added.

SUBSUREA	CEWAST	EWATER DISPOSAL SY	VSTE		TION	Maine Dept. Health & Human Services Div. Environmental Health, 11SHS
CODUCTIA	DBODEDT					
City, Town,	Currentille	LOCATION	Tou		TION: LPIAP	PROVAL REQUIRED <<
or Plantation	or Plantation Swanville Town/City_		te Permit Issued	127,24 Fee	S S S Double Fee Charged	
Street or Road	W Park Li	n	Da	- The		
Subdivision, Lot #		•		Local Plumbing	Inspector Signatur	e 240
OWNE	R/APPLICA	NT INFORMATION	F	ee: <u>\$ /20</u>	state prin fee	e \$ <u>0//</u> Locally adopted fee
Name (last, first, M	ll) tment of A	Owner	с т	be Subsurface W	astewater Dispos	al System shall not be installed until a
Mailing Address	22 State	House Station	P	ermit is issued by	the Local Plumbi	ng Inspector. The Permit shall
of	ZZ State I		a	uthorize the owne	r or installer to ins	tall the disposal system in accordance
Owner/Applicant	Augusta,	IVIE 04333	w	ith this application	and the Maine S	ubsurface Wastewater Disposal Rules.
Daytime Tel. #	(207)-287-	3821		Municipal		
I state and acknowled my knowledge and ur and/or Local Plumbin	ER OR APPLICA dge that the inform nderstand that any g Inspector to der	NT STATEMENT hation submitted is correct to the best of relatification is reason for the Department by a Permit. 8/15/12034		I have inspected with the Subsur	d the installation autho face Wastewater Disp	ITON REQUIRED irsed above and found it to be in compliance osal Rules Application. (1st) date approved
5191	nature of Owner o	PER			Plumbing Inspector Si	gnature (2nd) date approved
TYPE OF AP	PLICATION		REQUIR	RES	DISP	OSAL SYSTEM COMPONENTS
✓1. First Time Sy	ystem	1. No Rule Variance			O 1. Cor O 2 Prir	nplete Non-engineered System
2. Replacemen	t System	2. First Time System Variance			O 3. Alte	ernative Toilet, specify:
Type replaced:		☐ ☐a. Local Plumbing Inspector	Approv	r Approval	O 4. Nor	n-engineered Treatment Tank (only) ding Tank gallons
3. Expanded St	vstem	3. Replacement System Varian	ce	~	Q 6. Nor	n-engineered Disposal Field (only)
a. <25% Expa b. ≥25% Expa	ansion	b. State & Local Plumbing Inspector	spector	r Approval	07. Sep 08. Cor	parated Laundry System nolete Engineered System (2000 gpd or more)
4. Experimenta	I System	4. Minimum Lot Size Variance		O.9. Engineered Treatment Tank (only)		gineered Treatment Tank (only)
5. Seasonal Co	onversion	5. Seasonal Conversion Permit			O10. En O11. Pre	gineered Disposal Field (only) e-treatment, specify:
SIZE OF PR	OPERTY	DISPOSAL SYSTEM TO S	SERVE	Na da sa sa sa	O12. Mis	scellaneous Components
67	SQ. FT.	2. Multiple Family Dwelling, No.	of Unit	searooms:	TY	PE OF WATER SUPPLY
SHORELAN		3. Other:			1. Drilled	Well 2. Dug Well 3. Private
Yes	 <i>⊠</i> No	(specify) Current Use I Seasonal I Year	Round		4. Public	5. Other
		DESIGN DETAILS (S	YSTE	M LAYOUT SH	IOWN ON PAG	GE 3)
TREATMEN	IT TANK	DISPOSAL FIELD TYPE &	SIZE	GARBAGE DI	SPOSAL UNIT	DESIGN FLOW
1. Concrete		1. Stone Bed 2. Stone Tren	ch	1. NO 2. Y	es 3. Maybe	1872 gallons per day
b. Low Profile		a. cluster array C. Linear		a. multi-compa	specily one below.	BASED ON:
3. Other: (2)-1500	GAL	b. regular load d. H-20 lo	ad	Øb tanks in	series	✓I2. Table 4C (other facilities)
CAPACITY: 30	000 GAL.	SIZE: 2108	. #	C. increase in ta	ank capacity	SHOW CALCULATIONS for other facilities (600x3 god)+(6x12 god)= 1872 GPD
SOIL DATA & DE	SIGN CLASS		1. 11.			□ 3 Section 4G (meter readings)
PROFILE COND	ITION	DIGFOGAL FIELD SILING		1 Not Required	TOR PUMP	ATTACH WATER METER DATA
<u>12/1</u> / D	-	1. Medium2.6 sq. ft. / gpd		2. May Be Requ	lired	LATITUDE AND LONGITUDE
at Observation Ho	olė # <u>TP-1</u>	2. MediumLarge 3.3 sq. f.t /	gpd	3. Required		at center of disposal area
of Most Limiting Sc	nil Factor	L≤13. Large4.1 sq. ft. / gpd		Specify only for e	ingineered systems:	Lon. <u>68</u> d <u>58</u> m <u>41.76</u> s
		4. Extra Large5.0 sq. ft. / gp	d	DUSE:	gallons	if g.p.s, state margin of error: 30'
SITE EVALUATOR STATEMENT						
I certify that on	6/24/24	(date) I completed a site e	valuat	ion on this prope	rty and state tha	t the data reported are accurate and
that the propose	d system is ir	compliance with the State of M	laine S	Subsurface Wast	ewater Disposal	Rules (10-144A CMR 241).
	m	- Lom		00439		3/8/24
S	ite Evaluato	r Signature			+ 	
Aaron Leighton (207)-598-6515 aleighton94@o						
Site Evaluator Name Printed Lelephone Number E-mail Address						
Note : Changes to or deviations from the design should be confirmed with the Site Evaluator. Page 1 of 3						
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PG 2B





Pg 4

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 nna Roberge <sroberge@haleyward.com></sroberge@haleyward.com> n 6/10/2024 1:47 PM Aaron Leighton <alieighton94@outlook.com></alieighton94@outlook.com> Chip Haskell <chaskell@haleyward.com></chaskell@haleyward.com> 2 attachments (10 MB) 2 attachments (10 MB) an Lake State Park Proposal Map.pdf; 14641.003-V-XP.dwg; Ilo Aaron, ank you for your help with the Swan Lake State Park septic design and soil evaluation. I have ir u have any questions or need anything else. an Lake State Park is in Swanville, ME, and it is a day-use only park (i.e., there is no camping). 1/23, and the maximum visitors the park saw in a <u>single day</u> was about 500. There are approximately 94 days). The total park visitor information for 2021-2023 is shown below. From : proximately 4-6 park staff on any given day. The existing restroom facilities are evault toilets, are e to install a new bathroom with approximately 7 flush valve toilet rooms (toilet plus sink) to scation of the proposed bathroom is shown in the attached markup plan. We would look to you id (or other form of septic treatment) based on proximity and setback requirements. addition to the proposed bathroom, the Bureau of Parks and Lands would also like to install a let footprint will be approximately 128 inches x 79 inches, and it will be located in the first park tached markup plan. The vault toilet will also require a soil sample to evaluate placement, and tached markup plan. The vault toilet will also require a soil sample to evaluate placement, and
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	14,123	MAX
	8,253	NIN
	11,117	AVG
	33,352	111
28.7	14,123	2023



Sienna Roberge, PE Project Engineer t: <u>207.989.4824</u> m: <u>207.391.9730</u> a: One Merchants Plaza, Suite 701, Bangor, ME 04401



AN EMPLOYED OWNED COMPANY

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Department of Health and Human Services Maine Center for Disease Control and Prevention 286 Water Street # 11 State House Station Augusta, Maine 04333-0011 Tel: (207) 287-5672 Fax: (207) 287-4172; TTY: 1-800-606-0215

SUBSURFACE WASTEWATER DISPOSAL SYSTEM VARIANCE REQUEST

This form must accompany an application (HHE-200 Form) for any subsurface wastewater disposal system which requires a variance to provisions of the Subsurface Wastewater Disposal Rules. The Local Plumbing Inspector must not issue a permit for the installation of a subsurface wastewater disposal system requiring a variance from the Department of Health and Human Services until approval has been received from the Department.

