Mackworth Island

Conceptual Utilization Master Plan

Final Report

January 27, 2023

Harriman

CONTENTS

1

EXECUTIVE SUMMARY

ACKNOWLEDGMENTS

The Mackworth Island Conceptual Utilization Plan (referred to as the "Master Plan"), was contracted through the Maine Bureau of General Services (BGS) and was managed by BGS staff. BGS played an active role throughout the entire process, provided direction, and acted as conduits to the other stakeholder groups representing various aspects of island use. Their leadership and guidance during the planning process was instrumental in the creation of a final Master Plan that reflected the needs and interests of the Mackworth Island stakeholders, visitors, and the surrounding community.

BGS STAFF INVOLVED IN THE MASTER PLANNING PROCESS INCLUDED

Elaine Clark		Deputy Commissioner, Department of Administrative & Financial Services
Deane Rykerson	Architect	Bureau of General Services

MASTER PLAN STEERING COMMITTEE

Catherine Breen	State Senator	State of Maine
Teresa Pierce	State Representative	State of Maine
Pender Makin	Commissioner	Maine Department of Education
Daniel Chuhta	Deputy Commissioner	Maine Department of Education
Gary Best	State Park Regional Manager	Department of Agriculture, Conservation, and Forestry; Bureau of Parks and Lands
Amy Kuhn	Councilor	Town of Falmouth
Nathan Poore	Town Manager	Town of Falmouth
Karen Hopkins	Executive Director	Maine Education Center for the Deaf and Hard of Hearing
Lisette Belanger	Board Chair	Maine Education Center for the Deaf and Hard of Hearing
Dean Flanagin	Facilities Director	Maine Educational Center for the Deaf and Hard of Hearing
Stephen Kimball	Facilities Department	Maine Educational Center for the Deaf and Hard of Hearing

CONSULTANT TEAM

Harriman	Project Management, Architecture, Engineering, Planning
GEI	Marine Engineering
Kleinfelder	Architectural Historians
PCM	Cost Estimating and Project Phasing
VHB	Traffic and Parking

CONTEXT MAP

INTRODUCTION

The Mackworth Island Conceptual Utilization Plan (referred to as the "Master Plan") is a series of recommendations to improve multiple use areas and infrastructure for the Island. Mackworth is located in the Town of Falmouth and has a long history dating back over 10,000 years. It was initially inhabited and used for agriculture, hunting, and fishing by the Wabanaki. European settlement led to the island being gifted to its namesake, Arthur Mackworth in 1631. In 1863 the island briefly hosted Camp Berry, a training location during the Civil War.

MACKWORTH ISLAND SIGN

Development of the island began in earnest following James Baxter's purchase of the island in 1885. The island passed to his son Percival Baxter who built the existing Mansion in 1917. In 1943 Percival gifted the island to the State of Maine. The deed included restrictions that the Island "always be used for State public purposes only", that the cemetery for animals including the bronze tablets be maintained, and that the property never be used for penal or corrective institutions. In accepting the deed, the Maine State Legislature provided that the Island be "held forever by the people of Maine for state public purposes, as trustee in trust." See Appendix D for a copy of the Deed.

CAUSEWAY: VIEW TO FALMOUTH

A campus of eight buildings was funded by former Governor Percival Baxter and the Maine State legislature as a school for the deaf and its use restricted to that purpose. Campus construction began in 1955. The island is currently used and celebrated as the Governor Baxter School for the Deaf and Mackworth Island State Park. Its varied uses result in multiple state agencies having jurisdiction over limited areas of the island or island infrastructure. See page 1-6 for an illustration of these areas of jurisdiction.

STONE PIER

Planning recommendations in this report are a result of a months-long process to provide short-term, long-term, and phased solutions to address identified issues and to enhance the character and quality of Mackworth Island for visitors and occupants.

STAKEHOLDER ENGAGEMENT

A Steering Committee comprised of stakeholders representing many users and interests of Mackworth Island met monthly during the duration of the study which ran from March to October 2022. This group guided the development of project goals and priorities and provided important feedback on the variety of topics as the study progressed.

GOVERNOR BAXTER SCHOOL FOR THE DEAF

In addition to regular participation by the Falmouth Town Manager, the Chair of the Planning Committee, and elected officials representing the Town, community outreach centered around an informational meeting held at the Falmouth Town Hall in the evening of June 29th. The interactive presentation was also streamed and posted on the Town's

website with a contact to allow for follow-up inquiries. Questions and comments were reviewed, and responses provided.

The planning team also met with members of the MECDHH school community several times to review current programs, occupant counts, program location and frequency of meeting, location suitability, and projected increases or decreases for future planning considerations. This inventory provided a basis in determining current and projected space need.

PATHWAY VIEW TO STONE PIER

GYM INTERIOR: BUILDING J

BREWSTER HALL: BUILDING H

SCHOOL PLAYGROUND BEHIND BUILDING I

MASTER PLAN GOALS

In early discussions with Mackworth Island stakeholders, it became clear that a primary goal of the master plan would be to preserve the two important qualities that make this a very special and beloved space. Any proposed changes should not be at the expense of Mackworth's defining characteristics, a natural refuge set in Casco Bay. It was also clear that preservation of the history and legacy of Mackworth as the home the Deaf Community should be strengthened through the master plan initiatives. These and other themes emerged from the Steering Committee's work in developing a shared set of goals to guide the future of the investment in the island. The following goals were considered throughout the planning process with the intent that the complete set of master plan recommendations responded to all stated goals.

Preserve the Experience of Mackworth

As a state park located in close proximity to Maine's largest metropolitan area, Mackworth enjoys popularity as a destination to escape the urban realm and enjoy a natural encounter with fields, beaches, forests, walking trails and spectacular views to Casco Bay in relative calm and seclusion. A single parking lot limited to 24 spaces restricts the number of visitors to the island and maintains a quality of the experience.

Maintain Mackworth as the Home for the Deaf Community

Since the establishment of the school on Mackworth in 1957, the Island has been home to generations of Deaf students. The educational community encompassed friends and families of students that lived here. While the scale of the school's program on Mackworth has changed with fewer students attending at this location, there are many events throughout the year that support the Deaf community. In this way, Mackworth serves as a home base for more than the direct school functions.

Honor the History of the Deaf Community

With the move of the school from Portland to Mackworth, the Island became more than simply a location for the school. Relocating the school also built on a history going back many years before the new campus was created. This history is preserved in several artifacts and stories that are maintained in a museum housed in a portion Sanders Hall. The Master Plan looks for opportunities to enhance the ability to share and honor the history of the Deaf Community in Maine.

MANSION: BUILDING A

Right-size Campus Facilities

The campus and buildings at the Baxter School for the Deaf were planned and designed for a school that consisted of site-based living and learning for elementary, middle and high school students. The full range of academic and residential uses required significant space and operational resources that are no long needed to support the school's needs for the foreseeable future. The Master Plan was initiated, in part, to review and make recommendations on a realignment of infrastructure to support the current needs of the Maine Educational Center for the Deaf and Hard of Hearing (MECDHH).

CAMPUS ACCESS DRIVES

Address Building Maintenance Needs and Operational Efficiencies

The Master Plan includes a facilities assessment to quantify building conditions and recommend upgrades. The majority of the structures were constructed more than 60 years ago with limited upgrades over this time period. Most building systems reach obsolescence and require replacement after a 40-year life cycle. Building and life safety code requirements are updated regularly to improve occupant safety, accessibility, and improve energy efficiency. Older buildings are also less efficient to maintain adding to high operating costs. Newer technologies consider ways to reduce both energy costs and impacts to the environment.

TRAIL AT CAMPUS EDGE

In addition to the stated master plan goals, the planning team and committee identified key issues to be considered in the master plan recommendations.

The Baxter Mansion is a hidden jewel

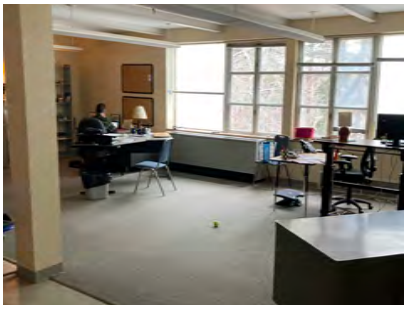
The current building known as the Mansion was the summer home of the Baxter family from its construction in 1918 to when the island was gifted in 1943. It is both historically and architecturally significant. The development of the school campus in the 1950's surrounds the building and prohibits views from most areas of the island.

DRAPER HALL: BUILDING J

PATHWAY VIEW TO STONE PIER

SCHOOL APPROACH SEQUENCE

MAIN SCHOOL ENTRY



STAFF WORK AREA: BUILDING D

There is no clear "front door" to the school

The sprawling nature of the multiple buildings that constitutes the school creates a condition of where there is a lack of hierarchy and intuitive sense of the school's front door. The access drive that circulates to the primary door also lacks a clear marker of significance to route drivers to the appropriate location.

The island lacks adequate wayfinding

Wayfinding provides visual and spatial cues to assist staff and visitors on the location of features and resources. The island, both the state park and the school campus, lack a clear and organized wayfinding strategy.

There is no distinct perimeter to the school campus. There is no physical demarcation of the separation of the school campus from the state park. This can lead to park visitors straying onto the school grounds.

Use of buildings and spaces is inefficient

As program needs have changed over time, the rooms of the buildings have been re-purposed to suit new uses. In many cases, rooms are larger than necessary. Examples include the conversion of bedrooms or classrooms into offices. Some buildings also have very intermittent use.

MACKWORTH ISLAND REGULATORY OVERSIGHT

Master planning recommendations address Mackworth Island's many diverse needs. Response to these needs must comply with various regulations and laws. The list below includes the major regulatory entities and requirements that apply to potential projects on the island.

Maine Department of Environmental Protection (DEP) permits related to land, air and water may be required pursuant to the Maine Site Location of Development Act ("Site Law") and the Maine Natural Resources Protection Act (NRPA).

Site Location of Development regulates development that may have a substantial environmental impact.

NRPA regulates activities in, on, over or adjacent to natural resources including water bodies, wetlands, significant wildlife habitat and vernal pools. This includes shoreland zoning.

Maine DEP also regulates Stormwater under Site Law or Stormwater Management Law.

Town of Falmouth has zoning regulation oversight.

MACKWORTH ISLAND JURISDICTIONAL ORGANIZATION

The different uses on the island require several State of Maine organizations to share oversight and management. While the Bureau of General Services (BGS) has oversight of the island at-large (specifically the causeway and GBSD buildings and grounds), the groups below operate and maintain other specific areas of Mackworth Island.

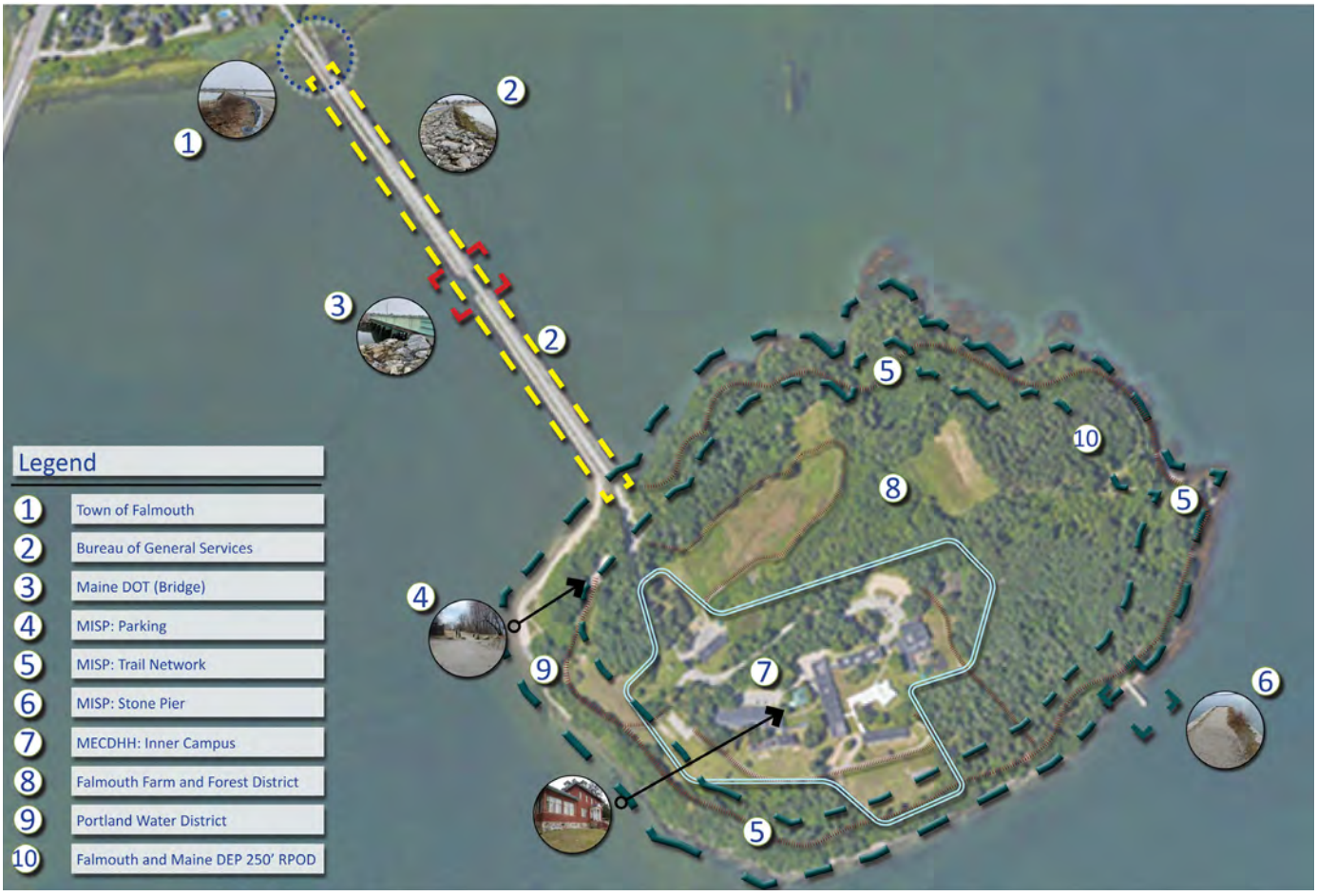
Maine Department of Transportation (Maine DOT) is responsible for the causeway bridge (not the causeway itself).

Bureau of Parks and Lands manages all natural resources on the island including Mackworth Island State Park (MISP): see Appendix D Summary.

Department of Education oversees the Maine Education Center for the Deaf and Hard of Hearing (MECDHH) also referred to as the Governor Baxter School for the Deaf (GBSD).

Town of Falmouth, regulates Zoning. Mackworth Island is zoned as: Farm and Forest (Residential Rural District) and also under Shoreland Zoning: 250 foot Resource Protection Overlay District (RPOD).

Portland Water District (operates a pump station on Mackworth that serves neighboring islands in Casco bay.



CONTEXT MAP: AREAS OF JURISDICTION

EXISTING CONDITIONS ASSESSMENTS

The planning team reviewed and assessed site, facility, and infrastructure elements on Mackworth Island. The following information is elaborated on in subsequent sections and full report content is included as appendices to the Master Plan. Areas of focus were Site, Facilities and Utilities Condition, Historic Character, Causeway and Pier, and Traffic and Parking.

SITE SUMMARY

Site Analysis included an inventory of existing conditions for the overall island as well as the (GBSD)/ MECDHH Campus proper. The site inventory, collected from on-site assessments, research of existing reports, documents and available mapping for the existing conditions contributed to the development of the site diagram resources as shown below. Mackworth Island falls under the Town of Falmouth and Maine DEP for regulatory and management oversight.

GOVERNOR BAXTER SCHOOL FOR THE DEAF CAMPUS EXISTING CONDITIONS SITE PLAN

SITE FINDINGS

- The island is most vulnerable to weather from the south and east: predicted sea level rise will exacerbate this vulnerability. It is most protected from the northwest.
- Access to the island is limited to a narrow two-lane causeway.
- Visitor entrance to the GBSD/MECDHH campus is not clearly articulated and procession through the campus by car is confusing.
- Areas of waterfront erosion were noted along the State Park trail, especially in locations where informal access ways from the trail to the shore have been created.
- The island is a mix of densely wooded areas and open spaces. In general, forested areas make up the State Park trail system and legacy site features of the Baxter estate (such as the Pet Cemetery and Stone Pier) and open areas are connected to the school campus.
- Landmark resources on the island include a Wabanaki grind stone and water tower attributed to the original Baxter farm, and the Baxter Mansion.
- Locations where the natural boundary of woods does not buffer the school campus were noted as problematic as park visitors sometimes migrate into the campus areas.
- There are extensive views to Casco Bay and the mainland at locations around the island, especially the trail system.
- The zoning district, Farm and Forest (F), for Mackworth Island allows municipal uses, including Falmouth public schools. However, GBSD, a state public school, was not included as a permitted use under the zoning district for Mackworth Island.

ISLAND ACCESS: GATEHOUSE

SHORE ACCESS

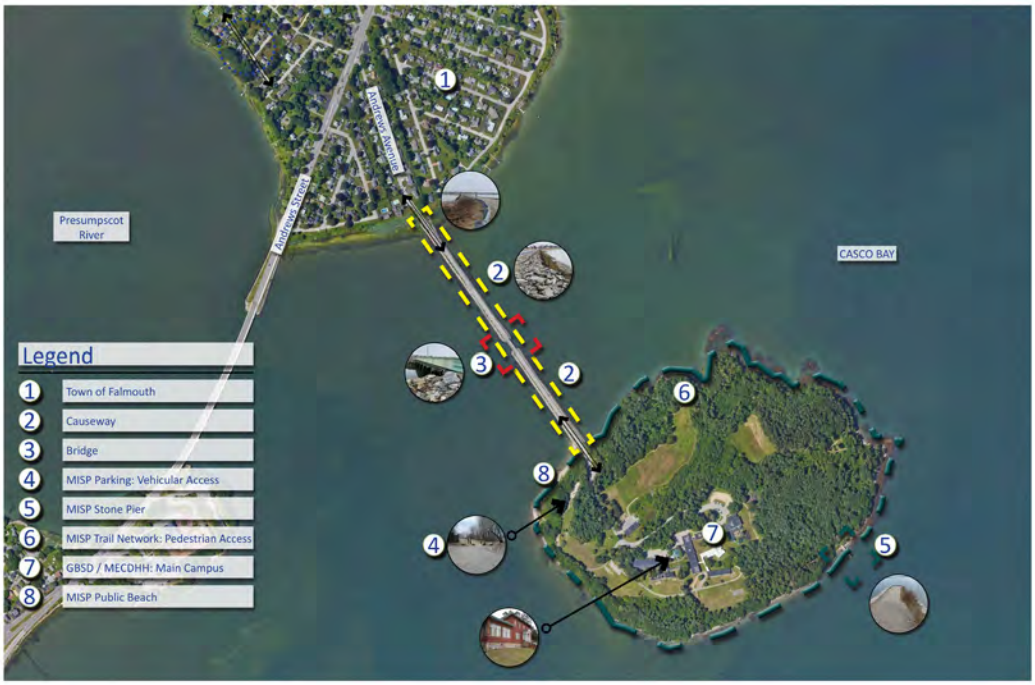
LANDMARK: WATER TOWER AND GRINDSTONE

SITE RECOMMENDATIONS

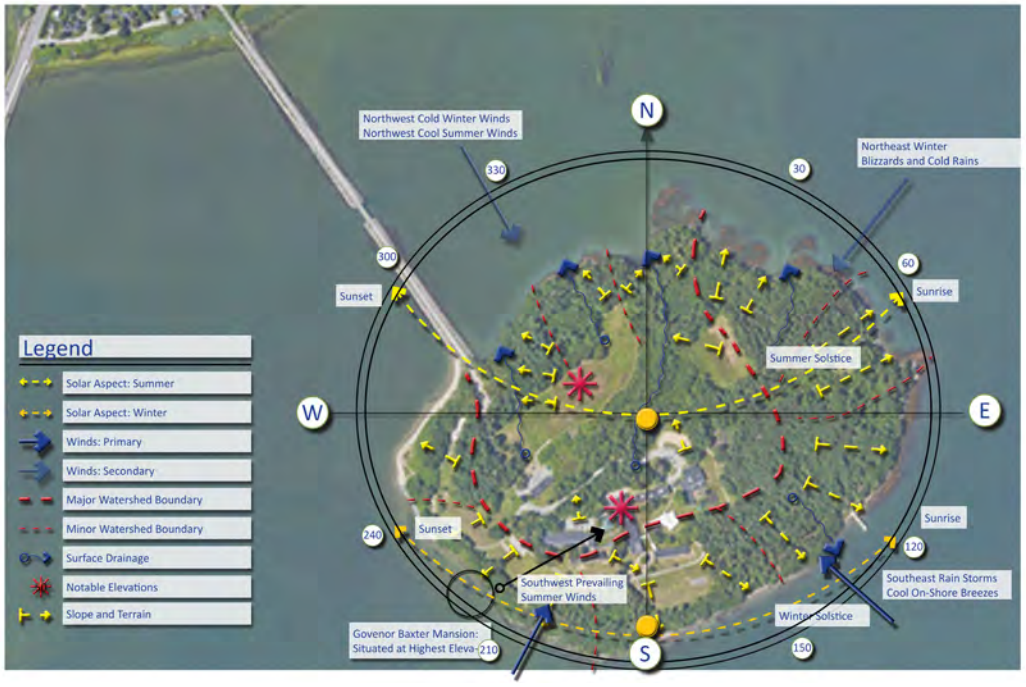
- Improve entry to campus by developing a clear gateway within sight of the State Park gatehouse and parking areas.
- Rework campus access drives and parking areas to improve navigation, create a hierarchy of approach to various campus areas, and consolidate parking to specific lots.
- Clarify campus and State Park boundaries to reduce Park visitors accessing campus areas.
- Analyze existing topography to support recommendations for trail improvements, erosion control, and dedicated shore access points.

LANDMARK: PET CEMETERY

- Create view corridors and specific access from the State Park to landmark resources such as the Mansion, Water Tower, and Grindstone.
- Communicate with the Town Falmouth to discuss revising zoning in advance of potential school projects.



EXISTING CONDITIONS SITE CONTEXT

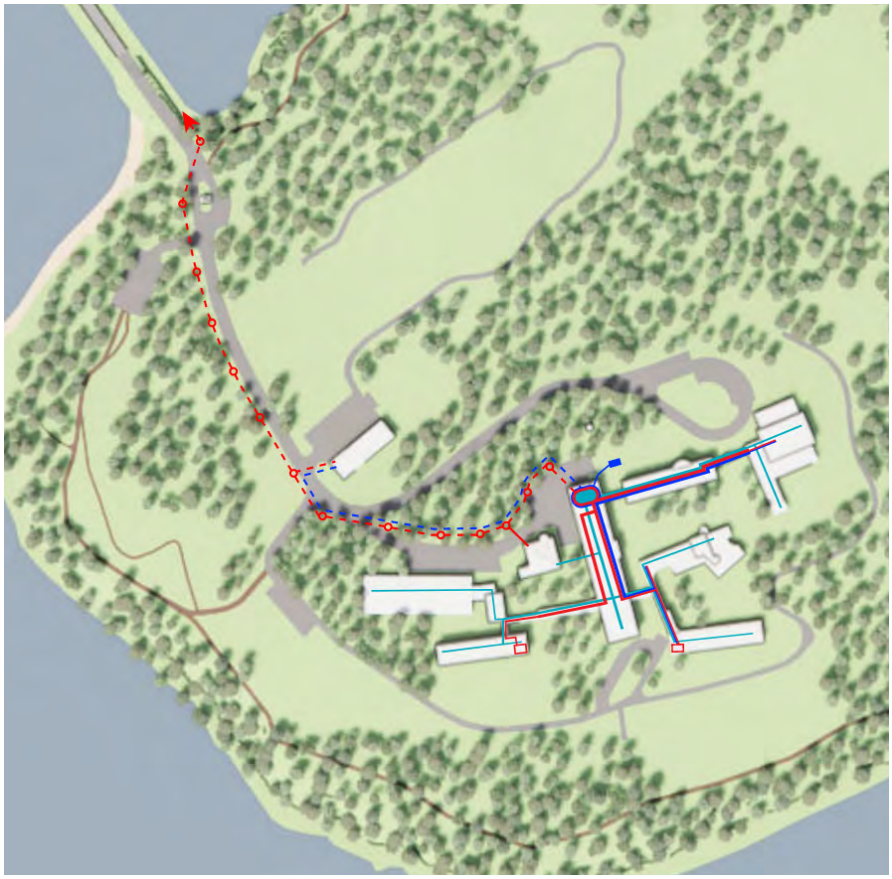


SITE INVENTORY CLIMATE AND RESOURCES

CAMPUS UTILITIES ANALYSIS

Utilities serving Mackworth Island are generally based on a central plant model where electricity and heat are located in a central campus location then distributed throughout the individual buildings. Mackworth Island receives electricity via overhead poles from Andrews Avenue. Power is fed to Building K (Sanders Hall) then distributed to individual buildings. Water is provided by Portland Water District via underwater pipes to a pump station on the west side of the island. The pump station sends water under Casco Bay to other populated islands as well as serving Mackworth. Heat, by way of hot water, is provided by a central boiler that is located at the north end of Sanders Hall. All campus buildings have direct piping connections to Sanders. The enclosed building connectors host the piping infrastructure so that piping does not need to run outside or underground.

Master Planning recommendations include changing the utility distribution from a central plant model to creating a system where utility infrastructure serves each building independently. This change improves overall energy performance by designing systems that are optimized for each particular building. It also eliminates the need for the connector buildings which the current piping is distributed through.



CAMPUS UTILITIES PLAN DIAGRAM

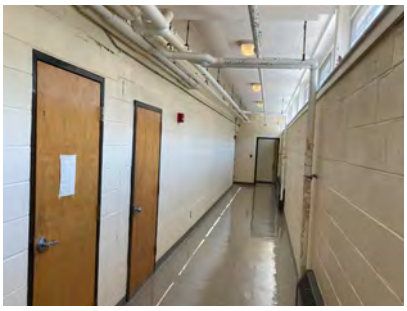
KEY PLAN

BUILDING CONDITION ASSESSMENTS

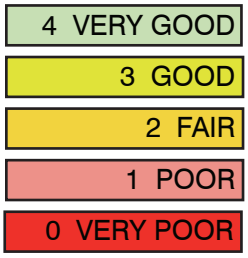
The design team, comprised of architects and engineers, performed onsite facilities assessments accompanied by GBSD representatives. Assessments are based on observations of the visible condition of various building components and systems. All 10 campus buildings, their associated connectors, and the State Park Gatehouse were reviewed.

Facility condition varies greatly from building to building. Some buildings are in a state of extensive decline and should be considered for removal and others are in very good working order. Images and assessment summary charts below reflect overall condition: green is very good, yellow is good, orange is fair, red is poor, and dark red is very poor.

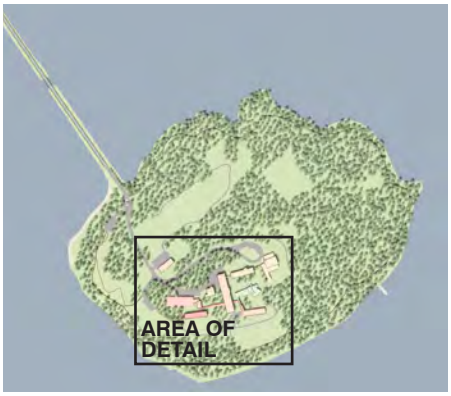
GREENLAW HALL: BUILDING D



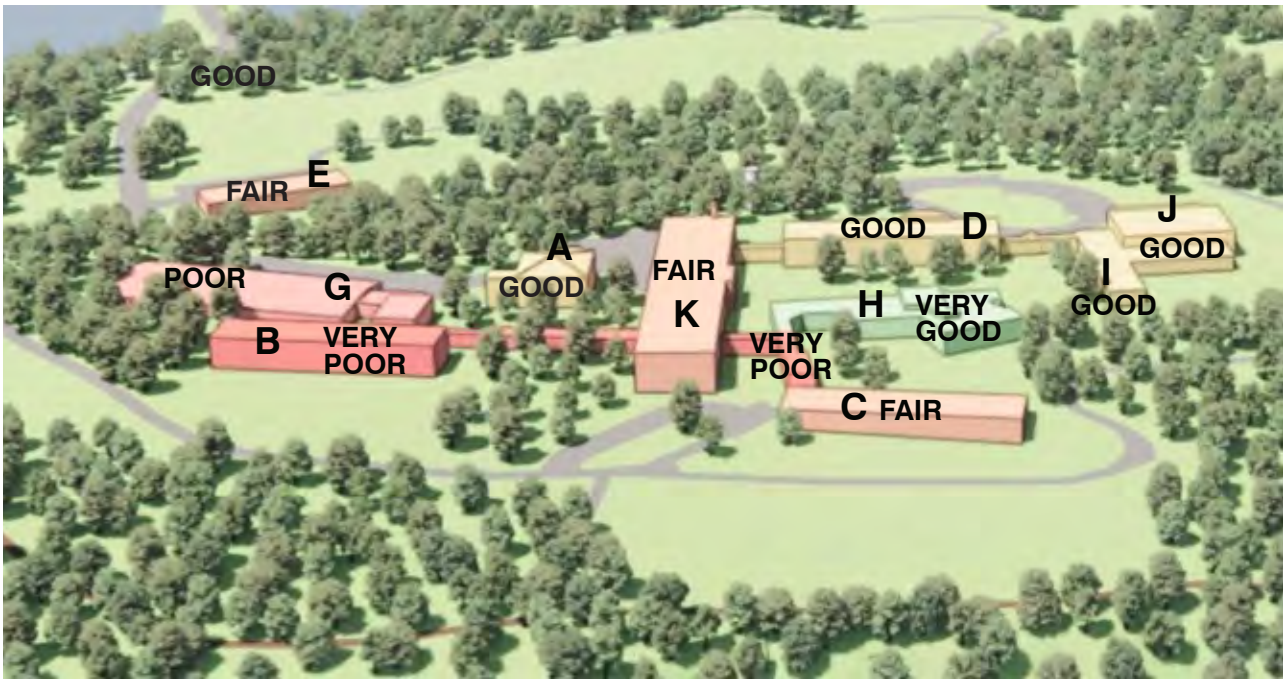
DRAPER: BUILDING J



CONDITION LEGEND



KEY PLAN



FACILITIES CONDITION CAMPUS AERIAL VIEW

Building Identification	Building Name	Year Constructed	Existing Area (GSF)	Facility Condition
A	Mansion	1917	1,772	Good
B	Young Hall	1959	1,051	Very Poor/ Remove
C	Taylor Hall	1958	13,460	Fair
D	Greenlaw Hall	1959/ 1996	21,540	Good
E	Inman Garage	1961	4,800	Fair
F	Removed		0	n/a
G	Carter Hall	1957	17,600	Poor
H	Brewster Hall	2004	9,000	Very Good
I	Patrick Hall	1958	1,800	Good
J	Draper Hall	1958	12,370	Good
K	Sanders Hall	1959	34,800	Fair
	Gatehouse	1990	n/a	Good

GREENLAW: CENTRAL STAIR

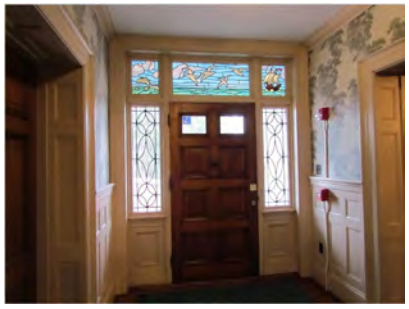
SANDERS: MAIN LOBBY

YOUNG: TOILET ROOM

HISTORIC FACILITIES INVENTORY

Kleinfelder performed building character assessments of the existing structures on Mackworth Island that were constructed over 45 years ago. The Baxter Mansion is listed in the National Register of Historic Places and eight other buildings were identified as part of the Baxter School for the Deaf Historic District. The purpose of the survey was to identify and document all resources 45 years old or older within the study area and evaluate eligibility for listing in the National Register of Historic Places.

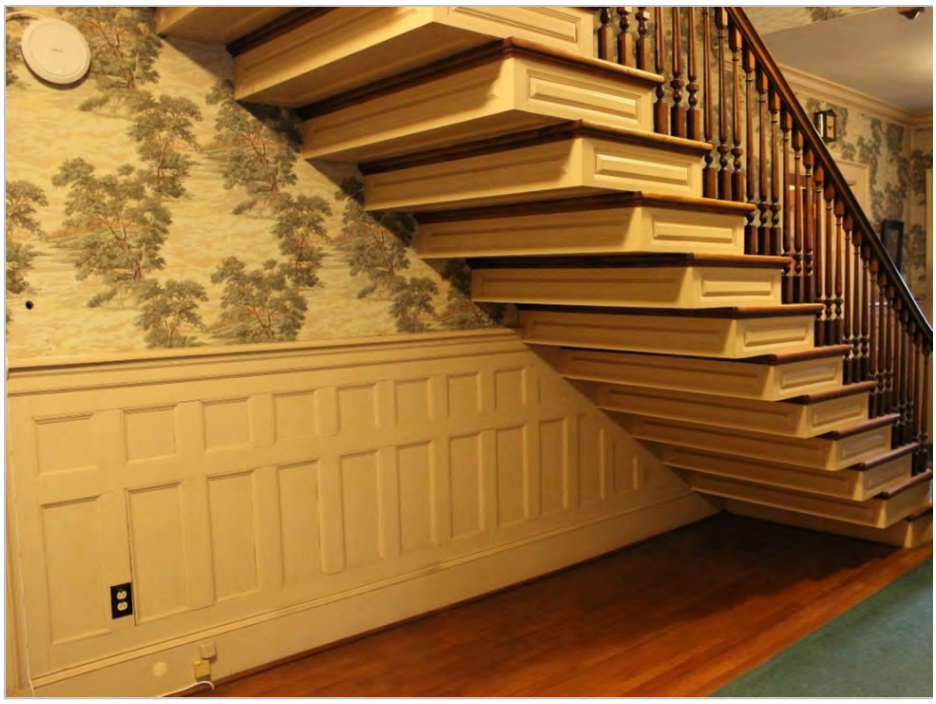
Buildings that are identified for removal can undergo a digital building recordation that includes digital photography, archival research, and a narrative report to document the building's characteristics. The recordation process should be included as a project requirement and completed ahead of planned building removal. The complete Architectural Survey Report is located in Appendix A.



MANSION: FRONT DOOR

MANSION: EXTERIOR

MANSION: EXTERIOR



MANSION STAIRCASE

CAUSEWAY

CAUSEWAY

CAUSEWAY OVERTOPPING DURING
DECEMBER 23, 2022 STORM

CAUSEWAY AND PIER CONDITION AND RESILIENCY ASSESSMENTS

GEI Marine Engineering performed general assessments of the causeway, causeway bridge, stone pier, and the stability of the Coastal Slopes. Summary findings are listed below. GEI provided a supplementary review of the causeway, bridge, and pier following the December 23, 2022 storm. Immediate repair work is needed and significant raising (or replacement) of the causeway and bridge is recommended within the next 10-20 years to maintain safe access to and from Mackworth Island. Complete observations and recommendations are located in the full report in Appendix A. A separate report, specific to damage incurred by the December 23 storm, will be issued independent of this Master Plan.

EMBANKMENT DETAIL

The causeway, a stone armored filled construction, has immediate, short-term and long-term improvement needs. It is low and overtopped by wave action during significant storm events. It is reported that the low portions of the causeway are overtopped by seawater more than once per year. Each overtopping event undermines the integrity of the causeway by pulling fine material from the composition and leaving gaps which accelerates settling. Immediate concerns include utility pole damage, and transverse steel beam play at one of the bridge support locations. Short-term needs include repair and stabilization of the two locations where the marine mattresses have failed, and settlement of the causeway has occurred. Long-term needs include reducing vulnerability from sea level rise and storm surge. This may be achieved by rebuilding the causeway at a higher elevation, partial replacement of the causeway, or complete replacement with a bridge. Recommended modifications include raising the causeway between 6 feet and 10 feet above its current road height to meet the Maine Climate Council's (MCC) 'Commit to Manage' (C2M) and/or the more conservative 'Prepare to Manage' (P2M) design criteria. Depending on the forecast, the causeway and bridge will be underwater throughout the year within 27 or 47 years.

BRIDGE

The bridge, overseen by Maine Department of Transportation (MDOT), was rehabilitated in 2011 by adding structural steel above and below the existing timber structure. It is posted with a weight limit of 22 tons. Aside from creating limitations of island access by large, heavy vehicles, the bridge is in good working condition. GEI recommends an investigation to determine whether it is cost-effective in the short-term to increase the load capacity of the bridge to fully accommodate construction traffic associated with campus improvements. In the long term, a new raised bridge will be needed to accommodate sea level rise (see MCC projections above).

STONE PIER

The Stone Pier, a historic component of the original Baxter property, is in relatively good condition but lacks deep-water access. An extension to deep-water is needed to provide an effective boat landing and might be accommodated with the addition of a ramp and float for seasonal

COASTAL BLUFFS CONDITION

BLUFF EROSION AND LEDGE ARMOR

STATE PARK LOT

GATEHOUSE AND STATE PARK STAFF LOT

PARKING BEHIND K AND C BUILDINGS

access and/or a fixed pier for year-round access. Such alterations are not recommended since no specific need was identified to support it. No use beyond pedestrian recreation has been presented as a viable use for the pier in its current condition during the Master Planning process.

A review of the coastal embankments identified a history of embankment armoring at several areas of active erosion that should be monitored. Imported rip rap armoring supplements areas of natural armoring such as ledge. The most cost-effective long-term resiliency response will be to introduce a program of regrading, replanting and relocating trails and overlooks to increase the setback to the top of bank.

BGS procured a detailed topographical survey of Mackworth Island to be utilized for future projects such as trail stabilization and relocation. The survey, containing both topographical and aerial imagery, is included in Appendix A.

TRAFFIC AND PARKING ASSESSMENT

VHB provided traffic and transportation planning support to Harriman for the Mackworth Island study. An existing conditions analysis included the existing traffic entering the island, parking spaces, and parking demand. VHB performed two onsite observational analyses and one traffic count analysis to gather information on the traffic and parking conditions at Mackworth Island. The assessment began with an initial onsite observation by VHB staff on March 31, 2022. Observations focused on addressing the limited parking at the Mackworth Island State Park and the amount of traffic generated along Andrews Avenue to access the Island causeway. Results did not align with stakeholder comments so a follow up onsite observation was scheduled for a fair-weather weekend day after Memorial Day. This observation occurred on June 5, 2022. After receiving additional public input about perceived traffic volume and parking issues, the assessment team contracted a follow up to record vehicle counts on August 8 and 9, 2022. The last data set provides a detailed accounting of traffic at Andrews Avenue, State Park traffic, and School campus traffic. Detailed analysis information is included in Section 2, page 2-23 and the complete Parking and Traffic Assessment is included in Appendix A.

With input from stakeholders and the public, VHB reported findings and provided recommendations. Summary conclusions from the analysis are listed below.

- The school campus appears to have adequate parking, even if it is not convenient to all buildings.
- Traffic to the island does not appear to be consistently as heavy as

was conveyed anecdotally during the planning process. Findings from the analysis indicated that the existing traffic delay on to the island from Andrews Avenue was acceptable.

- To align with the Maine Bureau of Parks and Lands policy to limit additional impacts to the State Park and not overburden the island's carrying capacity, additional parking is not being recommended for Mackworth Island State Park. The approach of limiting human traffic to prevent detrimental impacts to island wildlife has been a consistent policy for decades, as documented in the Mackworth Island Management Plan dated March 11, 1991.
- In response to public and Committee input, Parks and Lands is installing a web-camera facing the main parking lot. The real-time status of parking availability can be viewed on-line by potential visitors.

SPACE PROGRAM

Space utilization of the facilities on Mackworth Island was a primary area of focus of this study. The majority of the buildings were constructed to support the Governor Baxter School for the Deaf/ The Maine Educational Center for the Deaf and Hard of Hearing. Exceptions to this are the original Baxter Summer Home that now houses the school's administrative functions (Building A), and the entrance gate house. The nature of the school's programs has changed significantly from when the buildings were designed and constructed. The result is a reduction in the amount of needed space to accommodate the school's operations. Several buildings are vacant or have low utilization. The low utilization has allowed non-school functions to lease space. These currently include Disability Rights Maine, and the State of Maine Office of Information Technology. Additionally, the Deaf Community has established a museum currently in Sanders Hall that highlights the history of the school and the island. This study examines utilization in terms of whether a space is used and the frequency of its use.

SPACE UTILIZATION OF EXISTING CAMPUS BUILDINGS:

(Current utilized square footage divided by net square footage per building)

CAMPUS UTILIZATION DIAGRAM

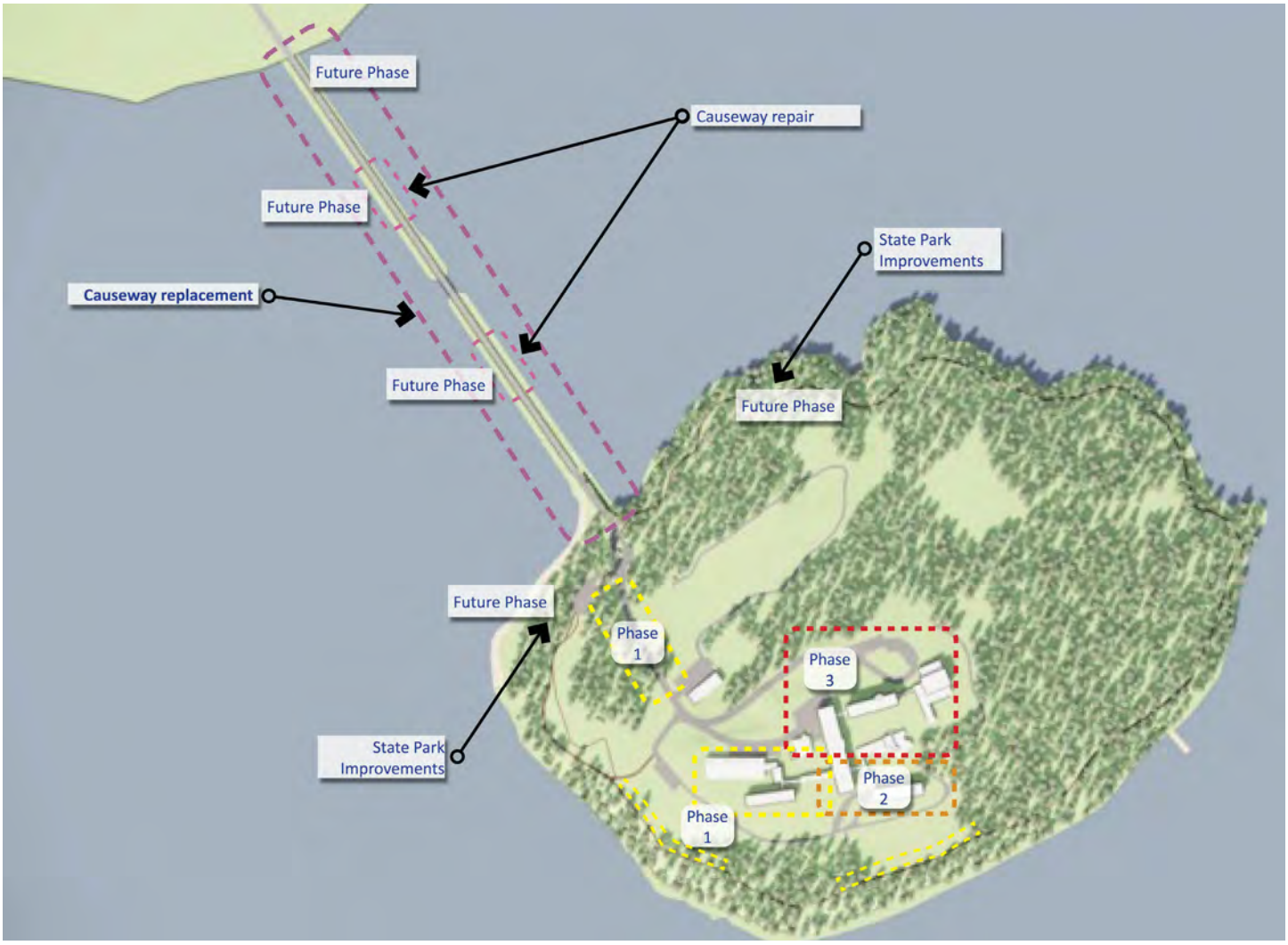
MASTER PLANNING

PLANNING RECOMMENDATIONS

In collaboration with the Master Plan Steering Committee, the Consultant Team developed a series of recommendations to be implemented over the next 10 years. Recommendations are intended to address the goals, issues, considerations, and drivers developed during the planning process. Additionally, the history of Mackworth Island, its unique position within the context of greater Portland and Casco Bay, and the varied agencies providing oversight over the island are reflected in the master plan.

Planning recommendations are focused on improving the facility condition of the MECDHH/GBSD campus. They are broken into three phases and summarized below. Phase 1 focuses on building removals and wayfinding improvements. Phase 2 focuses on reorganizing and optimizing existing program spaces in preparation for future building removals.

Other initiatives such as State Park improvements and Causeway and Bridge improvements are identified as future phases and are addressed in the report Appendices.



PLANNING RECOMMENDATIONS PHASING DIAGRAM

PHASE 1

Phase 1 accomplishes the removal of unused and potentially hazardous buildings and opens views to the Mansion. Site improvements assist in wayfinding and navigation as well as celebrating the campus as the home for the Deaf Community.

The removal of empty buildings and associated connectors. The addition of site elements including new campus gateway entrance, screening vegetation, and reduction of mowed area at State Park trail to create a better-defined buffer at the campus edge.

PHASE 1: KEY PLAN

DEMOLITION

- Relocate campus utilities
- Remove Building B
- Remove Building G
- Remove Associated Connectors

IMPROVEMENTS

- Relocate campus utilities including IT
- New Campus Entry Gate & Signage
- New Tree Screening at Building E/ Service Area
- Trail Buffer -“No Mow” Zone

PHASE 1: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

PHASE 1 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building A	**Mansion**	7,988	$ 500,000		Front Door & Porch renovation allowance
Building B	**Young**	15,580	$ 1,092,616	N/A	Building demolition: Includes abatement allowance, building removal, and associated site work
Building C	**Taylor**		$ -		No work, Phase 1
Building D	**Greenlaw**		$ -	$ 300,000	Cap primary electric at B & rerun Fiber from G to D: allowance
Building E	**Inman Garage**		$ -		No work, Phase 1
Building G	**Carter**	17,600	$ 1,283,520	N/A	Building demolition: Includes abatement allowance, building removal, and associated site work
Building H	**Brewster**		$ -		No work, Phase 1
Building I	**Patrick**		$ -		No work, Phase 1
Building J	**Draper**		$ -		No work, Phase 1
Building K	**Sanders**		$ -	N/A	No work, Phase 1
Connector	**G-K**	2,550	$ 204,260	N/A	Building demolition: Includes abatement allowance, building removal, and associated site work
Connector	**C-H-K**		$ -	N/A	No work, Phase 1
Connector	**D-K**		$ -	N/A	No work, Phase 1
Sitework: New campus gateway			$ -	$ 165,000	Gate, pillars, signage, lighting
Sitework: screening at Building E			$ -	$ 55,000	Screening trees
Sitework: no mowing 50' from trail at campus edge			$ -	$ -	Reduce landscape maintenance near trail
CONSTRUCTION TOTAL: BY CATEGORY		43,718	$ 3,080,396	$ 520,000	12% cost escalation included for a April 2024 construction start. Costs assume load limit cost increases for building demolition. Soft costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 4,004,515	$ 676,000	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 1		$		4,680,515	

PHASE 1 ENERGY SAVINGS

Building Letter / Name - Left Over Area		Building Area		Oil Consumption (Approximation by Building)	Annual Heating Cost	Annual Electrical Cost	Annual Total Utility Cost
		Square Feet		Gallons	Assumes $2.50/Gallon	$0.118161/kWh	
B	Young	15,580				$ 4,578.40	**$ 4,578.40**
G	Carter	17,600		9,394	$ 23,485	$ 5,172.00	**$ 28,657.00**
G-K	Connector	2,500			$ -	$ 734.66	$ 734.66
	Total Values per Category	142,402	SF	50,723	$ 126,807.50	$ 41,846.77	$ 168,654.27
	Removing B, C, G, & Connectors			Cost Savings	$ 40,945.00	$ 14,940.03	$ 55,885.03
	Removing K			Cost Savings	$ 39,103	$ 10,226.45	$ 49,328.95

PHASE 2

Phase 2 accomplishes the removal of underutilized buildings and improves utilization for existing facility spaces.

Underutilized buildings H and K will be reorganized with minimal renovation expense to allow building C to be vacated.

The removal of building C and associated connector. Renovation of the gym (building J) for improved use for assembly events.

PHASE 2 KEY PLAN

DEMOLITION

- Remove Building C
- Remove Associated Connectors

IMPROVEMENTS

- Renovate Building J gymnasium and associated support spaces
- Consolidate Building H
- Consolidate Building C lease space into Building K
- Additional plantings and site improvements along campus and trial edges

PHASE 2: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

PHASE 2 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building A	Mansion		$ -		No work, Phase 2
Building C	Taylor	13,460	$ 723,420		Demolish building
Building D	Greenlaw	4,301	$ 387,072		Minor renovation as required
Building E	Inman Garage		$ -		No work, Phase 2
Building H	Brewster	1,800	$ 162,000		Minor renovation as required
Building I	Patrick	950	$ 85,500		Minor renovation as required
Building J	Draper	6,000	$ 648,000		Renovate Gym, annex, and limited plumbing upgrades
Building K	Sanders	2,000	$ 180,000		Minor renovation for swing space
Connector	C-H-K	1,360	$ 165,900		Demolish leg from H to C (75% of total cost)
Connector	D-K		$ -		No work, Phase 2
Sitework: New campus gateway			$ -		Complete
Sitework: screening at Building E			$ -		Complete
Sitework: Revised parking loop at J			$ -		No work, Phase 2
Sitework: no mow grass at campus edge			$ -		Complete
Sitework: Allowance for planting and hardscape improvements			$ -		No work, Phase 2
CONSTRUCTION TOTAL: BY CATEGORY		29,871	$ 2,351,892	$ -	20% cost escalation included for a April 2025 construction start. Costs assume load limit cost increases for building demolition. Soft costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 3,057,460	$ -	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 2		$		3,057,460	

PHASE 2 ENERGY SAVINGS

Building Letter / Name - Left Over Area		Building Area		Oil Consumption (Approximation by Building)	Annual Heating Cost	Annual Electrical Cost	Annual Total Utility Cost
		Square Feet		Gallons	Assumes $2.50/Gallon	$0.118161/kWh	
C	Taylor	13,460		6,984	$ 17,460	$ 3,955.40	**$ 21,415.40**
C-H-K	Connector	1,700			$ -	$ 499.57	$ 499.57
	Total Values per Category	142,402	SF	50,723	$ 126,807.50	$ 41,846.77	$ 168,654.27
	Removing B, C, G, & Connectors			Cost Savings	$ 40,945.00	$ 14,940.03	$ 55,885.03
	Removing K			Cost Savings	$ 39,103	$ 10,226.45	$ 49,328.95

PHASE 3

Phase 3 accomplishes the final removal of outmoded buildings and completes the MECDHH vision for a right-sized campus. Site improvements assist in wayfinding and navigation as well as celebrating the campus as the home for the Deaf Community. A replacement for building K is envisioned to connect to building D and include public-facing program spaces such as meeting rooms and food preparation.

The removal of building K and associated connector. Addition of new building. The addition of site elements including new school drop-off loop entrance and additional site improvements at State Park trail to create a better-defined buffer at the campus edge.

PHASE 3: KEY PLAN

DEMOLITION

- Remove existing Building K
- Remove Associated Connectors

IMPROVEMENTS

- Improved Access Driveways and New Loop Road
- New Access Drive to Mansion
- Build new building 'K'
- New Drop-off Loop and Turnaround Building A
- Develop campus building systems to remove central heat

PHASE 3: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

PHASE 3 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building D	Greenlaw		$ -		Minor renovation as required
Building E	Inman Garage		$ -		No work, Phase 3
Building H	Brewster		$ -		No work, Phase 3
Building I	Patrick		$ -		No work, Phase 3
Building J	Draper		$ -		No work, Phase 3
Building K	Sanders		$ 1,656,200	$ 600,000	Demolish
New Building K'		15,000	$ 11,550,000		2 story new construction: 7,500 SF footprint (4-5 years escalation)
Connector	D-K		$ 82,600		Demolish
Sitework: New campus gateway			$ -	$ -	Complete
Sitework: screening at Building E			$ -	$ -	Complete
Sitework: Revised parking loop at J			$ -	$ 1,582,000	50,000SF parking & loop, 2500SF hardscape, 5,000SF sidewalks, Demo, Site lighting (4-5 years escalation)
Sitework: no mow grass at campus edge			$ -	$ -	Complete
Sitework: Allowance for planting and hardscape improvements			$ -	$ 80,000	As needed to complete unforeseen planting for screening and miscellaneous hardscaping.
CONSTRUCTION TOTAL: BY CATEGORY		15,000	$ 13,288,800	$ 2,262,000	40% cost escalation included for a April 2028 construction start. Costs assume load limit cost increases for building demolition. Soft costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 17,275,440	$ 2,940,600	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 3		$		20,216,040	

PHASE 3 ENERGY SAVINGS

Building Letter / Name - Left Over Area		Building Area		Oil Consumption (Approximation by Building)	Annual Heating Cost	Annual Electrical Cost	Annual Total Utility Cost
		Square Feet		Gallons	Assumes $2.50/Gallon	$0.118161/kWh	
K	Sanders	34,800		15,641	$ 39,103	$ 10,226.45	**$ 49,328.95**
D-K	Connector	400			$ -	$ 117.55	$ 117.55
	Total Values per Category	142,402	SF	50,723	$ 126,807.50	$ 41,846.77	$ 168,654.27
	Removing B, C, G, & Connectors			Cost Savings	$ 40,945.00	$ 14,940.03	$ 55,885.03
	Removing K			Cost Savings	$ 39,103	$ 10,226.45	$ 49,328.95

2

EXISTING CONDITIONS

INTRODUCTION

The existing conditions assessment scope of the Master Plan included review of the following site and facility elements.

Facility conditions such as central plant, electrical, mechanical, plumbing, structural, architectural , and historic character. The Facility Condition Report by Harriman is located in Appendix A1.

Site conditions, utility infrastructure, traffic and parking, marine-related elements such as Causeway, Causeway Bridge, Stone Pier, and coastal embankment condition.

GATEHOUSE & MAIN ACCESS DRIVE TO CAMPUS

FACILITY ASSESSMENTS

BUILDING NAME

Mansion: Building A

Young Hall: Building B

Taylor Hall: Building C

Greenlaw Hall: Building D

Inman Garage: Building E

Carter Hall: Building G

Brewster Hall: Building H

Patrick Hall: Building I

Draper Hall: Building J

Sanders Hall: Building K

Gatehouse

ACCESS & PARKING FOR ADMINISTRATION

WATER TOWER

METHODOLOGY

Facility assessments are broken into 38 categories. Condition ranking for each category allows for easy identification of facility components or systems that are in poor condition or in need of replacement. Categories that are not present are marked by a n/a designation. Overall rankings are defined numerically and qualitatively as: Very Good, Good, Fair, Poor, and Very Poor. 0 represents the worst condition and 5 represents the best. Assessment findings are used to inform planning and phasing recommendations.

GYM INTERIOR: BUILDING J

MANSION: BUILDING A

Year Constructed	**1917**
Use	**Office**
Building GSF	**7,988 GSF**
Number of Floors	**2 + Attic & Basement**
Construction type	**Masonry & Wood (Porch floor is Concrete & Steel)**
Average rating (scale of 0-5)	**3.5**
Overall Condition Rating	**Good**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	2	2	1	2	2	3	5	5	0	0	3	4	3	3	4	4	4	3	53.0	2.79

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Wood Trusses	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
3	4	n/a	1	1	n/a	n/a	3	n/a	2	2	2	n/a	n/a	1	3	3	n/a	n/a	78.0	**3.00**

YOUNG HALL: BUILDING B

Year Constructed	**1959**
Use	**Dormitory**
Building GSF	**15,580 GSF**
Number of Floors	**2 + Partial Utility Basement**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**1.2**
Overall Condition Rating	**Very Poor (Remove)**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	1	1	2	0	1.5	3	n/a	1	1	1	0	0	1	1	1	1	1	22.5	1.25

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
2	2	1	1	n/a	n/a	n/a	0	n/a	1	1	1	2	2	1	2.5	2.5	2	2	39.0	**1.18**

TAYLOR HALL: BUILDING C

Year Constructed	**1958**
Use	**Office & Dormitory**
Building GSF	**13,460 GSF**
Number of Floors	**2**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**2.2**
Overall Condition Rating	**Fair**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	1	1	2	0	5	3	4	2	3	3.5	3	2.5	3	3	1	2	3	45.0	2.50

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
n/a	3	3	2	n/a	n/a	n/a	2	n/a	2	2	2	3	3	1	3	3	2.5	2	75.5	**2.22**

GREENLAW: BUILDING D

Year Constructed	**1959/ Renovated 1996**
Use	**Classroom & Office**
Building GSF	**21,504 GSF**
Number of Floors	**3**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**3.4**
Overall Condition Rating	**Good**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
4	4	3	4	4	3	5	4	3	4	4	3.5	3	2.5	3	3	1	2	3	63.0	3.32

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
4	4	4	4	n/a	n/a	n/a	4	n/a	3	n/a	2	3	3	n/a	4	3	3	4	108.0	**3.38**

INMAN GARAGE: BUILDING E

Year Constructed	**1961**
Use	**Maintenance Garage**
Building GSF	**4,800 GSF**
Number of Floors	**1**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**2.1**
Overall Condition Rating	**Fair**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	n/a	1	3	n/a	3	n/a	n/a	1	3	3	n/a	2	2	n/a	n/a	2	2	28.0	2.33

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
4	2	4	3	n/a	n/a	n/a	4	n/a	1	2	2	3	3	1	3	2	2	n/a	55.0	**2.12**

CARTER: BUILDING G

Year Constructed	**1957**
Use	**Classroom, office, and Gym**
Building GSF	**17,600 GSF**
Number of Floors	**1**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**1.84**
Overall Condition Rating	**Poor**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	1	1	2	1	2	4	n/a	2	2	2	2	2	2	2	1	2	2	33.0	1.83

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
3	2	1	1	n/a	n/a	n/a	3	n/a	1	n/a	2	3	3	1	2	2	2	n/a	57.0	**1.84**

BREWSTER: BUILDING H

Year Constructed	**2004**
Use	**Classroom, Library, Office**
Building GSF	**9,000 GSF**
Number of Floors	**1**
Construction type	**Steel Frame**
Average rating (scale of 0-5)	**3.9**
Overall Condition Rating	**Very Good**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
4	4	3	4	4	4	3	4	4	4	4	4.5	4.5	4.5	4.5	4.5	4.5	4	4.5	73.5	3.87

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
4	4	4	4	4	n/a	n/a	4	n/a	4	4	4	4	4	n/a	5	4	4	4	134.5	**3.96**

PATRICK HALL: BUILDING I

Year Constructed	**1958**
Use	**Classroom & Office**
Building GSF	**1,900 GSF**
Number of Floors	**1**
Construction type	**Masonry & Wood**
Average rating (scale of 0-5)	**2.69**
Overall Condition Rating	**Fair**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	3	3	3	3	3	3	n/a	n/a	n/a	3	3	2.5	2.5	3	3	3	3	44.0	2.75

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
n/a	n/a	n/a	2	n/a	n/a	n/a	3	n/a	n/a	n/a	2	3	3	n/a	n/a	2	2	2	63.0	**2.63**

DRAPER HALL: BUILDING J

Year Constructed	**1958**
Use	**Office & Gym/Assembly**
Building GSF	**12.370 GSF**
Number of Floors	**1**
Construction type	**Masonry & Wood**
Average rating (scale of 0-5)	**2.4**
Overall Condition Rating	**Fair**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	3	3	3	3	3	3	n/a	3	n/a	3.5	3	3	3	3	2	3	2	49.5	2.91

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel/Gluelams	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
n/a	n/a	n/a	2	n/a	n/a	n/a	2	n/a	1	n/a	2	3	4	1	3	3	3	3	73.5	**2.63**

SANDERS HALL: BUILDING K

Year Constructed	**1959**
Use	**Kitchen, Dining, Museum**
Building GSF	**34,800 GSF**
Number of Floors	**2**
Construction type	**Masonry & Steel**
Average rating (scale of 0-5)	**2.31**
Overall Condition Rating	**Fair**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	3	3	1	2	2	2.5	4	n/a	2	2	2	3	2	2	2	1	2	3	41.5	2.31

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Observable Steel	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
3	2	2	1	n/a	4	2	3	n/a	1	2	2	3	3	1	3	3	2.5	2	81.0	**2.31**

GATEHOUSE

Year Constructed	**1973**
Use	**Office**
Building GSF	**160 GSF**
Number of Floors	**1**
Construction type	**Masonry & Wood**
Average rating (scale of 0-5)	**2.1**
Overall Condition Rating	**Good**

Building Exterior							Life Safety				Interior								19 Total Review Categories	
Exposed Foundation	Brick / Masonry	Siding / Cladding	Windows	Doors	Canopies / Overhangs	Roof / Flashing	Fire Alarm / Strobes	CO / Smoke Detector	Life Safety: Exit Signs	Life Safety: Emergency Lighting	Condition of Walls	Base	Flooring	Ceiling	Stairs	Handrails	Doors	Glazing	Total Score	Building Average Rating
3	n/a	4	4	4	2	2					3	2	1.5	3	n/a	n/a	3	n/a	31.5	2.86

Electrical			Lighting		Mechanical				Plumbing						Structure				38 Total Review Categories	
Service Entrance	Panel / Distribution	Emergency Power	Lighting	Lighting Controls	Boiler	Fuel	HVAC	Specialty Areas	Toilet Rooms	Kitchen	Domestic Water	Sprinkler Riser	Sprinkler Distribution	Showers	Wood Trusses	Observable Masonry	Headers / Lintels	Misc Metals / Stairs	Total Score	Building Average Rating
									2	n/a	2	n/a	n/a	n/a					35.5	**2.73**

SITE CONDITIONS

The Site Analysis for Mackworth Island included an inventory of existing conditions encompassing the overall island, GBSD/ MECDHH Campus and Mackworth Island State Park. Existing site information was collected from on-site assessments, research of existing reports, documents and available mapping.

The site Inventory included the following:

- Natural features including open space, topography, drainage and climate
- Sensitive natural habitats
- Access and Circulation – drives, procession and sense of arrival, paths and trails
- Parking, service areas and signage
- Views – from the island and to GBSD
- Landmarks
- Interface between GBSD and Mackworth Island State Park

EXISTING CONDITION SITE CONTEXT PLAN

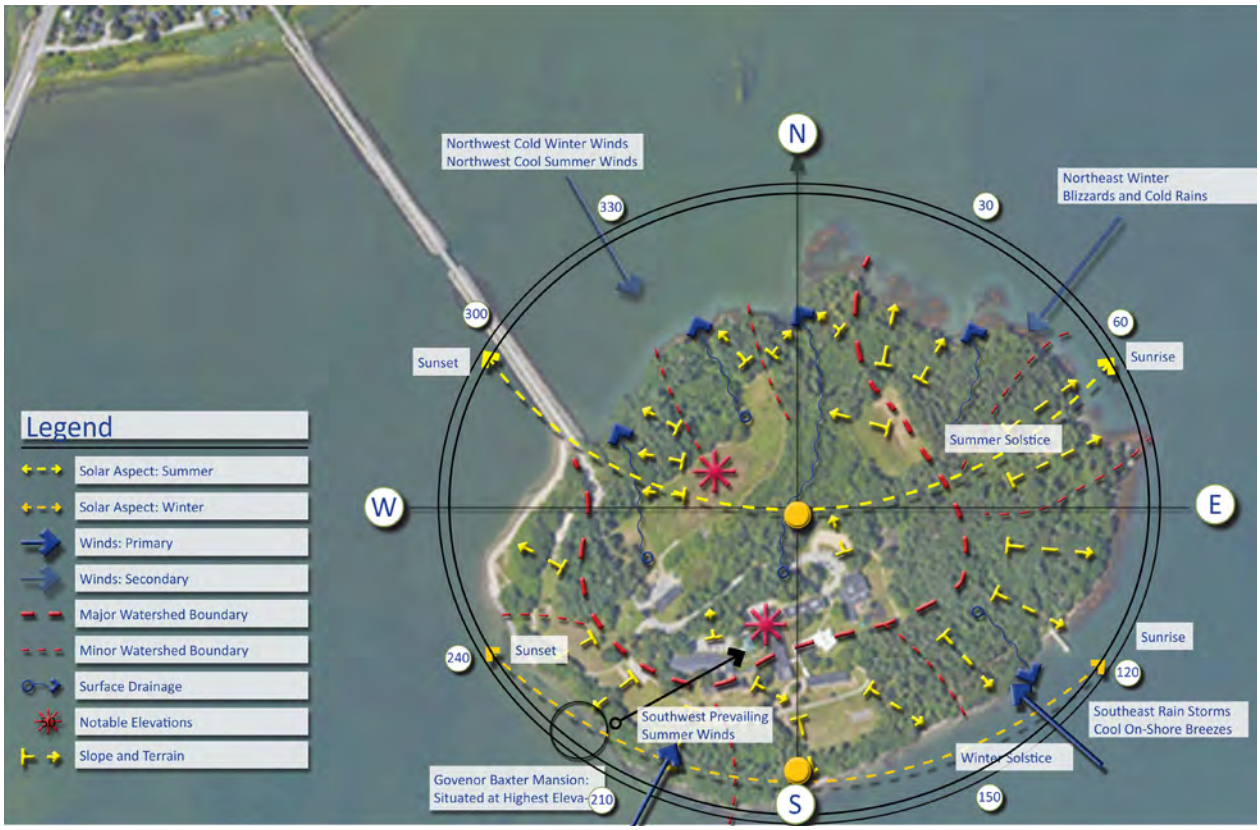
SITE CONTEXT

Mackworth Island is located in Casco Bay just north of Portland in Falmouth, Cumberland County, Maine. The 100-acre island is predominantly undeveloped. GBSD/ MECDHH occupies about 15-acres near the center of the island while Mackworth Island State Park (MISP) encompasses the remainder of the island. MISP includes a gate house, visitor and staff parking, a perimeter trail system with shore access points and all other land not part of GBSD. The Portland Water District owns a pump house and water main serving the coastal islands.

EXISTING CONDITIONS GBSD/ MECDHH CAMPUS

The GBSD/ MECDHH campus, developed around the Baxter Mansion is located on the height of land and includes the administrative, academic and support buildings; paved access drives and parking for staff and visitors, walks, open space, and recreation facilities. A detailed inventory of the existing buildings prepared by the architects and engineers is found in the Facilities Assessment reports. A detailed inventory of traffic and parking is provided in the Traffic Report.

The GBSD upper campus buildings are organized around the Baxter Mansion. The lower campus buildings are organized around internal open spaces. The open spaces include traditional, quadrangle-like spaces; passive and active recreation (playground) areas and buffers.



SITE INVENTORY CLIMATE AND RESOURCES

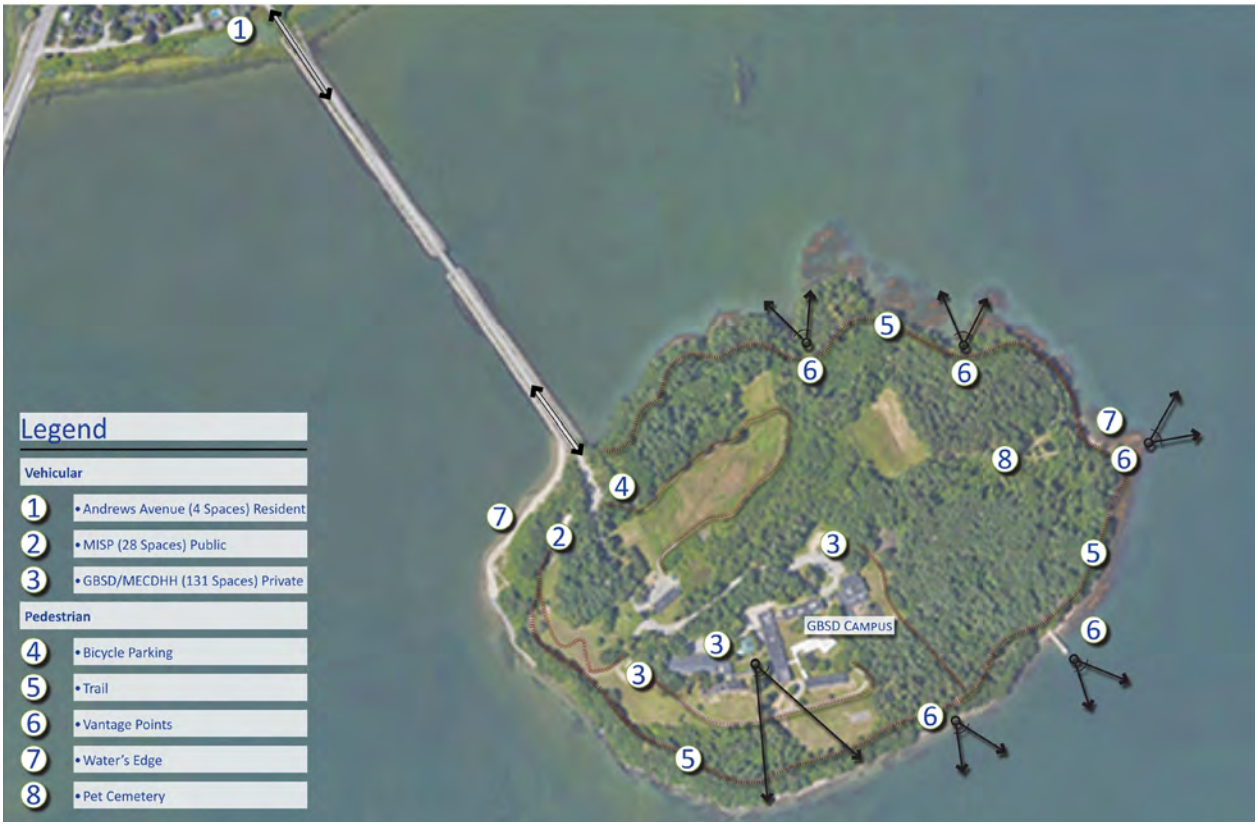
Mackworth Island is surround by the ocean waters of Casco Bay to the south, east and north and the Presumpscot River to the west which temper and affect the micro-climate of the island. The summer temperatures are moderated by cooling, on-shore breezes. The island is exposed to winter “nor’easters” or on-shore blizzards and cold, northwesterly winds. Afternoon, on-shore breezes extend cool temperatures well into the spring months. Autumn temperatures are moderated by the relatively warmer ocean temperatures.

The GBSD/ MECDHH campus is located on southerly facing slopes. The Baxter Mansion (Administration Building) facade is oriented due south along with many of the other campus buildings.

Mackworth Island is comprised of three environmental zones: the coastal zone; the embankment zone; and upland zone. The GBSD/ MECDHH campus is in the upland zone. The Mackworth Island State Park trail is located along the embankment zone.

Beyond the MISP Gatehouse, a single road serves Mackworth Island/ GBSD. The roadway diverges at the approach to GBSD. The upper driveway provides access to the Baxter Mansion and upper campus. The lower driveway provides access to the Preschool and lower campus. Access to the school property is controlled by a metal gate and signage.

The coastal island environment of Mackworth Island has been preserved



SITE INVENTORY – CIRCULATION AND ELEMENTS

in part due to historically limited access. Of note are large forested areas, open spaces, areas previously identified as special protected resources including but not limited to: prehistoric shell middens near the stone pier; civil war era stone pier; miscellaneous rare plants; the pet cemetery and trees planted by Governor Baxter.

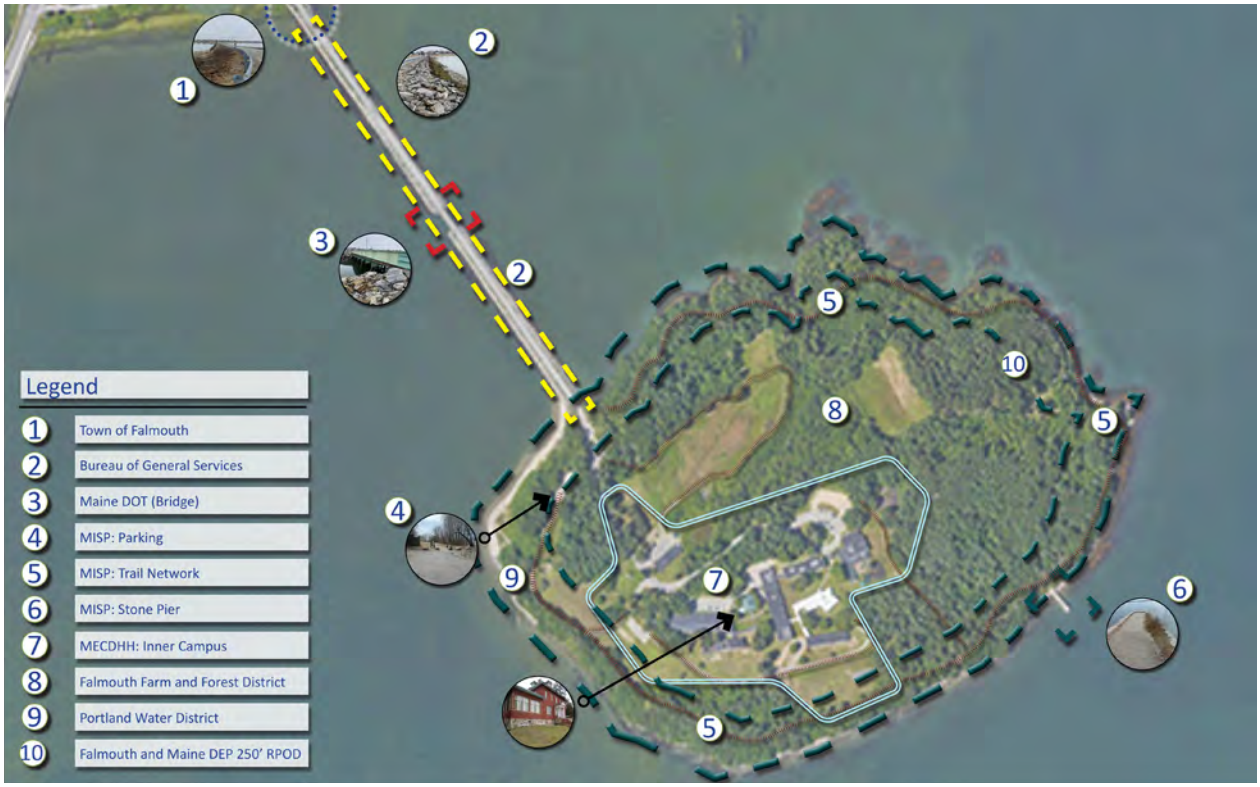
VIEWS

A photographic inventory included vantage points along the entire length of the MISP trail; at areas of special interest such as the pet cemetery, and the GBSD/MECDHH campus. Vantage points and potential vistas were noted along with any existing visual barriers such as vegetation and unneeded structures. Vistas include the Presumpscot River and Portland's Eastern Promenade to the east; Casco Bay and the islands to the south and east, and Falmouth and the "Falmouth Flats" to the north and northeast. The views of and along the trail are also intriguing as the trail winds along the shore and farther inland amid mature trees, open spaces, woody under story and past wetlands.

Landmark resources include a prehistoric Wabanaki grind stone and historic water tower (located near building 'D'); and the Baxter Mansion. The farm house was intentionally razed by fire in 2004 after the Baxter School Board voted to demolish the building due to its poor condition, cost of repairs, and dark past.

SIGNS

Sign locations and functions were inventoried. Wayfinding is an important function for visitors to Mackworth Island State Park to maintain the safety and security for GBSD/ MECDHH as well as to orient day-visitors to the park trail system and educate them about the history, environment, ecologically sensitive areas and the boundaries of the GBSD/ MECDHH.



SITE INVENTORY – JURISDICTION AND REGULATORY

LAND USE SUITABILITY ASSESSMENT

Jurisdiction Control of Mackworth Island is the responsibility of the following:

Bureau of General Services

- Buildings and Grounds GBSD/ MECDHH campus
- Causeway (exclusive of the bridge)

State Park - The Department of Agriculture, Conservation and Forestry

- State Park gatehouse, trail, shore and parking
- The entire remaining island except the GBSD/ MECDHH campus

Maine DOT

- Bridge at the Causeway

LAND USE AND ENVIRONMENTAL REGULATION

A review of regulatory and legal constraints of the buildings and site under the Town of Falmouth land use regulations included review of local ordinances and direct contact with the Community Development/ Planning Office. Mackworth Island falls under the following regulatory and management oversight:

Local: The Town of Falmouth has jurisdiction under zoning including Site Plan Review and Shoreland Zoning.

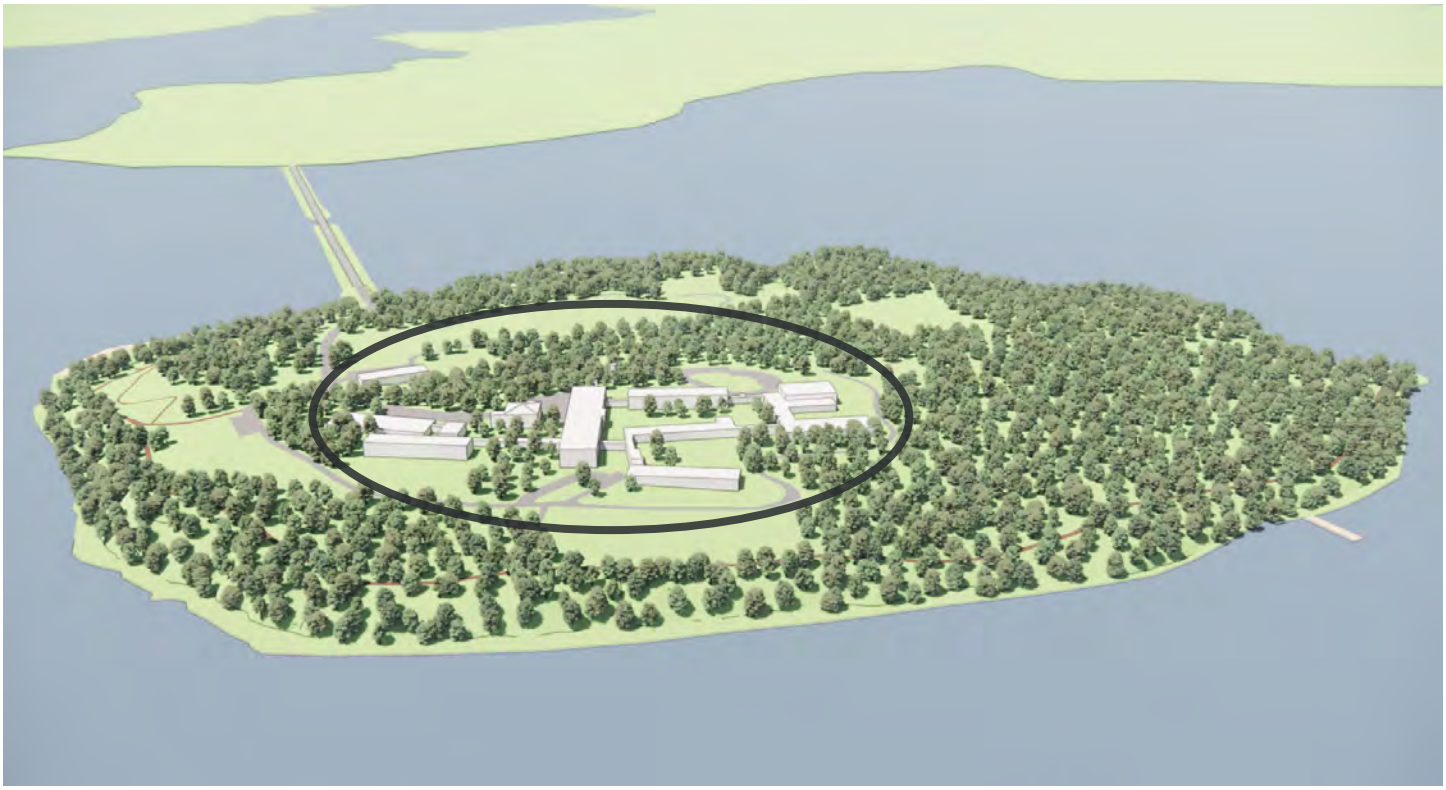
State of Maine: Maine DEP for land and shoreland related uses including environmental permitting; Maine Dept of Inland Fisheries and Wildlife; Maine DOT for the bridge spanning the causeway; The Department of Agriculture, Conservation and Forestry for the operation of the state park and overall island maintenance; Bureau of General Services for the causeway and MECDHH/ GBSD buildings and grounds.

HISTORIC CHARACTER ASSESSMENT

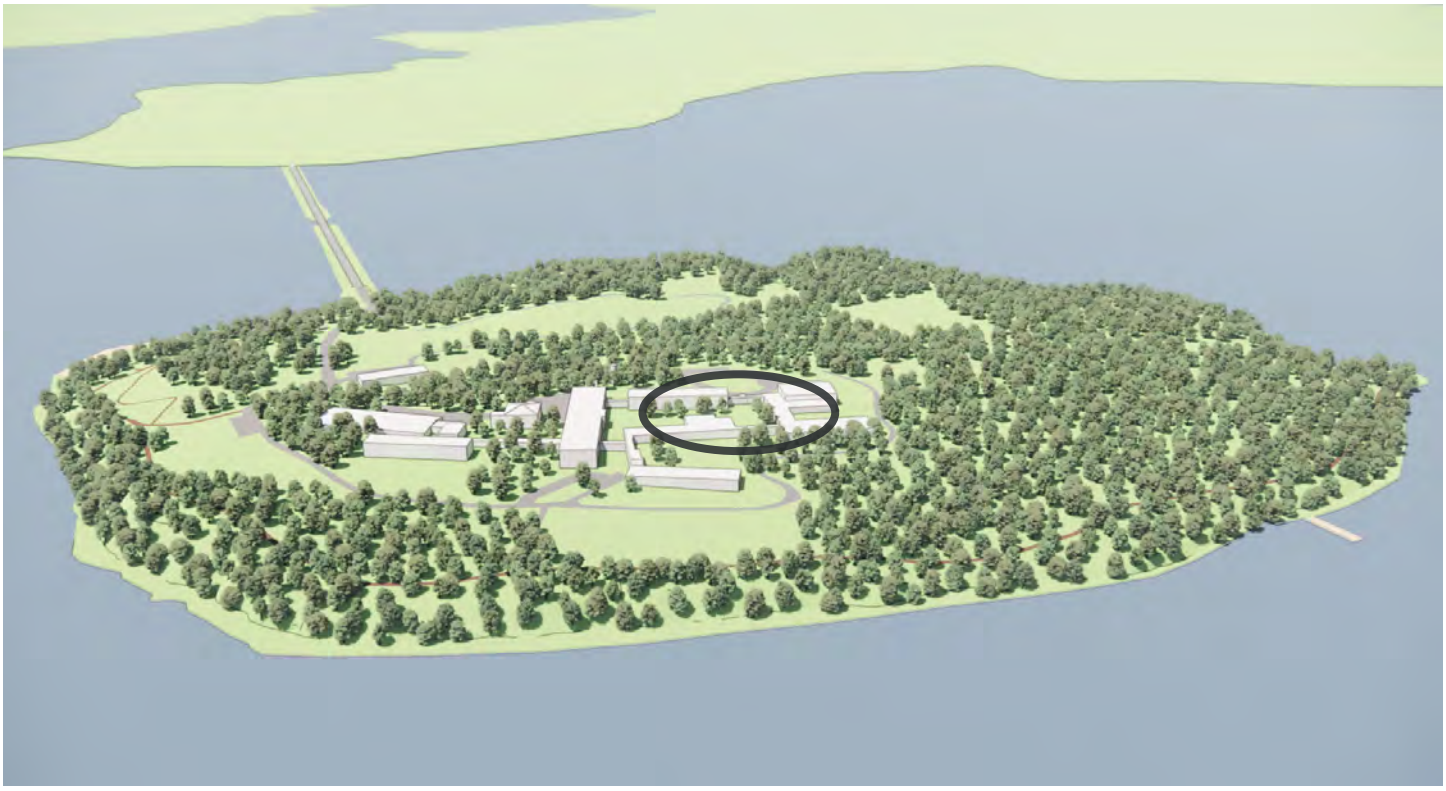
The complete Historic Assessment Report is located in Appendix A2 of this report.

The following set of images depicts development of Mackworth Island over time. The period begins in 1917 with the construction of Baxter Mansion and ends in 2004 with the construction of Brewster hall, the most recent campus building.

CONSTRUCTION OF BAXTER MANSION, 1917

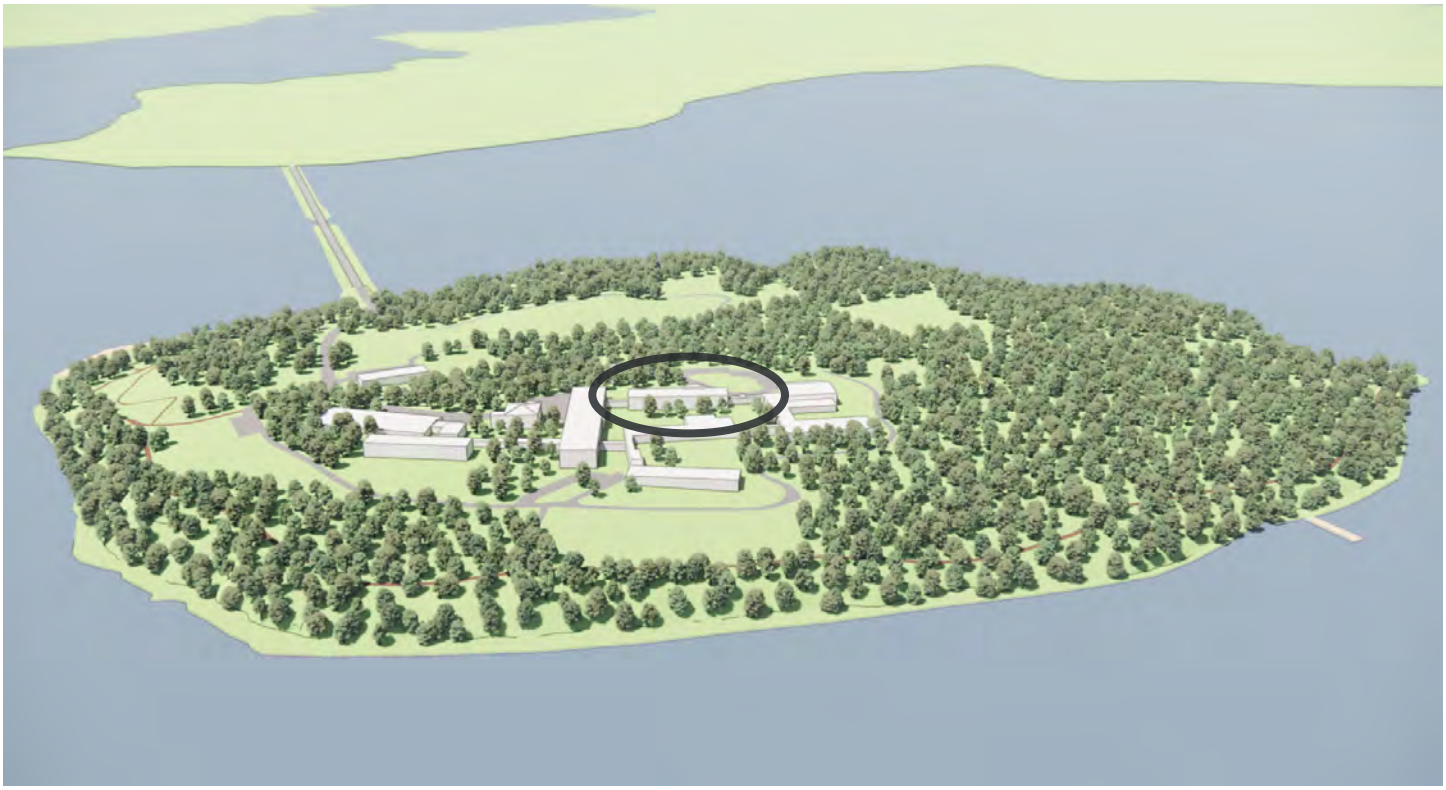


MAIN CAMPUS DEVELOPMENT, 1957-1959

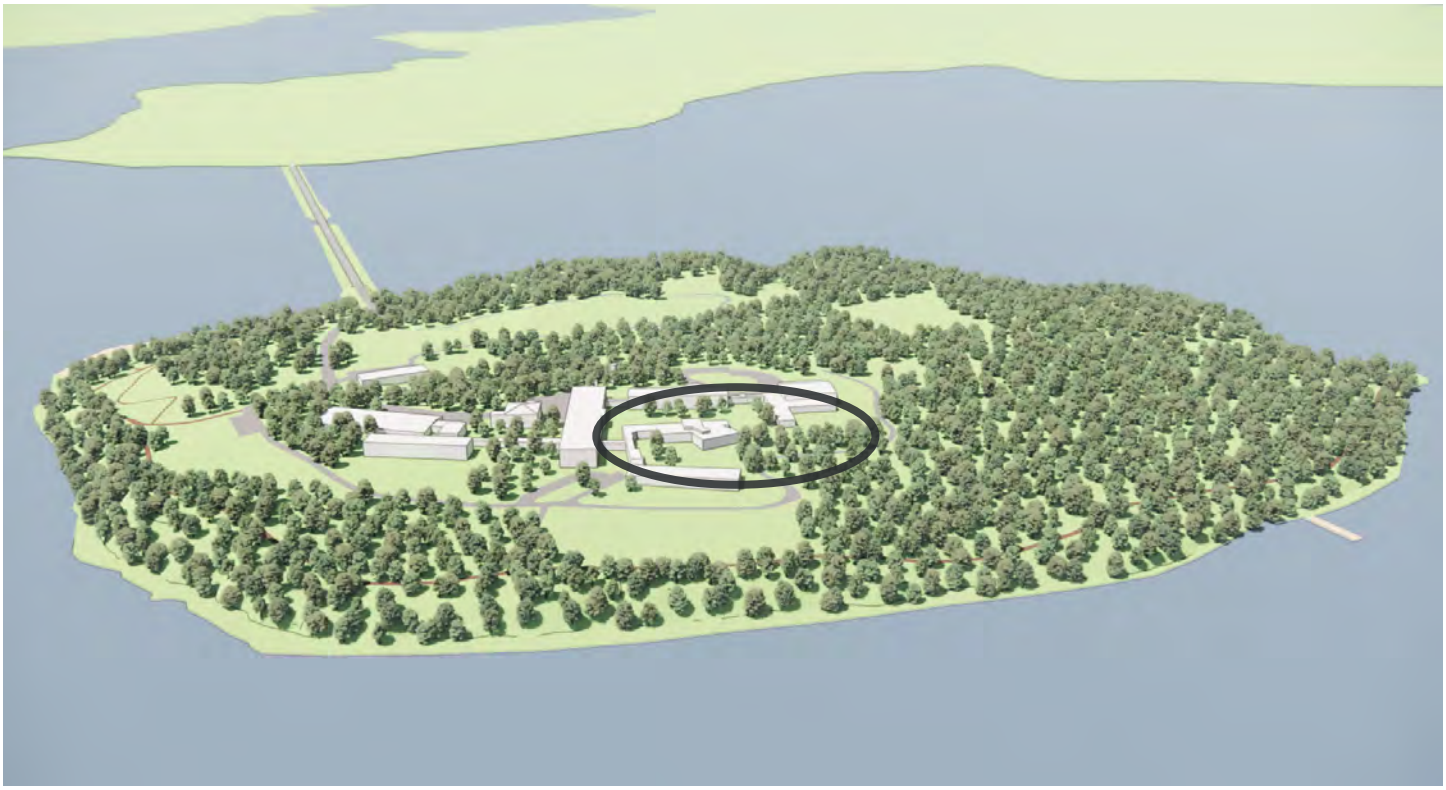


ADDITIONAL CAMPUS DEVELOPMENT, 1973

CONSTRUCTION OF STATE PARK GATEHOUSE, 1990



RENOVATION OF D BUILDING, 1996



REMOVAL OF I BUILDING AND CONSTRUCTION OF H BUILDING -2004

CAUSEWAY AND PIER ASSESSMENT

The complete Causeway, Causeway Bridge, Pier, and Embankment Assessment Report is located in Appendix A3.

VHB,PARKING AND TRAFFIC ASSESSMENT

VHB performed two onsite observational analyses and one traffic count analysis to gather information on the traffic and parking conditions at Mackworth Island. Combined with historical research and input from stakeholders and the public, VHB reported findings and provided recommendations.

VHB's assessment addressed the limited parking at the Mackworth Island State Park and the amount of traffic generated along Andrews Avenue to access the Island causeway. Initial onsite observation by VHB staff occurred on March 31, 2022. Results did not align with stakeholder comments so a follow up onsite observation was scheduled for a fair-weather weekend day after Memorial Day. This observation occurred on June 5, 2022. After receiving additional public input about perceived traffic volume and parking issues, the assessment team contracted a follow up to record vehicle counts on August 8 and 9, 2022. The last data set provides a detailed accounting of traffic at Andrews Avenue, State Park traffic, and School campus traffic.

The complete Parking and Traffic Assessment Report is located in the Appendix A4.

SUMMARY FINDINGS FROM AUGUST 8-9, 2022 ANALYSIS

August, 8-9, 2022	AM (8:15-9:15)	PM (4:15-5:15)
Andrews Avenue Traffic	30	35
Campus Traffic	16	16
Park Traffic	22	34

State Park Traffic	Total (6/5/22) (12-1PM)
12:00	17
12:15	17
12:30	16
12:45	12

State Park Traffic	Total (8/9/22) (12-1PM)
12:00	13
12:15	14
12:30	9
12:45	12

Traffic & Parking Assessment | Observations Summary - March 31

Trip Generation

TIME PERIOD	TOTAL	ANDREWS AVE.	MACKWORTH ISLAND
Daily	770	251	519
AM Peak	87	19	68
PM Peak	93	24	69

MECDHH Campus Parking

PARKING AREA	PARKING USED	TOTAL PARKING	% USED
Mansion	7	10	70%
Taylor	6	31	19%
Inman Garage	7	22	32%
Carter	2	16	10%
Draper	9	52	17%
Sanders	2	10	20%
Athletic Field	0	10	0%

Mackworth Island State Park Parking

PARKING AREA	PARKING USED	TOTAL PARKING	% USED
Main Lot	6	22	27%
Gatehouse Lot	1	6	17%

Notes:

- Route 1 & Andrews Avenue appear to have enough capacity to accommodate Mackworth Island traffic.
- Number of trips has reduced over time.
- Campus Parking capacity can accommodate typical vehicle requirements.
- School parking is restricted to MECDHH/GBSD use and exceeds current need.
- State Park parking did not reach capacity on a weekday during off-season.

Traffic & Parking Assessment | Observations Summary - June 5

Parking Data

Site Visit and traffic/parking observations 6/5/2022

Time	Main Parking Used	Main Parking Total	% Used	Gate Parking Used	Gate Parking Total	% Used	Main Turnover	% Turnover	Gate Turnover	% Turnover
11:00	23	24	96%	8	8	100%	4	17%	2	25%
11:15	23	24	96%	7	8	88%	2	8%	1	13%
11:30	23	24	96%	8	8	100%	7	29%	1	13%
11:45	22	24	92%	8	8	100%	3	13%	0	0%
12:00	23	24	96%	8	8	100%	6	25%	2	25%
12:15	23	24	96%	8	8	100%	5	21%	1	13%
12:30	23	24	96%	8	8	100%	8	33%	3	38%
12:45	22	24	92%	8	8	100%	4	17%	1	13%

Turnover every 15 Minutes

Location	Total	%
Main Lot Average Turnover per 15 Min	5	20%
Gate Lot Average Turnover per 15 Min	1	17%

Motor Vehicles

Turned Away	Total
12:00	9
12:15	11
12:30	5
12:45	7
Hour Total	32

Bicycles

Bikes Parked	Total
12:00	4
12:15	4
12:30	4
12:45	7
Average	5

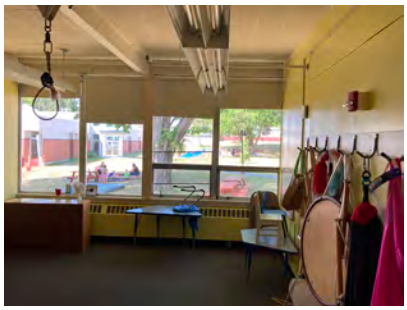
3

SPACE PROGRAM

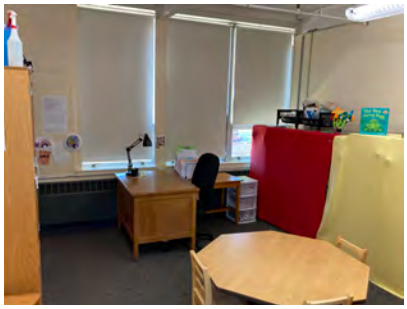
SPACE PROGRAM

INTRODUCTION

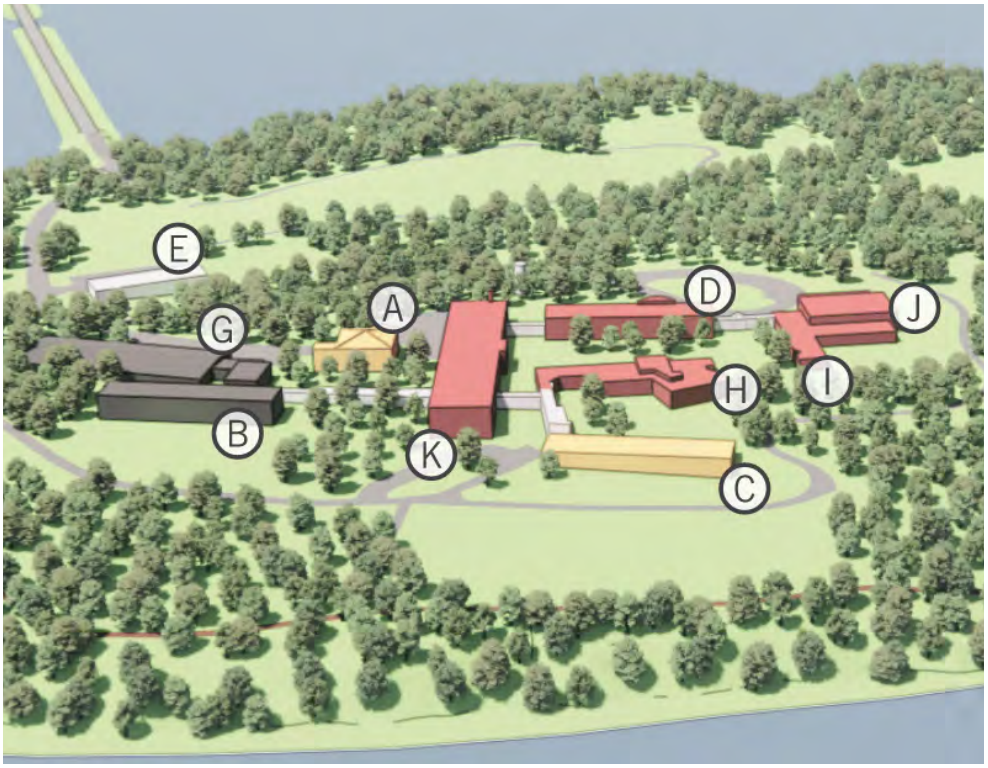
Space utilization of the facilities on Mackworth Island was a primary area of focus of this study. The majority of the buildings were constructed to support the Governor Baxter School for the Deaf/The Maine Educational Center for the Deaf and Hard of Hearing. Exceptions to this are the original Baxter Summer Home that now houses the school's administrative functions (Building A) and the entrance gate house. The nature of the school's programs has changed significantly from when the buildings were designed and constructed. The result is a reduction in the amount of needed space to accommodate the school's operations. Several buildings are vacant or have low utilization. The low utilization has allowed non-school functions to lease space. These currently include Disability Rights Maine, and the State of Maine Office of Information Technology. Additionally, the Deaf Community curates a museum currently located in Sanders Hall that highlights the history of the school and the island. This study examines utilization in terms of whether a space is used and the frequency of its use.