GENERAL INFORMATIO	NTown of Swanville		
Property Owner's Name:	Maine Department of Agriculture Conservation & Forestry	Tel. No.:	207-287-3821
System's Location: WPar	k Ln Swanville	an a	
Property Owner's Address	22 State House Station Augusta, ME		Zip Code 04333
e-mail address:			

The subsurface wastewater disposal system design for the subject property requires a Teplacement system variance X first time system variance to the Subsurface Wastewater Disposal Rules. This variance requires Tolocal approval X local and state approval.

SPECIFIC VARIANCE REQUESTED (To be filled in by Site Evaluator. Use additional sheets if needed.)	SECTION OF RULE
1. Sizing the Disposal Field using Site Data and table 4C	Section 4
2	
-	

SITE EVALUATOR

When a property is found to be unsuitable for subsurface wastewater disposal by a licensed Site Evaluator, the Evaluator shall so inform the property owner. If the property owner, after exploring all other alternatives, wishes to request a variance to the Rules, and the Evaluator in his professional opinion feels the variance request is justified and the site limitations can be overcome, he shall document the soil and site conditions on the Application. The Evaluator shall list the specific variances necessary plus describe below the proposed system design and function. The Evaluator shall further describe how the specific site limitations are to be overcome, and provide any other support documentation as required prior to consideration by the Department. Attach a separate sheet if necessary.

I sized the field and calculated the GPD using the visitor information from the State Park from 2021-2023. The most visitors the park had in one day was 500. The field was sized using 600 visitors per day at 3 GPD per visitors with 6 employees at 12 GPD per employee. The Section of the code for bathrooms in the park with no showers at 3 GPD per user or 40 GPD per parking spot. There are 168 Parking spots on site which would change the sizing significantly.Cont-

I. <u>Aaron Leighton</u>, S.E., certify that a variance to the Rules is necessary since a system cannot be installed which will completely satisfy all the Rule requirements. In my judgment, the proposed system design on the attached Application is the best alternative available; enhances the potential of the site for subsurface wastewater disposal; and that the system should function properly. 8/7/24

SIGNATURE OF SITE EVALUATOR

DATE

PROPERTY OWNER

I, ROVALD SHAW, arm the owner X agent for the c	wner of the subject property. I understand that the
installation on the Application is not in total compliance with the Rules. Should the proposed sys	tem malfunction, I release all concerned provided they
have performed their duties in a reasonable and proper manner, and I will promptly notify the Lo	cal Plumbing Inspector and make any corrections
required by the Rules. By signing the variance request form, I acknowledge permission for repr	esentatives of the Department to enter onto the property
to perform such duties as may be necessary to evaluate the variance request.	
Ronald Stran	8/15/2024
SIGNATURE OF OWNER	DATE
AGENT FOR THE OWNER	1

HHE-204 Page 1 Rev. 01/2011

LOCAL PLUMBING INSPECTOR - Approval at local level

The local plumbing inspector shall review all variance requests prior to rendering a decision. I, <u><u>resord</u></u>, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (does does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (do do not) approve the requested variance. I (will will not) issue a permit for the system's installation as proposed by the application.

LOCAL PLUMBING INSPECTOR - Referral to the Department

The local plumbing inspector shall review all variance requests prior to forwarding to the Division of Environmental Health.

I, ________, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (does does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (do do not) recommend the issuance of a permit for the system's installation as proposed by the application.

LPI Signature

LPI Signature

Date

Date

FOR USE BY THE DEPARTMENT ONLY

The Department has reviewed the variance(s) and (does does not) give its approval. Any additional requirements, recommendations, or reasons for the Variance denial, are given in the attached letter.

SIGNATURE OF THE DEPARTMENT

DATE

Notes: 1. Variances for soil conditions may be approved at the local level as long as the total point assessment is at least the minimum allowed. (See Section 7.B.4 of the Subsurface Wastewater Disposal Rules for Municipal Review.)

2. Variances for other than soil conditions or soil conditions beyond the limit of the LPI's authority are to be submitted to the Department for review. (See Section 7.B.3 for Department Review.) The LPI's signature is required on these variance requests prior to sending them to the Department.

SOIL, SITE AND ENGINEERING FACTORS FOR FIRST TIME SYSTEM VARIANCE ASSESSMENT WITH LIMITING SOIL DRAINAGE CONDITIONS (SEE TABLES 7C THROUGH 7M).

	CHARACTERISTIC	POINT ASSESSMENT
Soil Profile		
Depth to Groundwater/Restrictive Layer		
Terrain		
Size of Property		
Waterbody Setback		<u>Oppmanister (oppmanister) of the state of t</u>
Water Supply		
Type of Development		
Disposal Area Adjustment		
Vertical Separation Distance		
Additional Treatment		
	TOTAL POINT ASSESSMENT:	

Minimum Points (Check One):

Outside Shoreland Zone-50

d Zone-50 Inside Shoreland Zone-65

Subdivision-65

LOCAL PLUMBING INSPECTOR - Approval at local level

The local plumbing inspector shall review all variance requests prior to rendering a decision.

I, ______, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (does does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (do do not) approve the requested variance. I (will will not) issue a permit for the system's installation as proposed by the application.

LPI Signature

Date

LOCAL PLUMBING INSPECTOR - Referral to the Department

The local plumbing inspector shall review all variance requests prior to forwarding to the Division of Environmental Health.

I, ______, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (_ does _ does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (_ do _ do not) recommend the issuance of a permit for the system's installation as proposed by the application.

LPI Signature

Date

FOR USE BY THE DEPARTMENT ONLY

The Department has reviewed the variance(s) and (does does not) give its approval. Any additional requirements, recommendations, or reasons for the Variance denial, are given in the attached letter.

SIGNATURE OF THE DEPARTMENT

DATE

Notes: 1. Variances for soil conditions may be approved at the local level as long as the total point assessment is at least the minimum allowed. (See Section 7.B.4 of the Subsurface Wastewater Disposal Rules for Municipal Review.)

2. Variances for other than soil conditions or soil conditions beyond the limit of the LPI's authority are to be submitted to the Department for review. (See Section 7.B.3 for Department Review.) The LPI's signature is required on these variance requests prior to sending them to the Department.

SOIL, SITE AND ENGINEERING FACTORS FOR FIRST TIME SYSTEM VARIANCE ASSESSMENT WITH LIMITING SOIL DRAINAGE CONDITIONS (SEE TABLES 7C THROUGH 7M).

	CHARACTERISTIC	POINT ASSESSMENT
Soil Profile		
Depth to Groundwater/Restrictive Layer		
Terrain		
Size of Property		
Waterbody Setback		
Water Supply		
Type of Development		
Disposal Area Adjustment		
Vertical Separation Distance		
Additional Treatment		
	TOTAL POINT ASSESSMENT:	

Minimum Points (Check One):

Outside Shoreland Zone-50

Inside Shoreland Zone-65

Subdivision-65

Variance Pg 2

This Variance Request is for permission to use gathered data for visitors and 3 GPD per visitor rather than 40 GPD per parking spot. Also water meters should be installed to record actual water usage.



REPORT

24-0940 S

June 17, 2024

Explorations and Geotechnical Engineering Services

Proposed Facility Improvements Swan Lake State Park Swanville, Maine

Prepared For: Haley Ward, Inc. Attention: Jeremy Beaulieu, P.E. One Merchants Plaza, Suite 701 Bangor, Maine 04401

Prepared By: S. W. Cole Engineering, Inc. 37 Liberty Drive Bangor, ME 04401 T: 207.848.5714

www.swcole.com | info@swcole.com

Geotechnical Engineering | Construction Materials Testing | Special Inspections

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www.swcole.com



24-0940 S

June 17, 2024

Haley Ward, Inc. Attention: Jeremy Beaulieu, P.E. One Merchants Plaza, Suite 701 Bangor, Maine 04401

Subject: Explorations and Geotechnical Engineering Services Proposed Facility Improvements Swan Lake State Park Swanville, Maine

Dear Jeremy:

In accordance with our Proposal, dated May 22, 2024, 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 six test boring explorations, 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 at the State of Maine, Bureau of Parks and Land's, Swan Lake State Park, in Swanville, Maine. The State Park generally consists of recreational areas including grassed surfaced and wooded areas, playgrounds, access drives and parking areas. The State Park currently includes several out-buildings including an entrance booth, outhouse building, and various storage sheds. Based on the provided plans



(Plans), identified as Sheets V101 and V102, received by email on May 21, 2024, we understand the overall site generally slopes downward from north to south from about elevation 280 to 200 feet (project datum).

Based on our conversations with you and the Plans, we understand development plans call for the construction of a new workhouse and bathhouse, and reconstruction of the existing entrance booth. We understand the workhouse is proposed north of the existing entrance booth, adjacent to existing storage buildings. We understand the workhouse is proposed to be a wood-framed structure occupying a footprint of about 30 by 40 feet. We understand the new bathhouse is proposed to be a CMU masonry structure occupying a footprint of about 24 by 46 feet. We understand the entrance booth will be reconstructed at the existing location and likely consist of a wood-framed structure. We understand the new entrance booth will be larger, however exact dimensions are unknown.

We understand the new buildings will be one-story structures with on-grade floor slabs and spread footing foundations. We anticipate that the buildings will be unheated during Winter conditions. We understand the exact building locations have not been finalized, however it is anticipated that the buildings will be founded within the general area of the test borings as described herein. We anticipate the buildings will be founded near existing grades requiring tapered cuts and fills approaching 2 feet to establish level building sites. Details regarding proposed grading and structural loading are unknown at this time.

Existing site features are shown on the "Exploration Location Plans" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Six test borings (B-1 through B-6) were made at the site on June 3, 2024, by Seaboard Drilling, LLC. The exploration locations were selected by Haley Ward, Inc and S. W. Cole Engineering, Inc. (S.W.COLE) and established at the site by S.W.COLE. The exploration locations were subsequently located using a mapping grade GPS unit. The



approximate exploration locations are shown on the "Exploration Location Plans" 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 Plans."

2.2 Field Testing

The test borings were drilled using hollow-stem augers. The soils were sampled at 2-to-5-foot intervals using a split-spoon sampler and Standard Penetration Testing (SPT) methods. SPT blow counts are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Laboratory testing included two moisture content and two gradation tests. Moisture content test results are noted on the logs and results of the gradation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

The test borings encountered a soils profile generally consisting of surficial topsoil overlying undocumented fill overlying glaciomarine soils and glacial till. Underlying surficial topsoil, the test borings encountered undocumented fill generally consisting of loose to medium dense sand and silt with varying portions of gravel and organics to depths of about 1.5 to 5 feet. Underlying the undocumented fill, test borings B-1 and B-3 encountered glaciomarine soils generally consisting of loose sandy silt to depths of about 7.5 to 11.5 feet. Underlying the glaciomarine soils or undocumented fill at the remaining locations, the test borings encountered glacial till generally consisting of medium dense to very dense sandy silt with varying portions of gravel. The test borings were terminated in glacial till at depths of about 17 feet.

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



3.2 Groundwater

The soils were generally moist from the ground surface. Free water was observed in test boring B-3 at a depth of about 4.7 feet. Groundwater likely becomes perched on the relatively impervious glaciomarine soils and glacial till encountered at the site. 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 principal geotechnical considerations include:

- We understand the buildings are proposed to be unheated. We recommend ongrade slab areas be underlain with 5 feet of compacted non-frost susceptible soil, such as Structural Fill. The use of rigid polystyrene insulation may be used to reduce this section.
- The building sites have been previously developed and filled. The proposed building sites are underlain by undocumented fill generally consisting of loose silty gravelly sand extending to depths varying from about 1.5 to 5 feet and may extend deeper in areas not explored. We recommend undocumented fills be completely removed to native glaciomarine soils or glacial till below the building footprints. The over-excavated area should be backfilled with compacted Structural Fill within the design frost depth (5 feet) and Granular Borrow or Structural Fill below depths of 5 feet.
- Following removal of undocumented fills, spread footing foundations and slab-ongrade floors bearing on properly prepared subgrades appear suitable for the proposed buildings. Footings should bear on new compacted fills or at least 6 inches of compacted Crushed Stone overlying undisturbed native glaciomarine soils or glacial till.
- Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, or Fall.



• Imported Structural Fill and Crushed Stone will be needed for construction. The undocumented fill and native soils are unsuitable for reuse below the proposed buildings or as backfill for foundations, however they may be utilized in landscape areas, if needed.

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

As discussed, the site was previously developed and filled. The proposed building sites are underlain by loose undocumented fill extending to depths varying from about 1.5 to 5 feet and may extend deeper in areas not explored. Undocumented fill must be completely removed from beneath the proposed building footprints. The extent of removal should extend 1 foot laterally outward from the outside edge of perimeter footings for every 1-foot of excavation depth (1H:1V bearing splay). The over-excavated area should be backfilled with compacted Structural Fill within the design frost depth (5 feet) and Granular Borrow or Structural Fill below depths of 5 feet.

In general, subgrades for the proposed foundation construction will consist of native glaciomarine soils or glacial till, or new compacted fills overlying glaciomarine soils or glacial till. We recommend excavation to subgrades be completed with a smooth-edged bucket to lessen disturbance of subgrade soils. We recommend foundations bearing on native glaciomarine soils or glacial till be underlain with 6 inches of compacted Crushed Stone wrapped in a geotextile fabric.

4.3 Excavation and Dewatering

Excavations will generally encounter surficial topsoil, undocumented fill, glaciomarine soils and glacial till. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should ideally occur during drier, nonfreezing weather of Spring, Summer, and Fall. Rubber tired construction equipment should not operate directly on the native soils. Final cuts to soil subgrades 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 adjacent utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

Based on the subsurface findings and our understanding of the proposed construction, spread footing foundations bearing on properly prepared subgrades appear suitable for the proposed buildings. 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)	5 feet	
Net Allowable Soil Bearing Pressure	1.5 ksf	
Base Friction Factor	0.35	
Total Unit Weight of Backfill	125 pcf	
At-Rest Lateral Earth Pressure Coefficient	0.5	
At-Rest Equivalent Fluid Earth Pressure	62.5	
Internal Friction Angle of Backfill	30°	
Seismic Soil Site Class	D (IBC 2015)	
Total Settlement	1-inch	
Differential Settlement	1/2-inch over 40 feet	

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, Mirafi 160N or equal. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the buildings for positive surface water drainage. General underdrain details are illustrated on the "Foundation Detail Sketch" attached in Appendix B.



4.6 Slab-On-Grade

On-grade floor slabs may be designed using a subgrade reaction modulus of 140 pci (pounds per cubic inch) provided the slab is underlain by at least 5 feet of compacted Structural Fill placed over properly prepared subgrades. The use of rigid polystyrene insulation may be used to reduce this section. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function, as well as prevention of slab cracking and curling.

We recommend a sub-slab vapor retarder particularly in areas of the buildings 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 buildings must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend non-frost susceptible Structural Fill be provided to a depth of at least 5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full 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.

<u>Common Borrow</u>: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow.

<u>Granular Borrow</u>: Fill to raise site grades, backfill for over-excavations below the design frost depth, 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.

<u>Structural Fill</u>: Fill to raise grades in building areas, including within the design frost depth below on-grade slabs, backfill for over-excavations and foundations, and material below exterior entrances slabs and sidewalks 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						
1/4 inch	25 to 90						
No. 40	0 to 30						
No. 200	0 to 6						

<u>Crushed Stone</u>: Crushed Stone, used for underdrain aggregate and beneath footings should be washed ³/₄-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ³/₄-Inch.

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

<u>Placement and Compaction</u>: 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. We recommend that fill and backfill in building 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, including observation of over-excavations and the preparation of foundation bearing surfaces, as well as to provide testing and IBC Special Inspection services for soils, concrete and structural masonry.



24-0940 S June 17, 2024

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.

Mats Sta

Nathan D. Strout, P.E. Senior Geotechnical Engineer

NDS:mas



APPENDIX A

Limitations

This report has been prepared for the exclusive use of Haley Ward, Inc. for specific application to the proposed Facility Improvements at Swan Lake State Park in Swanville, 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"=40' SCALE EXISTING CONDITIONS PLAN OF THE SITE PREPARED BY HALEY WARD, RECEIVED 6/7/2024.
- 2. THE BORINGS WERE LOCATED IN THE FIELD BY S. W. COLE ENGINEERING, INC. USING A MAPPING GRADE GNSS RECEIVER.
- 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.