PT/OT CLASSROOM



CLASSROOM



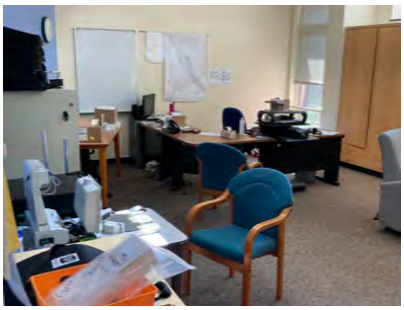
BUILDING KEY

- (A) GOVERNOR'S MANSION
- (B) YOUNG (NOT IN USE)
- (C) TAYLOR
- (D) GREENLAW
- (E) INMAN (GARAGE)
- (G) CARTER (NOT IN USE)
- (H) BREWSTER
- (I) PATRICK
- (J) DRAPER
- (K) SANDERS

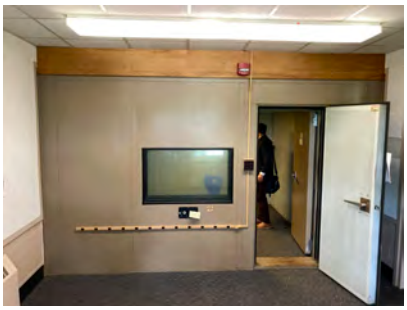
LEGEND

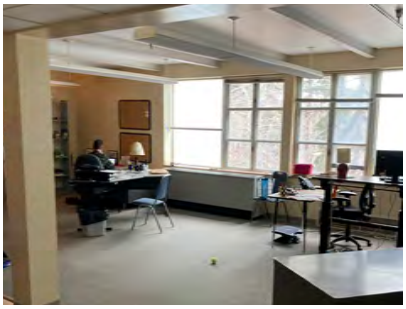
- >75% UTILIZATION
- 50-75% UTILIZATION
- <50% UTILIZATION
- 0% UTILIZATION

MECDHH SPACE PROGRAM


CLASSROOM USED AS OFFICE


CONFERENCE ROOM


AUDIOLOGY ROOM


CLASSROOM USED AS OFFICE

During the study, the consultant team met with school administration to understand its present use of the buildings, discuss space needs and how these needs are anticipated to change in the future. The resulting Space Program supported decisions about which current buildings are best suited to serve the school's needs, which were not needed, and how to accommodate future space needs.

Buildings listed below represent the total number of occupied facilities contributing to the current total MECDHH space program.

CURRENT USE

Mansion (Building A)

The school's administration occupies all floors of the Mansion. Resdential spaces have been converted into offices on the three primary levels of the building with the basement used for storage.

Greenlaw Hall (Building D)

Greenlaw Hall is a 3-story building that houses the Pre-Kindergarten Classrooms and the preschool staff offices. It has a multi-purpose room used for smaller assemblies and events. Public outreach staff occupy 2 former classrooms on the third floor.

Brewster Hall (Building H)

Brewster Hall is a single-story building originally designed as a secondary school. Its current use is largely offices in former classroom spaces and support spaces. Additional uses are evaluation, observations and audiology rooms. The library has been converted into a multipurpose space for a variety of functions.

Patrick Hall (Building I)

Only a portion of the original Patrick Hall still exists and houses approximately 8 rooms used as offices as well as the Nurse/Health room for the school.

Draper Hall (Building J)

Draper Hall is the school's gymnasium and stage and is used by the preschool and aftercare as well as for community events.

Sanders Hall (Building K)

Sanders was originally constructed as a dining facility. The school uses former bedroom spaces in the lower level for offices. There are also two internal spaces designed as exam rooms that are used for Zoom/Speech rooms. The former dining room is used for a variety of meetings and events. Another room known as the Tandberg Room is used as a large conference room.

FINDINGS AND RECOMMENDATIONS

Findings conclude that all campus buildings are underutilized. A reduction in campus square footage, renovation of some existing spaces, and replacement of incompatible program spaces with 'right-sized' new construction is recommended to reestablish a campus that meets current and future space needs. An average campus utilization of 60% - 70% is recommended to provide flexibility while maintaining a high degree of use in all campus buildings.

Current total campus building area occupied by MECDHH: 134,202 GSF

Calculated total building area needed by MECDHH: 31,650 GSF = 29% of total existing GSF.

SPACE ALLOCATION WORKBOOK

Subject	# of Rooms	@	Room Area (sf)	=	Area (sf)
Administration					
Executive Director Office (Karen Hopkins)	1	@	150	=	150
Executive Asst to Director (Suzy Sargent)	1	@	120	=	120
Director of Operations (Dean Flanigan)	1	@	150	=	150
Maintenance Supervisor (Stephen Kimball)	1	@	150	=	150
Accountant (Chris Rheault)	1	@	150	=	150
Accountant Support Tech (Kathy Lagasse)	1	@	120	=	120
Director of HR (Lori Levesque)	1	@	150	=	150
Personnel File Storage	1	@	200	=	200
Interpreter Coordinator Office	1	@	200	=	200
Rotating Zoom Space	1	@	100	=	100
Transportation Coordinator (can be shared office)	1	@	120	=	120
IT Specialist Office	2	@	120	=	240
Conference/Meeting Room	1	@	300	=	300
Kitchen/Staff Workroom	1	@	150	=	150
Storage (Bldg A Basement)	1	@	200	=	200
Sub-Total					**2,500**
Pre-Kindergarten Program					
PK Classroom (Spoken Language)	2	@	1,000	=	2,000
PK Classroom (ASL)	1	@	1,000	=	1,000
PK SPED Classroom	1	@	1,000	=	1,000
Aftercare Room	1	@	500	=	500
PK Coordinator Office	1	@	120	=	120
Site-Based Coordinator	**2**	@	120	=	240
Teachers' Office	1	@	500	=	500
Teachers Workroom	1	@	300	=	300
Curriculum Materials Storage	1	@	300	=	300
SEL/Technology/Events/Meeting Room	1	@	400	=	400
PK Library (Book Room)	1	@	200	=	200
ASL Video Room	1	@	200	=	200
ADD SPACE: Specialist Workspace	4	@	120	=	480
Sub-Total					**7,240**

Subject	# of Rooms	@	Room Area (sf)	=	Area (sf)
Statewide Education and Family Services					
Public Outreach Itinerant Staff	1	@	500	=	500
ADD SPACE: Public Outreach Itinerant Staff Coordinator	1	@	120	=	120
Statewide Education and Family Services Main Office	1	@	120	=	120
Multipurpose Room	1	@	1,500	=	1,500
Parent Resource Room	1	@	200	=	200
Teachers Room	1	@	300	=	300
Director of Statewide Education and Family Services	1	@	150	=	150
Early Education and Family Services Coordinator	1	@	120	=	120
Admin Asst to Director of Early Intervention Office	1	@	120	=	120
Early Intervention Office	3	@	150	=	450
Audiologist Office	1	@	120	=	120
Observation Room	1	@	100	=	100
Audiology Booth	1	@	100	=	100
Storage	1	@	200	=	200
Social Worker	2	@	120	=	240
OT (Bldg K)	1	@	120	=	120
Speech and OT (Bldg K)	6	@	120	=	720
IEP Office	1	@	250	=	250
OT Room (Bldg I/J)	1	@	200	=	200
Speech Room (Bldg I/J)	2	@	200	=	400
ASL Room (Bldg I/J)	1	@	200	=	200
Nurse/Health Room	1	@	250	=	250
BCBA Office	1	@		=	120
Sub-Total					**5,860**
Other/Additional Multipurpose Spaces					
Gymnasium	1	@	4,000	=	4,000
Stage	1	@	1,000	=	1,000
Dining Room	1	@		=	0
Kitchen	1	@		=	500
Sub-Total					**5,500**

TOTAL PROGRAM AND SUPPORT SPACE AREA	**21,100**
Gross Mark-up @ 1.5	**10,550**
TOTAL GROSS AREA	**31,650**

The table above identified the current space needs of the school program.

4

MASTER PLAN

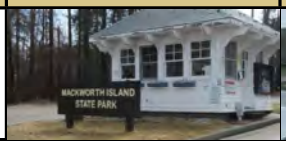
PLANNING RECOMMENDATIONS

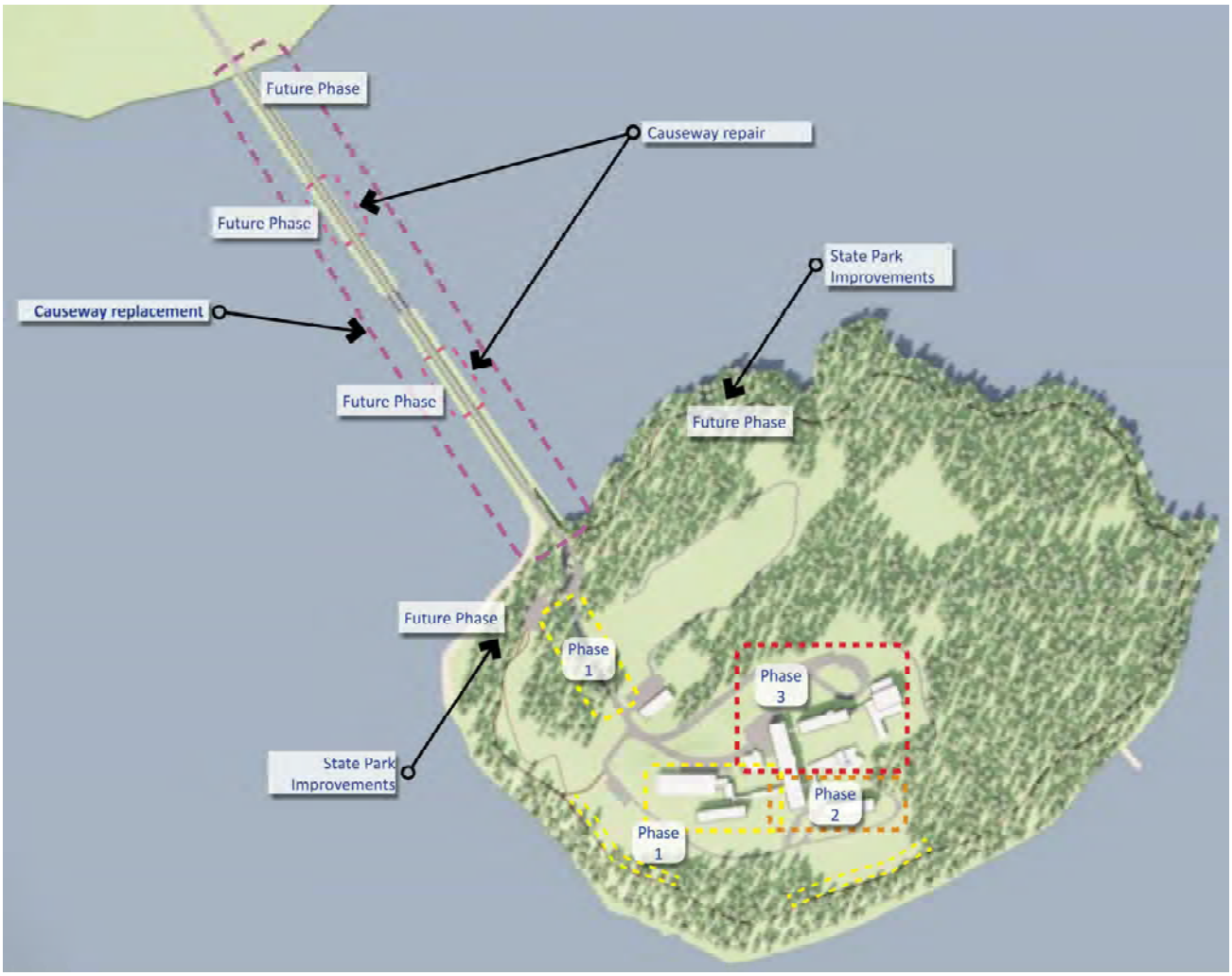
INTRODUCTION

Planning recommendations fall into three basic categories.

1. Three-phase campus reorganization and improvement initiative
2. State Park improvements
3. Causeway and Bridge improvements

MASTER PLAN PHASING MATRIX

CAMPUS REORGANIZATION PHASE 1	CAMPUS REORGANIZATION PHASE 2	CAMPUS REORGANIZATION PHASE 3	STATE PARK IMPROVEMENTS	CAUSEWAY AND BRIDGE IMPROVEMENTS
				
REMOVALS				
BUILDING B, G & ASSOCIATED CONNECTORS	BUILDING C & ASSOCIATED CONNECTORS	BUILDING K & ASSOCIATED CONNECTORS	UNKNOWN	FAILING MATERIAL AS REQUIRED
IMPROVEMENTS				
			PARKING LOT AND STATE PARK TRAIL IMPROVEMENTS	STABILIZATION AND REPAIR
PROJECT COST (BASED ON 2022 CONSTRUCTION COSTS WITH 30% SOFT COSTS INCLUDED)				
$4,680,515	$3,057,460	$20,216,040	TBD	$2,000,000 - $3,000,000
ANNUAL ENERGY SAVINGS (ESTIMATED FROM HISTORIC UTILITY BILL DATA)				
$34,000	$22,000	$49,000 ADD 'NEW BLDG K' TO CAMPUS ENERGY LOAD: TBD	N/A	N/A
TIME FRAME				
0-3 years	3-5 years	4-10 years	0-5 years	0-5 years



MASTER PLAN PHASES MAP

PHASE 1:

Removal of empty buildings and associated connectors. Addition of site elements including new campus gateway entrance, screening vegetation, and reduction of mowed area at State Park trail to create a better-defined buffer at the campus edge.

Phase 1 accomplishes the removal of unused and potentially hazardous buildings and opens views to the Mansion. Site improvements assist in wayfinding and navigation as well as celebrating the campus as the home for the Deaf Community.

PHASE 1: KEY PLAN

DEMOLITION

- Relocate campus utilities (entering Building G)
- Remove Building B (currently vacant)
- Remove Building G (currently vacant)
- Remove Associated Connectors (currently vacant)

IMPROVEMENTS

- Relocate campus utilities including IT entrance to directly connect to Building K
- New Campus Entry Gate & Signage to improve wayfinding and security
- New Tree Screening at Building E/ Service Area to better define access to school and improve campus aesthetics
- Trail Buffer -"No Mow" Zone approximately 50 feet from trail edge to reduce park visitors entering campus grounds

PHASE 1: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

PHASE 1 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building A	Mansion	7,988	$ 500,000		Front Door & Porch renovation allowa
Building B	Young	15,580	$ 1,092,616	N/A	Building demolition: Includes abatement allowance, buil removal, and associated site v
Building C	Taylor		$ -		No work, Phas
Building D	Greenlaw		$ -	$ 300,000	Cap primary electric at B & rerun Fiber from G to D: allowa
Building E	Inman Garage		$ -		No work, Phas
Building G	Carter	17,600	$ 1,283,520	N/A	Building demolition: Includes abatement allowance, buil removal, and associated site v
Building H	Brewster		$ -		No work, Phas
Building I	Patrick		$ -		No work, Phas
Building J	Draper		$ -		No work, Phas
Building K	Sanders		$ -	N/A	No work, Phas
Connector	G-K	2,550	$ 204,260	N/A	Building demolition: Includes abatement allowance, buil removal, and associated site v
Connector	C-H-K		$ -	N/A	No work, Phas
Connector	D-K		$ -	N/A	No work, Phas
Sitework: New campus gateway			$ -	$ 165,000	Gate, pillars, signage, ligl
Sitework: screening at Building E			$ -	$ 55,000	Screening t
Sitework: no mowing 50' from trail at campus edge			$ -	$ -	Reduce landscape maintenance near
CONSTRUCTION TOTAL: BY CATEGORY		43,718	$ 3,080,396	$ 520,000	12% cost escalation included for a April 2024 construction start. Costs assume load limit cost increases for building demolition. S costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 4,004,515	$ 676,000	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 1		$		4,680,515	

PHASE 2

Phase 2 accomplishes the removal of underutilized buildings that are very energy inefficient and require significant capital expenditure to renovate for future viability. Removal improves utilization for existing facility spaces. Although Building C is functional, it is reliant on the connector elements to supply heat and water. The need to remove the connectors influenced the recommendation to remove Building C.

Underutilized buildings H and K will be reorganized with minimal renovation expense to allow building C to be vacated. Building C and associated connector are to be removed. Renovation of the gym (building J) for improved use for assembly events.

PHASE 2 KEY PLAN

DEMOLITION

- Remove Building C (currently underutilized and in need of extensive exterior envelope repair)
- Remove Associated Connectors

IMPROVEMENTS

- Renovate Building J gymnasium and associated support spaces to improve utilization of existing large function space
- Consolidate Building H
- Consolidate Building C lease space into Building K
- Additional plantings and site improvements along campus and trial edges

PHASE 2: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

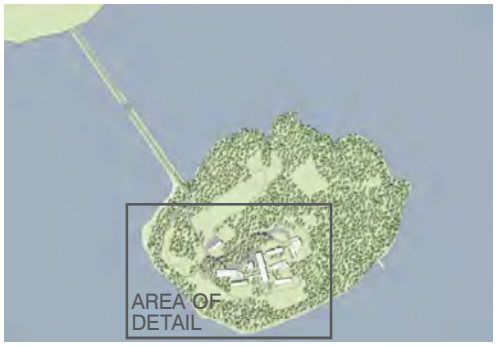
PHASE 2 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building A	Mansion		$ -		No work, Phase 2
Building C	Taylor	13,460	$ 723,420		Demolish building
Building D	Greenlaw	4,301	$ 387,072		Minor renovation as required
Building E	Inman Garage		$ -		No work, Phase 2
Building H	Brewster	1,800	$ 162,000		Minor renovation as required
Building I	Patrick	950	$ 85,500		Minor renovation as required
Building J	Draper	6,000	$ 648,000		Renovate Gym, annex, and limited plumbing upgrades
Building K	Sanders	2,000	$ 180,000		Minor renovation for swing space
Connector	C-H-K	1,360	$ 165,900		Demolish leg from H to C (75% of total cost)
Connector	D-K		$ -		No work, Phase 2
Sitework: New campus gateway			$ -		Complete
Sitework: screening at Building E			$ -		Complete
Sitework: Revised parking loop at J			$ -		No work, Phase 2
Sitework: no mow grass at campus edge			$ -		Complete
Sitework: Allowance for planting and hardscape improvements			$ -		No work, Phase 2
CONSTRUCTION TOTAL: BY CATEGORY		29,871	$ 2,351,892	$ -	20% cost escalation included for a April 2025 construction start. Costs assume load limit cost increases for building demolition. Soft costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 3,057,460	$ -	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 2		$		3,057,460	

PHASE 3:

Phase 3 accomplishes the final removal of outdated buildings and completes the MECDHH vision for a right-sized campus. Site improvements assist in wayfinding and navigation as well as celebrating the campus as the home for the Deaf Community.

The removal of building K and associated connector. Addition of new building. The addition of site elements including new school drop-off loop entrance and additional site improvements at State Park trail to create a better-defined buffer at the campus edge.



PHASE 3: KEY PLAN

DEMOLITION

- Remove existing Building K following completion of replacement 'New Building K'
- Remove Associated Connectors

IMPROVEMENTS

- Improved Access Driveways and New Loop Road
- New Access Drive to Mansion
- Build new building ‘K’
- New Drop-off Loop and Turnaround Building A
- Develop campus building systems to remove central heat
- Plantings to define view corridors and central quadrangle

PHASE 3: REMOVALS AND DEVELOPMENT PLAN

NOT TO SCALE

PHASE 3 COST MODELING

Building Name		Area	Building Removal or Renovation Allowance	Site Work or Utility Infrastructure Relocation	Notes
Building D	Greenlaw		$ -		Minor renovation as required
Building E	Inman Garage		$ -		No work, Phase 3
Building H	Brewster		$ -		No work, Phase 3
Building I	Patrick		$ -		No work, Phase 3
Building J	Draper		$ -		No work, Phase 3
Building K	Sanders		$ 1,656,200	$ 600,000	Demolish
New Building K'		15,000	$ 11,550,000		2 story new construction: 7,500 SF footprint (4-5 years escalation)
Connector	D-K		$ 82,600		Demolish
Sitework: New campus gateway			$ -	$ -	Complete
Sitework: screening at Building E			$ -	$ -	Complete
Sitework: Revised parking loop at J			$ -	$ 1,582,000	50,000SF parking & loop, 2500SF hardscape, 5,000SF sidewalks, Demo, Site lighting (4-5 years escalation)
Sitework: no mow grass at campus edge			$ -	$ -	Complete
Sitework: Allowance for planting and hardscape improvements			$ -	$ 80,000	As needed to complete unforeseen planting for screening and miscellaneous hardscaping.
CONSTRUCTION TOTAL: BY CATEGORY		15,000	$ 13,288,800	$ 2,262,000	40% cost escalation included for a April 2028 construction start. Costs assume load limit cost increases for building demolition. Soft costs not included.
ADD 30% FOR TOTAL PROJECT COST			$ 17,275,440	$ 2,940,600	Total project cost includes total construction cost plus soft costs (Administrative costs, Owner contingencies, design & permitting fees, and other related costs incurred directly by Owner)
PROJECT TOTAL: PHASE 3		$		20,216,040	

APPENDIX

A1: BUILDING CONDITION ASSESSMENT

REPORT BY HARRIMAN

Report contents include facility condition assessments of all GBSD/ MECDHH buildings and connector structures. Information is organized by discipline for all buildings. Each discipline category includes facility observations and recommendations that have been summarized in the Master Plan document. Discipline categories include:

- Architectural
    - Interior Systems
    - Exterior Systems
    - Building Structure Observations
- Plumbing Systems
- Fire Protection Systems
- Mechanical Systems
- Electrical Systems

A2: HISTORIC CHARACTER ASSESSMENT

REPORT BY KLEINFELDER

Report contents include a reconnaissance level review of all GBSD/MEC-DHH campus buildings and connector structures that are over 45 years old. Buildings are reviewed for level of intact architectural character and historic significance. Report observations and recommendations have been summarized in the Master Plan document.

DIGITAL RECORDATION SUMMARY

To meet historic archival requirements, it is understood that a digital recordation process is acceptable for buildings identified for removal in the Master Plan recommendations.

A3: CAUSEWAY AND PIER CONDITION ASSESSMENT

REPORT BY GEI

Report contents include a general review of the condition and resilience of the following items.

- Causeway
- Bridge
- Stone Pier
- Coastal Slopes

General observations of the December 23, 2022 storm are included in the report although a separate report will be issued independently from the Master Plan to address specific damage to the causeway and bridge that stem from the December 23, 2022 storm.

A4: TRAFFIC AND PARKING ASSESSMENT

REPORT BY VHB

Report contents include an assessment of current parking capacity and traffic observed at three periods: March 31, June 5, and August 8-9 2022.

A5: ISLAND SURVEY

AERIAL PHOTOGRAPH AND EXISTING CONDITIONS/ TOPOGRAPHIC SURVEY

Content includes supplemental work to the original Master Plan scope. Information is intended to inform future projects on Mackworth Island.

INTRODUCTION

Sebago Technics/ Titcomb Associates was retained by BGS to provide an existing conditions survey of the Mackworth Island State Park trail and parking area. As an alternative to traditional survey methods, Sebago Technics utilized unmanned aerial systems (UAS) and light detection and ranging (LiDAR) remote sensing measuring methods. Aero-Geomatic/ sUAS services, including on-board camera along with aerial LiDAR sensor, provided high resolution orthophotography, and collected point cloud data for the entire island.

The resulting information provides high resolution imagery of the GBSD/ MECDHH campus as well as a complete point cloud data set of Mackworth Island. Future projects requiring survey information will be able to request the modeling of captured data sets from specific areas on the Island from Sebago Technics. This option is intended to save the State time and money as future capital initiatives move forward.

The following files and file groups are included in Appendix A5.

- High resolution, aerial photograph of Mackworth island in its entirety
- Island topographic survey without aerial photograph
- Island topographic survey with aerial photograph
- Trail detail survey without aerial photographs
- Trail detail survey with aerial photographs

B: STATE PARK RECOMMENDATIONS

SUMMARY

The Master Plan was focused on utilization and addressing immediate facility needs on the GBSD/MECDHH campus. Steering Committee and public input resulted in several recommendations for the State Park that are included in the Master Plan as well as topics that are outside the Master Plan scope and require additional exploration.

State Park-related items included in the Master Plan

- No mow grass buffer at boundary locations between the State Park trail and school campus that are difficult to identify.
- To maintain a rural experience on the island, do not expand existing parking lot sizes. See Master Plan Executive Summary and Parking and Traffic section for more information.
- Add a camera to provide live feed information of parking lot capacity. Camera feed to be connected to the State Park website.

State Park-related items discussed during the planning process for future consideration and/or implementation.

- Pave and stripe existing parking lots to improve efficiency and navigation. The island survey, located on Appendix 5, provides information about the parking areas.
- Identify trail areas that require maintenance relative to grading/slope, coastal bluff erosion, or other concerns. The island survey, located on Appendix 5, provides information about the entire trail loop.

C: PUBLIC MEETING NOTES

SUMMARY

Notes from public comments at June 30, 2022 meeting at Falmouth Town Hall.

D: HISTORICAL REFERENCE INFORMATION

CONTENTS

- Summary of the Governor Baxter Deed, prepared by BGS
- Deed of Gift Document
- Supporting Documentation establishing Deed, Lease, School, etc.

APPENDIX

A1: BUILDING CONDITION ASSESSMENT

REPORT BY HARRIMAN

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- Architectural
    - Interior Systems
    - Exterior Systems
    - Building Structure Observations
- Plumbing Systems
- Fire Protection Systems
- Mechanical Systems
- Electrical Systems

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN

Facilities Assessments

Introduction and Overview

The Facility Assessment is the first task in the planning process for the Mackworth Island Conceptual Utilization Plan. The design team, comprised of architects, engineers, and landscape architects, performed the onsite assessment on March 31, 2022. The Team was accompanied by GBSD representatives. Structural observations and recommendations are included within the architectural assessments. Since most building structure is hidden, recommendations are limited to visible elements of concern for buildings that are currently occupied.

The buildings assessed included all school campus buildings and their associated connector structures. The State Park gatehouse was also assessed from the exterior.

Overview, of Mackworth Island

Summary of Findings

Facility condition varies greatly from building to building. Some buildings are in a state of extensive decline and should be considered for removal and others are in very good working order. Images below reflect overall condition: green is very good, yellow is good, orange is fair, red is poor, and dark red is very poor.

Campus buildings colored by overall condition

Campus plan

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Applicable Codes

IBC, NFPA, ADA

Building A: Mansion

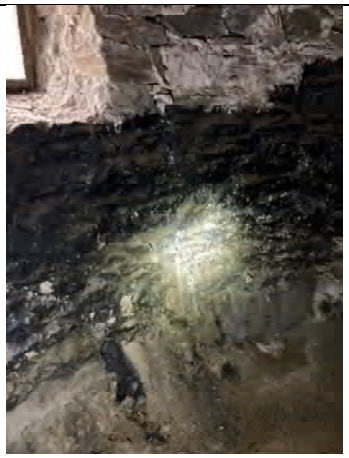
Introduction

The original building was constructed in 1917. It is 3 stories with a footprint of 3,412 GSF and total area of 7,988 GSF. The building is listed on the National Historic Register. The building's architectural condition is good overall, with areas of concern focused mainly on exterior envelope and finishes elements: see accompanying Building Condition Summary Table for additional information.

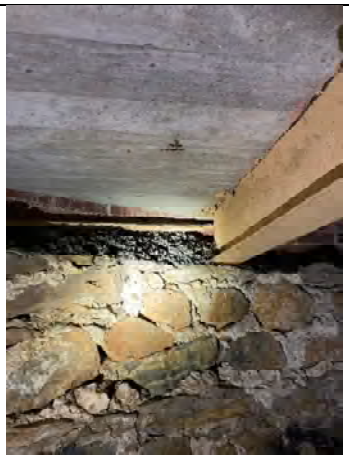
Interior Systems

Interior finishes of the mansion are generally in good condition throughout. There is minor-to-moderate water damage to plaster and finishes around Chimney.

Interior Stairs are residential in nature and are not ADA or code compliant for commercial use. Due to the historic significance of the building, improvements to vertical circulation need to be carefully considered so the integrity of the original architectural character is not compromised. A historically sensitive addition containing a lift and code compliant stair may be required if the building use changes significantly. Other options include accessibility improvements to the building interior.



Existing foundation wall.

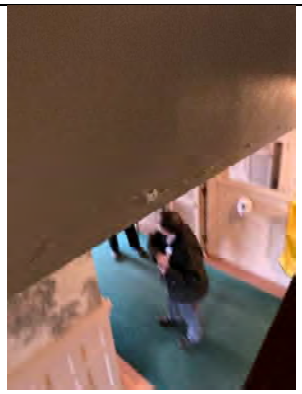


Existing slab and floor structure.

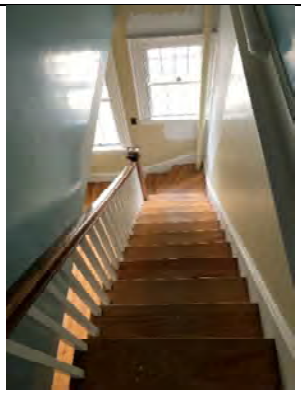
ARCHITECTURAL SYSTEMS SUMMARY

Main stair.

Existing millwork.



Plaster damage.



Existing back stair.

Water damage at Chimney.

Skylight/ roof access.

ARCHITECTURAL SYSTEMS SUMMARY

Exterior Systems

The existing façade is comprised of load bearing masonry walls with mortared fieldstone foundation and brick walls. Window openings are supported by painted steel lintels and sills are made of shaped stone. Moderate pointing is needed throughout the building. Higher levels of mortar deterioration were observed around the side entrance (near door A2). Recent pointing does not appear to be in keeping with the original masonry construction and should be redone, if possible, to match the original building elements.

Windows are single pane wood with storm panels. All need painting. Existing paint should be tested for lead prior to scraping and prep.

Exterior trim and detail elements are painted wood with copper flashing at roof edges. Significant signs of rot were observed. Due to the historic significance of the building replication of rotted elements is recommended. All exterior wood trim and detail surfaces need painting. Existing paint should be tested for lead prior to scraping and prep.

South / Southwest sides of Mansion.

North Façade.

Root infiltration at masonry

Mortar deterioration near door A2

ARCHITECTURAL SYSTEMS SUMMARY

Wood deterioration near door A2

Typical exterior elements

Typical exterior elements

Roof tile & EPDM.

The roof was not easily visible from the access skylight. Photography trough the skylight revealed areas of EPDM roofing in addition to the clay tiles that cover most of the sloped roof areas.

Roof edge, dormer, and chimney detail

Hardscape deterioration at exterior patio

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Recommendations Summary

- *Accessibility improvements are required from the site to the one of the first-floor entry locations. The exterior patio, which needs to be repaired, may be a good candidate for integrating an accessible entrance.*
- *Main stair does not meet current ADA standards, consider historically sensitive improvements if necessary.*
- *Consider replacing steel frame windows with energy efficient historically accurate windows.*
- *Point masonry walls and chimneys as needed.*
- *Accurately repair damaged finishes.*
- *Repair/replace roof to avoid further leakage.*

Building B: Young Hall

Introduction

The original building was constructed in 1958-1959 by Stevens and Saunders Architects of Portland, Maine. It is 2 full stories with a partial basement. The main floor footprint is approximately 6,140 GSF and total area of 15,580 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The building is vacant, and the architectural condition is poor in most assessment categories. Many interiors and some exterior categories scored 0 which indicates elements will likely be a hazard and immediate replacement or removal is highly recommended: see accompanying Building Condition Summary Table for additional information.

Interior Systems

Overall interior is in poor condition. Roof has caused major water damage throughout building. Many areas of interior finish have been stripped and most remaining interior finishes are beyond repair. The building has a posted sign declaring the interior spaces will expose occupants to asbestos containing building materials (ACBM).

Water damage.

Water damage.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Standing water.

Roof leak.

Deterioration at existing partition wall.

Exterior Systems

Existing Cast in place foundation and Brick veneer walls are in good condition. Aluminum curtain wall with single pane glass and transite panels perform poorly and do not meet current energy codes. Transite panels are highly likely to contain asbestos. All exterior doors are in fair condition.

Steel egress stairs and balconies are in in dangerous condition.

ARCHITECTURAL SYSTEMS SUMMARY

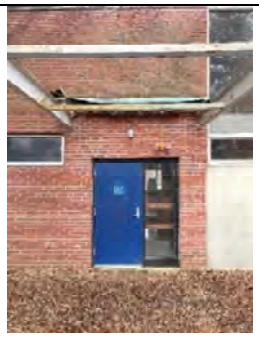
Canopy/overhang and exterior stair west side

Exterior stair detail

Canopy/overhang and exterior stair east side

Overhang at lower service level

Exterior siding/glazing system



Exterior Hollow Metal Door,

EPDM Roof ponding

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Recommendations Summary

- Building condition is considered beyond repair and removal is recommended. The following work is required to rehabilitate the building, which the Planning Team believes is not financially worthwhile.
    - Window wall infills need complete replacement.
    - Exterior balconies and Egress need complete replacement.
    - Interior is in poor condition and in need of complete gut and replacement.
    - Repair roof to prevent further water damage.
    - All building systems need to be replaced.

Building C: Taylor Hall

Introduction

The original building was constructed in 1958 by Stevens and Saunders Architects of Portland, Maine. It is 2 full stories. The main floor footprint is approximately 6,730 GSF and total area of 13,460 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from poor to good depending on the assessment category with the overall building condition identified as fair. One exterior category scored 0 which indicates elements will likely be a hazard and immediate replacement or removal is highly recommended: see accompanying Building Condition Summary Table for additional information.

Interior Systems

Water damage Sills on ocean side of building. Some second-floor windows have been recently replaced, majority of windows are comprised of single pane glass and do not meet current building code.

Majority of door hardware is not to current code.

Existing VCT Floor is in good conditions throughout the building. Carpet is in fair condition and should be replaced.

ARCHITECTURAL SYSTEMS SUMMARY

Single pane aluminum windows.

Water damage.

Non-compliant door hardware.

Typical interior condition

Egress Stair with non-compliant railing system.

Roof access hatch.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Exterior Systems

Existing brick veneer and cast in place concrete foundation are in good condition. Non thermal aluminum curtainwall is in poor condition and is comprised of single pane glass and transite panels. Transite panels are highly likely to contain asbestos.

EPDM roofing and aluminum roof edge flashing are in good condition.

Steel egress and balconies are in dangerous condition.

Existing Aluminum Curtainwall.

Existing Aluminum Curtainwall.

Exterior Windows.

Exterior With Remnant Canopy Frame.

Steel and Plywood Balcony.

EPDM Roofing.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Recommendations Summary

- Building condition is considered fair although extensive renovations and complete system upgrades are recommended due to building age. Building removal should be strongly considered as a long-term solution. The following work is required to rehabilitate the building, which the Planning Team believes is not financially worthwhile as a long-term investment.
    - Replace all single pane windows to meet building code.
    - Replace Sills will water damage on ocean side of building.
    - Door hardware needs to be upgraded to Lever type.
    - Carpet is in fair condition and in need of being replaced.
    - Steel egress and balconies need complete replacement.
    - Aluminum curtainwalls perform poorly and need complete replacement.
    - Change in use from dormitory will likely require an extensive renovation of most interior spaces.

Building D: Greenlaw

Introduction

The original building was constructed in 1958 by Stevens and Saunders Architects of Portland, Maine and extensively renovated in 1996 by TFH Architects of Portland, Maine. It is 3 full stories with a footprint of roughly 7,170 GSF with a total area of 21,504 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from good to very good depending on the assessment category with the overall building condition identified as good. A few interior categories were identified as poor or fair: see accompanying Building Condition Summary Table for additional information.

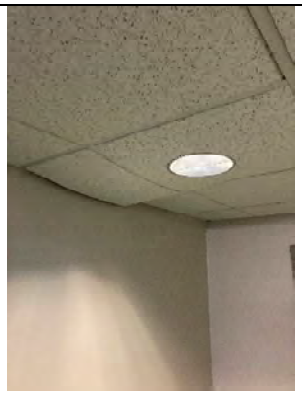
Interior Systems

Moisture damage causing ACT sagging in various locations. Water infiltration from grade-level exterior doors causes periodic saturation of classroom flooring. Overall Flooring is in good condition.

Some Door hardware is knob style but most lever-type throughout building .

Window next to the main interior stair is currently protected by plywood. A more permanent metal protective element, ideally somewhat transparent, should replace the plywood in lieu of replacing the window with tempered glass.

ARCHITECTURAL SYSTEMS SUMMARY

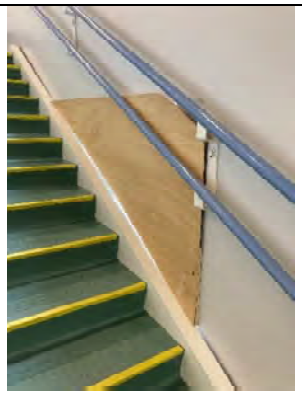


Sagging Ceiling.

Grade-level exterior door.

Knob-style door hardware.

Elevator.



Main stair window protection.

Main stair.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ARCHITECTURAL SYSTEMS SUMMARY

Exterior Systems

Exterior of building is in very good condition overall. Some metal siding has been damaged along with Minor brick repairs throughout.

Steel members at overhangs need repainting .

Exterior.

Exterior.

Curtain wall at egress.

Steel overhang.

Metal siding / windows

EPDM Roof.

ARCHITECTURAL SYSTEMS SUMMARY

Overhang.

Recommendations Summary

- Address water infiltration at ground floor at exterior doors.
- At the main stair window a more permanent metal protective element, ideally somewhat transparent, should replace the plywood in lieu of replacing the window with tempered glass.
- Prep and repaint exterior steel elements.
- Repair damaged metal siding and brick veneer.

Building E: Garage Inman

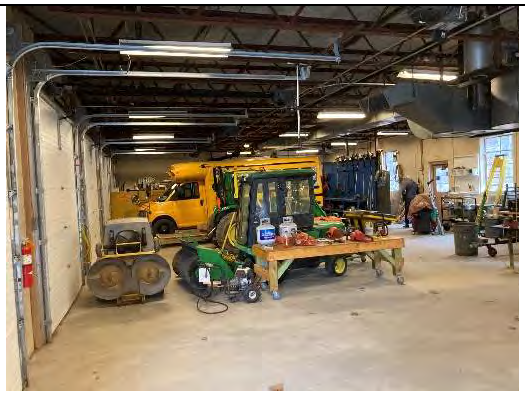
Introduction

The original building was constructed in 1961 by Stevens and Saunders Architects of Portland, Maine. It is 1 story with a total area of 4,000 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from poor to good depending on the assessment category with the overall building condition identified as fair: see accompanying Building Condition Summary Table for additional information.

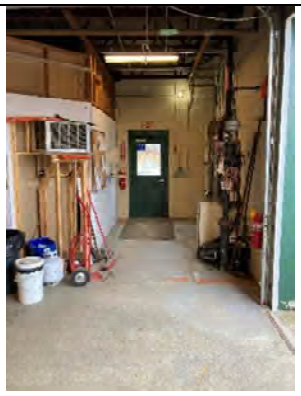
Interior Systems

Interiors are sparce because of utilitarian building use. No major concerns were Identified.

ARCHITECTURAL SYSTEMS SUMMARY



Interior of garage.



Interior of garage

Exterior Systems

Garage is in overall good condition and functional for use. Foundation and brick veneer walls are in good condition at exterior. Steel framed single paned windows are in poor condition.

Lean to structure is in poor condition and should be replaced.

Lean-to structure.

Front elevation.

Rear elevation

Exterior conditions.

ARCHITECTURAL SYSTEMS SUMMARY

Overhead door typ.

Recommendations Summary

- Replace lean-to structure.
- Replace steel single paned window.

Building G: Carter

Introduction

The original building was constructed in 1957 by Stevens and Saunders Architects of Portland, Maine. It is 1 story with a total area of 17,60 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The building is vacant, and the architectural condition is poor to fair in most assessment categories. See accompanying Building Condition Summary Table for additional information.

Interior Systems

Interior walls and base are in good condition throughout. Ceilings vary in conditions from good to fair. Sills show some water damage at windows and exterior doors.

Door approached typically do not have adequate clearance for ADA compliance. Knob hardware is located throughout.

Toilets are lacking grab bars throughout.

ARCHITECTURAL SYSTEMS SUMMARY

Restroom.

Water damage at sill.

Moisture penetration at exterior doors.

Damaged ACT

Non-compliant door hardware.

Non-ADA compliant approach at exterior door.

ARCHITECTURAL SYSTEMS SUMMARY

Exterior Systems

Cast in place foundation and brick veneer exterior walls are in good condition. Aluminum non-thermal windows and curtain wall consist of single glass and transite panels are in poor condition.

Aluminum composite panels failed and missing at overhangs.

Roof flashing indicates that the roof was built over the original roof. Snow loading capacity may be a concern. Overall Sloped and Flat EPDM roof is in fair condition.

Arial View.

Elevation.

Aluminum windows.

Aluminum curtainwall.

Aerial overview.

Exterior.

ARCHITECTURAL SYSTEMS SUMMARY

Aluminum curtainwall.

Overhang.

Detail

Exterior door.

Recommendations Summary

- Repair water damage at sills.
- Upgrade all door hardware to lever type.
- Install Handrails in restroom.
- Address non-ADA compliant approach to doors.
- Replace curtain walls and windows.
- Repair overhangs.

Building H: Brewster

Introduction

The existing building was constructed in 2004 by Barba Architecture and Preservation of Portland, Maine. It is 1 story with a total area of 9,000 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from fair to very good depending on the assessment category with the overall building

ARCHITECTURAL SYSTEMS SUMMARY

condition identified as good: see accompanying Building Condition Summary Table for additional information.

Interior Systems

Corridor.

Corridor.

Office.

Classroom.

Exterior Systems

Overall building is in very good condition. Many Metal siding panels have been damaged in various locations.

Aerial.

Elevation.

ARCHITECTURAL SYSTEMS SUMMARY

Damaged siding.

Aluminum insulated window.

Shading elements.

Recommendations Summary

- Replace damaged metal siding.

Building I: Patrick Hall

Introduction

The original building was constructed in 1958 by Stevens and Saunders Architects of Portland, Maine. It is a 1 story remnant of a larger building that was removed when Brewster Hall was constructed. The total building area is 1,900 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from fair to good depending on the assessment category with the overall building condition identified as fair. See accompanying Building Condition Summary Table for additional information.

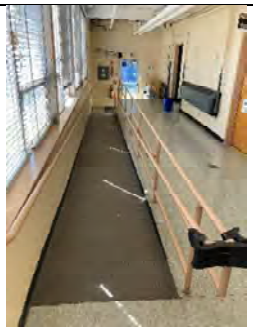
ARCHITECTURAL SYSTEMS SUMMARY

Interior Systems

Knob hardware is located throughout.

Floor finishes in corridor ramp are worn and should be replaced.

Typical door with knob hardware



Interior.

Worn flooring.

Office space.

Exterior Systems

Overall exterior is in good condition.

Metal siding panels have been damaged in various locations.

Exterior.

Damaged metal siding.

ARCHITECTURAL SYSTEMS SUMMARY

Recommendations Summary

- Upgrade all door hardware to lever type.
- Damaged metal siding should be replaced throughout.

Building J: Draper Hall

Introduction

The original building was constructed in 1958 by Stevens and Saunders Architects of Portland, Maine. It is 1 total story with a double-height gymnasium space and a story-and-a-half annex. The total building area is 12,370 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition ranges from fair to good depending on the assessment category with the overall building condition identified as fair. See accompanying Building Condition Summary Table for additional information.

Interior Systems

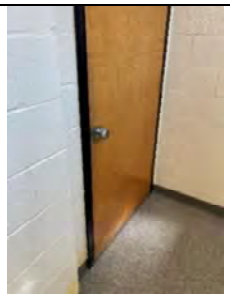
Overall finishes are in good condition.

Knob door hardware is located throughout.

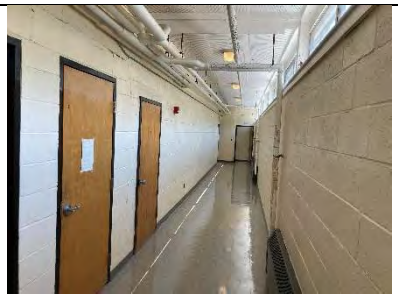
No ramp at left entrance to stage.

Gym.

Left entrance to stage.



Knob hardware.



Locker and backstage corridor.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS	
ARCHITECTURAL SYSTEMS SUMMARY	
Exterior Systems	
Overall exterior is in good condition.	
 *Arial.*	 *Arial.*
 *Rear elevaiton.*	 *Rear entrance/ ramp.*
	
Recommendations Summary	
• Upgrade all door hardware to lever type. • Damaged metal siding should be replaced throughout.	
Building K: Sanders Hall	
Introduction	
The original building was constructed in 1959 by Stevens and Saunders Architects of Portland, Maine. It is 3 total stories: the lowest level is smallest, the middle level occupies roughly 2/3 of the total footprint, and the upper level is the largest area. The upper floor footprint is approximately 14,100 GSF and total building area is 34,800 GSF. The building is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition	

ARCHITECTURAL SYSTEMS SUMMARY

ranges from poor to good depending on the assessment category with the overall building condition identified as fair. See accompanying Building Condition Summary Table for additional information.

Notable structural concerns are included in this section under *Interior Systems*.

Interior Systems

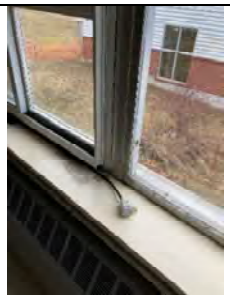
Significant cracking of the concrete floor slab was observed in several locations of the upper and middle levels. Areas of cracking are slab on grade conditions. Cracking appears to be the result of subsurface settling or other building movement over time. Finished flooring is damaged in several locations as a result. This condition is concerning and further investigation is recommended before floor finishes are replaced.

Water damage at sills and ceilings in various locations througout building.

Most doors have knob hardware trhoughout.

Damaged Flooring suggest slab failure througout building

Knob hardware.

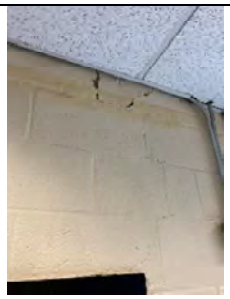


Existing window sills.

Damaged/cracked flooring.

Damaged ceiling.

ARCHITECTURAL SYSTEMS SUMMARY



Exteior CMU walls.

Existing window sill.