LEGEND:



APPROXIMATE BORING LOCATION

NOTES:

- 1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=40' SCALE EXISTING CONDITIONS PLAN OF THE SITE PREPARED BY HALEY WARD, RECEIVED 6/7/2024.
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- 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.







Date :

06/17/2024

Sheet:

3

APPENDIX C

Exploration Logs and Key

E			BORING LOG									BORING NO.: B- SHEET: 1 of		B-1 1 of 1
		CLIE	NT: _⊢	laley \	Nard,	Inc.						PROJEC	CT NO.	24-0940
		PRO	JECT:	Prop	osed	Facility	/ Improve	ements				DATE S		6/3/2024
S.W.C	COLE	LOC	ATION:	Swa	an Lai	ke State	e Park, S	Swanville, M	aine			DATE FI	NISH:	6/3/2024
Drillin LOCA DRILLI RIG TY HAMM HAMM	ng Info TION: <u>S</u> ING CO.: YPE: <u>Tr</u> IER TYPE IER COR R LEVEL	ECTIC	on loration L loard Dril unted Die omatic DN FACT IS (ft):	_ocation lling, LL edrich I CR: _ No fr	n Plan .C D-50 1.47 ee wate	E [[] [[] [] [] [] [] [] [] [] [] [] [] [] [] [ELEVATIC DRILLER: AUGER ID HAMMER HAMMER ved	DN (FT):282 	2' +/- tt n / 5 5 : <u>14</u> 30	5/8 in 0	TOTAL DEPTH (FT): 17.0 L DRILLING METHOD: Hollow Stem SAMPLER: Standard Split-Spoon CASING ID/OD: N/A /N/A C	OGGED BY Auger ORE BARR	: <u>Alex All</u> EL: <u>N/A</u>	en
GENE	RAL NOT	ES:	. ,											
KEY TO AND S	O NOTES YMBOLS:	<u>Water</u> 又 At t 又 At t 又 At t	Level ime of Dril Completion er Drilling	lling n of Drill	D U ing R V) = Split S J = Thin W R = Rock (/ = Field V	poon Samp /alled Tube Core Sampl /ane Shear	le Pen. Sample Rec. e bpf = mpf =	= Pene = Reco Blows = Minut	etration Length overy Length per Foot e per Foot		eld Vane Shea nconfined Com ction Angle (E Not Applicable	ar Strength, H npressive Str stimated)	kips/sq.ft. rength, kips/sq.ft.
				SA	MPLE	INFO	RMATIO	Ν	b					
Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	De De	epth ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Lo		Sample Description & Classification	H₂0 Depth	R	emarks
			1D)-2	24/12	1-2-2-1		<u>×17</u>	Orga	nics			
- 280 -	+		2D	2	2-4	24/12	2-4-2-2	W =9.1 %		U.5 Loos	e, brown silty gravelly SAND (Fill)			
- - 275 –	- 5		3D 4D	τ 7	5-7 7-9	24/12 24/16	3-2-3-3 3-5-7- 11			5.0 Loos	e, brown sandy SILT um dense, brown sandy SILT, trace			
	- - 10 -		5D	10)-12	24/18	7-8-11- 13			grave	∋l (Glacial Till)			
- 265	- 15		6D	15	5-17	24/24	15-29- 28-27			be	coming dense and gravelly			
Stratifica boundan gradual. at times Fluctuat other faa measure	ation lines f ry between . Water lev and under tions of gro ctors than i ements we	epresent soil type el reading condition undwater hose pre re made	t approxim s, transitio gs have b ns stated. r may occu sent at the	ate ns may een mac ur due to e time	be le						Bottom of Exploration at 17.0 feet	BORING) NO.:	B-1

E			BORING LOG									BC Sł	DRING NO HEET:	D.: <u> </u>	3-2 of 1
	フ	CL PR	IENT: <u>⊦</u> OJECT:	<u>Hale</u> P	ey Ward ropose	d, Inc. d Facility	/ Improv	ements				PF D/	ROJECT N ATE STAR	IO. <u>24</u> IT: 6/3	-0940 /2024
S.W.C	COLE	LO	CATION	: _ :	Swan L	ake Stat	e Park, S	Swanville, Ma	aine			D/	ATE FINIS	H: 6/3	/2024
Drilli LOCA	ng Inf TION: _ ING CO	See Ex	tion kploration l aboard Dri	Loca	ation Pla	n E	ELEVATIO	DN (FT):283	3' +/- t		TOTAL DEPTH (FT): <u>17.0</u> DRILLING METHOD: Hollow St	LOGG	ED BY: <u>A</u>	lex Allen	
RIG T	YPE: _1	rack N	lounted Di	edri	ch D-50		AUGER ID	/OD: 2 1/4 in	n / 5 5	i/8 in	SAMPLER: Standard Split-Spoo	n			
НАММ			utomatic		• 1 <i>4</i> 7	ł		WEIGHT (lbs)	: <u>14</u>	0	CASING ID/OD: N/A /N/A	CORE	BARREL:	N/A	
WATE	R LEVE		THS (ft):	_ <u>N</u>	o free wa	ater obser	ved								
GENE		TES:	er l evel			D = Split S	noon Samr	le Pen	= Pene	tration Length	WOR = Weight of Rods	= Field Va	ine Shear Stre	enath kins/sa	
AND S	YMBOLS	: ⊽ A ▼ A ▼ A	At time of Dri At Completio After Drilling	illing on of	Drilling	U = Thin V R = Rock (V = Field \	/alled Tube Core Sampl /ane Shear	Sample Rec. e bpf = mpf =	= Reco Blows Minut	per Foot e per Foot	WOH = Weight of Hammer q _U RQD = Rock Quality Designation Ø PID = Photoionization Detector N//	= Unconfi = Friction A A = Not Ap	ned Compress Angle (Estima oplicable	sive Strength ted)	, kips/sq.ft.
					SAMPL	E INFO	RMATIO	N	- _D		Comula				
Elev. (ft)	Depth (ft)	Casin Pen. (bpf)	g Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic L		Sample Description & Classification		H ₂ 0 Depth	Rema	ırks
-	_		1D	M	0-2	24/10	3-4-6- 14			0.2 Top Med trac	oil lium dense, brown gravelly sandy e organics (Fill)	SILT,	r		
-	+		2D	A	2-4	24/24	13-15-			1.5 Med grav	lium dense, brown sandy SILT, so /el (Glacial Till)	me			
280 -				M			14-21								
200				M											
-	t			H											
-	- 5		3D	\square	5-7	24/24	9-11-								
_				M			12-17								
				M											
-	t			H											
275 -	÷														
-	Ļ														
-	- 10		4D	\square	10-12	24/24	15-16-			b	ecoming dense and gravelly				
-	+			X											
-	Ļ			Δ											
270 -	Ť														
-	÷														
_	- 15		-		45.47	0.4/40									
			50	М	15-17	24/18	30-50								
-	÷			Ň											
				/ \							Bottom of Exploration at 17.0 fee	•t			
Stratifica boundar gradual.	ation lines ry betwee . Water le	represe n soil ty vel reac	ent approxim pes, transitic lings have b	nate ons r ieen	nay be made										
at times Fluctuat	and unde tions of gr	er condit oundwa those r	tions stated. ter may occupresent at the	ur du	ue to ne							-		_	
measure	ements w	ere mac	le.	un								B	DRING NO).: E	j-Z