Exterior Systems

Grade: No issues
Foundations: Cast in place concrete
Walls: Brick Veneer, metal siding, T-1-11 and CMU mech add-on
Windows: Aluminum non-thermal windows with single pane glass
Doors: Hollow metal in metal frames. Entrance door aluminum
Canopies/Overhangs: Painted panels
Roof/Flashing: Aluminum roof edge flashing and EPDM roofing in good condition.
Window wall infills need complete replacement. CMU addition is in poor condition.

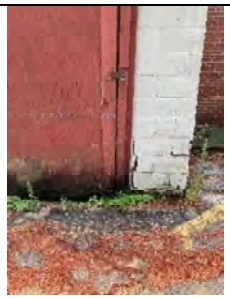
Arial.

Curtainwall.

Mechanical addition.

Mechanical addition.

ARCHITECTURAL SYSTEMS SUMMARY



Building exterior at grade.

Exterior exit stair.

Aluminum glazing.

Overhang

T-1-11 entry vestibule.

Recommendations Summary

- Remove flooring to inspect condition of slab. Limited destructive investigation may be necessary to understand the cause of the cracking.
- Replace VCT with new flooring.
- Change door hardware to lever-type.
- Replace all exterior glazing.
- Repoint brick as required.
- Replace exterior exit stair.

ARCHITECTURAL SYSTEMS SUMMARY

Connector: G-B-K

Introduction

The connector was constructed at the same time as the original campus buildings design by Stevens and Saunders Architects of Portland, Maine. It is 1 total story: sloping to connect different campus buildings. The connector is an uninsulated enclosure that is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition is mostly very poor to poor depending on the assessment category with the overall building condition identified as very poor with a strong recommendation to remove. See accompanying Building Condition Summary Table for additional information.

Interior Systems

Connector finishes are in fair-to-poor condition. Floors are in very poor condition and require repair or replacement. Building systems including hot water heating, domestic water, sprinkler piping, and electrical run through connector interiors.

Cracked floor slab

Interior

ARCHITECTURAL SYSTEMS SUMMARY

Interior

Cracked floor slab

Exterior Systems

Grade: Site drains underneath through 3 pipes
Foundations: Cast in place concrete
Walls: T-1-11
Windows: Site built wood frames with glass infill
Doors: Hollow metal in metal frames.
Canopies/Overhangs: Remove roof, retained steel frame
Roof/Flashing: Aluminum roof edge flashing
Connector needs to be replaced.

Aerial.

Typical drain pipes at grade.

ARCHITECTURAL SYSTEMS SUMMARY

Connector leg to building B.

Aerial.

Recommendations Summary

- Replace connector or remove it completely. Building systems and utilities will need to be relocated and redistributed.

Connector: C-H-K

Introduction

The connector was constructed at the same time as the original campus buildings design by Stevens and Saunders Architects of Portland, Maine. It is 1 total story: sloping to connect different campus buildings. The connector is an uninsulated enclosure that is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition is mostly very poor to fair depending on the assessment category with the overall building condition identified as very poor with a strong recommendation to remove. See accompanying Building Condition Summary Table for additional information.

Interior Systems

Connector finishes are in fair-to-poor condition. Floors are in poor condition and require repair. Building systems including hot water heating, domestic water, sprinkler piping, and electrical run through connector interiors.

ARCHITECTURAL SYSTEMS SUMMARY

Typical interior.

Interior at door to Building K.

Exterior Systems

Grade: Site drains underneath through 3 pipes
Foundations: Cast in place concrete
Walls: T-1-11
Windows: Site built wood frames with glass infill
Doors: Hollow metal in metal frames.
Canopies/Overhangs: Remove roof, retained steel frame
Roof/Flashing: Aluminum roof edge flashing

Aerial.

Aerial and T-1-11 siding.

ARCHITECTURAL SYSTEMS SUMMARY

Roof detail.

Site drains at leg to Building K.

Recommendations Summary

- Replace connector or remove it completely. Building systems and utilities will need to be relocated and redistributed.

Connector: D-K

Introduction

The connector was constructed at the same time as the original campus buildings design by Stevens and Saunders Architects of Portland, Maine. It is 1 total story: connecting different campus buildings. The connector is an uninsulated enclosure that is part of the original school campus planning and construction initiative and is designed in the modern style. The architectural condition is mostly fair depending on the assessment category with the overall building condition identified as fair. See accompanying Building Condition Summary Table for additional information.

Interior Systems

Connector finishes are in fair-to-good condition. Building systems including hot water heating, domestic water, sprinkler piping, and electrical run through connector interiors.

ARCHITECTURAL SYSTEMS SUMMARY

Interior.

Interior.

Exterior Systems

Grade: Site drains underneath through 3 pipes.
Foundations: Cast in place concrete.
Walls: T-1-11.
Windows: Site built wood frames with glass infill.
Doors: Hollow metal in metal frames.
Canopies/Overhangs: Remove roof, retained steel frame.
Roof/Flashing: Aluminum roof edge flashing.
Exterior stairs are in poor-fair condition and should be repaired.

Aerial.

Exterior stairs and ramp.

Recommendations Summary

- Repair exterior stairs and railings.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

PLUMBING SYSTEMS SUMMARY

Applicable Codes

2021 Uniform Plumbing Code, 2015 IECC

Building A: Mansion

Plumbing Systems

The building was constructed in 1917.
The 1" water service rises through the floor in the basement on the east side. The water service is insulated and is copper. No brass or lead piping was found in the building.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all of the domestic water piping is recommended.

Repairs and modifications to the domestic water piping have been made with Cross-linked polyethylene (PEX) in a variety of colors with ball valves. For the most part, blue PEX is connected to cold, and red PEX connected to hot except at the electric water where white PEX is hot and red is cold. The piping and valves appear to be in good condition. Old gate valves can be problematic when operating and there are many gate valves in the system. Most of the piping in the basement was insulated.

Hot water is generated by a Rheem 30 gallon electric water heater in the basement which was manufactured in 2013. The water heater appears to be in good condition. There is not a thermostatic mixing valve or hot water recirculation through the building to maintain hot water near the fixtures.

The sanitary sewer is comprised of cast iron with hub and spigot fittings and leaded joints. Branch drainage piping to sinks and bathtubs is galvanized steel piping. The sewer exits the basement next to the water service on the east side.

The plumbing fixtures are a mix from 1956 and 2000's. There is a restroom on the first and second floor with a more modern toilet and lavatory. A cast iron service sink is disconnected and a large slate sink is active in the basement. The fixtures are operable. There are no ADA compliant restrooms.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Install water meter and backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Provide hot water return piping with circulating pump and control.*
- *Replace sanitary and vent piping to the point of exit with PVC.*

PLUMBING SYSTEMS SUMMARY

- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures and bathtubs.*
- *Replace all restroom fixtures with period style fixtures.*
- *Provide stainless steel lounge sink with single handle faucet.*
- *Provide an ADA compliant restroom on each floor.*
- *Provide bi-level water cooler/bottle filler on the ground level.*

Building B: Young Hall

Plumbing Systems

It was constructed in 1959.The building is not being used and has been condemned.

The water service is 2" copper, a 6" sanitary drainage and separate 8" storm drainage exiting the building.
Sanitary drainage is cast iron with galvanized steel branch piping and vent piping. The storm drainage piping is cast iron.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

Plumbing fixtures are 1959 vintage and have not been used for some time.

The condition of the plumbing systems and fixtures is poor.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Provide hot water return piping with circulating pump and control.*
- *Replace sanitary and vent piping to the point of exit with PVC.*
- *Replace storm drainage piping to the point of exit PVC.*
- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures, drinking fountains and showers.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Provide ADA compliant restrooms on each level.*
- *Provide bi-level water cooler/bottle filler on each level.*

Building C: Taylor Hall

Plumbing Systems

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

PLUMBING SYSTEMS SUMMARY

The building is partially being used/leased.
The building was constructed in 1958 and the plumbing systems are mostly original to the building.

In 2019 modifications were made to a restroom on the ground floor to create two single use restrooms for ADA compliance. One of the toilets in the ADA restroom (Men's) is not mounted to the required height. There are no ADA compliant bathing fixtures available in the building. The staff lounge with a kitchen sink that is meant to meet ADA but the plumbing piping below the sink does not allow wheelchair access. Note: Sinks in staff lounges do not require knee space below and can be used with a side approach.

There is a 2" water service and separate cast iron 6" sanitary drain and 6" storm drain exiting the building. An electric water heater is in a closet of one the ADA restrooms.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Provide hot water return piping with circulating pump and control.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures, drinking fountains and showers.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Provide ADA compliant restrooms on each level.*
- *Provide bi-level water cooler/bottle filler on each level.*

Building D: Greenlaw Classrooms, Offices

Plumbing Systems

The building was constructed in 1958 with substantial renovations made in 1997.

There is a 2" water service with 1-1/2" water meter in the sprinkler room. There is no reduced pressure backflow preventer downstream of the meter. All domestic supply piping is insulated with fiberglass insulation.

PLUMBING SYSTEMS SUMMARY

There are two sanitary drainage pipes and one storm drain drainage pipe exiting the building. The drainage pipe sizes were not verified. Drainage piping is cast iron.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

The plumbing fixtures were replaced in 1997 with water saving products. The fixture are in good condition and are working as expected.

ADA compliant restrooms were provided in 1997. Toilets are floor mounted with manually operated flush valves. Urinals are provided with manually operated flush valves. Lavatories are drop-in counter mounted with gooseneck spouts and wrist blade handles. The restroom accessibility meets the requirements for adults. There is an ADA compliant restroom and classroom sink mounted lower than adult standards to meet the requirements for young children in one area of the building.

The water heater was installed in the 1997 renovation. The water heater is a dual fuel, 119 gallon HTP Super Stor tank with internal indirect fired heating coil which is supplied by the central heating plant hot water system. During the summer months, the water heat is switched over to the internal dual electric coils in the tank. A Bell & Gossett circulating pump maintains hot water to the fixtures through a hot water return piping system.

The condition of the plumbing systems and fixtures is good.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace pre-1997 domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures, drinking fountains and showers.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Provide ADA compliant restrooms on each level.*
- *Provide bi-level water cooler/bottle filler on each level.*

Building E: Garage-Inman

Plumbing Systems

This building was constructed in 1961.

PLUMBING SYSTEMS SUMMARY

There is a 1" water service with 3/4" water meter and 1" reduced pressure zone backflow preventer downstream of the meter.

The restroom fixtures are original to 1961. The toilet is floor mounted with a manually operated flush valve. The lavatory has two separate faucets. There is a shower stall in the restroom with a single mixing valve and shower head. The floor of the shower is made of wood that appears to be teak.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

The water heater was installed in 2009. The water heater is a Rudd 40 gallon, with two 6,000 watt electric coils.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures and shower.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Provide ADA compliant restroom with compliant transfer shower.*
- *Provide bi-level water cooler/bottle filler.*

Building G: Carter

Plumbing Systems

This building was constructed in 1957. The building is not used except for the small Gym for wood working.

There is a 2" water service in the sprinkler room with no reduced pressure zone backflow preventer downstream of the meter. The water supply comes up through the floor and goes back down through the floor after the water meter. The shut-off valves are old gate valves.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

PLUMBING SYSTEMS SUMMARY

Sanitary drainage is cast iron with galvanized steel branch piping and vent piping. The storm drainage piping is cast iron. Domestic water piping is copper with soldered fittings and joints. Plumbing fixtures are 1957 vintage and have not been used for some time.

The restroom fixtures are original to 1957. One restroom has been remodeled with an ADA compliant toilet and lavatory. The custodial closet has a wall mounted service sink vs a mop basin. The drinking fountains are original to the building.

The water heater was installed in 2002. The water heater is a Rheem 40 gallon, with two 4,500 watt electric coils. At one time hot water was generated by the campus heating plant. There is a non-functioning heat exchanger piped in above the water heater. The electric water heater supply still passes through the old heat exchanger.

The condition of the plumbing systems and fixtures is poor.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures and drinking fountains.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Adjust existing semi-compliant restrooms to comply with ADA.*
- *Provide ADA compliant restrooms on each level.*
- *Provide bi-level water cooler/bottle filler on each level.*

Building H: Brewster Library, Classrooms

Plumbing Systems

The building was constructed in 2004 and was certified LEED Silver.

The water service is 6” up through the floor which transitions to 2” and passes through a 2” water meter and 2” reduced pressure zone backflow preventer.

Piping is copper with soldered joints and fittings. The piping was installed post 1986 so lead solder is not a concern. All supply piping is insulated.

Sanitary and Storm drainage piping is schedule 40 PVC with solid core and solvent cemented joints and fittings.

PLUMBING SYSTEMS SUMMARY

The water heater is a Rheem/Vanguard, 50 gallon electric with two 4,500 watt electric coils. There is no thermostatic mixing valve on the discharge piping. The tank is stored at 125°f. A Taco circulator is installed with hot water return piping to maintain the hot water at 125°f.

Plumbing fixtures are wall hung toilets with manually operated flush valves. Urinals are waterless. Lavatories have manually operated single handle faucets with 2.0 gpm aerators.

The science room has epoxy countertops and sinks, lab faucets with gooseneck spouts and serrated tips and cross handles for hot and cold operation. A combination emergency shower and eyewash is located in the science lab with a thermostatic mixing valve to deliver tepid water.
Single outlet gas turrets are mounted on the counter and there is a manually operated gas shut-off cabinet in the room. Propane gas is no longer provided at the building and therefor the gas turrets are not currently usable.

The condition of the plumbing systems and fixtures is very good.

Recommendations Summary

- *Replace the electric water heater with a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Replace the 2.0 gpm aerators on lavatory faucets with low flow 0.5 gpm or consider replacing the lavatory faucets.*
- *Replace water coolers with bi-level water cooler/bottle filler on each level.*

Building I: Patrick Classrooms

Plumbing Systems

The building was constructed in 1958. A large part of the building was demolished to make room for the playground.

The plumbing services for the few remaining classrooms and corridor are supplied from Building J (Draper Gym).

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace plumbing fixtures.*

PLUMBING SYSTEMS SUMMARY

- *Provide bi-level water cooler/bottle filler.*

Building J: Draper Gym, Classrooms

Plumbing Systems

The building was constructed in 1958.

There is an electric water heater located off the gym to thew right of the stage. It is a Rheem Vanguard 40 gallon storage with two 4,500 watt electric coils. The water heater was installed in 2002. The water temperature stored in the tank is unknown. There is no thermostatic mixing valve on the hot water supply from the tank. There is no hot water return piping with circulator to maintain hot water at the fixtures.

The plumbing fixtures are mostly original. The toilets are wall hung with manually operated flush valves. Urinals are wall hung with manually operated flush valve and exposed drainage traps. Some fixtures have been replaced over the years.
Lavatories are wall hung with manually operated two handle lever faucets. One restroom with floor mounted toilet looks to be ADA compliant but the lavatory faucet is not compliant, and the piping below is not covered with insulation.

Showers have a single handle mixing valve with shower head. The men's locker rooms have group showers where the female locker room has individual fiberglass shower stalls which were installed at a later date.

Sanitary and storm drainage piping is cast iron.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended. Most domestic water piping insulated.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a propane fired water heater capable of supporting up to 8 showers. If showers are not required, provide a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures and drinking fountains.*

PLUMBING SYSTEMS SUMMARY

- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*
- *Provide ADA compliant restrooms.*
- *Provide bi-level water cooler/bottle filler.*

Building K: Sanders Facilities

Plumbing Systems

This building was constructed in 1959. This building has the main boiler plant as well as classrooms, museum and kitchen facilities.

The water service is in the basement next to the laundry room. A 2" water service riser through the basement floor with a 2" water meter. There is no backflow preventer downstream of the meter. The valves and piping are original to the building. Gate valves are installed.

Sanitary and storm drainage piping is cast iron. Floor drains are functioning in the boiler room.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

One small electric water serves the restroom off from the boiler room.
The 6 gallon Rheem water heater was installed in 2003.

Plumbing fixtures are original to the building. The toilet is tank type. Lavatory is wall hung with manually operated two handle lever faucet and gooseneck spout.

A 420 pound L.P cylinder is located outside the boiler room. The propane line is run in the same trench as the oil supply piping to the boilers. The propane serves the pilot for the burner on boiler #2. Boiler #1 has electronic ignition with no need for propane.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Replace the electric water heater in kind.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures.*
- *Replace restroom fixtures with water saving commercial toilet with manually operated flush valve and lavatory with low flow faucets.*
- *Provide ADA compliant restroom.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

PLUMBING SYSTEMS SUMMARY

Building K: Sanders Kitchen, Museum

Plumbing Systems

The kitchen is currently not used, but everything in the kitchen is usable and can be utilized as needed except the gas range. The propane tank has been removed so there is no propane available for the gas range. There is an electric range. An internal grease interceptor is set in the floor near the large two bay sink.

The primary water heater for the building is located in the laundry room below the kitchen. It is a Rheem 119 gallon electric water heater with two 4,500 watt electric coils. It was installed in 2003. There are no thermostatic mixing valves at either water heater. The water temperature in the tanks is unknown but expected to be 125°f. There is no hot water return piping with circulator to maintain hot water to the fixtures in the building.

Sanitary and storm drainage piping is cast iron.
A trench drain and large slate wash sink serve the laundry washing machines.

The domestic piping in the building is copper with soldered joints and fittings. The solder used prior to 1986 may contain lead and it is recommended to thoroughly flush piping before drink water. Because flushing is not a realistic practice, replacing all domestic water piping is recommended.

Plumbing fixtures are original to the building. Toilets are tank type. Lavatories are wall hung with manually operated two handle lever faucets.

One restroom has a shower stall with a single handle pressure balancing shower valve with shower head. A second restroom has a bathtub with a shower head mounted to a two-handle tub faucet. The tub/shower faucet does not have anti-scald protection.

The condition of the plumbing systems and fixtures is fair.

Recommendations Summary

- *Install backflow preventer at the water service.*
- *Replace all domestic water piping and valves with lead-free copper tubing, press-fit joints and fittings and ball valves.*
- *Consider replacing sanitary and vent piping to the point of exit with PVC.*
- *Consider replacing storm drainage piping to the point of exit with PVC.*
- *Replace the electric water heater with a propane fired water heater capable of supporting up to 8 showers. If showers are not required, provide a heat pump/electric water heater.*
- *Provide a thermostatic mixing valve on the water heater discharge.*
- *Remove all plumbing fixtures and drinking fountains.*
- *Replace all restroom fixtures with water saving commercial toilets with manually operated flush valves, stainless steel sinks and lavatories with low flow faucets.*

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS
PLUMBING SYSTEMS SUMMARY
• *Provide ADA compliant restrooms.* • *Provide bi-level water cooler/bottle filler.*
State Park: Gatehouse & Additional Parking
Plumbing Systems
The gatehouse was constructed in 1973. The water service and drain sizes and locations were not observed. The gate house has a tank type toilet, lavatory and 2 gallon water heater with cord and plug. The water heater has a 1,250 watt heating coil. The piping in the gate house is drained in the winter months. The water heater is installed and water is turned on during the summer months. The water heater was purchased in 2016. The condition of the plumbing systems and fixtures is fair.
Recommendations Summary
• *Install backflow preventer at the water service.* • *Replace the electric water heater in kind.* • *Provide a thermostatic mixing valve on the water heater discharge.* • *Replace restroom fixtures with water saving toilet with tank and lavatory with low flow faucet.* • *Consider providing ADA compliant restroom (this would likely require a new gate house).* • *Provide outside lawn faucet.*

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

FIRE PROTECTION SYSTEMS SUMMARY

Applicable Codes

2016 NFPA 13, 2018 NFPA 101

Building A: Mansion

Fire Protection Systems

The building was constructed in 1917.

This is the only building on campus without a fire a fire protection system other than the connector between buildings D & J.

Recommendations Summary

- *Provide a sprinkler service into the basement and provide a fully compliant dry sprinkler system within all spaces and attic and a 4" single outlet fire department connection.*
- *Option: Provide a wet pipe system for all areas except for the third floor and attic and provide a separate dry system for the third floor and attic.*

Building B: Young Hall

Fire Protection Systems

It was constructed in 1959.The building is not being used and has been condemned.

The 6" sprinkler service is located on the ground level and was installed in 1980. It is a wet pipe system with small glycol system outside. The system has been turned off and is not active.
The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is fair.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Inspect the interior of the piping for corrosion from sitting empty.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*

Building C: Taylor Hall

Fire Protection Systems

The building is partially being used/leased.
The building was constructed in 1958 and the fire protection system was installed when in 1980.

FIRE PROTECTION SYSTEMS SUMMARY

The wet sprinkler riser is below the stair at Building C at the connector. There is no backflow preventer at the sprinkler riser.
The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

The sprinklers in the connector to Building C are supplied from Building H.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building D: Greenlaw Classrooms, Offices

Fire Protection Systems

The building was constructed in 1958 with substantial renovations made in 1997.

The 6" sprinkler service is located on the ground level and was installed in 1980. It is a wet pipe system with small glycol system outside.

There is no backflow preventer at the sprinkler riser. The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building E: Garage-Inman

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

FIRE PROTECTION SYSTEMS SUMMARY

Fire Protection Systems

This building was constructed in 1961.

The 6" sprinkler service is believed to be installed in 1980. It is a wet pipe system.

There is no backflow preventer at the sprinkler riser. The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building G: Cartier

Fire Protection Systems

This building was constructed in 1957. The building is not used except for the small Gym for wood working.

The 6" sprinkler service is believed to be installed in 1980. It is a wet pipe system.

There is no backflow preventer at the sprinkler riser. The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

FIRE PROTECTION SYSTEMS SUMMARY

Building H: Brewster Library, Classrooms

Fire Protection Systems

The building was constructed in 2004 and was certified LEED Silver.

The 6" sprinkler service was installed in 2004. It is a wet pipe system. There is a detector double check valve backflow preventer with a water meter and testable double check backflow preventer.

The system is connected to the fire alarm and has a single 4" fire department connection and an electric alarm bell.

Sprinklers are glass bulb quick response style sprinklers which have a remaining life over 30 years.

The condition of the fire protection system is excellent.

Recommendations Summary

- *Provide sprinklers for spaces if room layouts are revised.*

Building I: Patrick Classrooms

Fire Protection Systems

The building was constructed in 1958. A large part of the building was demolished to make room for the playground.

The fire protection system is fed from Building J and is vintage 1980.

The condition of the fire protection system is good.

Recommendations Summary

- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building J: Draper Gym, Classrooms

Fire Protection Systems

The building was constructed in 1958.

The 6" sprinkler service is located on the ground level and was installed in 1980. It is a wet pipe system with small glycol system outside.

There is no backflow preventer at the sprinkler riser. The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

FIRE PROTECTION SYSTEMS SUMMARY

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building K: Sanders Facilities

Fire Protection Systems

This building was constructed in 1959. This building has the main boiler plant as well as classrooms, museum and kitchen facilities.

The 6" sprinkler service is located in the boiler room and is believed to be installed in 1980. It is a wet pipe system.

There is no backflow preventer at the sprinkler riser. The system is connected to the fire alarm and has a two-outlet fire department connection, electric alarm bell and water motor gong.

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

Recommendations Summary

- *Install a backflow preventer at the sprinkler service and rebuild the riser with new components and 4" single outlet fire department connection.*
- *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.*
- *Provide sprinklers for spaces if room layouts are revised.*

Building K: Sanders Kitchen, Museum

Fire Protection Systems

Sprinklers are a mix of different style sprinklers and ages that have been installed or replaced over the years.

The condition of the fire protection system is good.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS
FIRE PROTECTION SYSTEMS SUMMARY
Recommendations Summary
• *Replace all sprinklers with quick response type. Sprinklers in ceilings would be two-piece white finish and sprinklers in unfinished spaces will be upright or pendant bronze finish.* • *Provide sprinklers for spaces if room layouts are revised.*
State Park: Gatehouse & Additional Parking
Fire Protection Systems
The gatehouse was constructed in 1973. The gate house does not have a fire protection system and is not required.
Recommendations Summary
• *None.*

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

MECHANICAL SYSTEMS SUMMARY

Applicable Codes

2016 ASHRAE 62.1, 2016 ASHRAE 90.1, 2015 IECC

Building A: Mansion

Mechanical Systems

Heating hot water originates from the main boiler plant in Building K. Underground pipes enter the building in the basement from building K into the basement of Building A where it's piped to a shell and tube heat exchanger which appears to be at the end of its useful life.

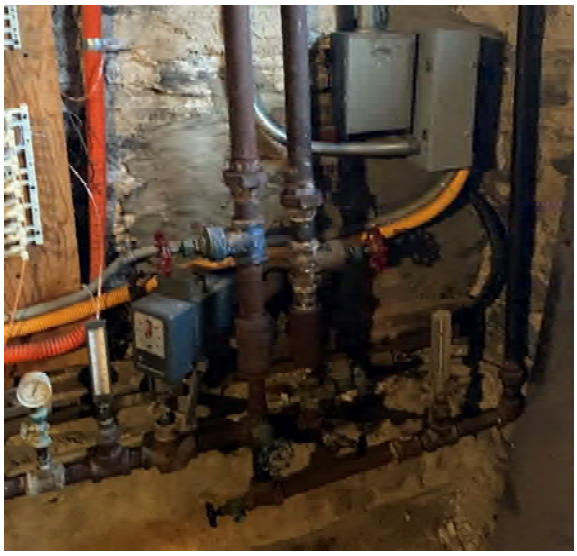


Figure 1- Hot Water Entrance

Zone pumps in the basement circulate water from the load side of the heat exchanger to individual zones in the building. The 3 story building is divided into 2 zones. The first floor is zone 1. The second and third floor makeup the other zone. Each zone is controlled by a single thermostat located in a hallway. Portable, electric heaters were observed in multiple rooms indicated that the building lacks sufficient zone control.

There are no central mechanical ventilation systems nor is there a central cooling system for the building.

The condition of the mechanical system is fair.

Recommendations Summary

- *Evaluate the need for an intermediate hydronic heat exchanger.*
- *Evaluate heating loads in the building.*
- *Provide additional fin tube hydronic heat to meet heating loads.*
- *Upgrade controls to provide zone control in each room.*
- *Provide central energy recovery unit for proper ventilation of individual space.*
- *Review cooling requirements with the Owner and evaluate options for a central cooling system.*
- *Review variable refrigerant flow system as an option for heating and cooling.*

Building B: Young Hall

Mechanical Systems

It was constructed in 1959.The building is not being used and has been condemned.

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

MECHANICAL SYSTEMS SUMMARY

The building's heating hot water loop has been disconnected from the central heating plant loop.

The condition of the mechanical system is poor.

Recommendations Summary

- *A complete replacement of the mechanical system is needed to occupy the building.*

Building C: Taylor Hall

Mechanical Systems

Heating hot water originates from the main boiler plant in Building K. Pipes are installed in the connectors from Building K to Building C. Most spaces are heated with perimeter fin tube with cabinet unit heaters in some of the larger rooms.

A single thermostat on the first floor controls heat for the entire 2 story, 13,000 square foot building. Most of the piping is exposed in the first floor corridor where it's piped to first floor terminal units and up through the second floor.

There are no central mechanical ventilation systems nor is there a central cooling system for the building. One of the shower rooms lacks proper exhaust.

The condition of the mechanical system is fair.

Recommendations Summary

- *Upgrade controls to provide zone control in each room.*
- *Provide central energy recovery unit for proper ventilation of individual space.*
- *Review cooling requirements with the Owner and evaluate options for a central cooling system.*
- *Review variable refrigerant flow system as an option for heating and cooling.*

Building D: Greenlaw Classrooms, Offices

Mechanical Systems

The building was renovated in 1997 when new mechanical systems were installed. Heating hot water originates from the main boiler plant in Building K. Pipes are installed in the connector from Building K to Building D. Pipes are connected to a single circulating pump which is capable of boosting water flow in the building if the central campus pumps cannot provide adequate flow.

Figure 2 - Booster Pump

Two air handlers provide heating and ventilation to parts of the building. Classrooms along the south wall are served with unit ventilators connect to outdoor air louvers for ventilation. Pressure relief louvers were designed to allow air to exhaust to the outside when the unit ventilators are in economizer mode. Many of the louvers at the ground floor have been blocked with plywood indicating that at least one unit ventilator is not capable of providing outdoor air for ventilation as well as preventing economizing. The unit ventilators are past their typical useful life.

There is no central cooling system for the building.

The condition of the mechanical systems are very good.

Recommendations Summary

- *Consider replacing existing unit ventilators*
- *Repair and replace intake and relief louvers at the ground floor.*
- *Review cooling requirements with the Owner and evaluate options for a central cooling system.*

Building E: Garage-Inman

Mechanical Systems

The main garage is served by a single, oil-fired furnace which is connected to a simple ducted air distribution system. The furnace was installed approximately 6 years ago and appears to be in excellent condition.

Figure 3 - Oil-fired Furnace

The associated office space is cooled with terminal air conditioner typically installed in the windows of homes. The air conditioner rejects heat into the main garage rather than be installed in a window.

Ventilation is achieved through air infiltration when garage doors are opened.

The condition of the mechanical systems are very good.

Recommendations Summary

- *Consider adding a small heat recovery unit with electric heat for proper ventilation of the office.*

Building G: Carter

Mechanical Systems

Heating hot water originates from the main boiler plant in Building K. Pipes are installed in the connector from Building K to Building G. Pipes are connected to circulating pumps which are capable of boosting water flow in the building if the central campus pumps cannot provide adequate flow.

Hot water is piped to perimeter fin tube as well as some heating and ventilation units which provide ventilation to limited areas of the building. One unit is dedicated to the recreation room which is currently used as a carpentry space for the campus. Another unit is located above the ceiling in the classroom area and only serves 4 of the classrooms along the north wall and some support spaces. Rooms along the south wall are not ventilated.

The condition of the mechanical systems are good.

Recommendations Summary

- *Upgrade controls.*
- *Remove existing classroom ventilation unit and provide central energy recovery unit for proper ventilation of the entire classroom wing.*
- *Review cooling requirements with the Owner and evaluate options for a central cooling system.*
- *Review variable refrigerant flow system as an option for heating and cooling.*

Building H: Brewster Library, Classrooms

Mechanical Systems

The building was constructed around 2003. Heating hot water originates from the main boiler plant in Building K. Pipes are installed in the connector from Building K to Building H. Pipes are connected to a single circulating pump which is capable of boosting water flow in the building if the central campus pumps cannot provide adequate flow.

A single air handler provides warm and cool air to variable air volume boxes and then supply diffusers throughout the building which are a mix of displacement diffusers and overhead ceiling diffusers. Typically, displacement diffusers should not be served by the same air handler as overhead ceiling diffusers when cooling is provided. This has the potential to create temperature control issues in spaces when cooling is required. Typical displacement systems supply cooler air in the winter and warmer air in the summer which is not compatible with some overhead delivery systems.

Figure 4 - Radiant Floor Pumps

Heating is achieved mostly through radiant floors which is served by a separate hydronic loop providing low temperature water from a dedicated set of pumps is in the mechanical mezzanine. Heat is also achieved with some perimeter fin tube and cabinet unit heaters which is connected to main, high temperature water loop. The scope of the control system was reduced when the building was constructed so there are spaces that are not maintaining a comfortable temperature.

It was observed that the air systems in the main lobby outside the Library were noisy.

The condition of the mechanical systems are very good.

Recommendations Summary

- *Review controls and upgrade to provide proper control of radiant floor and displacement systems.*
- *Review and provide sound attenuation for the air side systems.*

Building I: Patrick Classrooms
Mechanical Systems
Heating hot water originates from the main boiler plant in Building K and serves perimeter fin tube. The building lacks mechanical ventilation. The condition of the mechanical systems are good.
Recommendations Summary
• *Upgrade controls.* • *Provide central energy recovery unit for proper ventilation. Could be combined with ventilation upgrades to Building J.* • *Review cooling requirements with the Owner and evaluate options for a central cooling system.* • *Review variable refrigerant flow system as an option for heating and cooling.*

Building J: Draper Gym, Classrooms

Mechanical Systems

Heating hot water originates from the main boiler plant in Building K and serves air handlers, unit ventilators, and perimeter fin tube. Pipes are connected to a single circulating pump which is capable of boosting water flow to the auxiliary gym if the central campus pumps cannot provide adequate flow.

The main gym is served by two air handlers that are hung from the structure and mounted high in the space and appear to be in good condition. The air handlers provide heat and ventilation with some exposed ductwork and low returns. The smaller auxiliary space is served with unit ventilator hung in the adjacent storage room. The supply grille is missing and return air is transferred though louvers in the storage room doors which are in need of repair.

Figure 5 - Gym AHU

The locker rooms exhaust systems were installed in manner that required drip trays or diverters to prevent cold air drafts.

The condition of the mechanical systems are fair.

Recommendations Summary

- *Repair supply grille in the auxiliary gym*
- *Repair storage room doors.*
- *Replace locker room exhaust system.*
- *Upgrade controls.*
- *Provide central energy recovery unit for proper ventilation. Could be combined with ventilation upgrades to Building I.*
- *Review cooling requirements with the Owner and evaluate options for a central cooling system.*
- *Review variable refrigerant flow system as an option for heating and cooling.*

Building K: Sanders Facilities

Mechanical Systems

Heating hot water originates from the boiler room in this building which provide heating hot water for the entire campus.

A majority of the building is heated with perimeter fin tube which can be boosted with pumps located in the basement. Most spaces lack mechanical ventilation. The conference room area is the only space that is cooled and ventilated which is done with a packaged rooftop unit. The computer technology spaces are cooled with two ductless units.

The building contains a commercial kitchen with an island type hood that is oversized for the amount of cooking equipment under it. The kitchen freezer and cooler condensing units are located in the basement in a mechanical room which can be exhausted when the space gets too warm.

There are commercial dryers located in the basement which are manifolded into a common exhaust before terminating outside the building.

Figure 6 - Kitchen Hood

The boiler plant consists of two oil-fired boilers. Boiler 1 has a capacity of 3,562 MBTU and Boiler 2 has a capacity of 4,023 MBTU. One boiler is used as the lead boiler without sharing lead responsibility with the other boiler which only acts as a lag boiler when the lead boiler cannot keep up with demand. Oil for the boilers is stored in an underground 10,000 gallon tank. Oil is pumped directly to the boiler burners and bypasses the oil pre-heater which is abandoned in place.

Three base mounted pumps circulate water from the boiler plant to the heating loop that extends to each building on campus.

The condition of the mechanical systems outside of the boiler room are good. The boiler plant has been well maintained and is in very good condition.

Figure 7 - Main Heating Pumps

Recommendations Summary
• *Upgrade controls.* • *Provide central energy recovery unit for proper ventilation.* • *Review cooling requirements with the Owner and evaluate options for a central cooling system.* • *Review variable refrigerant flow system as an option for heating and cooling.*

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS

ELECTRICAL SYSTEMS SUMMARY

Applicable Codes

NEC, NFPA, IEC

Site Power Distribution

Electrical Systems

The existing power distribution system for the island is fed from two main sets of Central Maine Power transformers located in vaults, likely utilizing exposed parts based on age (1950s). These vaults were not accessible at the time of survey, and are original to the installation of the buildings in which they reside (Buildings B and C). These transformers bring the voltage down to 120/208V 3PH which is distributed around the island to each remote building via overhead power lines. Connections from these lines are made directly into the majority of the buildings, without the use of pole mounted transformers.

There is one additional small transformer located at the gatehouse, and one meter located at this pole which serves to meter the usage of all buildings on the island.

Incoming Power and transformers at Gatehouse

Main Island Meter at Gatehouse

Building A: Mansion

Electrical Systems

Power distribution – the building is provided with power directly from the island overhead poles into the building main power panel at 120/240V, 1PH which is located on the second floor. There is an additional electrical panel in the basement. GFCI receptacles were located at appropriate

ELECTRICAL SYSTEMS SUMMARY

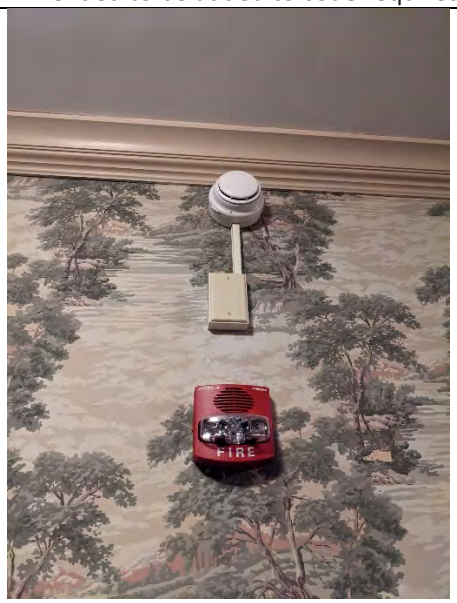
locations, but appeared to be old style and are recommended to be changed out. TR type receptacles are also recommended for any areas accessible to the general public such as corridors and conference/meeting rooms.

Lighting is generally fluorescent, and only one instance of dimming was noted. No vacancy/occupancy sensors are provided. Generally, the lighting levels in this building were low. An upgrade to LED lighting with appropriate code required energy controls based on building type are recommended.

Minimal exit lights were provided – some locations were lacking appropriate exit lights. Signs are old, but functional. Paths of egress will need to be coordinated with any reuse design and paths properly marked.

Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code and egress paths properly lite.

Fire alarm – the panel and devices appear to have been replaced within the last few years to a Simplex panel. Existing devices appeared to be in good condition, though only Smoke Detectors and Speaker Strobes were witnessed. Carbon monoxide detection was not observed and is recommended to be added to code required areas based on building occupancy type.



Fire Alarm Devices

Existing GFCI Receptacles

Existing IT and communications equipment appears to enter in the basement. IT rack is also located in basement. Equipment appeared to be in good condition. Additional communications cables may

ELECTRICAL SYSTEMS SUMMARY

be required based on updates to building usage. No existing wireless access points or public speakers were observed.

Building B: Young Hall

Electrical Systems

The electrical service to this building is provided via a bank of CMP transformers located in a vault on the lowest level (walkout basement level). The transformers feed several of the other campus buildings (exact buildings served is to be determined). There is a main electrical room on the same (basement) level which contains a 225A MDP, a transfer switch that is no longer in use, and feeds to Building G. Two additional distribution panels are located on the floors above. Age of the panels was noted as beyond recommended life.

Lighting is comprised of fluorescent fixtures, many of which have been broken due to vandalism. Much of the lighting is not powered and currently not in use. Minimal dimming controls were noted.

There is Exit signage that will require removal and proper disposal.

Emergency lighting is existing battery units (EBU) and will need to be removed and the batteries recycled and the remaining components disposed of properly.

Fire alarm – existing fire alarm cabinet is a Simplex panel located on one of the upper floors. It appeared to be in fair condition. Existing devices could not be determined to be functional. It is recommended to remove panel and devices and return to owner for testing and possible re-use.

Demolition – It is recommended that electrically, the building systems be demolished and new, safer transformers from CMP be located on the site in order to replace existing old transformers.

Existing Light Fixtures

MACKWORTH ISLAND CONCEPTUAL UTILIZATION PLAN – FACILITIES ASSESSMENTS	
ELECTRICAL SYSTEMS SUMMARY	
	CMP Xfmr Vault
Building C: Taylor Hall	
Electrical Systems	

The main electrical panel is on the upper floor. There is a second panel on this floor provided with emergency power. The normal power panels are older, but in fair condition. The emergency panel is newer, a 100A Square D panel in good condition. Both normal and emergency power to Building C are fed from Building K via connectors through Building H. There is an additional power pole extending from Building C out to an outdoor picnic area.

Lighting is comprised of various styles of surface mounted fluorescent fixtures of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures are beyond their recommended life, and many are dirty. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Existing exit signage is present, but unlit. Exit signs will need to be replaced. Paths of egress will need to be coordinated with any reuse design and paths properly marked.

Emergency lighting is existing battery units (EBU). The units will need to be tested to ensure they function properly before re-using.

Fire alarm – existing speaker strobes and smoke detectors were witness. Locations will need to be reviewed for compliance with the latest NFPA code, and tested for functionality. No specific fire alarm cabinet was witnessed in this building – it may be sub-fed from Building H or Building K.

Teleommunications systems (data drops, telephones) were noted in the building, however a dedicated telecommunications closet was not noted during the survey.

ELECTRICAL SYSTEMS SUMMARY

Existing Light Fixtures

Existing Elec Paenl

Building D: Greenlaw Classrooms, Offices

Electrical Systems

The MDP for this building is fed from a pad mounted transformer outside the building and is located on the lower floor, and shares a room with the fire pump and riser. This poses a risk to allow water in the electrical room. This does not meet the requirements of the current NFPA 70 code requirements. In addition to the MDP, the bottom floor electrical room also contains two additional panels (one normal, one emergency) and an ASCO transfer switch. Two additional panels (one normal, one electrical) are located in a closet near the stairs on the middle floor of the building. The panels in this building are a mix of GE and Square D. GE panels appear to be older, and nearing end of life. The emergency ATS appears to be fed from Building K, via connector.

Elevator – This building has two elevators. The elevator machine room is located near the Main Elevator on the ground floor, next to a stairwell.

Lighting is comprised of various styles of surface and pendant mounted fluorescent fixtures of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures are beyond their recommended life, and many are dirty. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Exit signage is present are lit. The signs are old but functional.

Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code.

ELECTRICAL SYSTEMS SUMMARY

The fire alarm system appears to be in good condition. A Simplex FACP is provided adjacent to the Elevators on the bottom floor. Smoke Detectors, covered fire alarm pull stations, and speaker strobes were witnessed during the survey. The locations of all devices are recommended to be reviewed to ensure compliance with the latest NFPA 72 requirements.

Card Access is provided at several doors into this facility. It appears that the locks only prevent ingress, and pose no barrier to egress.

Other existing telecommunications systems in the building appeared to be functional. Dedicated IT rooms were noted.

Fluorescent Pendant Strip Lights

Ex. Space – Needs Daylight/Vacancy Controls

Building E: Garage-Inman

Electrical Systems

This building is powered via overhead connection from the campus pole system. Both a normal power and an emergency power panel are provided. Emergency power appears to also be run to the building via the overhead lines, separated by about 12" of space on the poles. The emergency panel is 100A, newer panel (less than 10 years). The normal panel is quite old and degraded and will need replacement. The panels are often exposed to weather as one side of the building has large garage bay doors that are frequently open.

Much of the building is provided with stainless steel junction boxes and receptacles. GFCI's are provide in many locations. Large power draws in this building include the garage door openers and heaters. The Door openers, lights, and office computer receptacles are provided with emergency power.

Existing lighting is open suspended fluorescent bulb type fixtures, of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures appear functional for

ELECTRICAL SYSTEMS SUMMARY

their industrial use. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

There is no existing fire alarm system. Fire extinguishers are provided throughout the facility.

Communications systems were not reviewed as a part of this survey. It is expected that this building has minimal telecommunications connections for computers and phones.

Deteriorated Panelboard

Incoming Overhead Power

Building G: Cartier

Electrical Systems

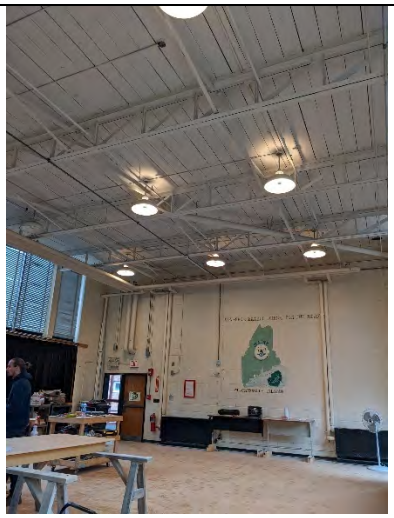
Existing Electrical service is provided via connector to building K. The building is currently not occupied, and undergoing some renovation. Two panels are provided in the corridors, one normal and one emergency. The main panel is 100A. Extensive MC cable was noted above the ceiling.

Existing lighting is suspended fluorescent bulb low bay type fixtures, of which demolition will require the lamps to be recycled and properly disposed of. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Existing fire alarm is provided via a Simplex FA panel. Smoke detectors were noted inside old classrooms.

Existing telecommunications system were not witnessed at the time of survey.

ELECTRICAL SYSTEMS SUMMARY



Existing Low Bay Light Fixtures

Existing Lighting Controls

Building H: Brewster Library, Classrooms

Electrical Systems

The newest building on campus (2004), this building is served via a Main Electrical room on the bottom floor. The electrical room shares space with the Fire Sprinkler room, which has reportedly leaked in the past. This does not meet the latest requirements of NFPA 70. The MDP was locked at the time of survey (estimated at 400A). A Cummins transfer switch is also provided in the main electrical room for emergency power. Power for both Normal and Emergency is run via the connector to Building K. Panels were Eaton Cutler-Hammer and in like-new condition.

Fire Alarm – An existing Simplex panel is located in the main electrical room. Speaker strobes, were witnessed throughout the building. The system is in good condition. The locations of all devices are recommended to be reviewed to ensure compliance with the latest NFPA 72 requirements.

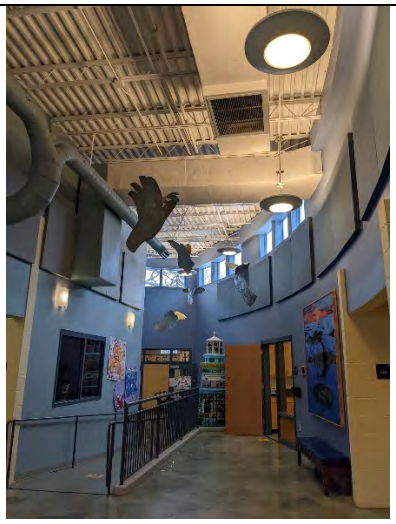
Lighting is comprised of various styles of surface and pendant mounted fluorescent fixtures of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures are beyond their recommended life, and many are dirty. Dimming and occupancy sensor capability was witnessed in specific areas (“the lab”) of the building. A Sapling time and control system was noted on the wall in the Electrical room. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Exit signage is present and fixtures are lit. The signs are newer, and may be LED. They appeared fully functional.

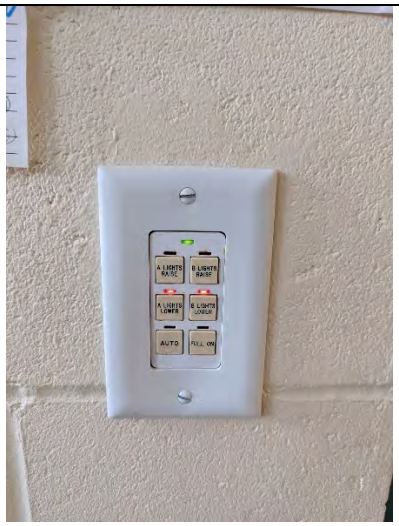
Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code.

ELECTRICAL SYSTEMS SUMMARY

A dedicated telecommunications room was noted during the survey with a full floor mounted rack. Existing data drops were noted throughout the building, and all appeared to be in good condition. No speakers or wireless access points were noted.



Interior Lighting



Lighting Controls

Building I: Patrick Classrooms

Electrical Systems

This building is provided with only one Electrical panel, which appears to be on normal power. Power appears to be provided via connector to building D (may run all the way back to building K).

A push to exit button is provided at one of the main egress doors. It should be confirmed that this door fails open should power be lost to the door controls.

Lighting is comprised of various styles of surface mounted fluorescent fixtures of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures are older, and beyond their recommended life. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

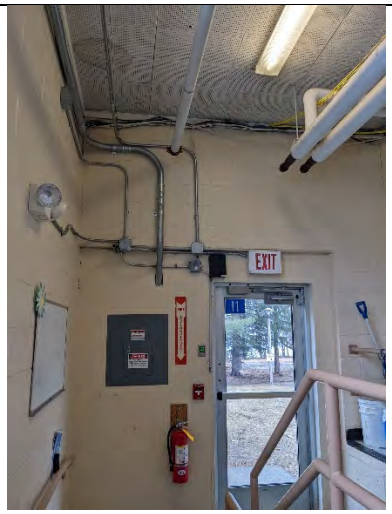
Exit signage is present and fixtures are lit. The signs are newer, and may be LED. They appeared fully functional.

Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code.

ELECTRICAL SYSTEMS SUMMARY

Fire alarm pull stations and speaker strobes were noted during the survey. No smoke detectors, CO detectors, etc. were noted. A dedicated fire alarm panel was not noted in the building. This building may be connected to Building D Fire Alarm Control Panel.

A telecommunications room is provided, however it is shared with general storage.



Lights, Elec Pnl, Exit Lights

Push to Exit Button.

Building J: Draper Gym, Classrooms

Electrical Systems

The Main Electrical panel for this facility is in the lobby. The 225A panel is fully backed by the generator in Building K. There are two additional panels, one located in the main gymnasium area, and one provided behind the stage to provide power to the stage lighting system. Existing power panels are Square D type and in fair condition.

Lighting in the main gymnasium is high bay type with guard rails and on-luminaire occupancy/vacancy sensors that slowly dim fixtures based on percentage. Additional theatrical lighting is provided at the stage area. All fixtures appear to be fluorescent type, pendant or rail mounted. Reuse of these fixtures is possible, utilizing LED replacement bulbs. Stage lighting if still required, appears functional and able to be re-used.

Existing sound system for stage appeared to be outdated. It was not witnessed during the survey whether the system is functional.

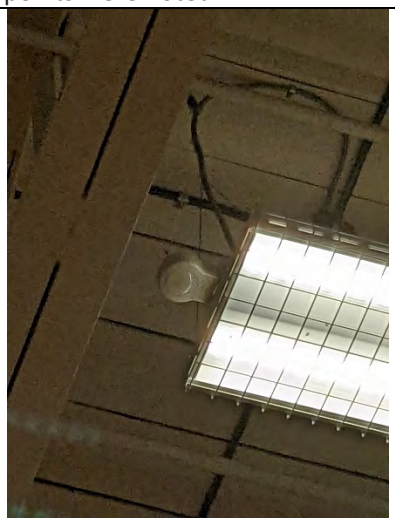
Exit signage is present and fixtures are lit. The signs are newer, and may be LED. They appeared fully functional.

ELECTRICAL SYSTEMS SUMMARY

Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code.

Fire alarm speaker strobe devices and pull stations (with protective wire guards in gymnasium area) were witnessed as a part of the survey. No fire alarm control panel was witnessed as a part of the survey. Building may be connected to Building D fire alarm system.

Existing communications systems were not noted during the survey with the exception of the stage sound system speakers. No public address speakers, telecommunications data drops, or wireless access points were noted.



Gymnasium fixture with Controls

Stage Lighting

Building K: Sanders Facilities

Electrical Systems

This section addresses the facilities area only of Building K. This building houses the campus boilers, emergency generator, as well as other main campus equipment. The normal power for this building is provided from the campus power poles, via an overhead connection. Three square D type panels are provided within the building area, as well as an Onan transfer switch. All three panels appear to be on emergency power via the transfer switch, and all equipment is in fair condition.

The existing emergency generator is a 208V, 3PH 100kW Onan Genset that is approximately 20 years old. The generator is fed via an underground #2 diesel fuel tank, which is separate from the diesel fuel tank feeding the boilers and other mechanical equipment. This generator serves emergency power for the entire campus. It was reportedly able to run for close to a week without additional fuel requirements at the current campus load. Clearance around the generator does not meet the latest code requirements as it is placed very close to an expansion tank.

ELECTRICAL SYSTEMS SUMMARY

Existing lighting is open suspended fluorescent bulb type fixtures, of which demolition will require the lamps to be recycled and properly disposed of. The majority of fixtures appear functional for their industrial use. No visible dimming or occupancy controls were witnessed. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Exit signage is present however they are reflective signs and not illuminated. New, LED type signs should be provided to meet current code requirements.

Emergency lighting is existing battery units (EBU) and will need to be tested to ensure compliance with NFPA 101 life safety code.

Fire alarm speaker strobe devices and pull stations were witnessed as a part of the survey. No smoke detectors were witnessed. Fire extinguishers were provided. Fire alarm control panel appears to be inside the building office, however it was not directly witnessed as a part of the survey. Per the panel schedules, a Siemens panel is provided. Fire alarm devices appear to be in good condition.

A siren system is provided in this building.

Existing communications systems were not noted during the survey. No public address speakers, telecommunications data drops, or wireless access points were noted. It is assumed that telecommunications is provided within the building office, however the office was not accessible for survey at the time of entry.

Generator Adjacent to Expansion Tanks

Electrical Panels and Transfer Switch.

Building K: Sanders Kitchen, Museum

Electrical Systems

ELECTRICAL SYSTEMS SUMMARY

The remainder of Building K is provided with Normal and Emergency Power via the Main Electrical room in the facilities area. Additional distribution panels include a small power panel within a conference room, and power panel in a corridor, and several panels provided in the Kitchen area. All panels were older, painted in walls, and not accessible. They appeared to be older (20+ years). The kitchen area is still used, however not at full capacity. An additional electrical room at the other end of the building on the lower level includes several square D panels, a Kohler transfer switch, and subfeeds to buildings A and C. One very old panel in this room is beyond it's useable life. The rest are in fair condition.

Building K houses the second bank of CMP transformers located in a vault on the lowest level (walkout basement level). The transformers feed several of the other campus buildings (exact buildings served is to be determined). This room was not accessible at the time of survey, and it is expected that the transformers are approximately 50 years old and likely of the open/exposed parts type.

Lighting in the building includes surface mounted, pendant type, as well as downlights in lay in ceilings, 1x4 Lay-in type fixtures, Low Bay lighting (storage area), and U-tube fluorescent lay in 2x2 fixtures throughout the building. No dimming controls or occupancy/vacancy sensing were noted during the survey. All fixtures appear to be fluorescent type. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Exit signage is present and fixtures are lit. The signs are older, non-LED type. They appeared fully functional. New, LED type signs should be provided to meet current code requirements.

Emergency lighting is existing battery units (EBU) appear original to building in some cases. Old fixtures should be replaced, and newer fixtures and will need to be tested to ensure compliance with NFPA 101 life safety code.

Fire alarm speaker strobe devices and pull stations as well as smoke detectors were witnessed as a part of the survey. No fire alarm control panel was witnessed as a part of the survey. Building may be connected to Building D fire alarm system.

Existing communications systems including wireless access points (WAPs), data drops, and telephone connections were noted during the survey. A telecommunications rack was found to be located in the lower level electrical room. No public address speakers were noted in the facility.

ELECTRICAL SYSTEMS SUMMARY

Exit Sign, WAP, Battery Light

Ex. Inaccessible Panels Serving Kitchen

State Park: Gatehouse & Additional Parking

Electrical Systems

Service to the Gatehouse is provided from a site utility pole via a small transformer (as the pole in this location has not yet been transformed down to 208/120V power). The feeder is then routed underground and up into the site of the Gatehouse. An electrical panel was not witnessed inside the facility, however no access was available at the time of survey and observations were made through various windows. It is assumed a small electrical panel is present within the building to serve lights, power, and security cameras as well as the traffic arm. There is no emergency power provided at the Gatehouse.

Lighting in the building includes surface mounted circular fluorescent fixtures as well as inlaid down lights on the interior, and several inlaid downlights under the overhang of the exterior. No dimming controls or occupancy/vacancy sensing were noted during the survey. All fixtures appear to be fluorescent type. Reuse of these fixtures is not expected with LED technology replacing fluorescent lamp technology and the age of the light fixtures.

Exit signage is not provided as the building appears to be only one or two rooms with direct access to an egress door.

No emergency lighting is provided.

No fire alarm devices are present at the gatehouse. A Fire extinguisher is provided within the building.

ELECTRICAL SYSTEMS SUMMARY

No existing telecommunications systems were noted at the gatehouse. No phones were provided, though a computer workstation was noted. Communications connection to the workstation was not able to be confirmed.

A security camera system is installed on the exterior of the gatehouse.

Power Entry to Gatehouse

Ext Lighting and Security Camera

A2: HISTORIC CHARACTER ASSESSMENT

REPORT BY KLEINFELDER

Report contents include a reconnaissance level review of all GBSD/MEC-DHH campus buildings and connector structures that are over 45 years old. Buildings are reviewed for level of intact architectural character and historic significance. Report observations and recommendations have been summarized in the Master Plan document.

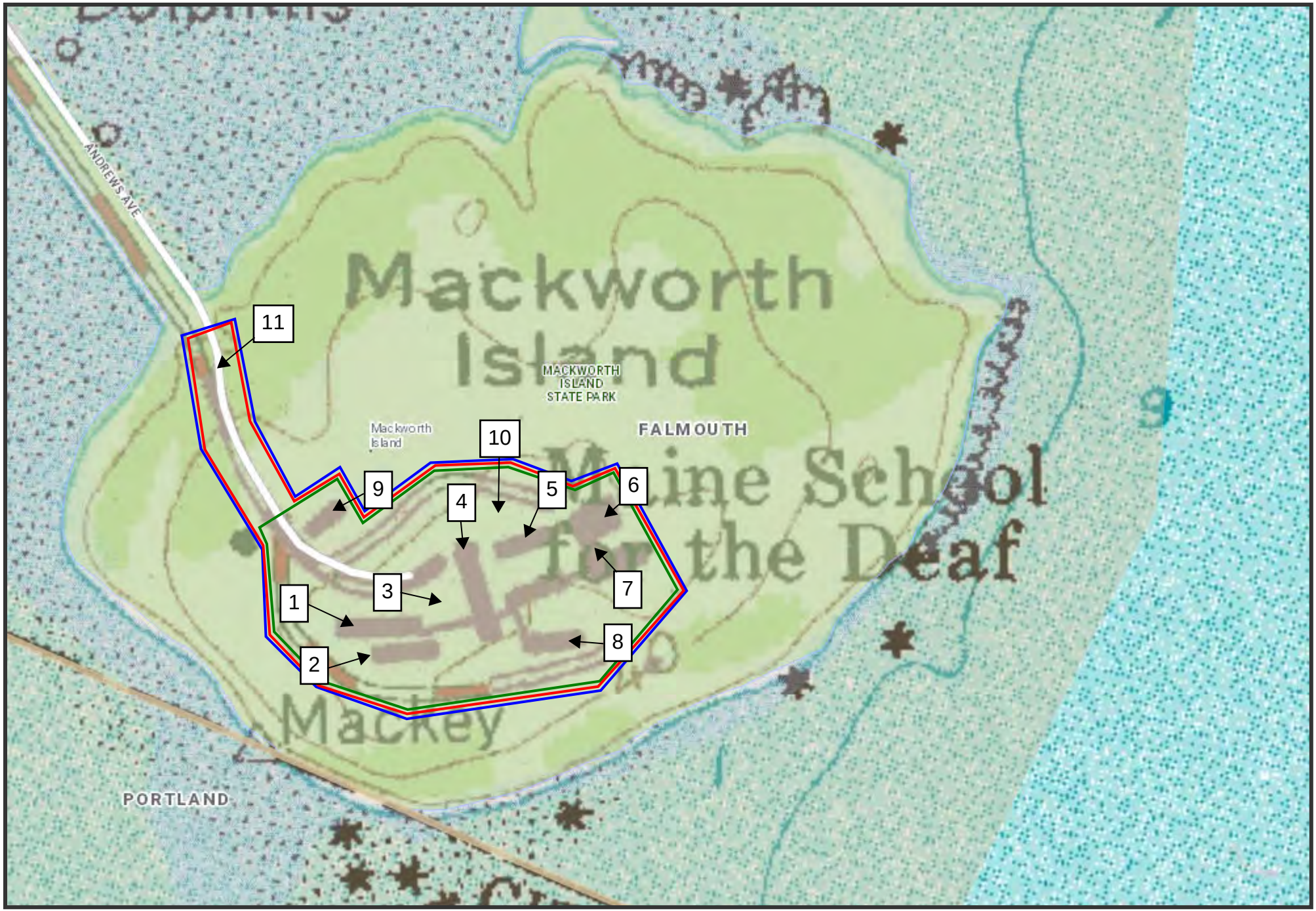
DIGITAL RECORDATION SUMMARY

To meet historic archival requirements, it is understood that a digital recordation process is acceptable for buildings identified for removal in the Master Plan recommendations.

APPENDIX A

ARCHITECTURAL HISTORY SURVEY

MACKWORTH ISLAND STUDY



Baxter School for the Deaf Architectural Survey

APE — Survey Area — Baxter School for the Deaf HD

0.1 Miles

1 inch = 0.09 miles

N

Architectural Survey Report
Conceptual Utilization Plan
Mackworth Island
Falmouth, Maine

Erin Ware
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16 Commerce Drive, Suite 2
Augusta, Maine 04330
eware@kleinfelder.com
(207)626-4919

Prepared for:

Sponsoring agency or entity

Harriman on behalf of Maine Bureau of General Services

Dates:

Provide the dates from when the project was started up through when the report was written and/or revised and submitted.

March 31, 2022 – April 15, 2022

Level:

Reconnaissance or Intensive

Reconnaissance

Name of surveyors:

(If different from author, provide contact information for each surveyor.)

Erin Ware

Continuing project?

If so, please summarize previous efforts.

No.

I. EXECUTIVE SUMMARY

Harriman, on behalf of the Maine Bureau of General Services, is completing a Conceptual Utilization Plan for Mackworth Island in Falmouth. There are eleven properties in the survey area that were identified as 45 years or older. Two resources were previously surveyed. One resource is listed in the National Register of Historic Places and eight resources are eligible for the National Register as part of the Baxter School for the Deaf Historic District.

II. RESEARCH DESIGN AND BACKGROUND RESEARCH

A. Basis:

Describe the purpose of this survey. Identify the Federal or State regulations mandating this survey, or any Programmatic Agreements associated with this project.

The purpose of the survey is to identify and document all resources 45 years old or older within the study area and evaluate eligibility for listing in the National Register of Historic Places.

B. Project Description / Scope of Work:

Describe the underlying project, specifically citing the type of project and duration of project. Summarize planned or anticipated alterations to landscapes, buildings, structures, districts, objects or sites.

Harriman, on behalf of Maine Bureau of General Services, is completing a Conceptual Utilization Plan for Mackworth Island in Falmouth.

C. Area of Potential

1. On a USGS topographic map draw the outermost boundary of the area of potential effect in red. Label this line "Project APE". If necessary, additional topographic maps or overlays may be submitted showing the limits of each

Effect:

specific APE if more than one potential effect is present within the project area.

2. List all the potential effects associated with the above cited scope of work. Distinguish between direct and indirect effects when applicable.

The current scope of work is a conceptual utilization plan. As part of this plan, the historic structures related to the Baxter School for the Deaf were surveyed. Any effects, direct or indirect, would occur during later planning phases yet to be determined. Effects will be further outlined once more information including design plans are detailed for future projects. At this time, the architectural survey is capturing any historic resources that could be potentially affected by future projects.

3. Provide a narrative of how the geographical limit of each potential effect within the project area was established.

The Area of Potential Effect is defined as the area in which the project may cause alterations to the visual setting or characteristics of properties in the vicinity of the project. This definition is illustrated on the topographic map submitted with the survey package.

D. Survey Boundaries:

1. Draw the boundaries of the survey on the topographic map in blue or black and label this line "Survey Boundaries." The boundaries of a survey map include portions of a property that lie outside the APE.

2. Describe the limits of the surveyed area. The survey boundary may be larger than the APE. Make reference to geographic landmarks, addresses or political boundaries. Utilize reasonable demarcations – tree lines, back lots.

The survey area mimics the APE. The APE encompasses the boundaries of the Baxter School for the Deaf.

E. Survey Methodology:

1. Describe background research method.

The National Register Information System and MHPC files were consulted to determined if there are any properties in the APE that are listed in, or officially eligible for listing in, the National Register. Additionally the surveyor looked at MHPC files to determine if they contained any previously recorded resources within the APE. The surveyor researched local histories at the Maine State Library for information about properties in the survey area

2. Describe field research method.

The surveyor conducted an initial drive through the project area and determined there were resources present greater than forty-five years of age. Next, the surveyor walked the project area and recorded on MHPC survey forms all of the buildings, structures, sites, objects, and landscape features within the boundaries that appeared to be forty-five years old or older, and photographs were taken of each resource.

3. Did you undertake a file search at MHPC for NR or previously recorded properties?

Yes.

III. SURVEY FINDINGS

A. Acres:

Provide the total number of acres within the survey boundaries.

The survey area is approximately 10 acres.

B. Setting:

Provide a general overview of the setting, including topography, development, and landscape.

Mackworth Island, located approximately 2000′ from shore, was named for Arthur Mackworth, deputy of Sir Ferdinando Gorges, who was gifted the island in 1631. During the Civil War, Camp Berry was established on the island. Known as Mackey′s Island in the nineteenth century, it was purchased by James Phinney Baxter, a successful Portland businessman and future mayor, in 1885 from the Cushing family. Baxter constructed a summer home on the island for his large family. He also established a farm on the island that included dairy cows, hens, sheep, pigs, geese, and rabbits and produced 50 tons of hay and oats annually, in addition to various fruits and vegetables. The island passed to his son Percival Proctor Baxter and he built a second house in 1917. In 1943 Percival gifted the island to the State of Maine for use as either a correctional institution for minor children or school for the deaf. A campus made up of eight buildings was constructed beginning in 1955 and the most recent was completed in 2004. The first Baxter summer house was demolished in 1959 and most of the farm buildings were demolished in 1960. The farmhouse was burned in 2004. No farm buildings remain except for a stone water tower. The island is reached from the mainland via a causeway. There is a small parking lot and gate house near the entrance to the island. A walking path lines the perimeter of the island. The island is largely wooded with grassy fields surrounding the school buildings. The buildings are located on the high point of the island and the land slopes down gradually towards the water on all sides.

C. Number of Resources Recorded:

Count each individually recorded building, structure, object, or site.

11 resources were surveyed.

D. Previously Inventoried Properties:

Address whether any of the resources had been previously surveyed. If so, how many, and how were these properties represented and evaluated within the current project?

SM #3 and 10 were surveyed by J. Roberts in 1992. No determinations of eligibility were made at that time. New forms and photos have been uploaded to CARMA.

E. Types of Properties:

1. Summarize general trends within the project area: commercial, residential, urban, rural, etc.

The resources are educational, with the exception of SM #10 which had an agricultural use and is now unused, and SM #11 which is recreational. The setting is built-up rural.

2. Summarize the age, style, and condition of the resources within the project area.

SM #1, 2, 4-9 date from 1957-1961 and are Modern in style. SM #3 dates from 1917 and is Colonial Revival in style. SM #10 is a vernacular water tower from c.1885. SM #11 is vernacular and dates from 1973. The resources are in good to fair condition.

3. Describe in detail any potentially eligible individual properties or historic districts.

The Baxter Summer Home (SM #3) is listed in the National Register and is a contributing resource to the National Register-eligible Baxter School for the Deaf Historic District. The house is a two-story brick building on a fieldstone foundation. There are entrances on both the southern and eastern

elevations, both sheltered by porticoes. The southern portico is pedimented, supported by fluted ionic columns. The door is framed by a transom and sidelights. On either side of the entrance are a set of five casement windows topped by five smaller fixed windows. The casements are made up of six panes while the fixed windows contain nine panes. The sills are brownstone and the headers are flared brick. The second floor contains five bays, each with a pair of casement-fixed window configurations, excepting the center bay above the entry which contains a sixed paned casement flanked by two three paned casements and topped by an arched fixed pane. A stained-glass window sits above the center casement. There is a one-story enclosed porched on the western side of the southern elevation. The entry porch on the eastern elevation has a flat roof supported by paired Ionic fluted columns. The porch has been enclosed and a modern metal entry door added. The windows of eastern elevation are identical to those on the southern elevation. There is a circular solarium at the northeast corner of the house. The hipped roof is tiled. Two hipped dormers that contain sixteen-over-twelve double hung windows are located on each slope of the roof. The northern slope also contains a shed dormer in the center. There is an interior brick chimney on each slope of the roof.

The Baxter School for the Deaf (SM #1-9) is eligible for listing in the National Register. The school is a complex of eight interconnected buildings, as well as a free-standing garage and the Baxter Summer Home. The school is set on the high point of Mackworth Island. The buildings are long and rectangular. Most are placed horizontally and sited close to one another, with the Baxter Summer Home near the center of the complex. The buildings are connected by walkways that are enclosed either with glass or plywood and have flat roofs. The walkways have concrete foundations. One walkway is partially supported by concrete piers due to the slope of the site. There are remnants of recreational facilities adjacent to some of the buildings. The campus is connected via a mixture of paved and gravel paths and narrow roads. The area to the north, west, and east of the school is wooded and open to the south. One of the buildings, Brewster Hall, was constructed in 2004 and does not contribute to the eligibility of the school.

Carter Hall (SM #1), located on the western end of the school complex, is a one-story brick building on a concrete foundation with a shallow side gable roof. The façade is nine bays wide with the entrance located in the eastern-most bay. The entry is a set of metal doors flanked by full-height fixed windows and topped by fixed transoms. The other bays consist of sets of four two-over-two double-hung metal windows. The windows are recessed and surrounded by red and blue glazed bricks. East of the entrance is a large bronze plaque commemorating Governor Percival Baxter. Above the plaque are metal letters spelling out "Governor Baxter School for the Deaf." The western elevation contains a metal casement window and a metal entry door sheltered by a flat roof porch. The southern elevation contains bands of fixed metal windows alternating with metal doors. The center windows contain awning windows at the bottom. The eastern elevation contains an L-shaped extension off of which two enclosed walkways radiate.

Young Hall (SM #2) is located southeast of Carter Hall and is connected to it via an enclosed walkway. The two-story brick building sits on a concrete foundation and has a flat roof. The northern elevation is largely blocked

from view by the walkway. There are narrow bands of fixed windows at the top of either floor. The southern elevation is made up of bands of tall, fixed metal windows, most with awning windows at the bottom. Metal panels sit below the windows. Metal doors leading to metal balconies and staircases are located at either end of the elevation on the second floor. The staircases are floating, supported by concrete plinths set away from the building.

Sanders Hall (SM #4) is located east of Carter Hall and Young Hall in the center of the complex. It is connected to Carter Hall via a long enclosed walkway. The one-story brick building sits on a concrete foundation and has a flat roof. Due to the slope of the site, the southern third of the building contains two floors. The western elevation contains three entrances divided by narrow bands of metal framed windows just below the roofline. The northern most entrance is recessed. The center entrance is sheltered by a small enclosed porch with a gable roof. The southern entrance is located within the enclosed walkway. South of the walkway, the building reaches two stories in height, with each floor containing bands of tall, fixed metal windows, most with awning windows at the bottom. Metal panels sit below the windows. The southern elevation is made up of a center grouping of four tall metal windows framed by bands of narrow metal windows. The lower floor contains an entry in place of one of the tall center windows. The eastern elevation contains a band of tall, fixed metal windows with squares of colored glass placed in an irregular pattern. The northern elevation contains an entrance at the western corner. A narrow band of metal windows runs along the western half of the elevation. A large external brick chimney sits at the center of the elevation.

Greenlaw Hall (SM #5) is a two-story brick building on a concrete foundation with a flat roof located east of Sanders Hall. Due to the slope of the site, the western end of the building is only one story. It is connected to Sanders Hall via an enclosed walkway. The building has six bays with the entrance located in the eastern end. The entry is a set of double metal doors sheltered by a flat roofed overhang. Large, fixed metal windows with narrow transoms sit to the east of the entry doors. The section above the entry is clad in metal panels. West of the entrance is a protruding nearly full-height atrium which connects to a rounded metal clad protrusion that contains a staircase. The three western bays contain sets of fixed metal windows with muntin inserts, flanked by metal panels. The eastern elevation contains a set of tall, fixed metal windows with transoms at the northern corner. A glass enclosed walkway occupies the center of the elevation. A section of metal cladding runs up the center of the elevation. A band of four square fixed metal windows sits just below the roof line within the metal cladding.

East of Greenlaw Hall is Draper Hall (SM #6). The building is brick on a concrete foundation with a flat roof. It consists of a two-story center block with one-story extensions off the north, west, and south elevations. The northern extension contains a narrow former window that has been filled with a vent, a second window identical in size to the filled opening, a metal entry door, and a band of five fixed metal windows. The west extension contains the primary entrance. It consists of double metal entry doors topped by a transom and flanked by large, fixed metal windows also topped by transoms. A glass enclosed walkway on the western end connects to Greenlaw Hall (SM #5). The southern extension contains a band of narrow

fixed windows just below the roof line. The center block contains a row of clerestory windows on each elevation.

Patrick Hall (SM #7) is located along the western elevation of Greenlaw Hall. It is constructed of brick on a concrete foundation. The western elevation contains a band of tall, fixed metal windows with awning windows below. The southern elevation contains a large section of standing seam metal cladding and a metal entry door.

Taylor Hall (SM #8) is located south of Greenlaw Hall. It a two-story brick building on a concrete foundation with a flat roof. Each bay of the north elevation is identical on the first and second floors. The eastern end contains a block of four tall, fixed windows with awning windows below. The next bay to the west is a band of four fixed narrow metal windows placed near the top of each floor. The center three bays contain sets of four tall, fixed windows with small sliding windows located at the bottom of the middle two windows. The eastern most bay contains another band of four fixed narrow metal windows placed near the top of each floor. The eastern elevation contains two metal entry doors, one at the north end and one in the center. The center door is paired with a tall, fixed metal window. There is one opening on the second floor, located in the center of the elevation and consisting of a large, fixed metal window. There is a concrete patio off the eastern elevation, covered by a metal pergola. The southern elevation contains bands of tall, fixed metal windows, most with awning windows at the bottom. Metal panels sit below the windows. At the center of the second floor is metal door that leads to a balcony with a metal railing. The western elevation contains a block of six tall, fixed metal windows with awning windows below on both the first and second floors. A metal entry door takes the place of one of the windows on the first floor.

The Inman Garage (SM #9) is a one-story brick building on a concrete foundation with a flat roof. It contains seven garage bays on the northern elevation. The western elevation contains a metal entry door and two four-paned fixed horizontal windows with concrete sills. It is located northwest of the rest of the school buildings.

F. NR Eligibility:

1. Address resource integrity, NR criteria, area of significance and period of significance.

The Baxter Summer Home (SM #3) is listed in the National Register under Criteria A and C, Conservation and Architecture. It was built in 1917 for Percival P. Baxter, governor of Maine from 1921-1925 and a conservationist who donated the land that would become Baxter State Park to the state, as well as Mackworth Island. The house was designed by Frederick Thompson, an established Portland architect. It is an excellent example of the Colonial Revival style with some elements of the Renaissance Revival style. It has lost some integrity of design due to the enclosure of one of the entry porches. Its period of significance is it date of construction, 1917.

The Baxter School for the Deaf (SM #1-9) is eligible for listing in the National Register under Criteria A and C, Education and Architecture on the state level. The school is significant as the only public school in Maine devoted to the education of deaf and hard of hearing children. Founded in 1876 as the Portland School for the Deaf, the school had grown beyond the

capacity of its Spring Street location and lacked adequate recreational facilities. Former Maine Governor Percival Baxter donated the entire island to the state for use as a school in 1943. The site on Mackworth Island would allow the school to expand its course offerings to include high school curriculum. In addition to donating the site, Baxter also donated $750,000 towards the construction of the school buildings and a bridge between the island and the mainland. The school was relocated from Portland to Mackworth Island in 1957 and its name was officially changed. The new campus also included dormitories, allowing students from outside the area to more easily attend the school.

The Baxter School for the Deaf is an excellent example of Modern-style architecture in an educational use. It is an example of the post-World War II movement for school buildings to focus on simplicity and functionality with an emphasis on economical building materials such as steel and concrete. Large windows were preferred as they provided a connection to the outdoors. The Baxter School's lack of ornamentation, use of brick and steel, and bands of windows embody the characteristics of school design in the 1950s. Overall, the school retains a high level of integrity. The enclosed walkways were not part of the original design and were added c.1970. However, their addition does not greatly impact the integrity of design of the school buildings. Greenlaw Hall (SM #5) underwent significant alterations to the north elevation in 2003 and the windows were replaced throughout the building. The massing and placement of the windows are unaltered, allowing the building to convey significance. The southern end of Patrick Hall (SM #7), which originally housed the high school, was demolished in 2003. However, it retains enough of its original features to convey significance. Brewster Hall took the place of Barton Hall, the middle school building demolished in 2003. The addition of Brewster Hall does not significantly effect the integrity of the school due to its use of similar massing, fenestration, and materials. Some minor changes have been made to the setting including the demolition of the farmhouse in 2004. The period of significance is 1957-1972, fifty years from the current year.

Note: Research did not reveal sufficient information about the water tower (SM #10) to determine its relationship to the Baxter Summer Home and Baxter School for the Deaf and therefore its eligibility is undetermined.

2. For a historic district provide a topographic map showing the limits of the proposed district illustrating street or landscape views and all non-historic or non-contributing resources.

IV. BIBLIOGRAPHY

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Town(s):	Mackworth Island, Falmouth						
MHPC #							
Surveyor:		Erin Ware Kleinfelder 16 Commerce Drive, Suite 2 Augusta, ME 022230 (207) 626-4919					
Survey Date:		3/31/2022					
Map No.	**Street No.**	**Address**	**Town**	**Individually Eligible for NR**	**Contributing to an NR District**	**Criteria**	**Aspects of Integrity**
1	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
2	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
3	n/a	Andrews Avenue	Falmouth	Y	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Conservation.
4	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
5	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
6	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
7	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
8	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.

Map No.	Street No.	Address	Town	Individually Eligible for NR	Contributing to an NR District	Criteria	Aspects of Integrity
9	n/a	Andrews Avenue	Falmouth	n	Y	A, C	Retains sufficient integrity to convey significance under Architecture and Education.
10	n/a	Andrews Avenue	Falmouth	n	ND	n/a	Loss of integrity of feeling and association due to loss of associated farm.
11	n/a	Andrews Avenue	Falmouth	n	n	n/a	Retains integrity but is not associated with the original design of the school.

Photo Index

Erin Ware, Photographer
03/31/22

SURVEY MAP #	STREET NO.	ADDRESS	TOWN	DIGITAL IMAGE #S
1	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_001 Mackworth Island Study_001a Mackworth Island Study_001b
2	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_002 Mackworth Island Study_002a
3	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_003 Mackworth Island Study_003a
4	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_004 Mackworth Island Study_004a
5	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_005
6	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_006 Mackworth Island Study_006a
7	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_007 Mackworth Island Study_007a
8	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_008
9	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_009
10	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_010
11	n/a	Andrews Avenue	Falmouth	Mackworth Island Study_011

SURVEY MAP NO. 1

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Carter Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building G

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY	___ AGRICULTURE	___ COMMERCIAL/TRADE	___ FUNERARY
___ MULTI-FAMILY	___ GOVERNMENTAL	X EDUCATION	___ HEALTH CARE
___ INDUSTRY	___ RELIGIOUS	___ HOTEL	___ LANDSCAPE
___ TRANSPORTATION	___ DEFENSE	___ SUMMER COTTAGE/CAMP	___ SOCIAL
___ RECREATION/CULTURE	___ UNKNOWN		
___ OTHER			

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN	___ STICK STYLE	___ 19TH/20TH C. REVIVAL	X MODERN/CONTEMPORARY
___ FEDERAL	___ QUEEN ANNE	___ COMMERCIAL STYLE	___ MINIMAL TRADITIONAL
___ GREEK REVIVAL	___ SHINGLE STYLE	___ CRAFTSMAN	___ RANCH
___ GOTHIC REVIVAL	___ ROMANESQUE	___ ART DECO / MODERNE	___ SPLIT LEVEL
___ ITALIANATE	___ NEO-CLASSICAL REV	___ INTERNATIONAL	___ VERNACULAR
___ SECOND EMPIRE	___ RENAISSANCE REV	___ OTHER	

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN	___ STICK STYLE	___ 19TH/20TH C. REVIVAL	___ MODERN/CONTEMPORARY
___ FEDERAL	___ QUEEN ANNE	___ COMMERCIAL STYLE	___ MINIMAL TRADITIONAL
___ GREEK REVIVAL	___ SHINGLE STYLE	___ CRAFTSMAN	___ RANCH
___ GOTHIC REVIVAL	___ ROMANESQUE	___ ART DECO / MODERNE	___ SPLIT LEVEL
___ ITALIANATE	___ NEO-CLASSICAL REV	___ INTERNATIONAL	___ VERNACULAR
___ SECOND EMPIRE	___ RENAISSANCE REV	___ OTHER	

14. HEIGHT:

X 1 STORY	___ 1 1/2 STORY	___ 2 STORY	___ 2 1/2 STORY	___ 3 STORY	___ 4 STORY
___ 5 STORY	___ OVER 5 (_____)				

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY	___ 2 BAY	___ 3 BAY	___ 4 BAY	___ 5 BAY	___ MORE THAN 5 (9_____)

16. APPENDAGES:

___ SIDE ELL	___ REAR ELL	___ FRONT	___ ADDED STORIES	___ SHED
___ DORMERS	___ PORCH	___ TOWER	___ CUPOLA	___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER school

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER

21. ROOF CONFIGURATION:
X GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD ___ FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1957 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: Rubber roof. Primary school until 1996. C.1970 glass enclosed walkway extends from eastern end of southern elevation, connecting to Sanders Hall/Building K; second plywood enclosed walkway extends south to Young Hall/Bui

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417254.8098316 43. UTM EASTING: -7818316.0653904

44. FACADE DIRECTION (CIRCLE ONE): (N) S E W NE NW SE SW

==========

MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 1

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Carter Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

Facade detail

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SURVEY MAP NO. 1

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Carter Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

Entrance

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SURVEY MAP NO. 2

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Young Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building B

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL ___ EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
X OTHER vacant

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL X MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

14. HEIGHT:

___ 1 STORY ___ 1 1/2 STORY X 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY ___ 3 BAY X 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER dormitory

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG X PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1958 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: C.1970 plywood enclosed walkway extends from northern elevation, connecting to Carter Hall/Building G

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417215.44890076 43. UTM EASTING: -7818267.21187265

44. FACADE DIRECTION (CIRCLE ONE): N S E W NE (NW) SE SW

==========

MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 3

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Baxter Summer Home

2. PROPERTY NAME (OTHER): Baxter School for the Deaf Building A, MHPC #152-0002

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS: _____

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL X EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER_____

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE X 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE X RENAISSANCE REV ___ OTHER_____

14. HEIGHT:

___ 1 STORY ___ 1 1/2 STORY X 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY X 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
X DORMERS X PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
[X] ATTACHED [ ] ENGAGED [X] ONE STORY [ ] MORE THAN ONE STORY
[ ] FULL WIDTH [ ] WRAPAROUND [ ] SLEEPING PORCH [X] SECONDARY PORCH

18. PLAN OR FORM
[ ] HALL AND PARLOR [ ] 1/2 CAPE [ ] CAPE [X] CENTRAL HALL [ ] 2-STORY DOUBLE PILE
[ ] SIDE HALL [ ] BACK HALL [ ] IRREGULAR [ ] FOURSQUARE [ ] BUNGALOW
[ ] MOBILE HOME [ ] MODULAR [ ] OTHER _____

19. PRIMARY STRUCTURAL SYSTEM:
[ ] TIMBER FRAME [ ] BRACED FRAME [X] BRICK [ ] STONE [ ] BALLOON FRAME
[ ] CONCRETE [ ] STEEL [ ] LOG [ ] PLANK WALL [ ] PLATFORM FRAME
[ ] FRAME CONSTRUCTION - TYPE UNKNOWN [ ] OTHER _____

20. CHIMNEY PLACEMENT:
[X] INTERIOR [ ] INTERIOR FRONT/REAR [ ] CENTER [ ] INTERIOR END [ ] EXTERIOR
[ ] OTHER _____

21. ROOF CONFIGURATION:
[ ] GABLE SIDE [ ] GABLE FRONT [X] HIP [ ] MANSARD [ ] FLAT
[ ] GAMBREL [ ] PARAPET GABLE [ ] SHED [ ] CROSS GABLE
[ ] COMPOUND [ ] OTHER _____

22. ROOF MATERIAL: [ ] WOOD [ ] METAL [X] TILE [ ] SLATE [ ] ASPHALT [ ] ASBESTOS

23. EXTERIOR WALL MATERIALS:
[ ] CLAPBOARD [X] BRICK [ ] FLUSH SHEATHING [ ] WOOD SHINGLE [ ] STONE
[ ] LOG [ ] PRESSED METAL [ ] CONCRETE [ ] STUCCO [ ] ASPHALT
[ ] GRANITE [ ] ASBESTOS [ ] TERRA COTTA [ ] BOARD AND BATTEN [ ] ALUMINUM/VINYL
[ ] OTHER _____

24. FOUNDATION MATERIAL:
[X] FIELDSTONE [ ] BRICK [ ] WOOD [ ] CONCRETE [ ] GRANITE [ ] ORNAMENTAL CONC. BLOCK
[ ] OTHER _____

25. OUTBUILDINGS/FEATURES:
[ ] CARRIAGE HOUSE [ ] FENCE OR WALL [ ] CEMETERY [ ] BARN (CONNECTED)
[ ] BARN (DETACHED) [ ] FORMAL GARDEN [ ] LANDSCAPE/PLANT MAT [ ] ARCHAEOLOGICAL SITE
[ ] GARAGE [ ] OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1917 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
[ ] ENGLISH [ ] FRENCH ACADIAN [ ] NATIVE AMERICAN [ ] SCOTTISH [ ] FRENCH CANADIAN
[ ] EAST EUROPEAN [ ] IRISH [ ] OTHER _____

34. HISTORIC CONTEXT(S):
[ ] COMMERCE [ ] INDUSTRY [ ] TRANSPORTATION [ ] AGRICULTURE [ ] MILITARY
[ ] RELIGION [ ] CIVIC AFFAIRS [ ] RECREATION [ ] HABITATION [ ] EDUCATION
[ ] ART, LIT, SCIENCE [ ] SOCIAL

35. COMMENTS/SOURCES: Listed in the National Register in 1985 under Criteria A and C, Conservation and Architecture.

36. HISTORICAL DRAWINGS EXIST: [ ] YES [X] NO 37. KIT HOUSE [ ] YES [X] NO 38. PATTERN BOOK HOUSE [ ] YES [X] NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: [X] ORIGINAL [ ] MOVED DATE MOVED _____

40. SETTING: [ ] RURAL/UNDISTURBED [X] RURAL/BUILT UP [ ] SMALL TOWN [ ] URBAN [ ] SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417287.80193573 43. UTM EASTING: -7818223.51378464

44. FACADE DIRECTION (CIRCLE ONE): N S (E) W NE NW SE SW

==========

MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: [ ] L [ ] HD [ ] E [ ] NE [ ] ND REVIEWER _____

DATA SOURCE: [ ] HPF [ ] CLG [ ] R&C [ ] STAFF [ ] STATE SURVEY OTHER _____ LEVEL OF SURVEY: [ ] R [ ] I

SURVEY MAP NO. 3

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Baxter Summer Home

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

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SURVEY MAP NO. 4

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Sanders Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building K

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth

5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022

7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine

9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL X EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL X MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

14. HEIGHT:

X 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY X 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER school

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END X EXTERIOR
___ OTHER

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG X PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1959 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: C.1970 plywood and glass enclosed walkway extends from west elevation to connect with Carter Hall/ Building G; second walkway extends from eastern elevation to connect with Brewster Hall

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417285.60393883 43. UTM EASTING: -7818179.1116994

44. FACADE DIRECTION (CIRCLE ONE): N S E W NE NW SE (SW)

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 4

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Sanders Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

South elevation

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SURVEY MAP NO. 5

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Greenlaw Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building D

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS: _____

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL X EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER_____

11. CONDITION: ___ GOOD X FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL X MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

14. HEIGHT:

___ 1 STORY ___ 1 1/2 STORY X 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (6_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER school

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG X PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1958 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: 1996

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: Originally a dorm, converted to elementary school in 1996; glass enclosed walkways extend from eastern and western elevations to Draper Hall/Building J and Sanders Hall/Building K

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417347.24430274 43. UTM EASTING: -7818127.66867911

44. FACADE DIRECTION (CIRCLE ONE): N S E W NE (NW) SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 6

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Draper Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building J

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS: _____

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY	___ AGRICULTURE	___ COMMERCIAL/TRADE	___ FUNERARY
___ MULTI-FAMILY	___ GOVERNMENTAL	X EDUCATION	___ HEALTH CARE
___ INDUSTRY	___ RELIGIOUS	___ HOTEL	___ LANDSCAPE
___ TRANSPORTATION	___ DEFENSE	___ SUMMER COTTAGE/CAMP	___ SOCIAL
___ RECREATION/CULTURE	___ UNKNOWN		
___ OTHER_____			

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN	___ STICK STYLE	___ 19TH/20TH C. REVIVAL	X MODERN/CONTEMPORARY
___ FEDERAL	___ QUEEN ANNE	___ COMMERCIAL STYLE	___ MINIMAL TRADITIONAL
___ GREEK REVIVAL	___ SHINGLE STYLE	___ CRAFTSMAN	___ RANCH
___ GOTHIC REVIVAL	___ ROMANESQUE	___ ART DECO / MODERNE	___ SPLIT LEVEL
___ ITALIANATE	___ NEO-CLASSICAL REV	___ INTERNATIONAL	___ VERNACULAR
___ SECOND EMPIRE	___ RENAISSANCE REV	___ OTHER_____	

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN	___ STICK STYLE	___ 19TH/20TH C. REVIVAL	___ MODERN/CONTEMPORARY
___ FEDERAL	___ QUEEN ANNE	___ COMMERCIAL STYLE	___ MINIMAL TRADITIONAL
___ GREEK REVIVAL	___ SHINGLE STYLE	___ CRAFTSMAN	___ RANCH
___ GOTHIC REVIVAL	___ ROMANESQUE	___ ART DECO / MODERNE	___ SPLIT LEVEL
___ ITALIANATE	___ NEO-CLASSICAL REV	___ INTERNATIONAL	___ VERNACULAR
___ SECOND EMPIRE	___ RENAISSANCE REV	___ OTHER_____	

14. HEIGHT:

X 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY X 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER school

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG X PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1958 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: Originally housed gym, vocational classrooms, and offices. Glass enclosed walkway extends from western elevation to Greenlaw Hall/Building K

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417383.18627458 43. UTM EASTING: -7818042.88264878

44. FACADE DIRECTION (CIRCLE ONE): N S E W NE (NW) SE SW

==========

MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 6

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Draper Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

South elevation

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SURVEY MAP NO. 7

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Patrick Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building I

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL X EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER

11. CONDITION: ___ GOOD X FAIR ___ POOR ___ DESTROYED, DATE

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL X MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

14. HEIGHT:

X 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

X 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL X IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR ___ OTHER _____

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1958 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: c.2002

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: Oringinally housed high school. Southern section demolished 2003.

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417353.9393683 43. UTM EASTING: -7818055.49055667

44. FACADE DIRECTION (CIRCLE ONE): (N) S E W NE NW SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 8

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Taylor Hall, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building C

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth

5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022

7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine

9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE __X__ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL ___ EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER

11. CONDITION: __X__ GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL __X__ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

14. HEIGHT:

___ 1 STORY ___ 1 1/2 STORY __X__ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (7_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER dormitory

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG X PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1958 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: C.1970 plywood enclosed walkway extends from northern elevation to Sanders Hall/Building K and Brewster Hall/Building H

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417226.29709687 43. UTM EASTING: -7818089.91139651

44. FACADE DIRECTION (CIRCLE ONE): (N) S E W NE NW SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 8

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Taylor Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

South and east elevations

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SURVEY MAP NO. 8

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: Taylor Hall, Baxter School for the Deaf

TOWN: Falmouth COUNTY: Cumberland

SURVEYOR: Ware, Erin DATE: 3/31/2022

DATA FIELD # (From Survey Form): 0

West elevation and enclosed walkway

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SURVEY MAP NO. 9

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Inman Garage, Baxter School for the Deaf

2. PROPERTY NAME (OTHER): Building E

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth

5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022

7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine

9. ADDRESS:

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL X EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
___ OTHER

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL X MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER

14. HEIGHT:

X 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (7_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER maintenance garage

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE X STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD X FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD X BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1961 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: _____

_____

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417363.83295347 43. UTM EASTING: -7818364.05591793

44. FACADE DIRECTION (CIRCLE ONE): N S E W NE (NW) SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 10

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Mackworth Farm Watertower

2. PROPERTY NAME (OTHER): MHPC #152-0004

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS: _____

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL ___ EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
___ RECREATION/CULTURE ___ UNKNOWN
X OTHER vacant

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL X VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

14. HEIGHT:

___ 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

X 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER watertower

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK X STONE ___ BALLOON FRAME
___ CONCRETE ___ STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ___ HIP ___ MANSARD ___ FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD ___ BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
X FIELDSTONE ___ BRICK ___ WOOD ___ CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: _____ 27. ESTIMATED DATE OF CONSTRUCTION: c.1885

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: _____

_____

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417370.09731071 43. UTM EASTING: -7818165.45378554

44. FACADE DIRECTION (CIRCLE ONE): N (S) E W NE NW SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

SURVEY MAP NO. 11

SURVEY NAME Mackworth Island Study

MHPC USE ONLY

SURVEY ID M17451

INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): Mackworth Island Gatehouse

2. PROPERTY NAME (OTHER): _____

3. STREET ADDRESS: Andrews Avenue

4. TOWN: Falmouth 5. COUNTY: Cumberland

6. DATE RECORDED: 3/31/2022 7. SURVEYOR: Ware, Erin

8. OWNER NAME: State of Maine 9. ADDRESS: _____

10. PRIMARY USE (PRESENT):

___ SINGLE FAMILY ___ AGRICULTURE ___ COMMERCIAL/TRADE ___ FUNERARY
___ MULTI-FAMILY ___ GOVERNMENTAL ___ EDUCATION ___ HEALTH CARE
___ INDUSTRY ___ RELIGIOUS ___ HOTEL ___ LANDSCAPE
___ TRANSPORTATION ___ DEFENSE ___ SUMMER COTTAGE/CAMP ___ SOCIAL
X RECREATION/CULTURE ___ UNKNOWN
___ OTHER_____

11. CONDITION: X GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE _____

ARCHITECTURAL DATA

12. PRIMARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV X OTHER Neo-craftsman

13. SECONDARY STYLISTIC CATEGORY:

___ GEORGIAN ___ STICK STYLE ___ 19TH/20TH C. REVIVAL ___ MODERN/CONTEMPORARY
___ FEDERAL ___ QUEEN ANNE ___ COMMERCIAL STYLE ___ MINIMAL TRADITIONAL
___ GREEK REVIVAL ___ SHINGLE STYLE ___ CRAFTSMAN ___ RANCH
___ GOTHIC REVIVAL ___ ROMANESQUE ___ ART DECO / MODERNE ___ SPLIT LEVEL
___ ITALIANATE ___ NEO-CLASSICAL REV ___ INTERNATIONAL ___ VERNACULAR
___ SECOND EMPIRE ___ RENAISSANCE REV ___ OTHER_____

14. HEIGHT:

X 1 STORY ___ 1 1/2 STORY ___ 2 STORY ___ 2 1/2 STORY ___ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (_____)

15. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):

___ 1 BAY X 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ___ MORE THAN 5 (_____)

16. APPENDAGES: ___ SIDE ELL ___ REAR ELL ___ FRONT ___ ADDED STORIES ___ SHED
___ DORMERS ___ PORCH ___ TOWER ___ CUPOLA ___ BAY WINDOW

PHOTOGRAPH:

17. PORCH:
___ ATTACHED ___ ENGAGED ___ ONE STORY ___ MORE THAN ONE STORY
___ FULL WIDTH ___ WRAPAROUND ___ SLEEPING PORCH ___ SECONDARY PORCH

18. PLAN OR FORM
___ HALL AND PARLOR ___ 1/2 CAPE ___ CAPE ___ CENTRAL HALL ___ 2-STORY DOUBLE PILE
___ SIDE HALL ___ BACK HALL ___ IRREGULAR ___ FOURSQUARE ___ BUNGALOW
___ MOBILE HOME ___ MODULAR X OTHER gatehouse

19. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE ___ STEEL ___ LOG ___ PLANK WALL X PLATFORM FRAME
___ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER _____

20. CHIMNEY PLACEMENT:
___ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
___ OTHER _____

21. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT X HIP ___ MANSARD ___ FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS GABLE
___ COMPOUND ___ OTHER _____

22. ROOF MATERIAL: ___ WOOD ___ METAL ___ TILE ___ SLATE X ASPHALT ___ ASBESTOS

23. EXTERIOR WALL MATERIALS:
___ CLAPBOARD ___ BRICK ___ FLUSH SHEATHING X WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER _____

24. FOUNDATION MATERIAL:
___ FIELDSTONE ___ BRICK ___ WOOD X CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
___ OTHER _____

25. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT ___ ARCHAEOLOGICAL SITE
___ GARAGE ___ OTHER _____

HISTORICAL DATA

26. DOCUMENTED DATE OF CONSTRUCTION: 1973 27. ESTIMATED DATE OF CONSTRUCTION: _____

28. DATE MAJOR ADDITIONS/ALTERATIONS: _____

29. ARCHITECT: _____ 30. CONTRACTOR: _____

31. ORIGINAL OWNER: _____

32. SUBSEQUENT SIGNIFICANT OWNER: _____ DATES: _____

33. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH ___ OTHER _____

34. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

35. COMMENTS/SOURCES: _____

_____

36. HISTORICAL DRAWINGS EXIST: ___ YES X NO 37. KIT HOUSE ___ YES X NO 38. PATTERN BOOK HOUSE ___ YES X NO

ENVIRONMENTAL DATA

39. SITE INTEGRITY: X ORIGINAL ___ MOVED DATE MOVED _____

40. SETTING: ___ RURAL/UNDISTURBED X RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN

41. QUADRANGLE MAP USED: Portland East

42. UTM NORTHING: 5417555.19797953 43. UTM EASTING: -7818487.63003487

44. FACADE DIRECTION (CIRCLE ONE): N S E (W) NE NW SE SW

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MHPC USE ONLY
DATE ENTERED IN INVENTORY: _____ PHOTO FILE #: _____

NR STATUS: ___ L ___ HD ___ E ___ NE ___ ND REVIEWER _____

DATA SOURCE: ___ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER _____ LEVEL OF SURVEY: __R __ I

A3: CAUSEWAY AND PIER CONDITION ASSESSMENT

REPORT BY GEI

Report contents include a general review of the condition and resilience of the following items.