F			BORING LOG									BORING NO.:		B-3
		CLI	ENT: _	lale	ey Ward	d, Inc.						PRO		. 24-0940
		PR	OJECT:	Ρ	ropose	d Facility	/ Improve	ements				DAT	E START	: 6/3/2024
S.W.O	COLE	LO	CATION	:_{	Swan L	ake Stat	e Park, S	Swanville, M	aine			DAT	e finish	: 6/3/2024
Drilli LOCA	ng Info TION:	Frmat See Ex	ion ploration L	_002	ation Pla	nI		DN (FT): 2	4' +/- ++		TOTAL DEPTH (FT): 17.0 Lo		BY: <u>Ale</u>	x Allen
RIG T	ING CO.: YPE: Tr	_Sea ack Mo	poard Dri	edri	, LLC ch D-50		AUGER ID	(OD: 2 1/4 i	ա n/5 ք	5/8 in	SAMPLER: Standard Split-Spoon	Auger		
НАММ		E: Au	Itomatic	Juli		i	HAMMER	WEIGHT (lbs)	: 14	0	CASING ID/OD: N/A /N/A C	ORE B	ARREL:	N/A
HAMM	IER COR	RECTI	ION FACT	OR	R: <u>1.47</u>	I	HAMMER	DROP (inch):	30					
WATE	R LEVEL	DEPT	"HS (ft):	_⊉	2.4.7 ft I	Free wate	r observed	l at 4.7'						
KEY T	O NOTES	ES: Wate	er Level			D = Split S	Spoon Samr	le Pen	= Pen	etration Length	WOR = Weight of Rods S = Fie	ld Vane	Shear Stren	ath kins/sa ft
AND S	YMBOLS:	⊻ At ▼ At ▼ At	t time of Dri Completion fter Drilling	lling n of	Drilling	U = Thin V R = Rock V = Field V	Valled Tube Core Sampl /ane Shear	Sample Rec. e bpf = mpf =	= Rec Blows Minut	overy Length per Foot te per Foot	WOH = Weight of Hammer $q_{ij} = Un$ RQD = Rock Quality DesignationØ = FricPID = Photoionization DetectorN/A = N	confined tion Ang lot Applic	Compressiv le (Estimate cable	ve Strength, kips/sq.ft. d)
					SAMPL	E INFO	RMATIO	N	ß					
Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic L		Sample Description & Classification	C	H₂0)epth	Remarks
			1D	11	0-2	24/6	2-4-4-5		*	.2 Top	soil	_/		
	+			IXI						Loo	se, brown gravelly silty SAND (Fill)			
				M						X				
· ·	†		2D	Ħ	2-4	24/8	5-4-3-2			Ś.				
.	L			W										
				M					\otimes	Â				
220 -	+			Н										
	5								\otimes			7	∠	
	- 5		3D	\prod	5-7	24/20	3-4-4-5			5.0 Loo:	se, brown fine sandy SILT			
	+			IXI										
				Μ										
· ·	†			Н										
	Ļ													
215 -	+													
	10													
			4D	\prod	10-12	24/24	2-2-2-9							
· ·	+			XI										
				M					-	11.5 Med	ium dense, brown silty gravelly SAND			
	Ť			П						(Gla	cial Till)			
	+													
ð														
210 -	+													
5	15													
			5D	М	15-17	24/12	8-9-9-							
5	+			XI										
ō c				\mathbb{N}										
5											Bottom of Exploration at 17.0 feet			
7 77														
- 12-21														
Stratific	ation lines	eprese	nt approxim	ate										
gradual	. Water lev	soll typ el readi	es, transitions have be ons stated	een	nay be made									
Fluctuat other fa	tions of gro	undwate hose pr	er may occu	ur du e tim	ue to ne							_		
measur	ements we	re made	Э.		•							BOR	ING NO.:	В-3

							E	ORIN	G	LOG		BO		NO.:	B-4
		CLI	ENT: H	lale	ey War	d, Inc.						PF		T NO.	24-0940
		PR	OJECT:	Ρ	ropose	d Facility	/ Improv	ements				_ D/	ATE ST	ART:	6/3/2024
S.W.O	COLE	LO	CATION	: _	Swan L	ake Stat	e Park, S	Swanville, Ma	aine			_ D/	ATE FIN	NISH:	6/3/2024
Drilli LOCA	ng Info TION:	ormat See Ex	t ion ploration l	Loca	ation Pla	in E	ELEVATIO	DN (FT) :212	2' +/-		TOTAL DEPTH (FT):	LOGG	ED BY:	Alex All	en
DRILL	ING CO.	Sea	board Dri	lling	, LLC	I	ORILLER:	Ryan Hacke	tt		DRILLING METHOD: Hollow Ster	n Auge	r		
RIG T	YPE: T	ack M	ounted Die	edri	ch D-50		AUGER ID	/OD: 2 1/4 ii	n / 5 5	/8 in	SAMPLER: Standard Split-Spoon				
		E: <u>AU</u> RECTI			• 147	I		DROP (inch)	: <u>14</u> 30	<u> </u>	Casing ID/OD: <u>N/A /N/A</u>	CORE	BARRE	L: <u>N/A</u>	
WATE	R LEVEL	DEPT	THS (ft):	<u>N</u>	o free w	ater obser	ved								
KEY T AND S	O NOTES	<u>Wate</u> ⊻ At ¥ At ¥ At	er Level t time of Dri t Completion fter Drilling	illing n of	Drilling	D = Split S U = Thin V R = Rock 0 V = Field \	poon Samp Valled Tube Core Sampl /ane Shear	e Pen. Sample Rec. e bpf = mpf =	= Pene = Reco Blows • Minut	etration Length overy Length per Foot e per Foot	$\label{eq:WOR} \begin{array}{ll} WOR = Weight of Rods & S_v = \\ WOH = Weight of Hammer & q_U = \\ RQD = Rock Quality Designation \\ PID = Photoionization Detector & N/A \end{array}$	Field Va Unconfii Friction / = Not Ap	ane Shear ned Comp Angle (Es oplicable	Strength, Foressive Strength	tips/sq.ft. ength, kips/sq.ft.
					SAMPI	LE INFO	RMATIO	N	bo-		0 annual a				
Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic L		Sample Description & Classification		H ₂ 0 Depth	R	emarks
			1D		0-2	24/14	3-5-3-2			0.2	soil		/		
	+			X						Loos	se, brown sandy gravelly SILT (Fill)				
210				\mathbb{N}											
210 -	T		2D	Μ	2-4	24/20	4-6-6-7			25	inne den se brown service OUT toss		_		
· .	+			X						grav	ium dense, brown sandy SILT, trac el (Glacial Till)	e			
				$\langle \rangle$											
	T														
·	- 5		3D	H	5-7	24/24	4-4-18-	ID 30294B							
				M			16	w =19.2 %							
	T			M						be	ecoming some gravel				
205 -	+			Н											
·	Ť														
	+														
· ·	10		4D	\square	10-12	24/24	15-19-								
.	+			IVI			41-31			11.0					
				M						Gla	dense, gray gravelly sandy SILT cial Till)				
200 -	+			Н							,				
1 1															
5															
	+														
1															
	15		5D	\square	15-17	24/24	25-34-								
	+			IXI			00.0								
				\mathbb{N}											
195				<u></u>		-1					Bottom of Exploration at 17.0 feet		1		
8															
Stratifica bounda gradual	ation lines ry betweer . Water lev	represe soil typ el readi	nt approxim les, transitio ngs have be	nate ons r een	nay be made										
at times Fluctuat other fa	and unde tions of gro octors than	conditi undwat those p	ons stated. er may occu resent at the	ur dı e tim	ue to ne										
measur	ements we	re made	е.										JRING	NU.:	D-4