- Causeway
- Bridge
- Stone Pier
- Coastal Slopes

General observations of the December 23, 2022 storm are included in the report although a separate report will be issued independently from the Master Plan to address specific damage to the causeway and bridge that stem from the December 23, 2022 storm.

GEI Consultants

Consulting
Engineers and
Scientists

Mackworth Island Vulnerability Assessment

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January 2023, Rev. 1
Project 2201456

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Table of Contents

Tables

Figures

Appendices

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Glossary of Terms

1% Annual Chance Storm: Also known as the "100-year storm," this storm has a 1% chance of occurring in any given year. It is also the storm condition that FEMA uses to determine their flood insurance maps.

1% Flood Elevation: Also referred to as the Base Flood Elevation (BFE), this is the water elevation that is expected to be seen during a 1% annual chance storm, or "100-year storm." This elevation accounts for wave action (wave crests, wave setup, and wave runup) on top of the Still Water Elevation (SWEL).

FEMA: The Federal Emergency Management Agency, responsible for distributing Flood Insurance Rate Maps (FIRMs) and determining present-day 1% Flood Elevations.

FIRMs: Flood Insurance Rate Maps, or maps showing the flood extents and 1% Flood Elevations for present-day conditions, distributed by FEMA.

FIS: Flood Insurance Study, issued by FEMA to accompany the FIRMs and provide details regarding the basis of the 1% Flood Elevations and extents.

HAT: Highest Annual Tide, the highest elevation tidal water elevation in any given year as reported by the Maine Department of Environmental Protection.

MHHW: Mean Higher High Water, the average of the higher high-water height of each tidal day observed over the National Tidal Datum Epoch.

MHW: Mean High Water, the average of all the high-water heights observed over the National Tidal Datum Epoch.

MLLW: Mean Lower Low Water, the average of the lower low water height of each tidal day observed over the National Tidal Datum Epoch.

MLW: Mean Low Water, the average of all the low water heights observed over the National Tidal Datum Epoch.

MSL: Mean Sea Level, the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch.

NAVD88: The North American Vertical Datum of 1988, the vertical datum used for all elevations in this report, unless stated otherwise.

NOAA: The National Atmospheric and Oceanic Administration, responsible for data buoys providing tidal datums and observed water levels.

SLR: Sea Level Rise, the relative increase in sea level over time that has been observed to occur historically or is projected to occur in the future.

SWEL: Still Water Elevation, or "storm surge." The SWEL is the rise in the static water elevation during storms due to a decrease in atmospheric pressure and an increase in offshore winds. The SWEL does not include the additional water elevation often seen during storms due to wave setup, wave runup, or wave crests.

1. Executive Summary

1.1 Introduction

The Mackworth Island property located in Casco Bay is host to the Maine Education Center for the Deaf and Hard of Hearing at the Governor Baxter School for the Deaf. The island is also a State Park administered by the Maine Bureau of Parks and Lands.

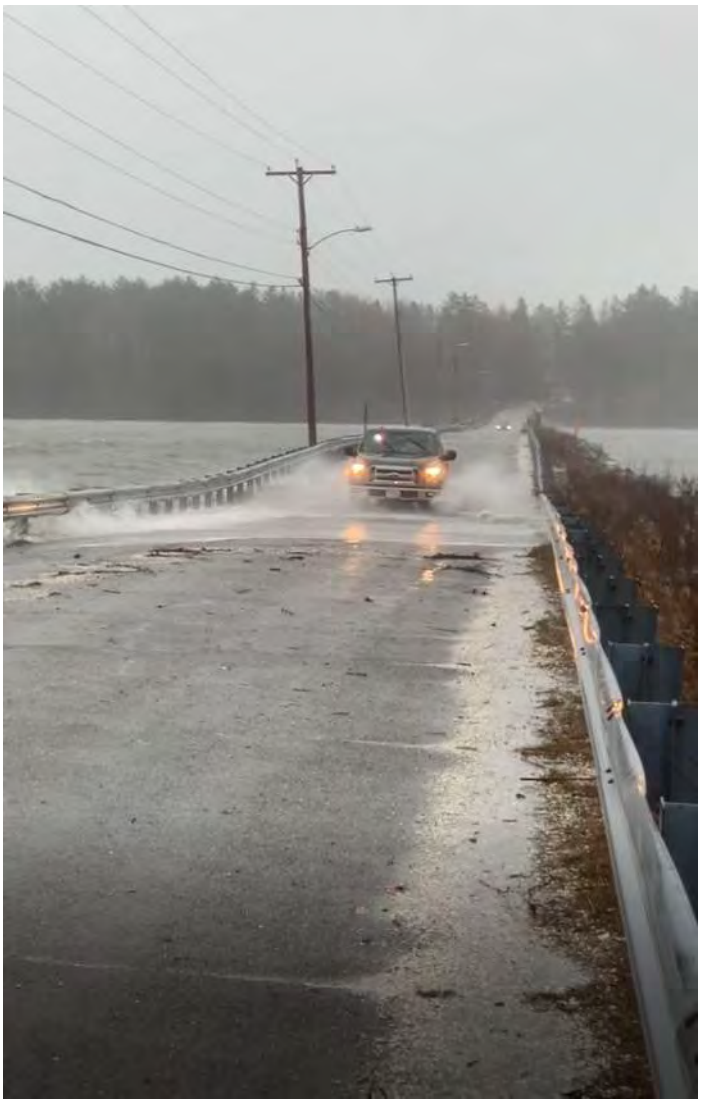

Fig. 1. Causeway Overtopping During December 23, 2022 Storm Event

The State of Maine Bureau of General Services retained the firm of Harriman to prepare a Resource Utilization Plan for the built environment on Mackworth Island. The work includes an assessment of the buildings, utilities, parking and transportation and environmental impacts associated with existing and future land use on Mackworth Island.

The role of GEI Consultants, Inc. on the Harriman team was to provide an assessment of the vulnerability of the causeway and bridge structures to coastal flooding and sea level rise. GEI staff were able to reference and draw from involvement with 2007 and 2011 maintenance projects on the causeway and bridge.

The report also considered the resiliency of the historical granite pier on the southern shore of the island that may one day be restored for vessel access and the steeps slopes adjacent to the island perimeter trail system that is used year-round by park visitors.

The chart below illustrates the Casco Bay location of Mackworth Island relative to the Gulf of Maine. Although partially protected by the island chain formed by Cushing, Peaks, Great Diamond, Long Island and Chebeague islands, Mackworth Island is exposed to wave and storm surge conditions that develop with sustained winds from the South and East quadrants.

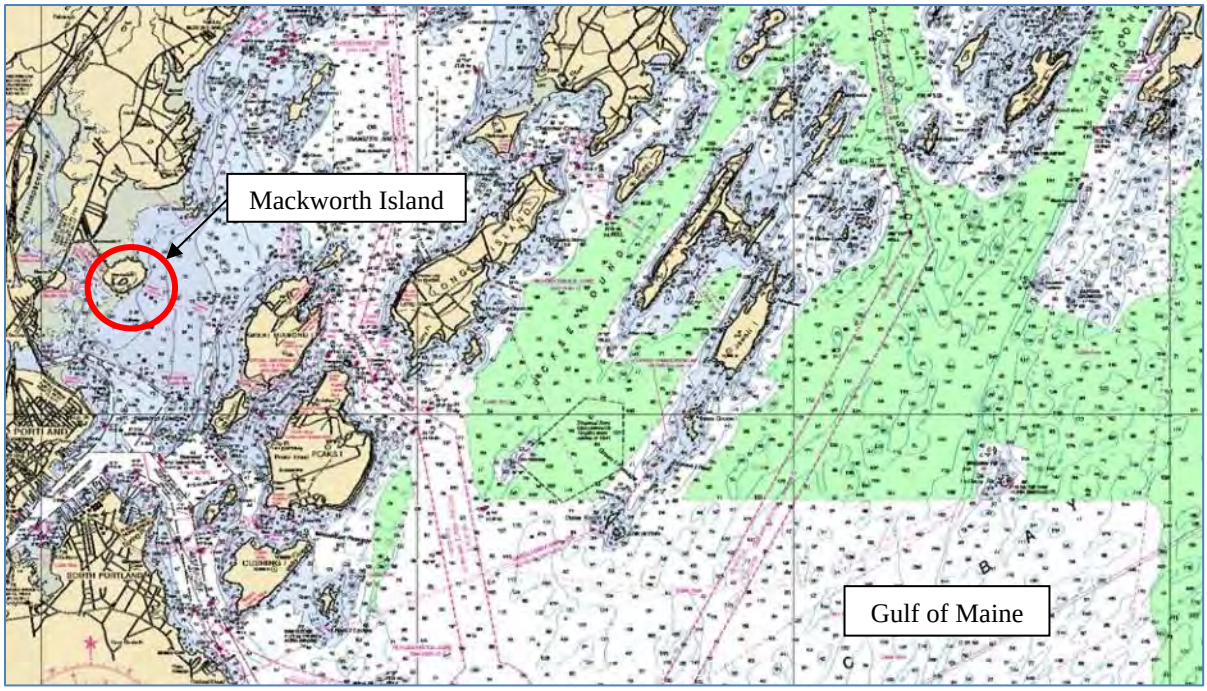

Fig. 2. Mackworth Island Location NOAA CHART 13290- Casco Bay

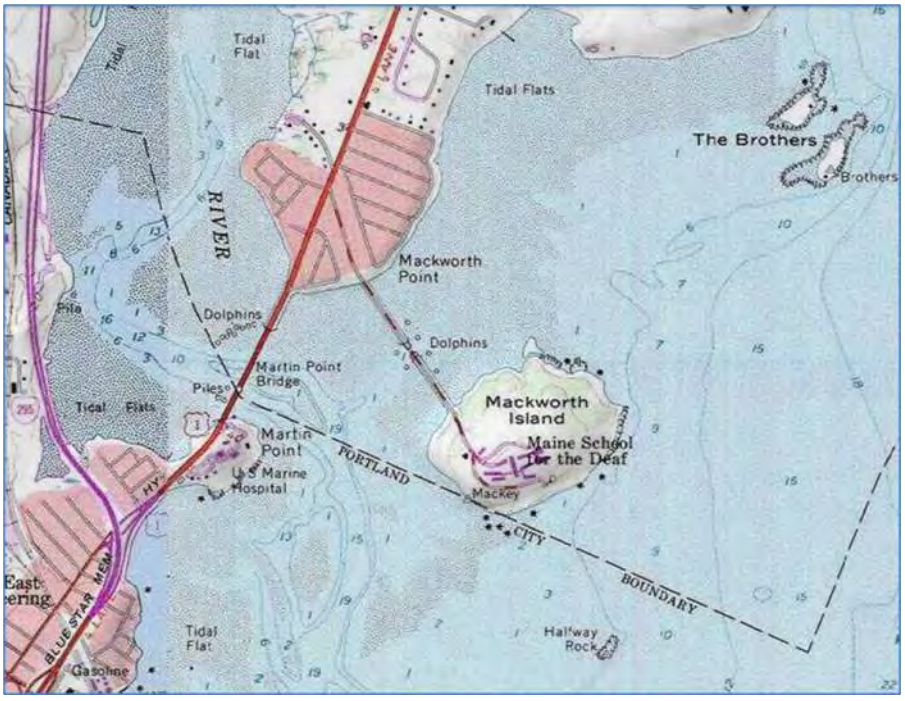

Fig. 3. Causeway Connection to Mackworth Point - USGS Map

1.2 Island Transportation Connections Review

Refer to the plans provided in Appendix A that refer to the causeway, bridge, and pier structures that comprise the Island Transportation Connections infrastructure considered in this report.

The vulnerability assessment investigated the condition and resiliency of the existing transportation infrastructure at risk to coastal flooding and damage. The causeway embankment and bridge are considered 'critical' infrastructure because these structures provide the only access to the island. The granite pier is currently unused as a transportation structure but might one day be improved to provide island access from the water. The stability of the south to west coastal embankment was added because of the park trail location at the top of the slope.

A site inspection was completed for each structure to provide a visual assessment of the condition and vulnerability to storm damage. This was supplemented by a desk top review of site exposure and a review of available storm damage and repair history documentation. Finally, a review of potential climate change impacts was undertaken to support an assessment of predicted sea level rise.

A transportation infrastructure assessment summary is provided in Table 1 with key observations and conclusions listed below.

- The total causeway length of 1,950 ft supports a 2-lane vehicle (and pedestrian) road with steel guardrail and pole mounted overhead utilities. Causeway sections, 850 ft East and 1,100 ft West are connected by a 5-span 102-foot bridge.

- The bridge is posted as not suitable for truck loading that exceeds 22 tons. This Load Rating reduces the capacity of the causeway crossing by 21% of the minimum required highway design load. In anticipation of construction on the island to upgrade buildings and infrastructure, the posted load limit will need to be considered in the selection of construction equipment used for the project. Reduced payloads may be necessary to comply with the 22 Ton limit.

- The entire causeway and bridge are subject to overtopping in a storm event that will become more frequent with sea level rise associated with climate change.

- Maine Climate Council Predictions for Sea Level Rise over the next 80-years will have a significant impact on 'nuisance flooding' which will result in road closures that are more frequent and for longer duration as time progresses.

Table 1. Mackworth Island Connections Overview

MACKWORTH ISLAND TRANSPORTATION CONNECTIONS				
Structure	**Causeway**	**Bridge**	**Granite Pier**	**South & West Coastal Slope Trail**
Year Built	1955	1955 2007, 2015 upgrades	~1900	Varies
Primary User	**Vehicles (Only Access)** & Pedestrians		Pedestrians	
Importance to Island Access/	**HIGH (Critical Island Link)**		**LOW**	**LOW**
Alternate Mainland Connection	**NONE Evacuation by Helicopter or Boat**		Move inland from Trail	
Responsible Party	Bureau of General Services	MaineDOT	Bureau of Parks and Lands	
Maintenance Partner	CMP- Overhead Service	Maine DOT (2 year Inspection)	NA	Bureau of Parks & Lands
Condition Rating	Serviceable	Serviceable Posted at 22 Tons	Serviceable for Pedestrian use	**Areas Impacted By Slope erosion**
Wave Action (current	**Embankment Exposure**	**Yes**	**Yes**	Embankment Exposure
Flooding Overtopping	**Yes**	**Yes**	**Yes**	NA
Climate Change Vulnerability	**Sea Level Rise increases nuisance flooding and need for remedial action to address storm damage.**		Alternative route available. Increase in remedial action to address flood damage.	

1.3 Connection Infrastructure Vulnerability

Two sources were used to evaluate site flooding and the impact of climate change on the Mackworth Island transportation infrastructure.

- The Federal Emergency Management Agency (FEMA) develops flood models that use historical flood data to develop probability predictions for site inundation. The model considers the combined effect of tidal action, wind generated waves and storm surge with site specific transect corrections for coastal exposure and bathymetry.

- The Maine Climate Council (MCC) has published (*Maine Won't Wait, A Four-Year Plan for Climate Action, December 2020*) recommendations for future sea level rise that increase the predicted FEMA inundation model elevations based on the expected life of the structure. MCC provides a minimum "Commit to Manage" (C2M) sea level rise value, but also recommends considering the impact of more conservative "Prepare to Manage" (P2M) elevations in design development.

The figure below shows how tidal elevation, wind driven storm surge, and sea level rise are combined to determine the water elevation that a structure is likely to be exposed to during its design life.

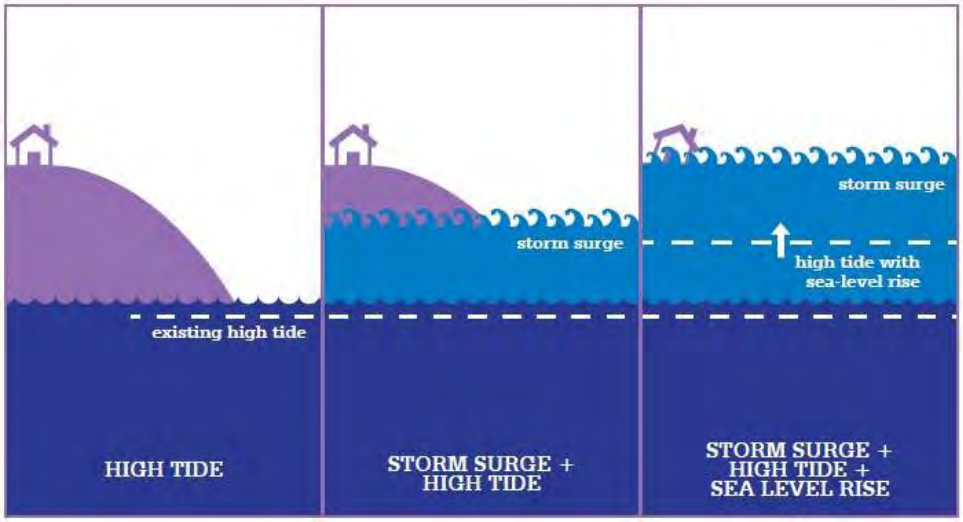

Fig. 4. Flooding with Tidal Action, Storm Surge and Sea Level Rise

Tidal elevations, FEMA storm surge results and MCC recommendations for Sea Level Rise are compiled in Table 2. The tabulated information provides threshold water elevations that are used to assess the vulnerability of the Mackworth Island transportation infrastructure. The Table includes the MCC 2070 sea level rise predictions as it would be reasonable to use a minimum design life of 50-years for causeway, bridge, or pier improvements.

Table 2. Elevation Table for Mackworth Island

PROJECT ELEVATIONS (BY DATUM)			
ELEVATION	**CHART** (ft)	**NAVD88** (ft)	**Notes**
Prepare to Manage_5.0 + BFE	23.3	18.0	Maine Climate Council Sea Level 2070 Rise
Commit to Manage_2.4 + BFE	20.7	15.4	
Pier -Shoreside End	21.3	16	Approx. from Drone Suvey/LIDAR Data
FEMA BFE Causeway West Side	20.3	15.0	FIRM PRELIMINARY, ZONE VE, 4.14.2017
FEMA BFE Causeway East Side & Pier	18.3	13.0	
Pier- Seaward End	16.3	11	Approx. from Drone Suvey/LIDAR Data
Causeway Bridge Deck	16.3	11	Approx. from Drone Survey/LIDAR Data
Causeway Low Point North Side	14.3	9	
Causeway Low Point South Side	13.8	8.5	
FEMA Stillwater 0.2% Annual Chance	14.8	9.5	FIS Cumberland County Transect 058 (Casco BAY)
FEMA Stillwater 1% Annual Chance	14.1	8.8	
FEMA Stillwater 2% Annual Chance	13.8	8.5	
FEMA Stillwater 10% Annual Chance	13.2	7.9	
HAT Highest Annual Tide	11.3	6.7	2018 MEDEP Predictions for Cow Island
MHHW	9.9	4.6	BASED ON NOAA TIDAL BM 8418150 "Portland"
NAVD88	5.3	0.0	
MLLW	0.0	-5.3	

The tabulated information, supplemented by the conditions experienced in the recent December 23, 2022 storm support the following conclusions and observations regarding causeway, bridge, and pier vulnerability to flooding.

1. High water elevations have been recorded at the Portland Harbor Tidal Gage for more than 100 years. The recorded Dec 23, 2022, storm peak elevation was 8.46' NAVD88 (2.4 ft above normal) which is 1.1-inches higher than that recorded (8.37' NAVD88) during the 1978 storm of record. The protected location of the Portland Harbor Tidal Gage results in an elevation that can be transferred to other sites in Casco Bay with a correction for site specific wave height.
2. The December 23, 2022 conditions at Mackworth Island included wave action that built up with the southeast wind. Fig. 1 shows the causeway breaching at the low point on the north side of the bridge. Inspection after the storm revealed debris on the bridge approaches suggesting peak water elevations was close to bridge deck height (i.e., approximately 2.5 ft above Portland Tidal Gage). Therefore, the wave height correction is estimated to have been about 5 ft.
3. The December 23, 2022 inundation elevation estimate at the Mackworth Island Causeway (11.0 NAVD88) falls short of the 2018 FEMA BFE (Preliminary) model that predicts the bridge will be submerged by approximately two (2) to four (4) feet in a storm with an annual probability occurrence of 1% (the 100-year storm).
4. The sea level rise predicted by the Maine Climate Council to occur by 2070 will result in storm flooding with a 1% annual probability of occurrence resulting in water levels over the existing bridge of 4.5 ft to 7 ft.

1.4 Options to Improve Resiliency of Island Connection

GEI recommends the findings from this vulnerability assessment be used to guide planning decisions to mitigate the impact of coastal flooding on the Mackworth Island causeway that periodically results in road closure that will only become more frequent with the future sea level rise associated with climate change. Three (3) options to address the current deficiencies of the Mackworth Island crossing are compared in the Table below. The option selected must balance site safety, environmental impact, and long-term resiliency of the island connection.

- OPTION A repairs and maintains the existing causeway elevation and alignment which will continue the cycle of storm damage, road closure and repairs required to maintain the crossing. The cost for maintenance repairs to the causeway outlined in Section 3.1 is estimated to be $2 to $2.5.

- Both OPTION B and OPTION C address the impact of sea level rise associated with climate change by raising the road crossing to prevent wave overtopping thereby ensuring unrestricted access to the island during a storm event.

Table 3. Options to Improve the Resiliency of the Mackworth Island Connection

RESILIENCY OPTIONS SUMMARY	**OPTION A** Repair Existing Crossing	**OPTION B** Raise Causeway/New Bridge	**OPTION C** New Bridge for Entire Crossing
Structure Type	Armored Causeway/Bridge	Armored Causeway/Bridge	Pile Supported Bridge
Cost	Lowest Cost	High Cost	High Cost
Maintenance	Overtopping Maintenance	Low Maintenance	Low Maintenance
Utilities Upgrade	No Change_Overhead Poles	Below Grade Conduits	Conduits Under Bridge Deck
Environmental Impact			
Intertidal Footprint	No Change	Increased mudflat footprint	Reduced mudflat footprint
Tidal Flow	No Change	No Change	Restores cove circulation to 1955 condition
Mainland/Island Approaches	No Change	Elevated Approach See Figures 2 & 3	Elevated Approach See Figures 2 & 3
Visual Impact	No Change	Raised Structure	Raised Structure
Resiliency			
Bridge Clearance	No Change Bridge Deck < 11.0 NAVD88	MCC 2070 P2M Bridge Deck > 18.0 NAVD88	MCC 2070 P2M Bridge Deck > 21.0 NAVD88
Overtopping/Road Closure	Current and Increasing with Sea Level Rise	NA	NA

2. History of Access to the island

Historical charts and Maps were researched to determine the evolution of island access in part to determine what alternative routes might exist if the existing causeway/bridge link were replaced. A chronology is provided below:

Fig. 5. 1853 Chart No 54378_Part of Portland Harbor - NOAA Office of Coast Survey

The 1853 chart above notes: "*Flats passable for teams at Low Water to the island*". The granite pier appears on the 1896 chart on what was then called Mackey's Island. The pier served as the only dedicated access until a timber bridge was built prior to WW1.

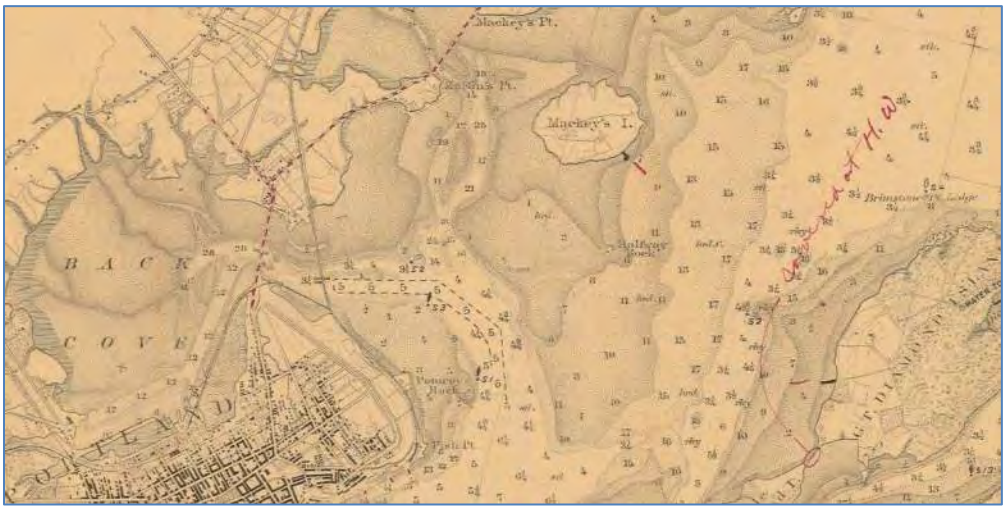

Fig. 6. 1896 Chart No 315 Casco Bay - Historical Charts NOAA Office of Coast Survey

Fig. 7. 1914 ME Casco Bay USGS Quadrangle

The Timber bridge connecting Mackworth Island to Mackworth Point shows up in the 1914 chart above. We know this was replaced by the causeway/bridge in 1955. Refer to the 2019 Casco Bay chart below.

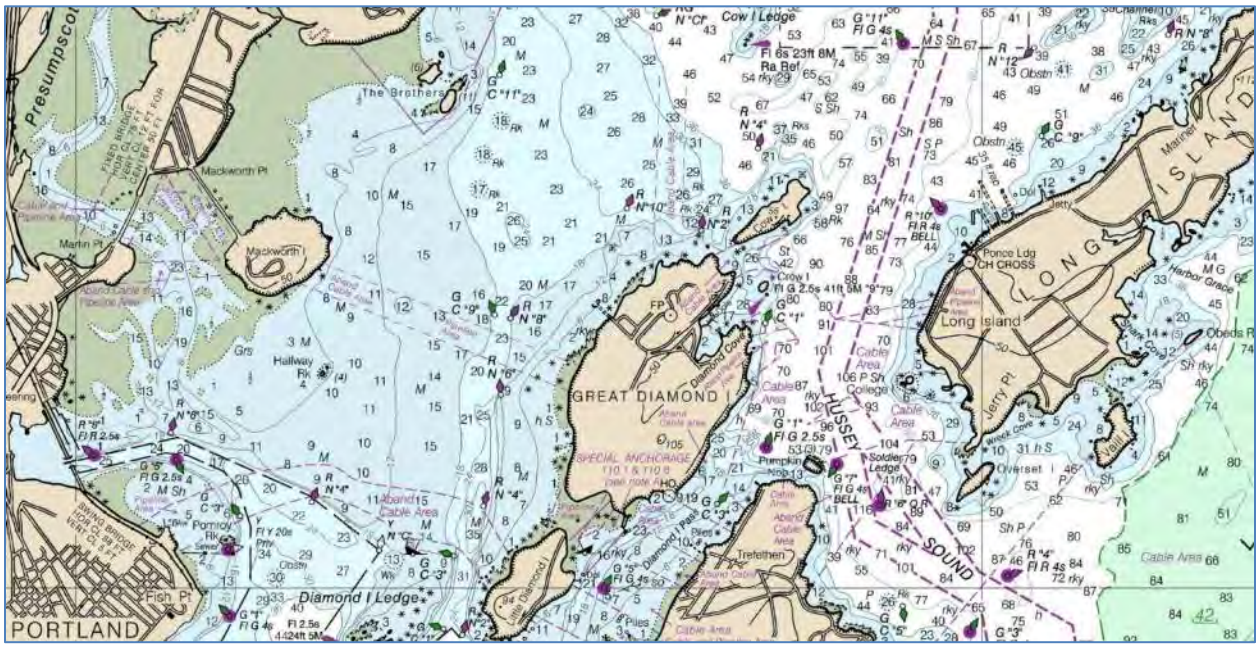

Fig. 8. 2019 Chart 13290 Casco Bay _ NOAA Office of Coast Survey

3. Structure Condition Review

3.1 General

Mackworth Island is on a hurricane coastline and therefore has a shorefront that is subject to coastal storm activity. Good protection is provided by the mainland to the north and west and to a lesser extent from offshore islands to the south and east. The island is most vulnerable to wave action and storm surge that develops with sustained winds from the northeast quadrant clockwise to the southwest quadrant.

The coastal geology is a mix of ledge outcrops, mudflat, and glacial deposits. The latter formations, being highly erodible, require embankments (and structures) to be armored and reinforced.

Casco Bay has been known to freeze over in the winter. A concentration of ice build-up on the causeway shore together with tidal action can damage existing shorefront armoring. There appears to be evidence of this on the northwest side of the causeway where the stone filled mattresses are broken and deformed.

3.2 Causeway Embankment & Bridge

Refer to Drawings 2-1 and 2-2 located in Appendix A.

Fig. 9. Mackworth Island Bridge Looking East from Boat

The causeway and bridge were constructed in 1955 to make the 2,050-foot crossing from Mackworth Island to the Falmouth mainland. The construction provided 2-lanes of vehicle travel to the island that replaced a timber bridge that was removed at the time. The 101-foot, 5-span timber pile supported bridge crosses a tidal channel that flows through the causeway. Currently, both these structures are in 'Serviceable' condition providing road access to the island except during extreme storm conditions when the causeway is overtopped by wave action. When overtopped, the causeway embankment is subject to attack from and

overtopped by wave action, making it vulnerable to washout and migration of fines that create voids below the pavement.

Fig. 10. Mackworth Island Bridge Looking East from Mainland

An extensive program of remedial action has been necessary to maintain this causeway/bridge crossing as evidenced by the chronology of repairs tabulated in Table 4. The causeway stone armor has been repaired and upgraded in intervals to mitigate storm damage and overtopping. The presence of soft soils at two (2) locations (one east and one west of the bridge) have resulted in causeway settlement of approximately 2 ft as measured in 1966, 2007 and in the recent drone survey completed for this assessment.

MaineDOT inspects the causeway bridge every two (2) years with the most recent inspection dated 05/26/2022. Features of the bridge (railing, guardrail, load capacity) are listed as substandard and it is noted that the bridge abutment armoring, and piles are subject to channel tidal flow scour. The bridge load capacity was upgraded in 2015 with the addition of new exterior girders that provide additional support to the bridge superstructure. In its current configuration with the added exterior girders, the bridge is listed as 'fracture critical' meaning there is little redundancy in the structure if these members fail or are damaged. All these factors contribute to the load rating of 22 Tons.

The original bridge structure is still intact but has been strengthened with extensive repairs in 1981 and 2015. This included deck reinforcement (1981) and exterior girders with independent abutments (2015). Refer to Table 4 for a chronology of recorded storm damage and repair history.

3.3 Causeway Utilities

There are no underground utilities on the causeway. A sewer line is buried in the seabed north of the causeway and the waterline crosses the mudflats south of the causeway.

Pole mounted overhead power, telephone and cable lines connect the island to the mainland. These are supported by poles on the causeway that have proved vulnerable to storm damage and associated power outages.

It is recommended that with any future upgrade or replacement of the causeway that overhead utilities be eliminated and placed in conduits buried on the embankment and/or supported under a bridge structure.

Fig. 11. West Causeway - Northside Armoring in Need of Repair

3.4 Causeway Repair Opinion of Probable Costs

The bridge is subject to overtopping in extreme storm conditions and should be checked for damage after each storm event. A site walk undertaken after the December 23, 2022 coastal storm[1] confirmed that sections of the causeway had been overtopped with evidence of debris deposits on the causeway and areas where pavement layers had peeled off.

The rough costs presented in this section are based on 2022 prices and corridor condition at the time of the field inspection and drone survey completed in April 2022. The extent of deficiencies will need to be reaffirmed in advance of construction year and a cost escalation of approximately 6% -10% per year should be applied with a 25-30% contingency added to cover engineering, survey, and permitting associated with the rehabilitation program. A further adjustment will also be needed to account for construction phasing and maintenance of traffic during the work activity. Ballpark total project costs could approach $2-$3 million.

- **West Causeway** - Northside Armoring- The Stone mattress armoring is deteriorating and needs to be replaced. Refer to Fig. 11. The metal mattress is compromised in multiple locations and the interior stone is getting washed out above the toe of the slope. Gaps have developed in the armoring and the top of the slope is starting to unravel at the guardrail. It is estimated that approximately 900ft of the embankment needs to be reconstructed to restore slope protection at an estimated $1,500 to $2,000 per linear foot.

- **East & West Causeway** - Overhead Utilities- Several poles are not straight suggesting wind damage and/or shifting subsurface support. Embedment in the existing slope has been compromised by wave action. The cost of re-setting new utility poles in-kind is estimated to be $10,000 to $20,000.

- **East & West Causeway** - Raise low points- Two (2) areas that have settled should be raised approximately 18 inches to match the adjacent causeway grade. This will increase the freeboard of the causeway in these areas and raise the overtopping threshold in future flood events that requires a road closure. The cost estimate for this work is $60,000 when combined with embankment armoring and paving. If completed separately an increased cost should be anticipated.

- **East & West Causeway** - Paving- Existing paving is intact, but in fair to poor condition. A $150,000 to $175,000 overlay following the repairs above is likely to be necessary.

- **Bridge** - Visual inspection from road surface only. One steel beam to abutment nut on the Northeast corner is missing. Otherwise, no obvious deterioration observed.

[1] A separate GEI assessment has been authorized to review site damage from the 23Dec2022 storm event and to make observations related to corridor safety. The information presented in this section is intended to provide a ballpark indication of rehabilitation requirements with the limited visual assessment completed for this study.

Table 4. Causeway/Bridge Construction and Repair History

Causeway/Bridge Construction and Repair History		
Year	**Causeway/Bridge deterioration/storm damage**	**Rehabilitation Measures Taken**
1954	Mackworth Island Causeway & Bridge Constructed.	
1954 - 1966	Two sags develop; from STA 15+50 to STA 17+50 and STA 22+75 (edge of bridge) to STA 25+00.	1966-Geotechnical subsurface study- William Gorrill- loss of fines and fill material over 12 years.
1969	Winter storm, damage to road from overtopping.	Temporary Repairs to road surface.
1971		Causeway rehabilitation from winter storm 69'; Stone Fill and Guardrail replacement.
1973		Temporary repairs are done to the road and guardrail. Crushed stone used to fill holes in pavement, holes are of varying depths.
1974	April 2 storm causes damage to embankment and road. Wave damage lifts pavement on causeway between bridge & mainland. Between bridge & island damage limited to embankment.	Gabions are installed along the north side of the causeway, between the mainland and bridge, approximately 2/3 of the total length.
1978-86	Storm on January 9th causes damage to the southerly side of the causeway.	1979 Wetlands Alteration Permit awarded to Mackworth Island.
		1980- Phase I (length of road between the mainland and bridge) rehabilitation starts; the addition of riprap and paving of the roadway surface.
		1981 Bridge on the causeway has steel beams added under the decking for additional support.
		1982 Phase II (length of road between the bridge and Island) is completed; the addition of riprap and paving.
		1983 Railing along bridge converted from timber to steel.
		1986 Additional bridge repair.
1986 - 2007	Periodical events overtopping the causeway, minor repairs done by Island maintenance.	
2007	Storm causes severe damage to the east bridge approach.	Emergency repairs done to reopen causeway. Jersey barriers, stone and sand used to fill large void in road section then repaved.
2007-2011	Additional events overtop the causeway producing further damage to the roadway surface and the embankments. Gabions have severe failure.	2008 Minor repairs done by Island maintenance staff to the road surface only. Damaged/deteriorated utility pole replacement by CMP.
		2011 Bridge and Northside Riprap repairs.
2015	Bridge Upgrade	MaineDOT adds structural exo-skeleton to bridge to address superstructure deterioration and load capacity
2022	Bridge Inspection	Posted Weight Limit of 22 Tons

3.5 Granite Pier

The granite pier first appears on historical charts in 1896 and until a timber bridge was installed (sometime between 1909 and 1914) would have been the primary access to the island. The 1943 chart shows a utility crossing to Great Diamond Island which the current Casco Bay chart identifies as an 'abandoned cable' and 'pipeline area' crossing suggesting the granite pier may have served military interests at one time. There is evidence of cribs directly offshore from the pier that likely extended the structure to deep-water. No documentation was found to suggest the pier was used for island access after the causeway was constructed.

The granite block structure looks to be in good condition and appears to have been restored and overtopped with grass to provide a stable Casco Bay overlook for park visitors.

In its current configuration it has little use except for the occasional high tide landing. It might be extended with an ADA ramp and seasonal float for small boat access. It would not be suitable for a year-round ferry landing without extensive modification to address flood inundation, deep-water access, and the need for wave protection.

The seaward end of the pier was overtopped during the December 23, 2022 coastal storm causing minor washout in the fill at the end of the pier. The fill material and salt-tolerant grass/ plantings should be replaced in the spring for an estimated $2,000 to $3,000.

Fig. 12. Granite Pier at Low Tide
(Remnants offshore suggest the original pier extended into deep-water)

3.6 South and West Coastal Slopes

The coastal slopes that face from West to South on the island are the highest on the island. A location inventory of the pictures taken to document the condition of these slopes is provided in Appendix A in Drawings 5-1, 5-2, and 5-3. A separate file of the pictures is available with this report. The pictures provide evidence of active erosion and evidence of prior efforts to armor the slope. The condition of the site is consistent with the Maine Geological Survey classification of these slopes as 'Highly Unstable Bluffs.' Refer to the MGS Mapping in the figure below.

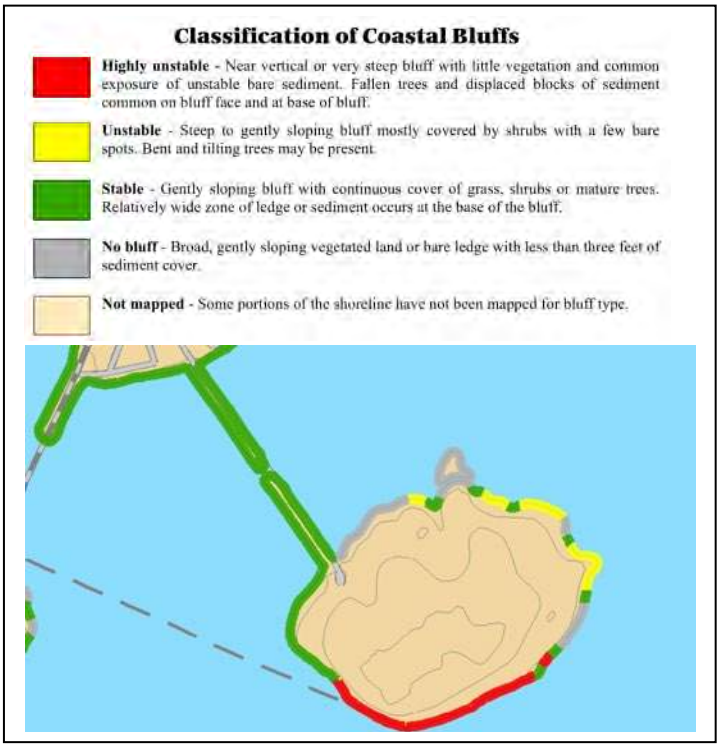

Fig. 13. MGS 2020 Coastal Bluff Map; No. 20-15

A park trail circumnavigates the island and provides the trail user with impressive views of Casco Bay. The trail is contiguous with the high coastal slope that extend south to east (i.e., along the shore from visitor parking to the granite pier).

Although beyond the scope of this study, it is recommended that a detailed survey[2] be undertaken on the perimeter trail to identify those areas where bluff erosion is encroaching on the stability and safe use of the trail. See Fig. 14 which shows the trail at the top of the slope with no buffer. In these areas, it must be determined whether slope stabilization is warranted to protect the trail. Generally, an adaptative solution that relocates the trail inland from the top of slope is the most practical alternative to improve trail safety at least cost and is the solution that is most compatible with current Maine and Falmouth shoreland zoning standards.

A visual inspection of these slopes from the beach reveals natural armoring from ledge outcrops at the toe of the slope. Where no ledge outcrops are present, stone riprap armoring has been installed resulting in an estimated 90% of the shoreline being protected. See Fig. 15. In isolated sections where the slope is not protected, active surficial failures have developed that threaten to encroach on the trail system above. This erosion is caused by undercutting of the toe by wave action leading to the development of erosion pockets that

[2] The survey was procured as an additional service by BGS and will be included as an Appendix to the final Harriman report.

migrate up the slope over time. In areas where the root system of a tree is undercut, the erosion occurs quickly when the tree fails. Refer to Fig. 16.

Fig. 14. Section of Trail Located at The Top of a Steep Coastal Slope

(Note evidence of surficial slide and subsequent repair.)

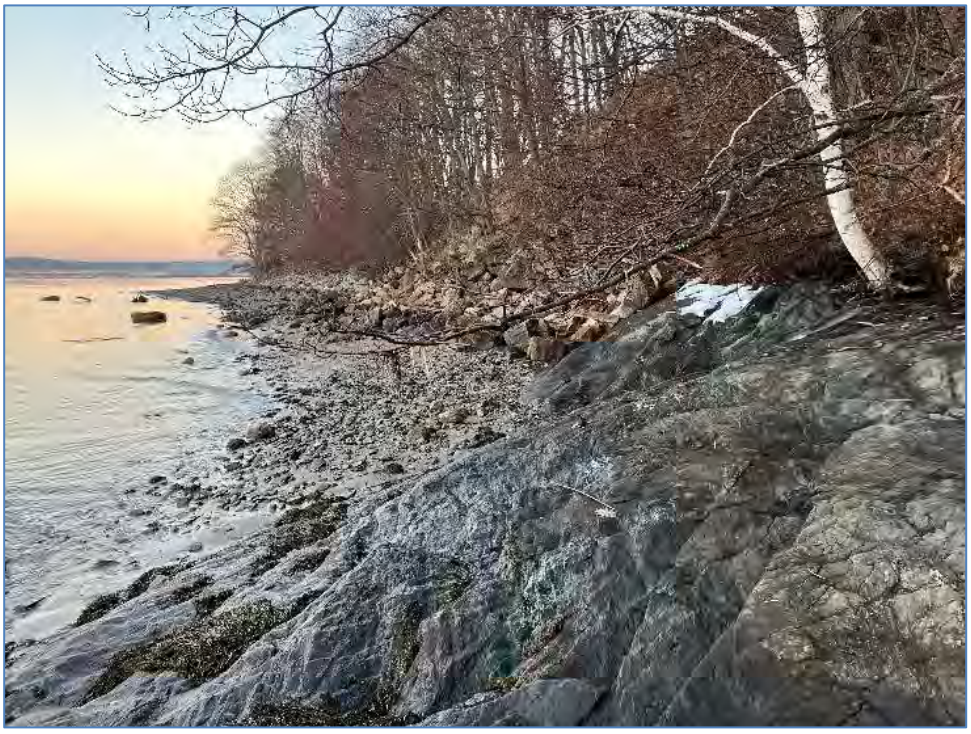

Fig. 15. Natural Ledge and Imported Riprap Protect the Coastal Embankment

Fig. 16. Pocket Erosion in the Area where the Embankment Toe is Exposed

4. Transportation Connection Resiliency

The sources used to determine tidal elevations, wave action, storm surge and associated flooding on the Mackworth Island transportation infrastructure are summarized in Table 5 below (same as Table 2 duplicated for easy reference). The Table provides cumulative threshold water elevations for Mackworth Island that contribute to the peak coastal flooding that threatens the Mackworth Island transportation infrastructure.

Finally, Maine Climate Council (MCC) recommendations for future sea level rise are presented in the Table and in *Section 4.4 Sea Level Rise Impact on Inundation*.

Table 5. Tabulated Inundation for Mackworth Island

PROJECT ELEVATIONS (BY DATUM)			
ELEVATION	**CHART** (ft)	**NAVD88** (ft)	**Notes**
Prepare to Manage_5.0 + BFE	23.3	18.0	Maine Climate Council Sea Level 2070 Rise
Commit to Manage_2.4 + BFE	20.7	15.4	
Pier -Shoreside End	21.3	16	Approx. from Drone Suvey/LIDAR Data
FEMA BFE Causeway West Side	20.3	15.0	FIRM PRELIMINARY, ZONE VE, 4.14.2017
FEMA BFE Causeway East Side & Pier	18.3	13.0	
Pier- Seaward End	16.3	11	Approx. from Drone Suvey/LIDAR Data
Causeway Bridge Deck	16.3	11	Approx. from Drone Survey/LIDAR Data
Causeway Low Point North Side	14.3	9	
Causeway Low Point South Side	13.8	8.5	
FEMA Stillwater 0.2% Annual Chance	14.8	9.5	FIS Cumberland County Transect 058 (Casco BAY)
FEMA Stillwater 1% Annual Chance	14.1	8.8	
FEMA Stillwater 2% Annual Chance	13.8	8.5	
FEMA Stillwater 10% Annual Chance	13.2	7.9	
HAT Highest Annual Tide	11.3	6.7	2018 MEDEP Predictions for Cow Island
MHHW	9.9	4.6	BASED ON NOAA TIDAL BM 8418150 "Portland"
NAVD88	5.3	0.0	
MLLW	0.0	-5.3	

The flooding of the causeway, pier, and bridge is also graphically depicted by Fig. 17 using data from the recent *December 23, 2022 Storm Event.* The characteristics of this storm are detailed in *Section 4.2.* Pictures and reports of conditions at the site that occurred during the event serve to validate the elevation data presented for the site and support the following observations regarding causeway, bridge, and pier vulnerability to flooding.

1. High water elevations have been recorded at the Portland Harbor Tidal Gage for more than 100 years. The recorded data indicate the water elevation measured at the peak of the December 23, 2022 storm was 8.46 ft NAVD88 (2.4 ft above normal) which is 1.1-inches higher than that recorded (8.37 ft NAVD88) during the 1978 storm of record. It is also noted that the elevations recorded at the Portland Harbor Tidal Gage do not include the additional contribution of wave height to total water elevation.
2. Wave height contribution to flooding is site specific and dependent on exposure and fetch. The December 23, 2022 conditions at Mackworth Island included wave action that built up with high and sustained winds from the southeast quadrant. Fig. 1 shows the causeway breeched at the low point on the north side of the bridge. Inspection after the storm revealed debris on the bridge approaches suggesting it was close to being overtopped (an elevation approximately 2.5 ft above the Portland Tidal Gage). Therefore, the wave height is estimated to have been about 5 ft.
3. The December 23, 2022 storm inundation elevation estimate at the Mackworth Island Causeway (11.0 NAVD88) falls marginally short of the 2018 FEMA BFE model that predicts the bridge will be submerged by approximately two (2) to four (4) feet in a storm with a probability occurrence of 1% (the 100-year storm).
4. The sea level rise predicted by the Maine Climate Council to occur by 2070 under the C2M condition must be verified by site specific modeling. An approximate estimate results in storm flooding with a 1% probability occurrence over the existing bridge of 4.5 ft to 7 ft.

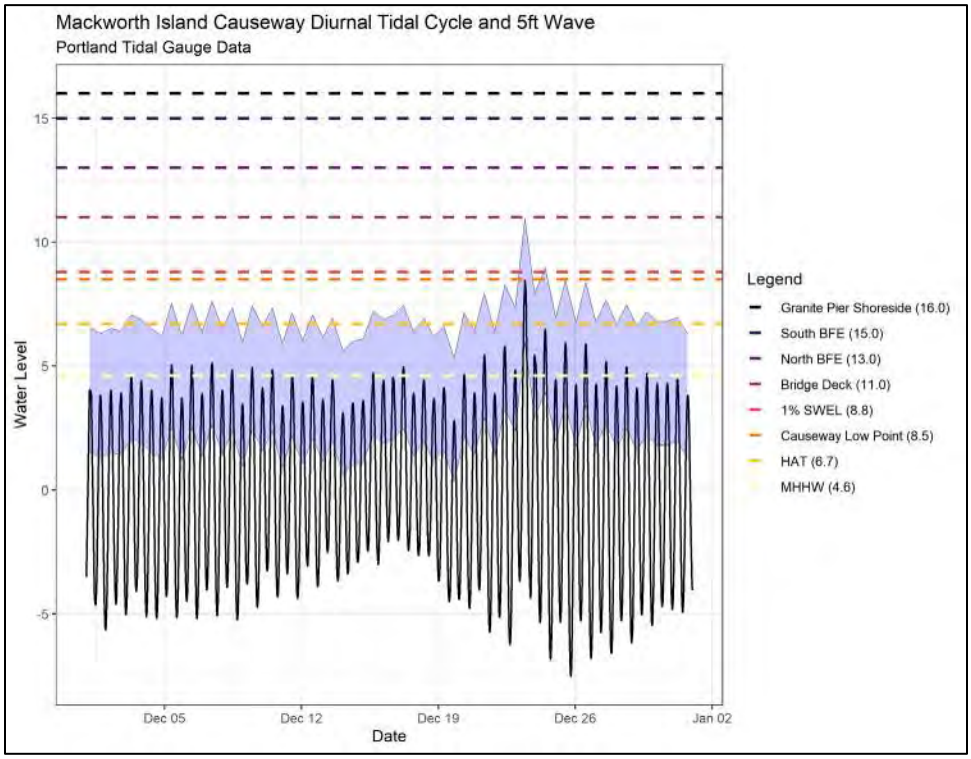

Fig. 17. Mackworth Island Causeway- Tidal Data + 5-ft Wave, No Sea Level Rise

4.1 FEMA Inundation Model

The Federal Emergency Management Agency (FEMA) develops flood models that use historical flood data to develop probability predictions for site inundation. The model considers the combined effect of tidal action, wind generated waves and storm surge with site specific transect corrections for coastal exposure and seabed bathymetry. The FEMA models are the accepted standard for community flood insurance programs that use FEMA published data as a benchmark to assess site vulnerability.

Fig. 18 shows the FEMA flood modeling results for the "100-year storm" overlayed on an aerial image of the site. This storm is predicted to have a 1% chance of occurring in any given year, also known as the Base Flood Elevation (BFE). The BFE on the north side of the causeway is VE EL 15.0 NAVD88. The VE designation indicates the wave height that contributes to the BFE is greater than 3 ft.

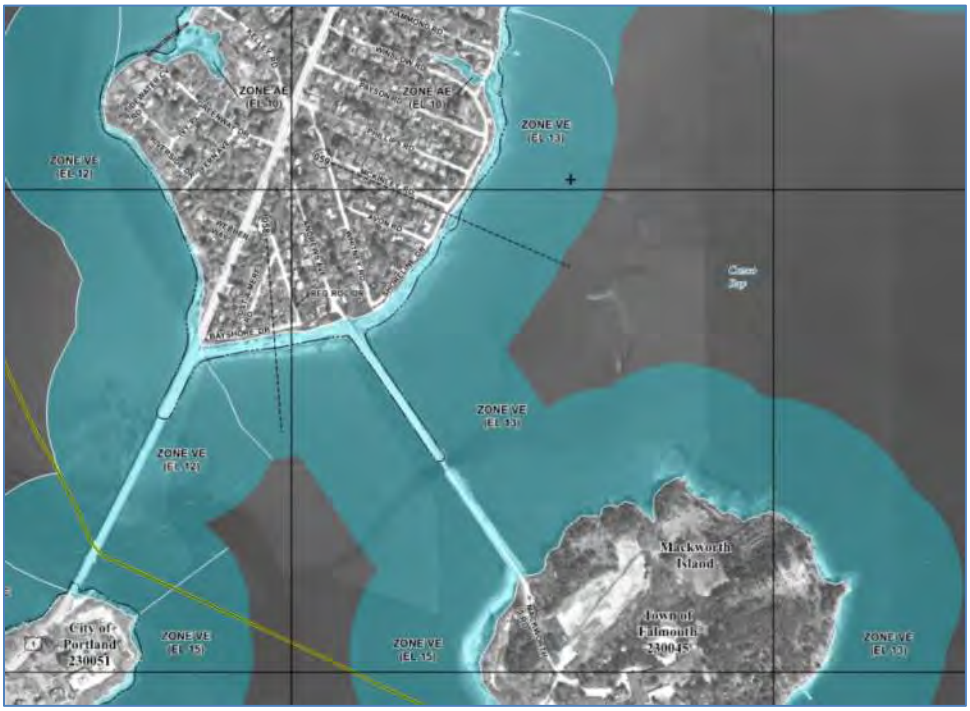

Fig. 18. FEMA Flood Insurance Rate Map (Preliminary)

4.2 December 23, 2022 Storm Event

The December 23,2022 storm event overtopped the Mackworth Island causeway and required the road to be closed. Storm characteristics can be defined by the recorded data from Portland Station CASM1 noted below and reports and pictures of site flooding.

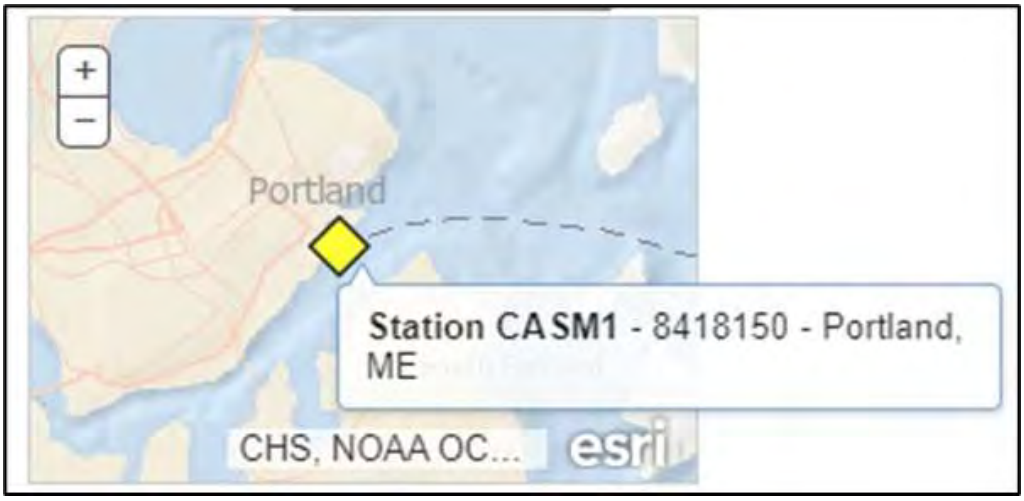

Fig. 19. Station CASM1 Location

Date:	December 23, 2022 (24-hr period):	
	Predicted High Tide:	Elev. 6.07 NAVD88 @ 10:12 AM
	Recorded Highwater (preliminary):	Elev. 8.46 NAVD88 @ 10:42 AM
	Average Wind Direction (24-hr day):	118 Degrees (ESE)
	Average Wind Speed (24-hr day):	28 knots
	Maximum Wind Gust:	52.5 knots @ 12:10 EST
	Average Wave Height (24-hr day):	4 m
	Maximum Wave Height:	6.5 m @ 13:20 EST

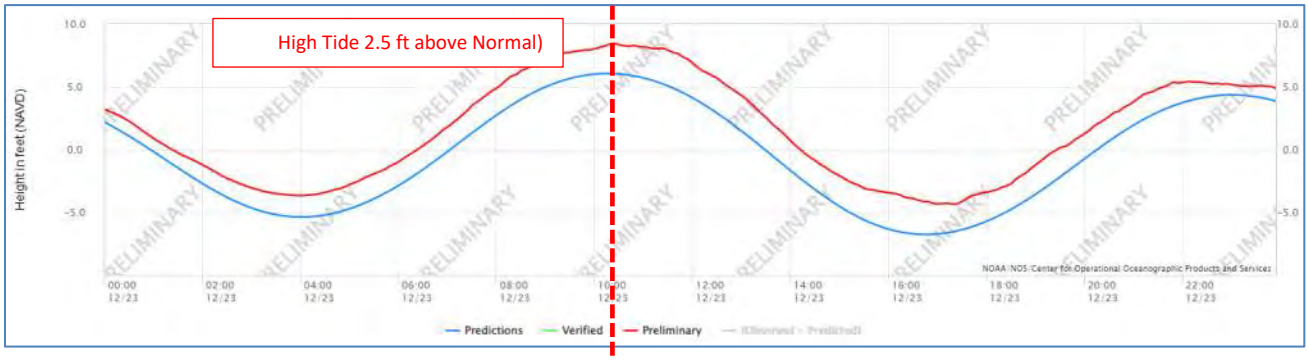

Fig. 20. Portland Tidal Gage Data December 23, 2022 Storm Event

4.3 Portland Tidal Gage

The following synopsis of historical sea level rise measurement is posted on the NOAA website and is based on monthly Portland Harbor Mean Sea Level (MSL) tidal gage data recorded between 1912 and 2006.

"The monthly extreme water levels include a Mean Sea Level (MSL) trend of 1.82 millimeters/year with a 95% confidence interval of +/- 0.17 millimeters/year based on monthly MSL data from 1912 to 2006 which is equivalent to a change of 0.60 feet in 100 years"

Fig. 21. Portland Tidal Gage

Table 6 provides a prediction for 'Nuisance Flooding" which is defined as the period when the causeway and bridge are overtopped in tidal and/or storm surge conditions without wave action. The Table uses Portland Tidal Gage data (1910- 2023) recorded at hourly intervals to determine the average time in hours/day key points on the causeway, bridge and pier are overtopped. Maine Climate Council projected sea level rise values are superimposed on this data to show how the flooding interval is predicted to increase from 2030 to 2100. Although not considered in this Table, it is recognized that the addition of wave action will increase the frequency and timeframe of the intervals provided in the table.

Nuisance Flooding is significant for two main reasons:

1. Road closure is necessary to maintain site safety during overtopping conditions, requiring an alternative Fire or Rescue response to be developed.

2. Overtopping is accompanied by breaking waves, suction forces and saturated soils that result in migration of fines and damage to the causeway that may render the road impassable until repairs can be made further isolating island operations.

Table 6. Existing and Future Nuisance Flooding

NUISANCE FLOODING (Based on FEMA Historical Data and MCC Predictions for Sea Level Rise)										
Site Feature			Maine Climate Council predicted SLR added to Portland Tidal Gage data (i.e.site specific wave height and runup not included) Year (Height Increase)							
Location		Elevation NAVD88-FT	Average Inundation Per Day (hours)							
			COMMIT to Manage (C2M)				PREPARE to Manage (P2M)			
			2030 (0.8 ft)	2050 (1.5 ft)	2070 (2.4 ft)	2100 (3.9 ft)	2030 (1.4 ft)	2050 (3.0 ft)	2070 (5.0 ft)	2100 (8.8 ft)
Causeway	Low Point North Side	**9.0**	0.0	0.0	**0.1**	**1.1**	0.0	**0.3**	**3.4**	**11.4**
	Bridge Deck	**11.0**	0.0	0.0	0.0	0.0	0.0	0.0	**0.3**	**8.0**
	Low Point South Side	**8.5**	0.0	0.0	**0.2**	**1.9**	0.0	**0.6**	**4.7**	**12.2**

4.4 Sea Level Rise Impact on Inundation

The Maine Climate Council (MCC) publishes recommendations for future sea level rise that should be added to the FEMA inundation model results based on the design life planned for the structure. MCC provides a minimum "Commit to Manage" (C2M) sea level rise value based on the lifespan of the proposed improvements. MCC also provides a more conservative "Prepare to Manage" (P2M) recommendation that should also be considered in design development. The Table below summarizes MCC recommendations for future sea level rise based on the structure life cycle.

Table 7. Maine Climate Council Recommendations for Sea Level Rise

Planning Scenario	"Commit to Manage"	"Prepare to Manage"
Year	Intermediate Scenario	High Scenario
2030	0.8	1.4
2050	1.5	3
2070	2.4	5
2100	3.9	8.8

Relative Sea Level Rise (feet) from 2000

Taken from Maine Climate Council's "Scientific Assessment of Climate Change and Its Effects in Maine", Dated August 2020

Figs. 22 and 23 superimpose the MCC 2070 sea level rise predictions on the current flood model (See Fig. 17) as it would be reasonable to expect that a causeway, bridge, or pier when improved or replaced would have a design life of 50-years.

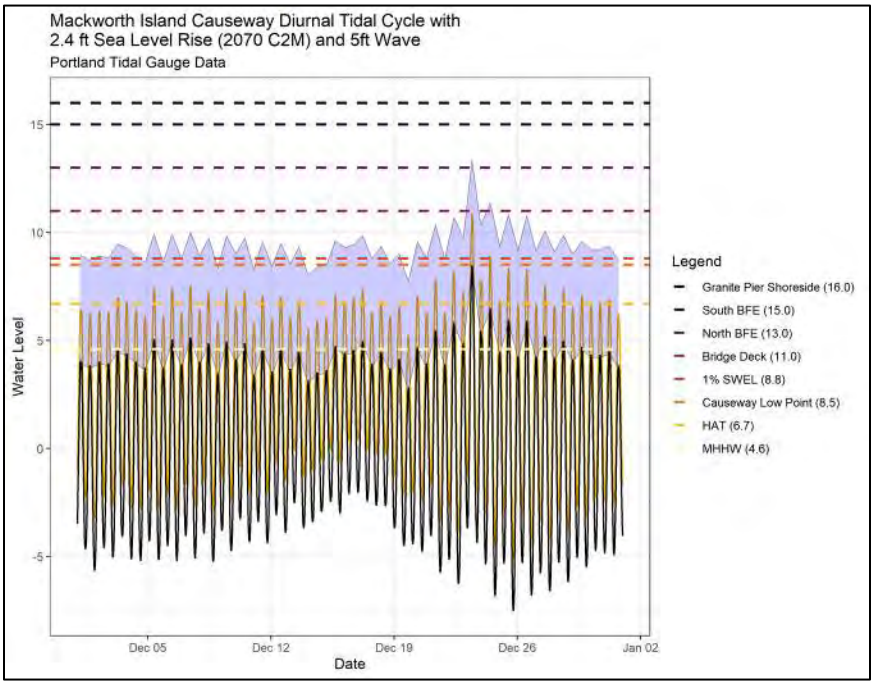

Fig. 22. Mackworth Island Causeway- Tidal Data + 2.4-ft SLR (2070 C2M) + 5-ft Wave

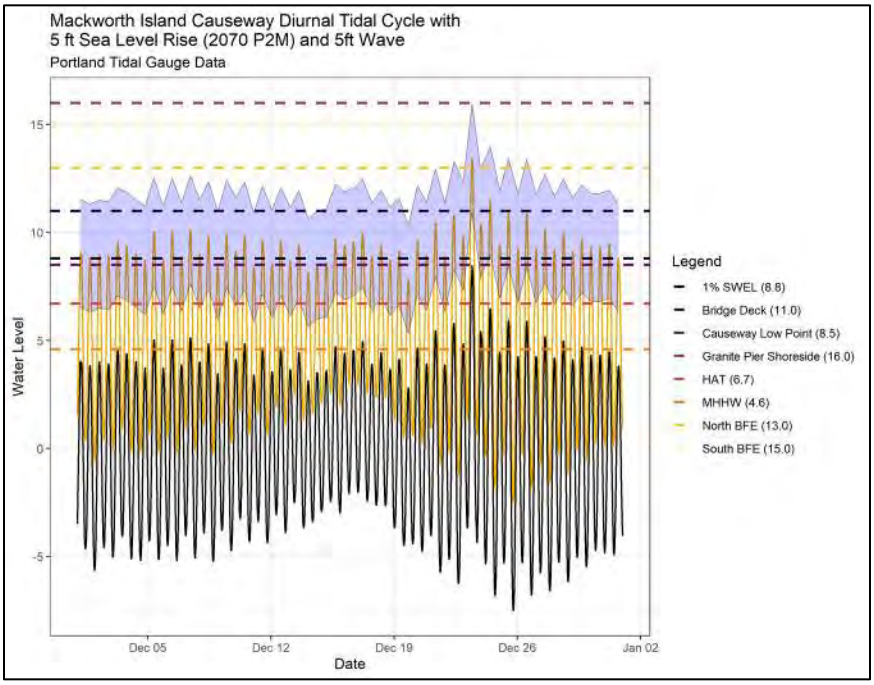

Fig. 23. Mackworth Island Causeway- Tidal Data + 5-ft SLR (2070 P2M) + 5-ft Wave

5. References

1. Coastal Geology
    a. Bedrock Geology of the Portland 7.5' Quadrangle, Cumberland County, Maine; Arthur Hussey; 2003.
    b. Bedrock Geology Mapping; Portland East Quadrangle, Maine; Me Geological Survey; 03-90; 2003
    c. Coastal Landside Hazards Mapping; Portland East Quadrangle, Me; Maine Geological Survey; 01-534; 2001.
    d. Coastal Bluffs Mapping; Portland East Quadrangle, Me; Maine Geological Survey; 02-205; 2002.
    e. Surficial Geology Mapping; Portland East Quadrangle, Me; Maine Geological Survey; 99-95; 1999.
    f. Surficial Materials Mapping; Portland East Quadrangle, Me; Maine Geological Survey; 99-39; 1999.
    g. Coastal Marine Geological Environments Mapping; Portland East Quadrangle, Me; Maine Geological Survey; 76-121; Barry Timson; 1976
2. Flood studies and Mapping
    a. FEMA NFIP FIRM; Community Panel 230045 0009 B; Town of Falmouth; Cumberland County, Maine; Effective 10/16/1984.
    b. FEMA NFIP FIRM; Community Panel 230045 0013 B; Town of Falmouth; Cumberland County, Maine; Effective 10/16/1984.
    c. FEMA NFIP FIRM; Community Panel 230045 0703 F; Town of Falmouth; Cumberland County, Maine; Preliminary 4/14/2017.
    d. FEMA NFIP FIS; Community; Falmouth 230045; Cumberland County, Maine; Preliminary 8/30/2019.
    e. Maine Climate Council Technical Reports and references; http://climatecouncil.maine.gov/
    f. Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS); http://neracoos.org/
    g. National Oceanic and Atmospheric Administration; National Ocean Service; https://tidesandcurrents.noaa.gov/waterlevel
    h. Federal Emergency Management Agency (FEMA) (2017). Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update. FEMA Region VI, FEMA Headquarters.

3. Regulatory Documents
    a. Chapter 305 -Permit by Rule- Maine Natural Resources Protection Act; Amended to June 8, 2012. https://www.maine.gov/dep/land/nrpa/index.html
    b. Chapter 310-Wetlands- Maine Natural Resources Protection Act; Amended to November 11, 2018. https://www.maine.gov/dep/land/nrpa/index.html
    c. Maine General Permit; Dept of the Army; October 2020 https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit/
    d. Maine Department of Environmental Protection (Maine DEP) (2018). Highest Annual Tide (HAT) Levels for Year 2018 Maine Coast from Eastport to Kittery.
4. Survey Data
    a. GEI Drone Survey and Imagery; 2022 04
    b. Maine GIS: Various Land Use Data Sets that include aerial imagery and lidar contour information.
    c. NOAA Chart 13292; Portland Harbor and Vicinity
5. Town of Falmouth
    a. Property: Falmouth Tax Map Reference: R02-012
6. Legacy Drawings

Date	Drawing Set Description	Company Reference
1953	Shts 1-12 (of12)- Caseway Construction	State Highway Commission Bridge Division
1972	Shts 1 & 5 (of10)- Force Main Nth of Causeway	Edward C. Jordan Co., Inc.
1973	Sht 1 of 1- Gabion Revetment to East Embnkment North Sta 3 to 11+20; Sth Sta 12+22 to 18+00	State Highway Commission
1980/81	Shts 1-5. (of 5)- Riprap & Paving Repairs	Doten Associates; Engineers & Surveyors
1981	Sht 1 of 1- Bridge Repairs	
1982	Shts 1,2 (of 5)- Riprap repairs	
2007	Emergency Bridge Repairs - SK1 of 1	Baker Design Consultants
2011	Shts T1-T3,C1-C6 (of 9), Bridge and RipRap Repairs	
2014	Shts 1-10 (of 10)- Structural Reinforcement	Bridge Maintenance, Maine DOT

7. Repair History Documents

Date	Document	Description/Company
Oct-66	Report of Subsurface Investigation	William R. Gorrill Consulting Engineer
Jul-68	Specifications for Causeway Repair	Joseph P. Youngs, Jr., Superintendent, State Department of Mental Health and corrections, Bureau of Public Improvements, Jordan Gorrill Associates
Jan-70	Project Application for Supplemental Federal Financial	Flood Damage, Office of Emergency Preparedness
Jan-71	Contract Documents	State of Maine Bureau of Public Improvements, Jordan Gorrill Associates
Apr-73	Causeway Damage Correspondence-Subject: Causeway Repair Funds	Chester T. booth, Director- Div. Of Finance, Fred A. Cole, Business Manager
Jan-74	Photos of Causeway	3 Photos of Causeway
Jan-78	Causeway File	January 1978 Storm Damage
Feb-75	Executive Order	Office of the Governor- Affirmative Action
Jan-79	Baxter School: Department of Environmental Protection: Board Order	Alteration of coastal wetlands act and water quality certifications: Findings of fact and order.
Apr-80	Memo Re: Geotechnical Engineering Proposal	Memo from the Business Manager: Doten Associates/Morrision, Joseph P. Youngs, Jr.
Apr-80	Letter Re: Repair of Causeway	Doten Associates, Joseph P. Youngs, Jr.
May-80	Morrison Geotechnical Engineering Proposal	Doten Associates, Morrison Geotechnical Engineers
Jun-80	Contract Documents	Doten Associates
Jan-80	Standard General Conditions and Contract Work on State Projects	
Jun-80	Application for Wetlands Alteration Permit and Water Quality Certification	Applicant- State of maine acting through its Dept. of Educational & Cultural Services
Jun-80	Letter Re: A Corps of Engineers permit	Department of the Army, Doten Associates
Jun-80	Letter Re: Project Jurisdiction	Board of Harbor Commissioners for the Harbor of Portland
Jul-80	Inter-Departmental Memorandum: Mackworth Island Causeway	Bureau of Public Improvements
Aug-80	Memo Re: Causeway	Business Manager
Oct-80	U.S. Coast Guard Letter	Doten Associates, U.S. Coast Guard
Jul-81	Letter Re: Structural Capacity of Bridge	Doten Associates, Joseph P. Youngs, Jr. Superintendent
Jul-81	Contract Change Order #2 Request Form	Blue Rock Industries
Jul-81	Letter Re: Mackworth Island Bridge	Doten Associates, Joseph P. Youngs, Jr. Superintendent
Jul-81	Contract Change Order #3 Request Form	Blue Rock Industries
Oct-81	Letter Re: Mackworth Island Bridge Improvements	Project Estimates: William Dunning, Business Manager, Colwell Construction Company, Inc.
Dec-81	Certificate of Acceptance	Blue Rock Industries, Bureau of Public Improvements
Jun-82	Letter Re: Phase 2 Rehabilitation	Bridge Construction Corporation, Bureau of Public Improvements
Jul-82	Letter: Phase 2 Rehabilitation	Bridge Construction Corporation, Hunter-Ballew Associates
Aug-82	Letter: Phase 2 Rehabilitation	Bridge Construction Corporation, Hunter-Ballew Associates
Aug-82	Contract Change Order #2 Request Form	Bridge Construction Corporation, Bureau of Public Improvements
Oct-82	Letter: Causeway	Bureau of Public Improvements, Hunter-Ballew Associates
Jan-82	Causeway Photos	
Jun-83	Scope of Work/Plan	
Jan-83	Wage Determination	
Jun-83	Contract Agreement- Short Form	Dept. of Education & Cultural Services, Colwell Construction Co. Inc.
Jul-86	Specification for Bridge Repair	Bureau of Public Improvements

Appendix A

Project Plans

1-1 Mackworth Island Project Location Map

2-1 Mackworth Island Vulnerability Map - West Causeway
2-2 Mackworth Island Vulnerability Map - East Causeway

3-1 Mackworth Island Storm Surge with Sea Level Rise Map - West Causeway
3-2 Mackworth Island Storm Surge with Sea Level Rise Map - East Causeway

4-1 Mackworth Island Vulnerability Map - Stone Pier

5-1 Mackworth Island Drone Photo Location Map - Overview
5-2* Mackworth Island Drone Photo Location Map - Western Shore
5-3* Mackworth Island Drone Photo Location Map - South Shore

*A separate file with referenced pictures is available

0 250 500
Feet

Mackworth Island
Vulnerability Project
Falmouth, Maine

Town of Falmouth
Falmouth, Maine

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MACKWORTH ISLAND
PROJECT LOCATION
MAP

Project 610029 | January 2023 | 1-1

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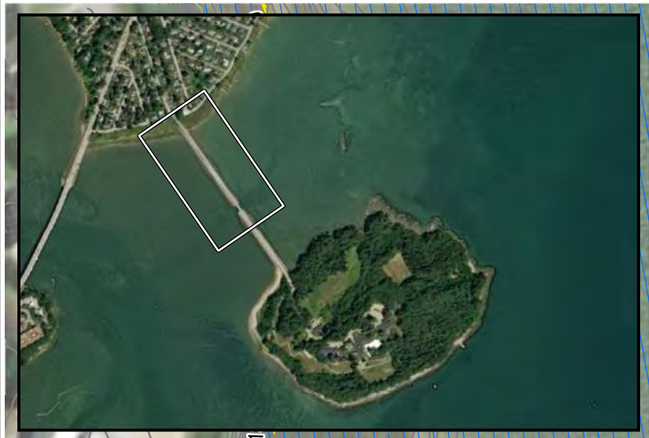

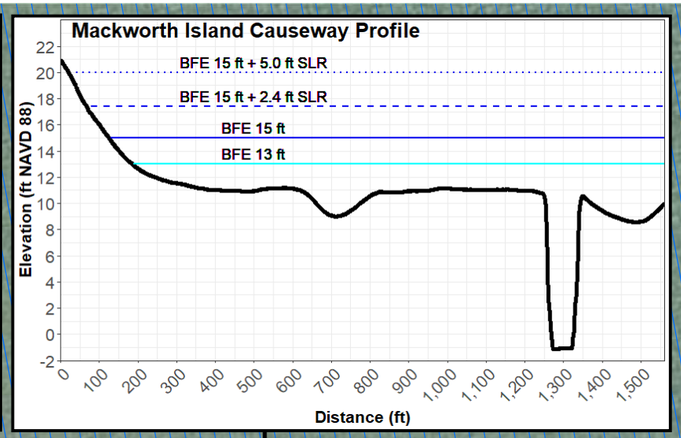

BFE 13 ft
NAVD88

BFE 15 ft
NAVD88

LEGEND:

- Mackworth Island causeway profile
- Contours (1ft)
- FEMA 1-percent chance inundation boundary (effective)
- Mapped eelgrass locations

Maine Coastal Bluff Stability

- Hightly unstable
- Unstable
- Stable
- Not a bluff
- Unmapped/undetermined

SOURCE:

1. Contours generated from 2020 USGS Lidar: South Coastal Maine (QL2).
2. FEMA 1-percent change inundation labels identify base flood elevations referenced to North American Vertical Datum of 1988.
3. Eelgrass locations developed by Maine DEP (2018).
4. Maine coastal bluff stability shapefile mapped at 1:24,000 scale (Maine Geological Survey, 2019).
5. Aerail imagery: Mackworth Island Pier: GEI drone flight (no ground control), April 21, 2022 and ESRI Online (2021). Mackworth Island Causeway: Nearmap, 2021).

0 50 100
Feet

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Falmouth, Maine

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MACKWORTH ISLAND
VULNERABILITY MAP -
WEST CAUSEWAY

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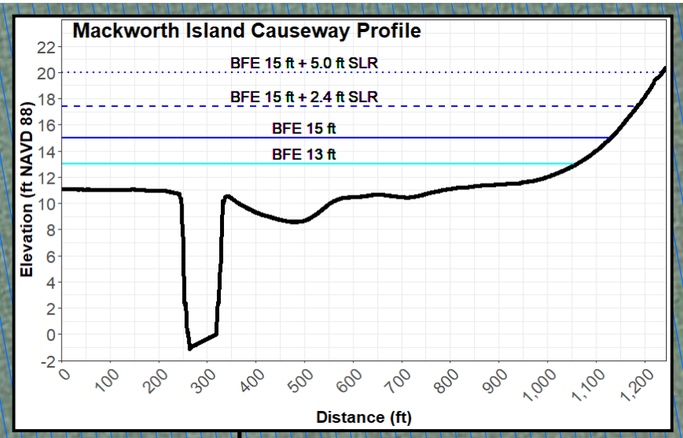

BFE 13 ft
NAVD88

BFE 15 ft
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Feet

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MACKWORTH ISLAND
VULNERABILITY MAP -
EAST CAUSEWAY

January 2023 2-2

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LEGEND:

1-Percent chance flood with 5 ft sea level rise

SOURCE:

1. 1-Percent chance storm with 5 ft of sea level rise boundary used a Digital Elevation Model generated from 2020 USGS Lidar: South Coastal Maine (QL2) and Base Flood Elevations (BFE) from FEMA.
2. Aerial imagery: Nearmap, 2022).

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Feet

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MACKWORTH ISLAND
STORM SURGE WITH SEA LEVEL RISE MAP - WEST CAUSEWAY

January 2023 3-1

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LEGEND:

1-Percent chance flood with 5 ft sea level rise

SOURCE:
1. 1-Percent chance storm with 5 ft of sea level rise boundary used a Digital Elevation Model generated from 2020 USGS Lidar: South Coastal Maine (QL2) and Base Flood Elevations (BFE) from FEMA.
2. Aerial imagery: Nearmap, 2022).

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Feet

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Town of Falmouth
Falmouth, Maine

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MACKWORTH ISLAND STORM SURGE WITH SEA LEVEL RISE MAP - EAST CAUSEWAY

January 2023

3-2

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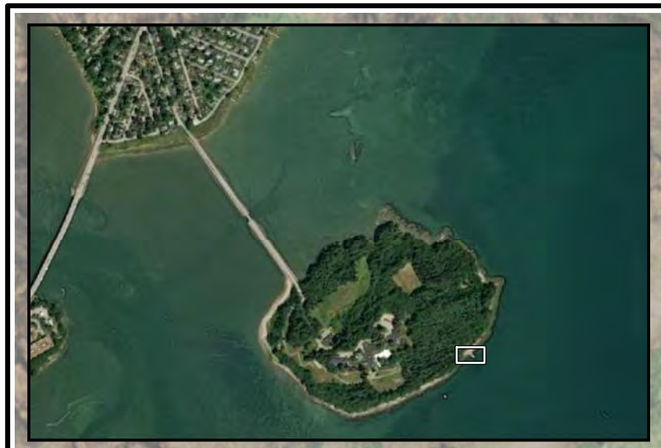

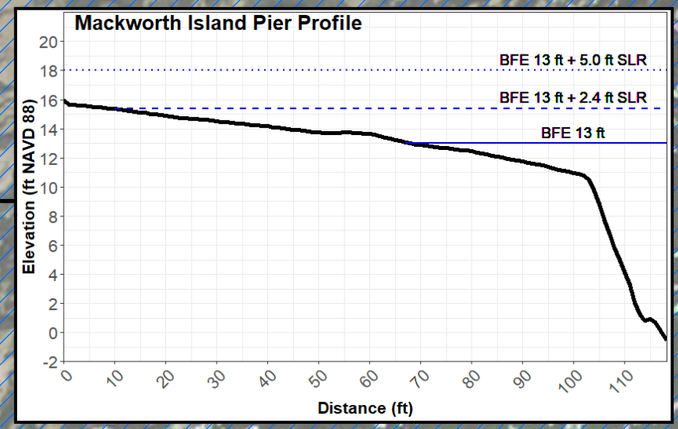

BFE 13 ft
NAVD88

LEGEND:

- Mackworth Island pier profile
- FEMA 1-percent chance inundation boundary (effective)
- Mapped eelgrass locations

Maine Coastal Bluff Stability

- Hightly unstable
- Unstable
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Feet

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Falmouth, Maine

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MACKWORTH ISLAND
VULNERABILITY MAP -
STONE PIER

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LEGEND:

- Drone photo location

0 250

Feet

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Vulnerability Project
Falmouth, Maine

Town of Falmouth
Falmouth, Maine

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MACKWORTH ISLAND
DRONE PHOTO LOCATION
MAP - OVERVIEW

Project 610029 | January 2023 | 5-1

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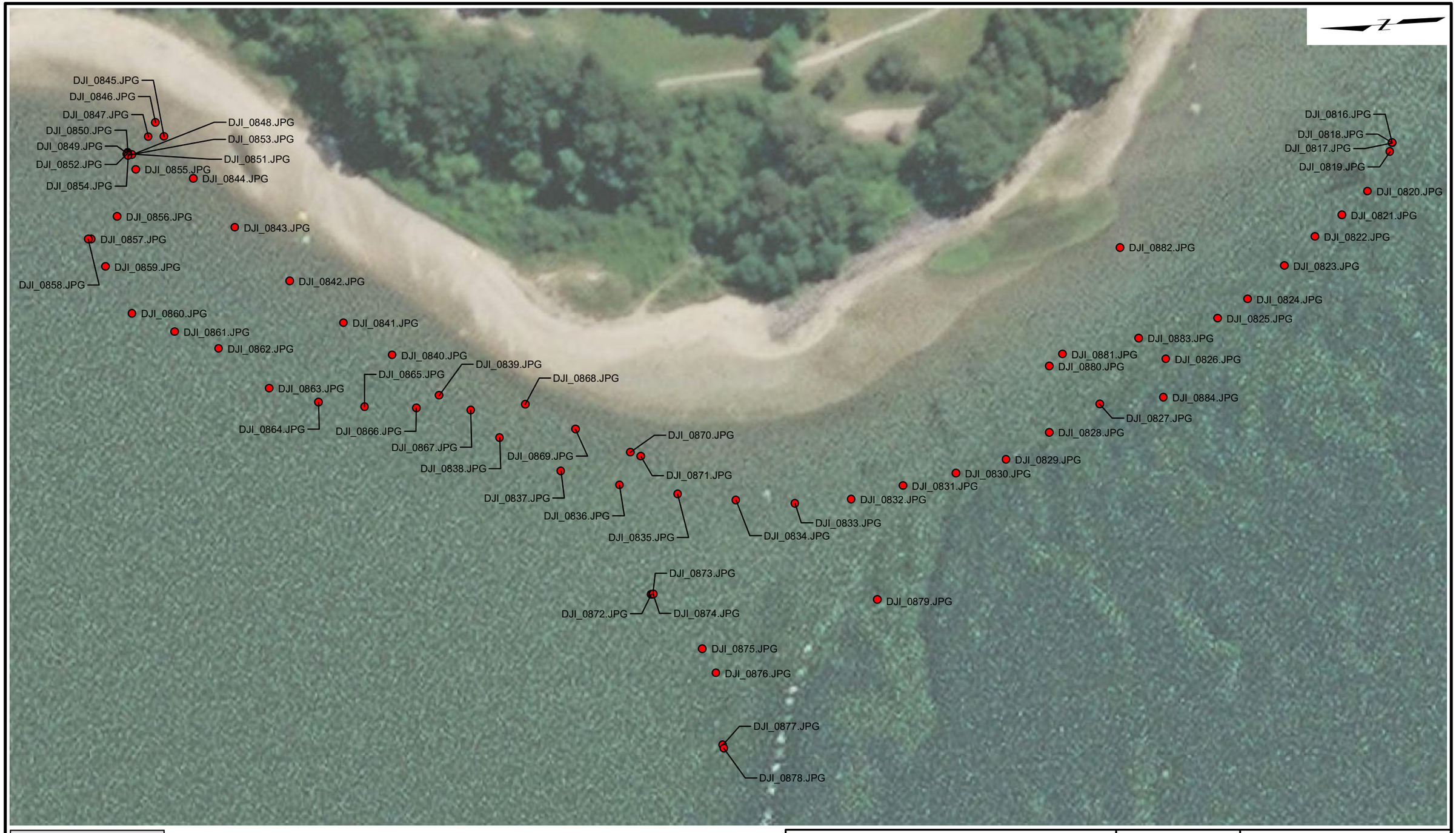

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- Drone photo location

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Feet

Mackworth Island
Vulnerability Project
Falmouth, Maine

Town of Falmouth
Falmouth, Maine

GEI Consultants

Project 610029

MACKWORTH ISLAND
DRONE PHOTO LOCATION
MAP - WESTERN SHORE

January 2023 5-2

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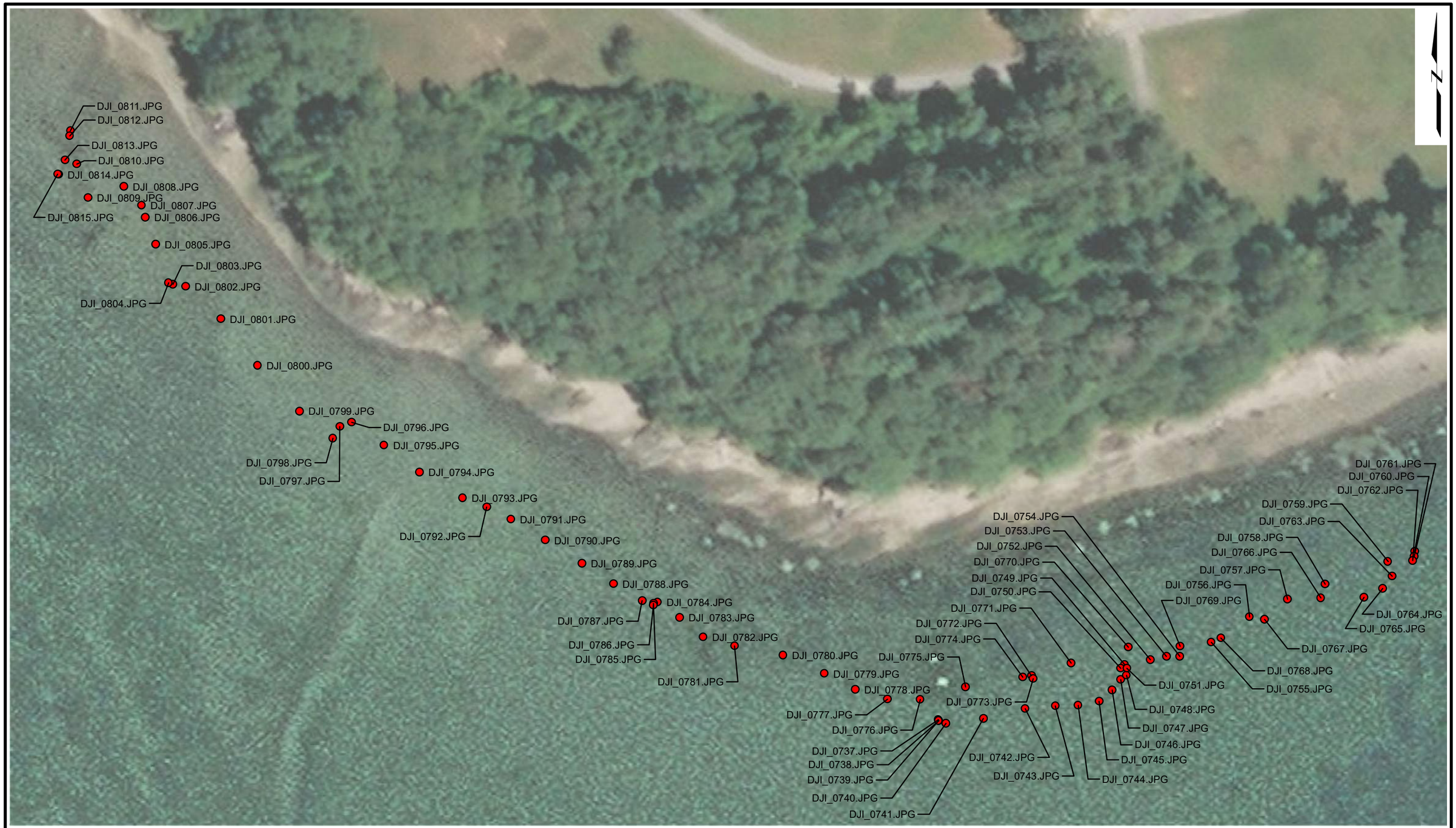

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- Drone photo location

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Feet

Mackworth Island
Vulnerability Project
Falmouth, Maine

Town of Falmouth
Falmouth, Maine

GEI Consultants

MACKWORTH ISLAND
DRONE PHOTO LOCATION
MAP - SOUTH SHORE

Project 610029 | January 2023 | 5-3

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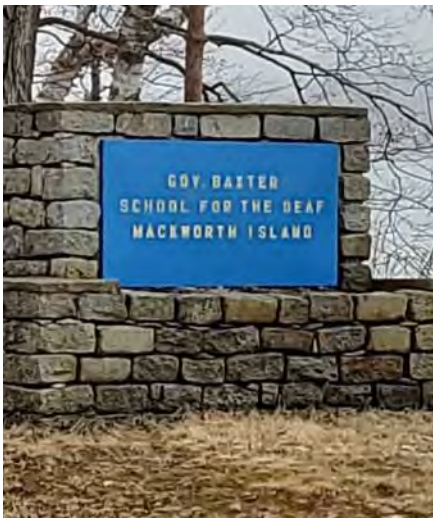
A4: TRAFFIC AND PARKING ASSESSMENT

REPORT BY VHB

Report contents include an assessment of current parking capacity and traffic observed at three periods: March 31, June 5, and August 8-9 2022.



Planning Report

Mackworth Island Redevelopment

Transportation and Parking Analysis

PREPARED FOR

HARRIMAN

Harriman
46 Harriman Drive
Auburn, ME 04210
207.784.5100

PREPARED BY

vhb

VHB
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4/20/2022

Table of Contents

1

Existing Conditions

VHB was tasked by Harriman to provide transportation planning and engineering consulting services in support of the Mackworth Island study in Falmouth, Maine. The project is located on Mackworth Island, connected via Andrews Avenue and a causeway bridge. Mackworth Island houses the Baxter School for the Deaf and Maine Educational Center for the Deaf and Hard of Hearing (MECDHH) with structures built over the last century. The efforts will assist Harriman with understanding existing traffic and parking that will advance redevelopment and/or re-occupancy of existing structures within Mackworth Island.

Island Structures

To understand the potential trips generated by the buildings on Mackworth Island, VHB collected data for the existing buildings and their current uses. A summary of the building land use data is provided in Table 1 below.

Table 1 Mackworth Island Buildings

Building	Name	Land Use	SF
A	Baxter Mansion	Office/Administration	2,377
B	Young Hall	Vacant	15,580
C	Taylor Hall	Office	7,000
D	Greenlaw Hall	School	17,600
E	Inman Building	Garage/Storage	4,800
G	Carter Hall	Vacant	17,600
H	Brewster Hall	Office	12,550
I	Patrick Hall	School	6,180
J	Draper Hall	Office	7,500
K	Sanders Hall	Office	34,800

Existing Parking

VHB inventoried the existing parking supply for Mackworth Island. The parking is a mix of marked/ unmarked and paved/unpaved stalls. The parking inventory was gathered for both the MECDHH campus and the Mackworth Island State Park on March 31st, 2022 in the late morning. In some cases, a parking area will be able to serve additional buildings. The titles here are indicative of the nearest major building adjacent to the parking. The campus office parking should not fluctuate significantly through the year, with the school use perhaps having a reduction of use during the summer months. The state park parking should see less use during the winter season, and increased use during the summer.

Building A: Baxter Mansion

Photo 1: Building A: Baxter Mansion parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
10	Marked	Paved	3	70%

Building C: Taylor

Photo 2: Building C: Taylor parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
31	Unmarked	Unpaved	25	19%

Building E: Inman Garage

Photo 3: Building E: Inman Garage parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
22	Unmarked	Unpaved	15	32%

Building E, the Inman Building, which serves as a maintenance garage and storage building, was not considered for the overall analysis and the available parking was considered sufficient for the building without impacting total campus parking supply as a standalone use.

Building G: Carter

Photo 4: Building G: Carter parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
16	Marked/Unmarked	Paved/Unpaved	26	10%

Building J: Draper

Photo 5: Building J: Draper parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
52	Marked/Unmarked	Paved/Unpaved	43	17%

Building K: Sanders

Photo 6: Building K: Sanders parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
10	Marked	Paved	8	20%

The Sanders Building also houses a cafeteria, dining hall, and the museum.

Athletic Field

Photo 7: Athletic Field area parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
10	Marked	Paved	10	0%

State Park - Public

Photo 8: Mackworth Island State Park parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
22	Unmarked	Unpaved	16	27%

As the data collected for the public State Park parking lot was during a non-peak season, the data is only representative for the time of year in which it was taken. Interviews with staff from Mackworth Island indicate that the public parking is consistently at capacity.

State Park - Gatehouse

Photo 9: Mackworth Island State Park gate parking lot

Total Parking	Parking Type	Surface Type	Available Parking	% Used
6	Unmarked	Unpaved	5	17%

As the data collected for the gatehouse State Park parking lot was during a non-peak season, the data is only representative for the time of year in which it was taken. With the gatehouse for the state park unoccupied, this reserved parking would be utilized at a higher rate during the summer peak season with increased staffing.

Museum

The MECDHH campus also features a museum with goals to "*to serve as a center for the collection, preservation, storage, and displays related to deafness, Deaf Culture, the education of Deaf persons, the heritage of the Deaf Community, Mackworth Island and the Baxter family and to provide a program of educational activities, exhibitions, group tours, and publications*." With the desire to see expanded use of the museum, the expected number of trips to the island and need for parking would increase.

Campus Parking

Parking for the MECDHH campus was totaled to determine the overall available parking. While Table 2 below would serve as a summary, the individual parking utilization for each area should be taken into context to understand the concentration of parking. Parking should also be provided within a comfortable walk of a building, with standard industry practice defining 500' as the maximum distance from the space to the entrance. The parking for Building E, the Inman Building, which serves as a maintenance garage and storage building, was not considered for the analysis and the available parking was considered sufficient for the building, without impacting total campus parking supply.

A summary of the available parking shows that the MECDHH campus serving its existing operations have ample parking.

Table 2 Mackworth Island Campus Parking

Total Parking	Available Parking	% Used
131	115	12%

A summary of the available parking shows that the MECDHH campus serving its existing operations have ample parking. However, the MECDHH campus has significantly reduced operations over the years. Two buildings, Young Hall and Carter Hall (buildings B and G) are currently vacant with pending analysis for their future usability. MECDHH served about 32 students in 2019 (Pre-COVID pandemic) and 24 students in 2022 (Post-COVID pandemic.) While the move away from student classroom teaching has occurred, a return to pre-pandemic students on campus is expected in the future. MECDHH also has social emotional programming that happens four times a year and weekly family programming (with approximately 10 families), plus family weekends 2-3 times a year (with more than 20 families). Summer programming for the extended school year brings 50 - 60 students to the island.

The vacant buildings have been leased as office space for different organizations. A tour of the MECDHH campus shows the availability of expansion for both the school and leased office space.

Photo 10: MECDHH Main Entrance

2

Vehicle Traffic and Parking

To determine the present level of impact to the island, an analysis was conducted for vehicle traffic and parking limitations on the island. Two types of analysis were completed to understand the level of congestion: what levels of traffic currently operate on the island and if the parking is sufficient for present uses.

Photo 11: The causeway to Mackworth Island

Traffic

VHB utilized Maine Department of Transportation (MaineDOT) traffic records and found recent average daily traffic (ADT) information for Andrews Avenue, the single road that provides access to Mackworth Island. ADT is an estimate of the average number of vehicles that traverse on a road segment, which takes into account seasonal variability of the location and road type. The Andrews Avenue data had a factor of 0.92 applied to the raw traffic count. The traffic data is presented in Table 3 below.

Table 3 Andrews Avenue Historical Traffic Counts in Falmouth, Maine

Year	ADT
2013	1160
2019	770

The traffic data shows a decline in traffic from 2013 to 2019, showing a decrease in use on the island. Due to the lack of data for other years, more detailed trends and assumptions cannot be made.

Hourly Traffic Data

Traffic data collected from MaineDOT also showed the hourly distribution of traffic. The traffic data does not differentiate between inbound and outbound traffic. The traffic count was collected on October 30th and 31st, which would have considered school related traffic that may not have otherwise been collected had the traffic counts been completed during the summer. The traffic data, though collected on that date, has been factored to account for an average day of the year, taking into consideration fluctuations through the year (e.g. more trips in the summer and less trips during the winter.) The complete traffic record is shown in Table 4 below.

Table 4 Andrews Avenue Hourly Traffic Count in Falmouth, Maine – 10/30/2019

Time	Volume
12:00 am	0
01:00 am	1
02:00 am	1
03:00 am	0
04:00 am	0
05:00 am	4
06:00 am	9
07:00 am	35
08:00 am	95
09:00 am	40
10:00 am	52
11:00 am	52
12:00 pm	104
01:00 pm	73
02:00 pm	78
03:00 pm	75
04:00 pm	101
05:00 pm	62
06:00 pm	31
07:00 pm	11
08:00 pm	7
09:00 pm	5
10:00 pm	3
11:00 pm	1

Source: MaineDOT Traffic Records

The data shows the peak AM volume to occur between 8:00 AM and 9:00 AM with a total of 95 vehicles and a PM volume to occur between 12:00 PM and 1:00 PM with a total of 104 vehicles. As Andrews Avenue is a residential based road with Mackworth Island Institutional and office land uses, the traffic patterns of peak hours for the AM, noon, and PM time periods are not unexpected. Chart 1 below graphically shows the 2019 hourly traffic data on Andrews Avenue.