E							E	BORIN	G	LOG		BOR	RING NO. ET:	: B-5
		CL	IENT: _	lale	ey War	d, Inc.						PRC	JECT NO	O . 24-0940
		PR	OJECT:	Ρ	ropose	d Facility	/ Improv	ements				DAT	E STAR	F: <u>6/3/2024</u>
S.W.C	COLE	LO	CATION	: _	Swan L	ake Stat	e Park, S	Swanville, Ma	aine				E FINISH	i : <u>6/3/2024</u>
Drilli LOCA DRILL	ng Info TION: ING CO.	See Ex	t ion ploration l aboard Dri	Loca Iling	ation Pla I, LLC	in E	ELEVATIO DRILLER:	DN (FT):213 Ryan Hacket	3' +/- it		TOTAL DEPTH (FT):17.0 L DRILLING METHOD:Hollow Stem	. OGGEI Auger	D BY: <u>Ale</u>	ex Allen
RIGT	YPE:	rack M	ounted Die	edri	ch D-50	/	AUGER ID	D/OD: 2 1/4 ii	n / 5 5	/8 in	SAMPLER: <u>Standard Split-Spoon</u>			
			utomatic		. 4 47	ł		WEIGHT (lbs)	: <u>14</u>	0	CASING ID/OD: <u>N/A /N/A</u>	ORE B	ARREL:	<u>N/A</u>
WATE	R LEVEL		THS (ff):	N	o free w	ater obser	ved	DROP (IIICII).	30					
GENE	RAL NO	TES:												
KEY T AND S	O NOTES YMBOLS:	<u>Wat</u> ⊻ A ⊻ A ¥ A	<u>er Level</u> t time of Dri t Completio fter Drilling	illing n of	Drilling	D = Split S U = Thin V R = Rock 0 V = Field \	Spoon Samp Valled Tube Core Samp /ane Shear	e Sample Pen. Sample Rec. e bpf = mpf =	= Pene = Reco Blows Minut	etration Length overy Length per Foot e per Foot	$ \begin{array}{ll} \text{WOR} = \text{Weight of Rods} & \text{S}_{v} = \text{Fi} \\ \text{WOH} = \text{Weight of Hammer} & \text{q}_{U} = \text{U} \\ \text{RQD} = \text{Rock Quality Designation} & \textit{Ø} = \text{Fr} \\ \text{PID} = \text{Photoionization Detector} & \text{N/A} = \\ \end{array} $	eld Vane nconfined iction Ang Not Appli	Shear Strer d Compressi gle (Estimate icable	ngth, kips/sq.ft. ive Strength, kips/sq.ft. ed)
					SAMPI	LE INFO	RMATIC	N	g					
Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Lo		Sample Description & Classification	ſ	H ₂ 0 Depth	Remarks
			1D	M	0-2	24/10	2-4-2-2			Top:	soil			
-				$\left \right\rangle$						Loos	se, brown silty gravelly SAND (Fill)			
			2D	M	2-4	24/12	4-5-12-			2.0 Med	ium dense, brown sandy SILT, trace el (Glacial Till)			
210 -	+			IXI						grav				
				\mathbb{N}										
-	+			H										
	- 5		20	Ц	57	24/24	6 7 10							
			30	М	5-7	24/24	11							
	+			X										
I .				\square										
205 -	+													
-	+													
	10				40.40	0.4/0.4	44.47							
			4D	М	10-12	24/24	20-30			be	ecoming dense and gravelly			
-	+			X										
				\mathbb{N}										
	Ť													
200 -	+													
-	+													
1	15													
	10		5D	M	15-17	24/24	22-33-			^{15.0} Very (Gla	dense, gray gravelly sandy SILT			
-	+			IXI										
5				M										
	1	I	1	- 1		1	1	1	-	1	Bottom of Exploration at 17.0 feet	I		
1														
Stratifica	ation lines	represe	ent approxim	nate	nav be									
gradual.	. Water lev	el readi r conditi	ings have b	een	made									
Fluctuat other fa	tions of gro ctors than	undwat those p	er may occu resent at the	ur du e tim	ue to ie							ROT		. D <i>E</i>
measur	ements we	re mad	e.	-		<u> </u>						BOH	NU.	. D- Э

F							B	BORIN	G	LOG		BORIN	G NO.: _	B-6
		CL	IENT: ⊦	lale	ey War	d, Inc.						PROJE	ECT NO.	24-0940
		PR	OJECT:	Ρ	ropose	d Facility	/ Improv	ements				DATE		6/3/2024
S.W.O	COLE	LO	CATION	:	Swan L	ake Stat	e Park, S	Swanville, Ma	aine			DATE	FINISH:	6/3/2024
Drilli LOCA	ng Info TION: ING CO.	ormat See Ex : Sea	tion ploration I aboard Dri	Loc	ation Pla a, LLC	in E	ELEVATIO	DN (FT): 214 Ryan Hacket	+' +/- t		TOTAL DEPTH (FT): I	-OGGED E Auger	SY: <u>Alex A</u>	llen
RIG T	YPE: T	ack M	ounted Die	edri	ich D-50		AUGER ID	/OD: 2 1/4 ir	n / 5 5	i/8 in	SAMPLER: Standard Split-Spoon			
НАММ	IER TYP	E: <u>A</u> u	utomatic			I	HAMMER	WEIGHT (lbs)	14	0	CASING ID/OD: N/A /N/A	CORE BAR	REL: <u>N</u> /A	۱
HAMM	IER COF	RECT	ION FACT	FOF	R: 1.47	I	HAMMER	DROP (inch):	30					
		DEP	THS (ft):	_N	lo free w	ater obser	ved							
GENE KEY T		Wate	er l evel			D = Split S	Snoon Samr	le Pen :	= Pene	etration Length	WOR = Weight of Rods S = E	ield Vane Sh	ear Strength	kins/sa ft
AND S	YMBOLS	∑ A Ţ A Ţ A	t time of Dri t Completio fter Drilling	illing n of	Drilling	U = Thin V R = Rock (V = Field \	Valled Tube Core Sampl /ane Shear	e Sample Rec. = e bpf = mpf =	= Reco Blows Minut	per Foot e per Foot	WOH= Weight of Hammer $q_U = U$ RQD = Rock Quality Designation $\emptyset = Fi$ PID = Photoionization DetectorN/A =	nconfined Co iction Angle Not Applicat	(Estimated)	trength, kips/sq.ft.
					SAMPI	LE INFO	RMATIO	N	b B					
Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic L		Sample Description & Classification	H ₂ Dep	o th F	Remarks
			1D	\mathbf{N}	0-2	24/2	5-4-3-1		X	0.3	soil			
	+			$\left \right\rangle$						Loos	se, brown silty gravelly SAND (Fill)			
	T		2D	Π	2-4	24/8	3-4-5-6			2.0 Med	ium dense, brown sandy SILT, trace			
	Ļ			IX						grav				
				\mathbb{N}										
210 -	+			Н										
	_													
· ·	- 5		3D	\square	5-7	24/20	7-5-5-6							
	Ļ			IV										
· ·	+			Н										
	t													
205 -														
200														
	- 10		40	H	10-12	24/24	14-20-			10.0	dence, grov grovelly condy SILT			
			40	M	10 12		33-29			(Gla	cial Till)			
	+			IXI										
				\mathbb{N}										
· ·	T													
	1													
200 -	+													
l .	15		5D	\square	15-17	24/24	18-26-							
	Ļ			W			34-30							
				$ \Lambda $										
											Bottom of Exploration at 17.0 feet			
											Letter of Exploration at 17.0 1661			
01	-4					-								
Stratific bounda gradual at times	ation lines ry betweer . Water lev and unde	represe soil typ el readi r conditi	ent approxim bes, transitio ings have b ions stated.	nate ons r een	may be made									
other fa	uons of gro ctors than	those p	resent at the	ur di e tin	ue to ne							BORIN	G NO.:	B-6
measur	GINCINS WE	ne maŭ	.			1						1	-	- •



KEY TO THE NOTES & SYMBOLS Test Boring and Test Pit Explorations

All 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)
- qu 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:

Description of Stratified Soils

		Parting:	0 to 1/16" thickness
Trace:	0 to 5%	Seam:	1/16" to ½" thickness
Some:	5 to 12%	Layer:	1/2" to 12" thickness
"Y"	12 to 35%	Varved:	Alternating seams or layers
And	35+%	Occasional:	one or less per foot of thickness
With	Undifferentiated	Frequent:	more than one per foot of thickness

REFUSAL: <u>Test Boring Explorations</u> - 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: <u>Test Pit Explorations</u> - 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.