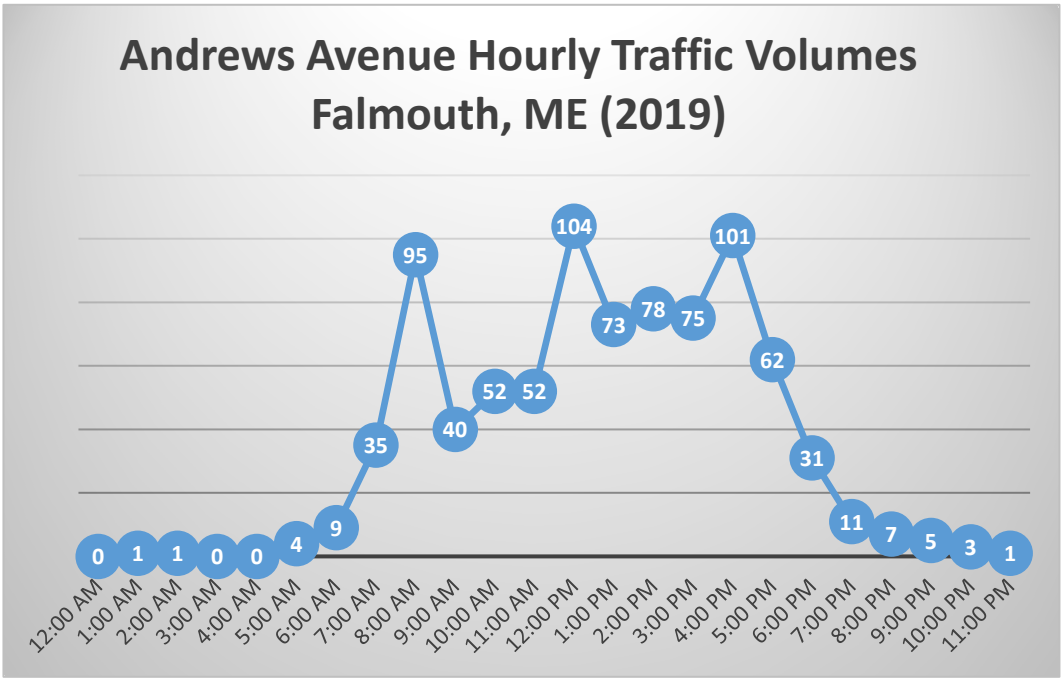


Figure 1 Andrews Avenue Hourly Traffic Volumes - 2019

Due to the location of the vehicle count, traffic specific to Mackworth Island cannot be distinguished from the residences along Andrews Avenue.

To supplement this historical data, VHB collected additional traffic data to understand both the current traffic counts, and to distinguish the traffic from Andrews Avenue, Mackworth Island State Park, and the school campus.

Table 5 Andrews Avenue Hourly Traffic Count in Falmouth, Maine – 8/10/2022

Time	Volume
0:00	1
1:00	1
2:00	0
3:00	1
4:00	2
5:00	9
6:00	16
7:00	39
8:00	62
9:00	69
10:00	75
11:00	74
12:00	74
13:00	68
14:00	79
15:00	66

16:00	93
17:00	76
18:00	65
19:00	55
20:00	27
21:00	7
22:00	6
23:00	2

Source: *Accurate Counts* data collection, August 9th and 10th, 2022

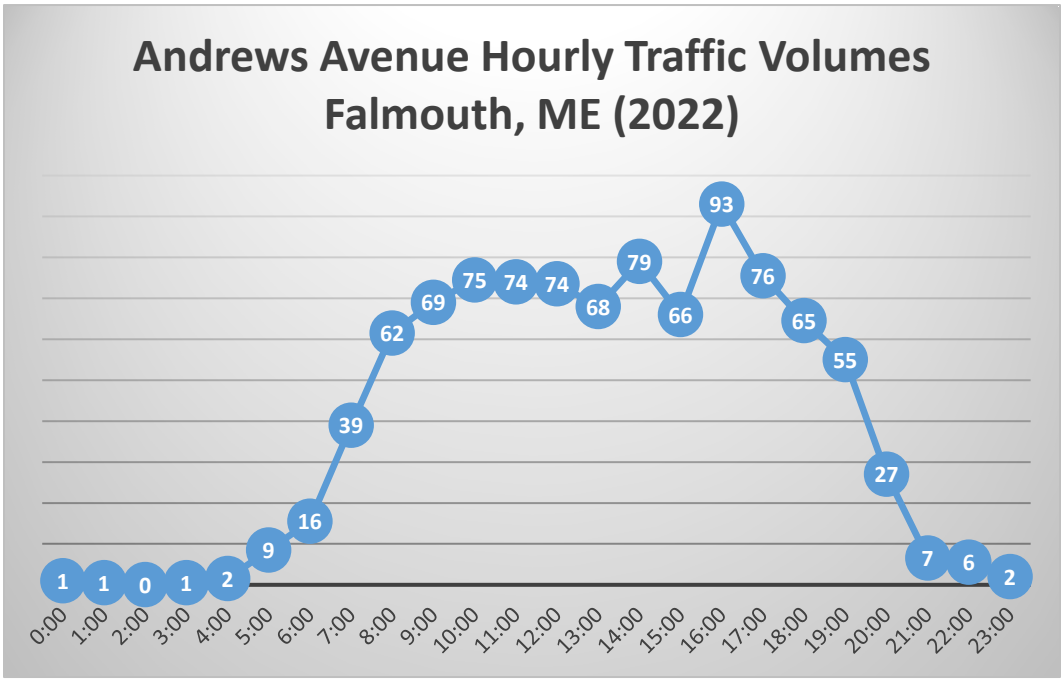


Figure 2 Andrews Avenue Hourly Traffic Volumes - 2022

The updated traffic data shows very similar data from 2019 in overall volumes, but with less variation in the data. The morning peak hour is less pronounced and without a reduction into the midday.

The updated traffic data also allows a comparison of the June and August data. The newly collected data shows that traffic to the park was slightly higher in June than August. However, the June data was on the weekend vs. the August weekday data, and park traffic is heavily dependent on external factors such as weather making direct comparisons difficult (both data collection days were during sunny weather). Table 6 below shows a single hour of vehicle volume between 12 and 1 PM in June and August for Mackworth Island State Park.

Table 6 Mackworth Island State Park 12-1 PM Visitation

Time Period	Volume
6/5/22	
12:00	17
12:15	17
12:30	16

12:45	12
8/10/22	
12:00	13
12:15	14
12:30	9
12:45	12

The peak hour of vehicle traffic could also be determined from the collected traffic data. The total data will be slightly different from the Andrews Avenue data in Table 5 above as Table 7 is showing the peak hour in a 15 minute increment, instead of by the whole hour (8:15-9:15 AM vs. 8:00-9:00 AM).

Table 7 AM and PM Peak Hour Vehicle Traffic

Location	AM (8:15-9:15)	PM (4:15-5:15)
Andrews Avenue Traffic	30	35
Campus Traffic	16	16
Park Traffic	22	34
Total	**68**	**85**

Trip Generation Estimates

An estimate of the expected number of trips to the island can be determined using statistical data from the Institute of Transportation Engineers (ITE) Trip Generation Manual. There are 22 residential detached housing units on Andrews Avenue that would have been a part of the traffic data collected in 2013 and 2019. Using the ITE 11th Edition Trip Generation Manual, traffic data was estimated for the 22 residences in Table 8 below.

Table 8 Trip Generation Estimates (LUC 210)

Time Period	Units	Rate	Total
Daily	22	Ln(T) = 0.92 Ln(X) + 2.68	251
AM Peak	22	Ln(T) = 0.91 Ln(X) + 0.12	19
PM Peak	22	Ln(T) = 0.94 Ln(X) + 0.27	24

Source: ITE Trip Generation Manual, 11th Edition

To determine the estimated number of trips to and from Mackworth Island, the total trip generation was compared against the estimated trip generation of the residential units. The difference between the values represents the estimated number of trips with an origin or destination on Mackworth Island. Table 9 below summarizes these estimated values, with the peak hour values from Table 2 above given a factor of .92 to account for seasonal variability that was accounted for in the daily data but not for the hourly data.

Table 9 Mackworth Island Trip Generation Estimates

Time Period	Total	Andrews Ave.	Mackworth Island
Daily	770	251	**519**
AM Peak	87	19	**68**
PM Peak	93	24	**69**

Table 6 provides the estimated number of trips (entering and exiting) specific to Mackworth Island, which includes both trips to the MECDHH campus and the state park and trail system.

Capacity Analysis

A short capacity analysis was conducted to understand the approximate existing delay for roadways and intersections on the island. The analysis will utilize the Highway Capacity Manual (HCM) from a *Synchro* software traffic model. A summary of the traffic delay and queuing for the intersection of US-1 at Andrews Avenue in Falmouth is shown in Table 10 and 11 below.

Table 10 Capacity Analysis US-1 at Andrews Ave – AM Peak Hour

Approach	Delay (seconds)	LOS	Queue (feet)
EB Greenway Dr	19.9	C	6
WB Andrews Ave	21.2	C	12
NB Route 1	0.1	A	0
SB Route 1	0.4	A	2
Overall	1.4	A	-

Table 11 Capacity Analysis US-1 at Andrews Ave – PM Peak Hour

Approach	Delay	LOS	Queue
EB Greenway Dr	21.9	C	6
WB Andrews Ave	32.2	D	32
NB Route 1	0.2	A	0
SB Route 1	0.3	A	2
Overall	2.4	A	-

The capacity analysis from the traffic model shows some amount of existing delay for Greenway Drive and Andrews Avenue for both the AM and PM peak hours, which is to be expected based on the high volumes on US Route 1 and the Stop sign traffic control on those minor streets.

Based on the minor traffic counts by the campus, there does not appear to be a traffic delay issue from traffic control with the relatively low impact island land uses and lack of parking at Mackworth Island State Park being the limiting factor for traffic. A major change in land use on the campus which substantially increases trip generation would require traffic studies to assure that acceptable levels of vehicle delay would be provided.

Signs

Site observations on the campus show a number of signs for traffic control, parking restrictions, and speed limits. A cursory analysis of the signs reveal that they are generally in poor and deteriorating condition. The signs should be replaced and adhere to the Manual on Uniform Traffic Control Devices (MUTCD) and provide a retroreflective surface to be more visible to drivers.

Parking

To determine the estimated number of parking spaces needed to serve the MECDHH campus, existing uses were considered. Mackworth Island generally has three land uses: school, office, and park. The Institute of Transportation Engineers 5th Edition Parking Manual provides statistical measurements of the estimated parking needs for these land uses. The vacant buildings were considered for the parking estimates. The parking for Building E, the Inman Building, which serves as a maintenance garage and storage building, was not considered for the analysis and the available parking was considered sufficient for the building, with existing parking not considered for this analysis.

The school space was determined by the total number of students currently enrolled. The office space was determined by adding the total square footage of the buildings designated as offices from Table 1, buildings A, C, H, J, and K. Mackworth Island State Park was estimated to be approximately 50 acres in area total, accounting for a total of 100 acres on the island and 50 acres being the private property of the MECDHH campus.

Table 12 below provides an estimate of the number of parking spaces needed for Mackworth Island.

Table 12 Mackworth Island Campus Parking Estimates - Existing

Land Use Code (LUC)	Land Use	Units	Variable	Rate	Total
536	Private School	22.0	Students	0.35	**8**
710	General Office	60.7	KSF	2.39	**145**
411	Public Park	50.0	Acres	0.47	**24**
				Total	**177**

It should be noted that the school is currently operating well below historical enrollment and the offices are not fully utilizing the space of each building. It is also important to understand that the public park estimates do not have a lot of statistical data associated for their use, and significant variance could be anticipated due to the site location and popularity.

A second parking analysis was considered utilizing historical land uses. Table 13 below outlines needed parking estimates based on the past use of Mackworth Island.

Table 13 Mackworth Island Campus Parking Estimates - Historical

Land Use Code (LUC)	Land Use	Units	Variable	Rate	Total
536	Private School	32	Students	0.35	**11**
710	General Office	0	KSF	2.39	**0**
411	Public Park	50	Acres	0.47	**24**
				Total	**35**

Falmouth Parking Ordinances

The Town of Falmouth has ordinances regarding the use of off-street parking. However, the town is generally not seeking to establish the minimum number of spaces in which a development must provide, seeking instead "to match actual demand for parking with supply." In not requiring a minimum number of spaces, the town will be able to allow developments to demonstrate what their need is. Div. II-19-1-5 Section 19-38 of the town's ordinances does require a minimum of 5 parking spaces to be provided for each teaching classroom of a school. Table 14 below shows parking requirements by ordinance relevant to Mackworth Island, which is far exceeded by the current number of parking spaces.

Table 143 Off-Street Parking Requirements – Town of Falmouth

Land Use	Units	Variable	Rate	Total
School	4	Classrooms	5	**20**
Office		Not Specified		
Public Park		Not Specified		
			Total	**20**

A5: ISLAND SURVEY

AERIAL PHOTOGRAPH AND EXISTING CONDITIONS/ TOPOGRAPHIC SURVEY

Content includes supplemental work to the original Master Plan scope. Information is intended to inform future projects on Mackworth Island.

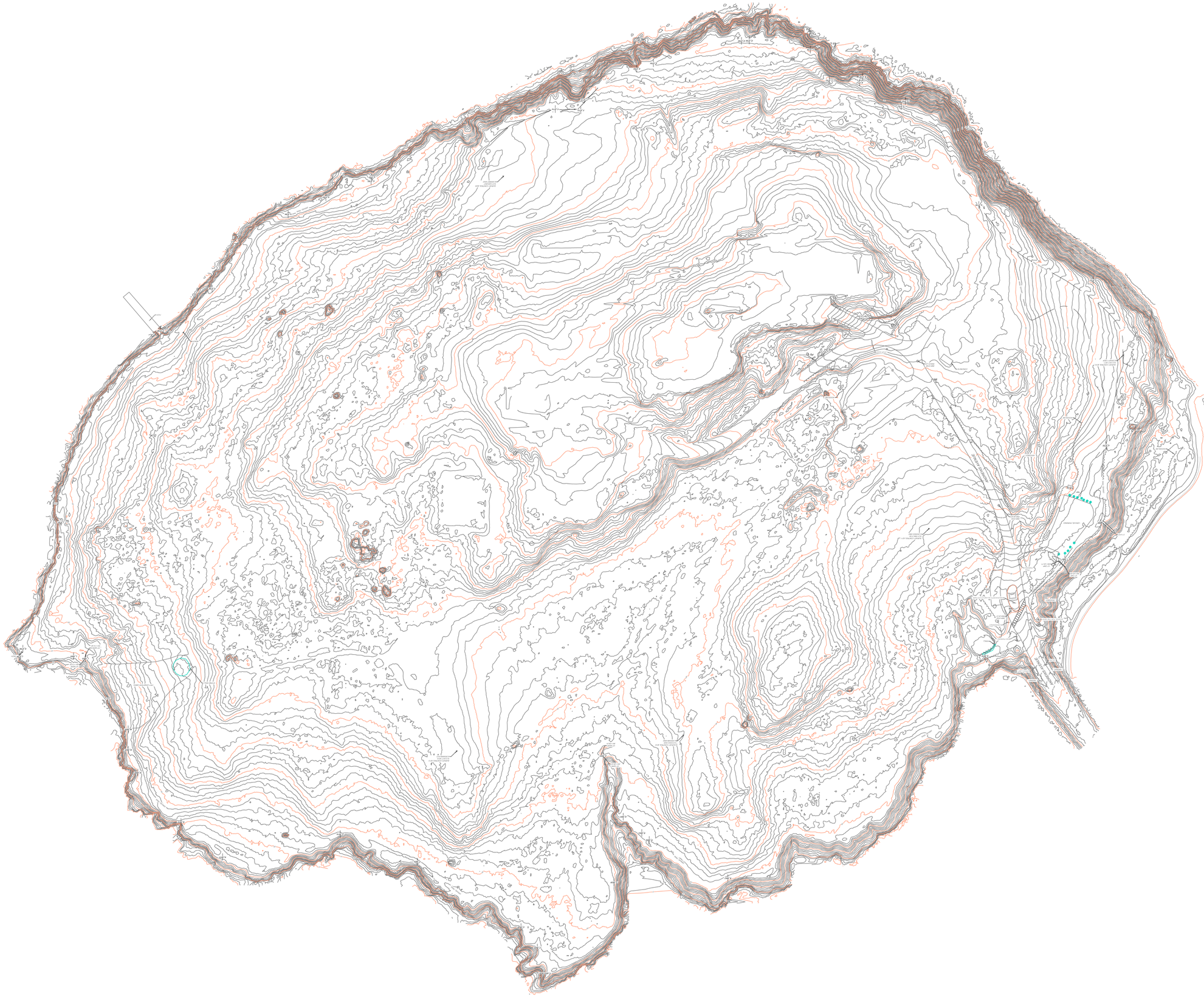
INTRODUCTION

Sebago Technics/ Titcomb Associates was retained by BGS to provide an existing conditions survey of the Mackworth Island State Park trail and parking area. As an alternative to traditional survey methods, Sebago Technics utilized unmanned aerial systems (UAS) and light detection and ranging (LiDAR) remote sensing measuring methods. Aero-Geomatic/ sUAS services, including on-board camera along with aerial LiDAR sensor, provided high resolution orthophotography, and collected point cloud data for the entire island.

The resulting information provides high resolution imagery of the GBSD/ MECDHH campus as well as a complete point cloud data set of Mackworth Island. Future projects requiring survey information will be able to request the modeling of captured data sets from specific areas on the Island from Sebago Technics. This option is intended to save the State time and money as future capital initiatives move forward.

The following files and file groups are included in Appendix A5.

- High resolution, aerial photograph of Mackworth island in its entirety
- Island topographic survey without aerial photograph
- Island topographic survey with aerial photograph
- Trail detail survey without aerial photographs
- Trail detail survey with aerial photographs



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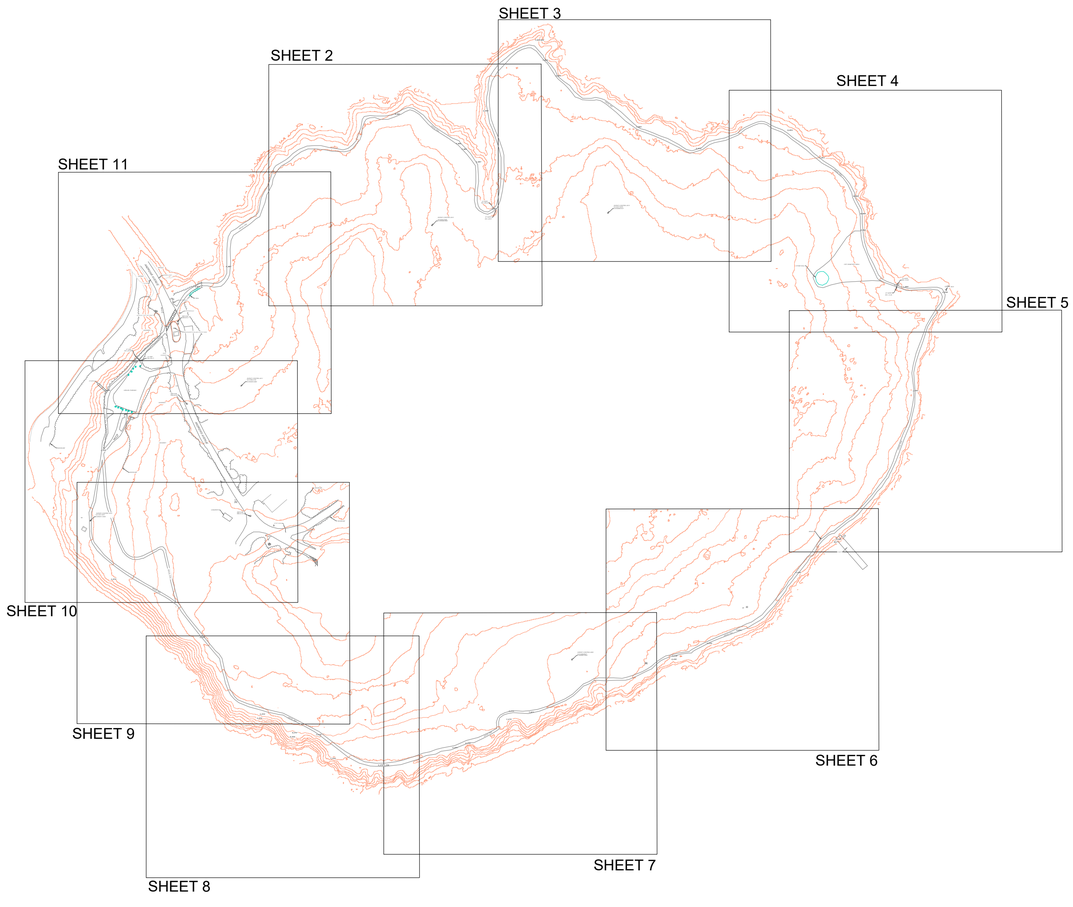
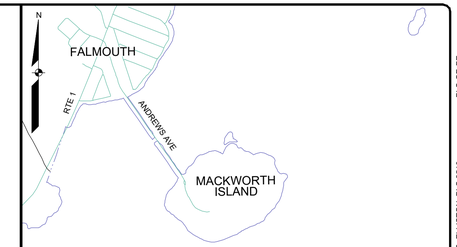
GRID

MACWORTH ISLAND PROJECT LAYOUT

NOT TO SCALE





LOCATION MAP

GENERAL NOTES:

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   TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN NOVEMBER 2022. TRADITIONAL SURVEY MEANS AND METHODS SUPPLEMENTED WITH LIDAR WERE EMPLOYED IN THE COLLECTION OF THIS TOPOGRAPHIC INFORMATION.
2. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
3. BENCHMARK:

   BM-1 DESCRIPTION ELEVATION: (NAVD88)
4. UTILITY INFORMATION DEPICTED HEREON, UNLESS OTHERWISE NOTED, IS OF QUALITY LEVEL D PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD CI/ASCE 38-02. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION AND/OR EXCAVATION.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV:	BY:	DATE:	STATUS:

TITCOMB ASSOCIATES
A Division of Sebago Technics
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
MACKWORTH ISLAND TRAIL LOOP
ANDREWS AVENUE CAUSEWAY
FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	-
DRAWN	JMC/CNG
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

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SHEET 1 OF 10

N

GRID

MATCH LINE

MATCH LINE

R_6857

R_6854

R_6853

Q_6851

Q_6839

GRAVEL TRAIL

15" HDPE
INV.=28.44

Q_6844

15" HDPE
INV.=28.91

SURVEY CONTROL 8212
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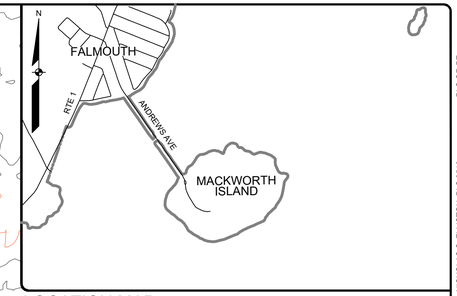
E:2935466.8562



LOCATION MAP

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LEGEND

- DECIDUOUS TREE
- SIGN
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- 120 — 118 — CONTOURS
- SANITARY MANHOLE
- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

TITCOMB ASSOCIATES
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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
MACKWORTH ISLAND TRAIL LOOP
ANDREWS AVENUE CAUSEWAY
FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	-
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET 2 OF 10

220594-dwg, TAB:NSE Sh. 2

MATCH LINE

P_6833 6834

P_6830

O_6828

GRAVEL TRAIL

O_6824

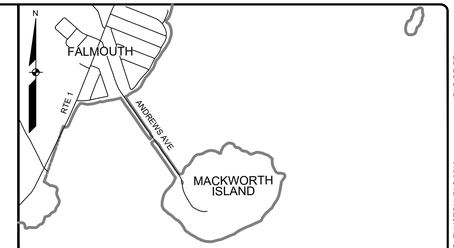
O_6819

SURVEY CONTROL 8213
N:312477.4919
E:2935958.9121

MATCH LINE

N

GRID



LOCATION MAP

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN NOVEMBER , 2022.

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3. BENCHMARK:

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LEGEND

- DECIDUOUS TREE
- SIGN
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- 120 — 118 — CONTOURS
- SANITARY MANHOLE
- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

TITCOMB ASSOCIATES
A Division of Sebago Technics
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
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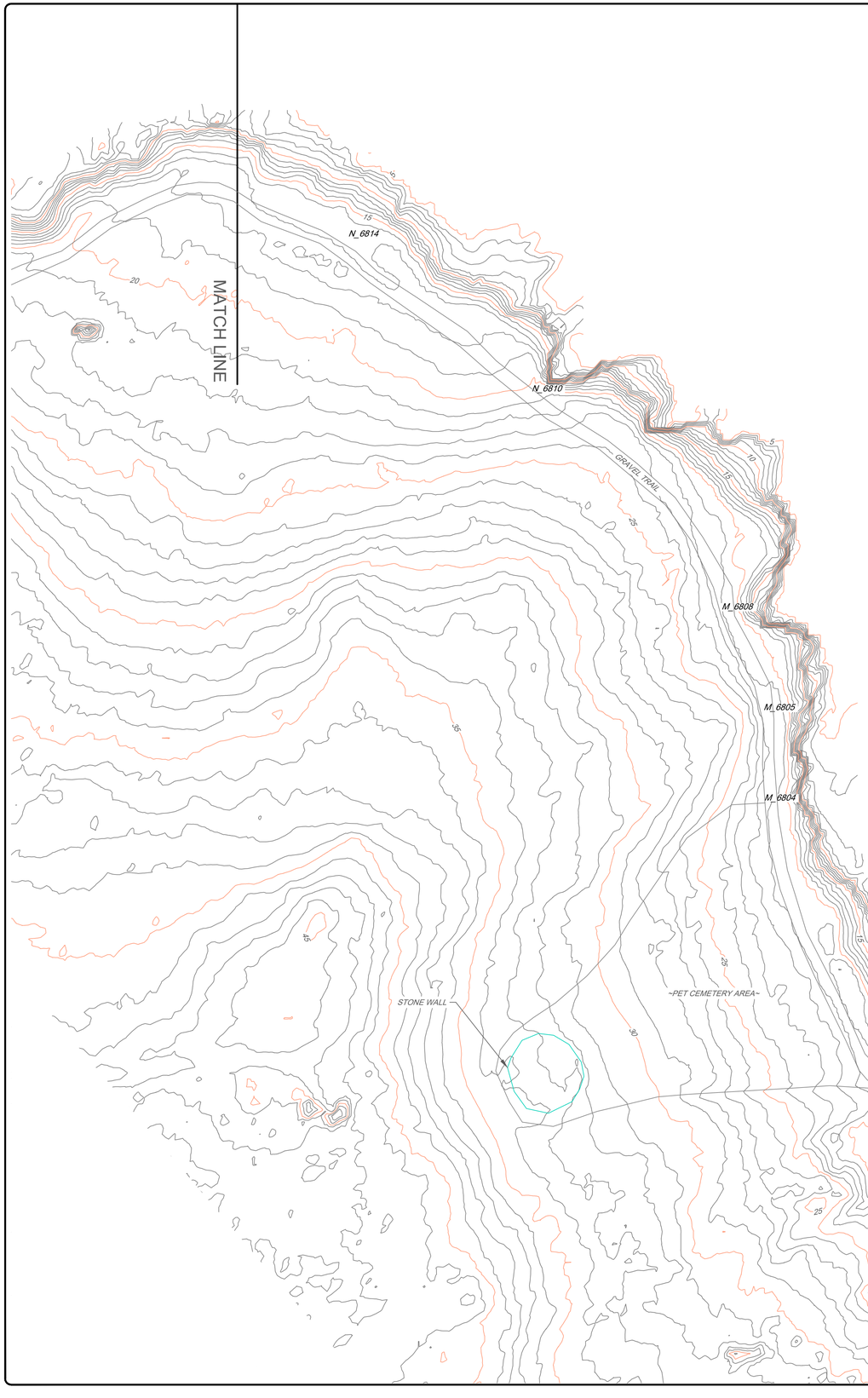
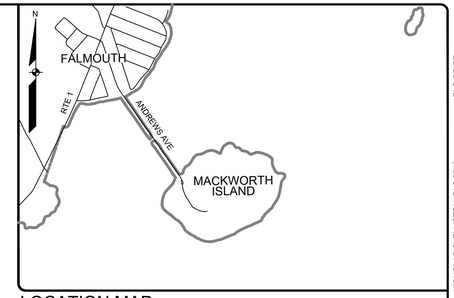
ANDREWS AVENUE CAUSEWAY
FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	-
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET 3 OF 10

220594.dwg, TAB:NSE Sh. 3





LOCATION MAP

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LEGEND

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- WATER SHUT OFF
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- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

MATCH LINE

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

TITCOMB ASSOCIATES
A Division of Sebago Technics
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FOR:
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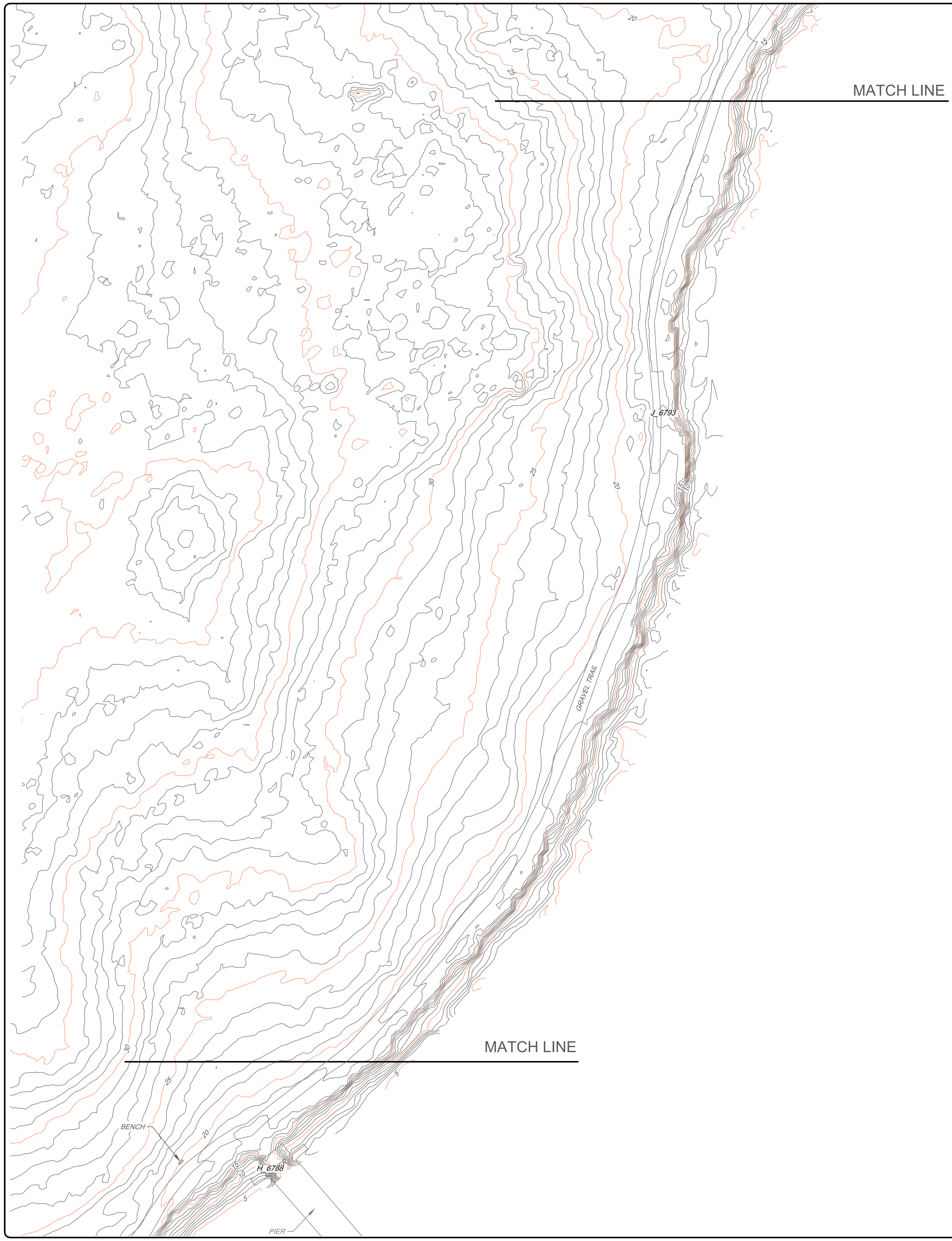
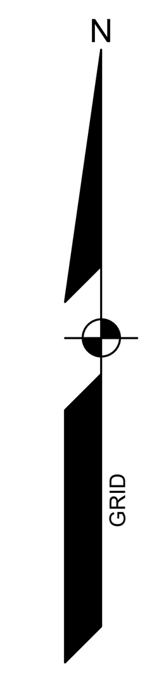
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

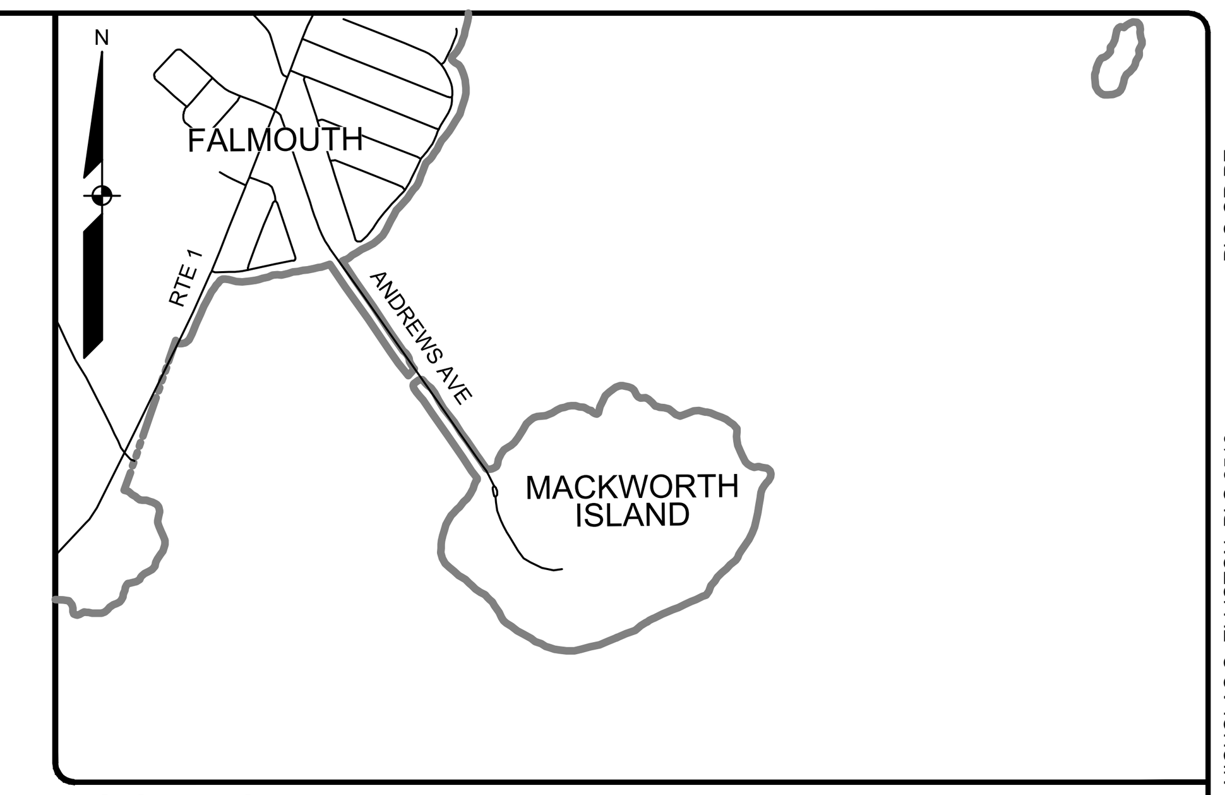
DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET 4 OF 10

220594-dwg, TAB:NSE Sh. 4







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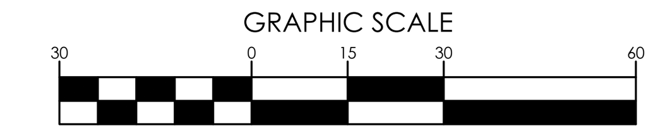
LEGEND

DECIDUOUS TREE
SIGN
WATER GATE VALVE
WATER SHUT OFF
HYDRANT
120 — 118 — CONTOURS
SANITARY MANHOLE
CULVERT
LIGHT POLE
UTILITY POLE
GUY WIRE
BOULDER
A_1234 PHOTO LOCATION
SURVEY CONTROL

GRAPHIC SCALE



(IN FEET)
1 INCH = 30 FT.

PLS OR PE

NICHOLAS S. ELLISTON, PLS 2518

REV	NSE	DATE	STATUS
REV:	BY:	DATE:	STATUS:

TITCOMB
ASSOCIATES
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75 John Roberts Rd.
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FOR:
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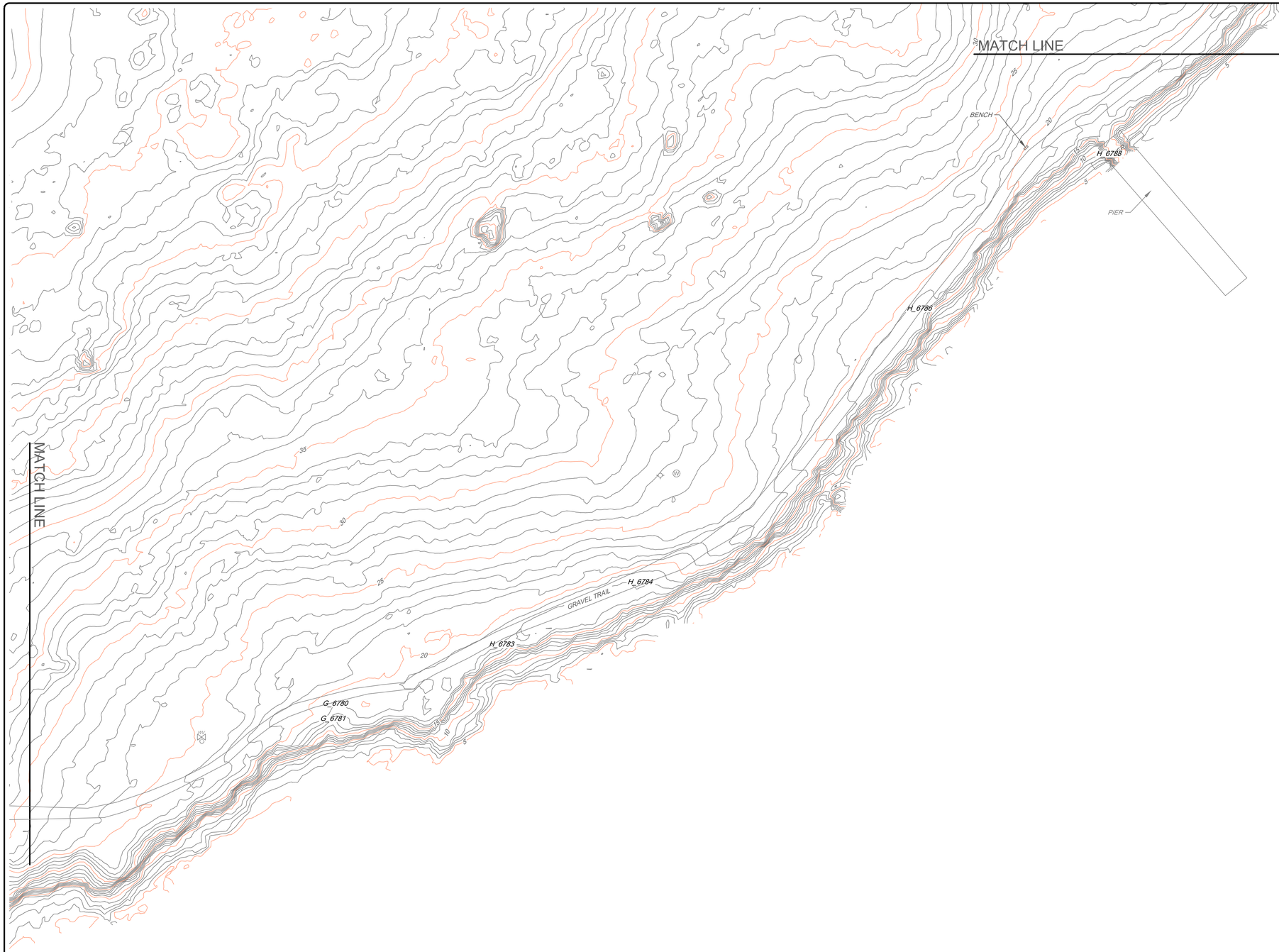
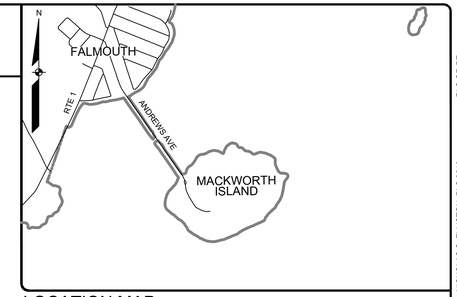
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

220594.dwg, TAB:NSE Sh. 5





LOCATION MAP

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LEGEND

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- SIGN
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- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE:	STATUS:

TITCOMB ASSOCIATES
A Division of Sebago Technics
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

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OF:
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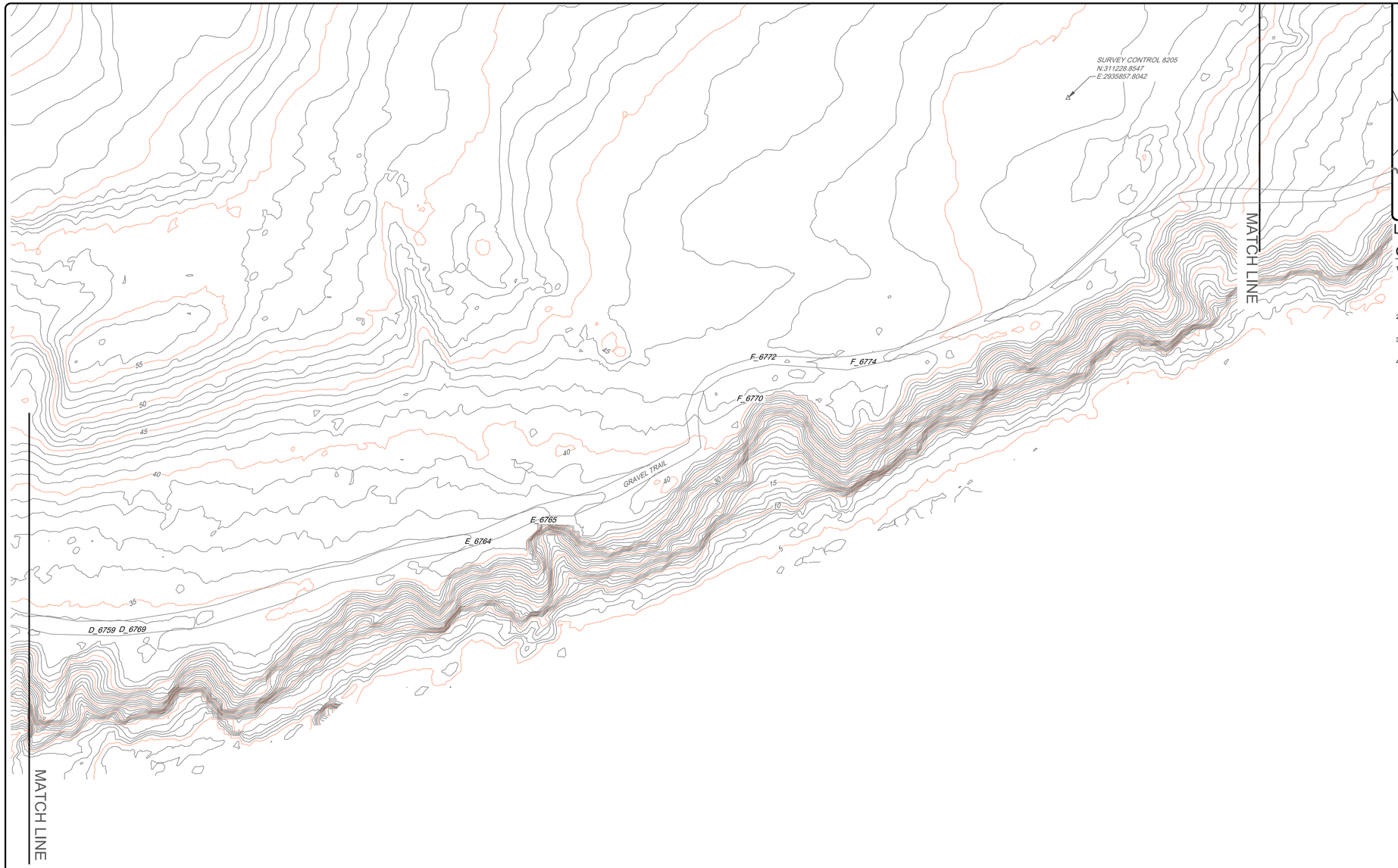
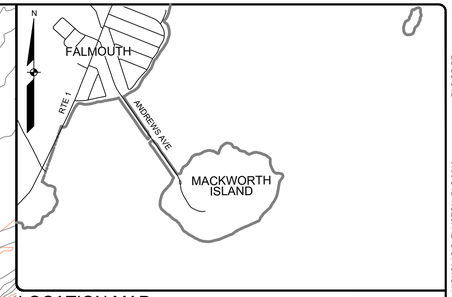
ANDREWS AVENUE CAUSEWAY
FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET 6 OF 10

220594.dwg, TAB:NSE Sh. 6





LOCATION MAP

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LEGEND

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- 120 / 118 CONTOURS
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- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL

N

GRID

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

PLS OR PE

NICHOLAS S. ELLISTON, PLS 2518

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

TITCOMB ASSOCIATES
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FOR:
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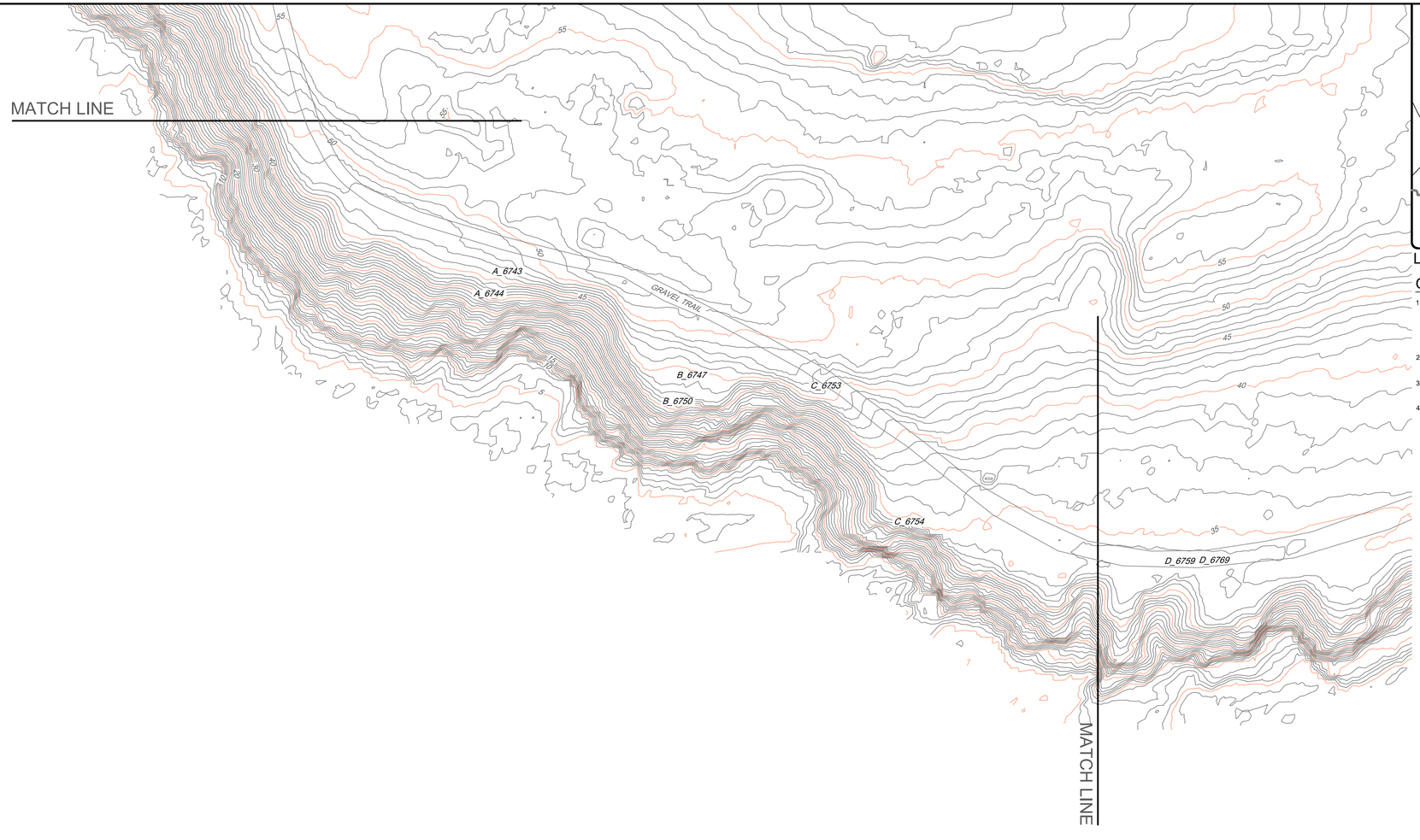
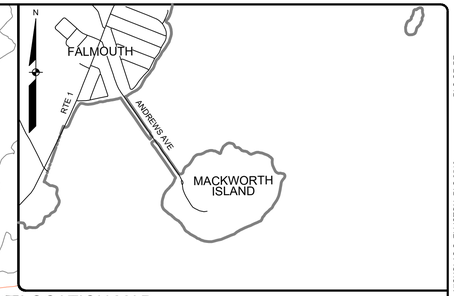
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

220594.dwg, TAB:NSE Sh. 7

SHEET 7 OF 10





LOCATION MAP

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- A_1234 PHOTO LOCATION
- SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

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23 HARRIMAN DRIVE
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DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