APPENDIX D

Laboratory Test Results



Report of Gradation

ASTM C-117 & C-136

SAMUEL ROBINSON

Project Name	SWANVILLE ME - PROPOSED SWANLAKE STATE PARK FACILITY	Project Number	24-0940
rojoornamo	IMPROVEMENTS - EXPLORATIONS AND GEOTECHNICAL		20205P
Client	HALEY WARD, INC.	Date Received	50295D
Exploration	B-1	Date Completed	6/4/2024
Material Source	1D, 0.5-2 feet	Tootod By	0/4/2024
		Tested by	OAMOLL N

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
DESIGNATION (mm/µm)			
150	6"	100	
125	5"	100	
100	4"	100	
75	3"	100	
50	2"	100	
38.1	1-1/2"	100	
25.0	1"	100	
19.0	3/4"	100	
12.5	1/2"	98	
6.3	1/4"	85	
4.75	No. 4	79	21.4% Gravel
2.00	No. 10	60	
850	No. 20	43	
425	No. 40	34	58.8% Sand
250	No. 60	30	
150	No. 100	24	
75	No. 200	19.8	19.8% Fines



Comments:



Report of Gradation

ASTM C-117 & C-136

LOGAN HENDERSON

SWANVILLE ME - PROPOSED SWAN LAKE STATE PARK FACILITY	Project Number	24-0940
IMPROVEMENTS - EXPLORATIONS AND GEOTECHNICAL	Lab ID	30294B
HALEY WARD, INC.	Date Received	6/3/2024
B-4	Date Completed	6/4/2024
3D, 5-6 feet	Tested By	LOGAN HE
	SWANVILLE ME - PROPOSED SWAN LAKE STATE PARK FACILITY IMPROVEMENTS - EXPLORATIONS AND GEOTECHNICAL HALEY WARD, INC. B-4 3D, 5-6 feet	SWANVILLE ME - PROPOSED SWAN LAKE STATE PARK FACILITYProject NumberIMPROVEMENTS - EXPLORATIONS AND GEOTECHNICALLab IDHALEY WARD, INC.Date ReceivedB-4Date Completed3D, 5-6 feetTested By

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
450	0"	400	
150	6"	100	
125	5"	100	
100	4"	100	
75	3"	100	
50	2"	100	
38.1	1-1/2"	100	
25.0	1"	100	
19.0	3/4"	100	
12.5	1/2"	99	
6.3	1/4"	96	
4.75	No. 4	95	4.8% Gravel
2.00	No. 10	91	
850	No. 20	87	
425	No. 40	85	20.4% Sand
250	No. 60	84	
150	No. 100	79	
75	No. 200	74.8	74.8% Fines



Comments:



EQUIPMENT SCHEDULE			
KEY TAG	KEY ITEM	MANUFACTURER / MODEL	MATERIAL
1	ADA GRAB BARS	-	STAINLESS STL
2	BABY CHANGING STATION (TYP.)	KOALA KARE / KB300-01SS	STAINLESS STL/PLASTIC
3	GLASS BLOCK, REFER TO STRUCTURAL	-	-
4	18X30 WALL HUNG MIRROR	GAMCO C-SERIES CHANNEL FRAME	STAINLESS STL
5	XLERATOR HAND DRYER (TYP.)	XLERATOR / XL-SB-120 (WITH SS WALL GAURD)	STAINLESS STL
6	FLOOR DRAIN, REFER TO PLUMBING	-	-
7	ROOM SIGNAGE (TYP.)	-	ACRYLIC
8	TOILET TISSUE DISPENSER (TYP.)	MCMASTER-CARR / 2826K53	STAINLESS STL
9	SANITARY NAPKIN DISPOSAL (TYP.)	McMASTER-CARR / 3027K12	STAINLESS STL
10	SOAP DISPENSER (TYP.)	McMASTER-CARR / 2777K3	STAINLESS STL
11	ADULT CHANGING STATION	PRESSALIT SCT 3000 / R8435318299	-
12	SWING-UP GRAB BAR	BOBRICK B-4998	STAINLESS STL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic exterior panel signs.
 - 1. Room Identification.
 - 2. Stairs.
 - 3. Restroom.
 - 4. Elevator Lobby.
 - 5. Informational Signage.
 - 6. Directory Signage.

1.2 RELATED SECTIONS

1.3 REFERENCES

- A. ANSI 117.1 For Buildings and Facilities.
- B. ASTM International (ASTM):
 - 1. ASTM D149 Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies.
 - 2. ASTM D150 Standard Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation.
 - 3. ASTM D256 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 4. ASTM D542 Standard Test Method for Index of Refraction of Transparent Organic Plastics.
 - 5. ASTM D570 Standard Test Method for Water Absorption of Plastics.
 - 6. ASTM D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - 7. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
 - 8. ASTM D648 Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
 - 9. ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics.
 - 10. ASTM D696 Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C with a Vitreous Silica Dilatometer.
 - 11. ASTM D732 Standard Test Method for Shear Strength of Plastics by Punch Tool.
 - 12. ASTM D785 Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
 - 13. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.



- 14. ASTM D792 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- 15. ASTM D1003 Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- 16. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics.
- 17. ASTM D2843 Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
- ASTM D3418 Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry.
- 19. ASTM D3763 Standard Test Method for High Speed Puncture Properties of Plastics Using Load and Displacement Sensors.
- 20. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- 21. ASTM E2072-04 Standard Specification for Photoluminescent (Phosphorescent) Safety Marketing.
- 22. ASTM E2073-02 Standard Test Method for Photopic Luminance of Photo Luminescent (Phosphorescent) Markings.
- C. Underwriters Laboratories (UL):
 - 1. UL 94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
 - 2. UL 723 Standard for Test for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Detail drawings showing sizes, lettering and graphics, construction details of each type of sign and mounting details with appropriate fasteners for specific project substrates.
- D. Manufacturer's Installation Instructions: Printed installation instructions for each signage system.
- E. Message List: Signage report indicating signage location, text, and sign type.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and available pictograms, characters, and Braille indications.
- G. Verification Samples: For each finish product specified, two samples, minimum size



6 inches (150 mm) square, representing actual product, color, and typical pictograms, characters, and Braille indications.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum two years documented experience in work of this Section.
- B. Installer Qualifications: Minimum two years documented experience in work of this Section.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Furnish signs designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in unopened factory packaging.
- B. Inspect materials at delivery to verify there are no defects or damage.
- C. Store products in manufacturer's original packaging until ready for installation in climate controlled location away from direct sunlight.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Install only when environmental conditions (temperature, humidity, and ventilation) are within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Nova Polymers, Inc., which is located at: 8 Evans St. Suite 201; Fairfield, NJ 07004; Toll Free Tel: 888-484-NOVA (6682);
 - 1. United States:
 - Acceptable Fabricator: AdLight Group, 4150 Elati St., Denver, CO 80216. Phone: (303) 399-3334. Email: Sales@AdLightGroup.com. Web: www.adlightgroup.com.
 - b. Acceptable Fabricator: AGS, 302 Commerce Drive, Exton, PA 19341.
 Phone: (610) 363-8150. Email: info@agsinfo.com. Web: www.agsinfo.com.
 - c. Acceptable Fabricator: ASI, Iowa Grinnell, IA, 1219 Zimmerman Dr.,



Grinnell, IA 50112. Phone: (641) 236-6616. Web: www.asisignage.com/locations/iowa

- d. Acceptable Fabricator: Bell Company, 8327 Parkway Dr., Leeds, AL 35094. Phone: (800) 828-3564. Email: sales@bellcoinc.com. Web: www.braillebybell.com.
- e. Acceptable Fabricator: Boyd Sign Systems, 3901 S Kalamath Street, Englewood, CO 80110. Phone: (800) 333-3190. Email: signs@boydsignsystems.com. Web: www.boydsignsystems.com
- f. Acceptable Fabricator: Cab Signs, 38 Livonia Ave, Brooklyn, NY 11212. Phone: (800) 394-1690. Email: sales@cab-signs.com. Web: www.cab-signs.com.
- g. Acceptable Fabricator: Cadwell Signs, 4 Kuniholm Drive, Holliston, MA 01746. Phone: (508) 429-3100. Web: www.cadwellsigns.com.
- h. Acceptable Fabricator: Graphic Components, 2800 Patterson Street, Greensboro, NC 27407. Phone: (336) 542-2128. Email: sales@graphiccomponents.com. Web: www.graphiccomponents.com.
- i. Acceptable Fabricator: InPro Corporation, S80 W18766 Apollo Drive, Muskego, WI 53150. Phone: (800) 222-5556. Email: rbader@inprocorp.com. Web: www.inprocorp.com.
- j. Acceptable Fabricator: Kroy Sign Systems, 8221 E Gelding Dr., Scottsdale, AZ 85260. Phone: (800) 950-5769. Email: signs@kroysignsystems.com. Web: www.kroysignsystems.com.
- k. Acceptable Fabricator: Neiman & Company, 6842 Valjean Ave., Van Nuys, CA 91406. Phone: (818) 781-8600. Email: signs@neimanandco.com. Web: www.neimanandcompany.com.
- 1. Acceptable Fabricator: Park Place Sign Systems, Inc., 2019 30th Street, Hannibal, MO 63401. Phone: (573) 221-1360. Email: sales@parkplacesign.com. Web: www.parkplacesign.com.
- M. Acceptable Fabricator: Sign Pro, 60 Westfield Dr, Plantsville, CT 96479.
 Phone: (860) 229-1812. Email: pete@signpro-usa.com. Web: www.signpro-usa.com.
- n. Acceptable Fabricator: Signtech, 4444 Federal Blvd., San Diego, CA 92102. Phone: (619) 527-6100 ext.117. Email: sales@Signtech.com. Web: www.signtech.com.
- Acceptable Fabricator: Tube Art Group, 11715 SE 5th Street, Bellevue, WA 98005. Phone: (206) 223-1122 Email: mwoods@tubeart.com. Web: www.tubeartgroup.com
- p. Acceptable Fabricator: Welch Signs, 7 Lincoln Ave., Scarborough, ME 04074. Phone: (207) 883-6200. Web: www.welchsign.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Provide photopolymer signage that conforms to the requirements of all regulatory agencies holding jurisdiction.



- B. Requirements:
 - 1. Comply with all applicable provisions of the 2010 ADA Standard for Accessible Design.
 - 2. Character Proportion: Letters and numbers on signs must have a width-toheight ratio between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10.
 - 3. Color Contrast: Characters and symbols must contrast with their background either light characters on a dark background or dark characters on a light background.
 - 4. Raised Characters or Symbols: Letters and numbers on signs must be raised 1/32 in (0.8 mm) minimum and be sans serif characters. Raised characters or symbols must be at least 5/8 in (16 mm) high but no higher than 2 in (50 mm). Symbols or pictograms on signs must be raised 1/32 in (0.8 mm) minimum.
 - 5. Symbols of Accessibility: Accessible facilities required to be identified must use the international symbol of accessibility.
 - 6. Braille: Grade II with accompanying text.
- C. Fire Performance Characteristics:
 - 1. Provide photopolymer signage with surface burning characteristics that consist of a flame spread of 75 and a smoke development of 120 when tested in accordance with UL 723 (ASTM E 84).
 - 2. Self-Extinguishing: Provide photopolymer signage with a CC1 classification for .060 in thick material when tested in accordance with the procedures in ASTM D 635, Standard Test Method for Rate of Burning and/or Extent and Time of Burning Plastics in a Horizontal Position.
 - 3. Vertical Burn: Provide photopolymer material that is classified as 94V-2 for material .118 in thick or greater and 94HB for material .118 in thick or less when tested in accordance with UL 94, Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
 - 4. Self-Ignition Temperature: Provide photopolymer material that has a selfignition temperature of 800 degrees F (427 degrees C) when tested in accordance with ASTM D 1929.
- D. Novacryl PETG: Polyethylene terephthalate glycol. A thermoplastic polyester with high chemical resistance, and fomability.
 - 1. ADA Compliant.
 - 2. NSF: Listed.
 - 3. FDA: Conforms to food contact regulations.
 - 4. Physical Properties:
 - a. Specific Gravity per ASTM D792: 1.27.
 - b. Optical Refractive Index per ASTM D542: 1.57.
 - c. Light Trans Total per ASTM D1003: 86 percent.
 - d. Light Trans Haze per ASTM D1003: 1 percent.
 - e. Water Absorption by weight per ASTM D570: 0.2 percent.
 - 5. Mechanical Properties:
 - a. Tensile Strength per ASTM D638: 7,700 psi.



- b. Tensile Modulus of Elasticity per ASTM D790: 320,300 psi.
- c. Flexural Strength per ASTM D790: 11,200 psi.
- d. Flexural Modulus of Elasticity per ASTM D790: 10,000 psi.
- e. Izod Impact Strength Molded Milled Notch per ASTM D256: 1.7 Ft-lb per inch Notch.
- f. Rockwell Hardness per ASTM D785: R-115.
- g. Drop Dart Impact per ASTM D3763: 22 ft-lbs.
- h. Shear Strength per ASTM D732: 9,000 psi.
- i. Compressive Strength per ASTM D695: 8,000 psi.
- 6. Thermal Properties:
 - a. Deflection Temperature at 264 psi ASTM D648: 157 degrees F.
 - b. Deflection Temperature at 66 psi ASTM D648: 164 degrees F.
 - c. Coefficient of Thermal Expansion ASTM D696: 3.8x10 Inches per inch per degrees F.
 - d. Flammability (Burning Rate) ASTM D635: 0.06 Inches per minute.
 - e. Flammability UL 94: HB.
 - f. Smoke Density Rating ASTM D2843: 53.8 percent.
 - g. Self-Ignition Temp ASTM D1929: 880 degrees F.
 - h. Flame Spread Index ASTM E84: 85.
 - i. Smoke Development Index ASTM D84: 450.
 - j. Glass Transition Temperature ASTM D3418: 178 degrees F.
- 7. Electrical Properties:
 - a. Dielectric Constant at 1KHz ASTM D150: 2.6.
 - b. Dielectric Constant at 1MHz ASTM D150: 2.4.
 - c. Dielectric Strength ASTM D149: 410 Volts per mil.

2.3 SIGNAGE - GENERAL

- A. It is the intent of these specifications to establish a sign standard for the Owner including but not limited to, wall-mounted directional signs, primary room identification, restrooms, conference rooms and all code compliant Braille signage.
- B. Comply with all applicable provisions of the 2010 ADA Standard for Accessible Design codes that apply to the State and Local jurisdiction of the project.
- C. If required text and graphics are not indicated in specification or on drawings, obtain Owner's instructions as to text and graphics prior to preparation of shop drawings.
- D. Typography: Copy shall be a clean and accurate reproduction of typeface(s) indicated by owner. Coordinate exact typeface with owner and architect prior to purchase. Letter spacing to be set by manufacturer.
- E. Arrows, symbols, and pictograms will be provided in style, sizes, colors and spacing per industry standard.
- F. Braille:
 - 1. Grade 1 Braille.
- G. Design:



- 1. Text/Graphics Placement: Centered.
- 2. Font: Arial, confirm with owner.

2.4 EXTERIOR SIGNAGE

- A. Panel Material: Novacryl EX Series Photopolymer.
 - 1. Composition: 0.032 inch (0.8 mm) thick exterior-grade photopolymer resin bonded to 0.016 inch (0.4 mm) thick aluminum alloy base.
 - 2. Base thickness: 0.016 inch (0.4 mm) thick brushed aluminum alloy base.
 - 3. Type and Color: To be selected from manufacturer's full color range by Architect.
 - 4. Size: 6"x9".

2.5 ACCESSORIES

- A. Adhesive:
 - 1. Type recommended by sign manufacturer.
 - 2. Maximum volatile organic compound (VOC) content: 70 grams per liter.
- B. Tape: Double sided, waterproof, pressure sensitive.
- C. Fasteners: Stainless steel screws.

2.6 FABRICATION

- A. Fabricate panel material in accordance with manufacturer's instructions and approved shop drawings.
- B. Fabricate signs by photo polymer process using film negatives to produce characters and graphics in contrasting color, raised. Refer to Signage Schedule.
- C. Characters:
 - 1. Height: Refer to Signage Schedule.
 - 2. Style: Refer to Signage Schedule.
 - 3. Width to height ratio: Refer to Signage Schedule.
 - 4. Stroke width to height ratio: Refer to Signage Schedule.
- D. Pictograms: Refer to Drawings.
- E. Provide Braille Grade indications for each character.
- F. Frames:
 - 1. Miter corners; fit to hairline joint.
 - 2. Secure frame to sign with adhesive.
- G. Changeable Slide Inserts: Clear NOVACRYL PETG sheet cover with slot behind for insertion of changeable slide strip, removed from side.

PART 3 EXECUTION

3.1 EXAMINATION



- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION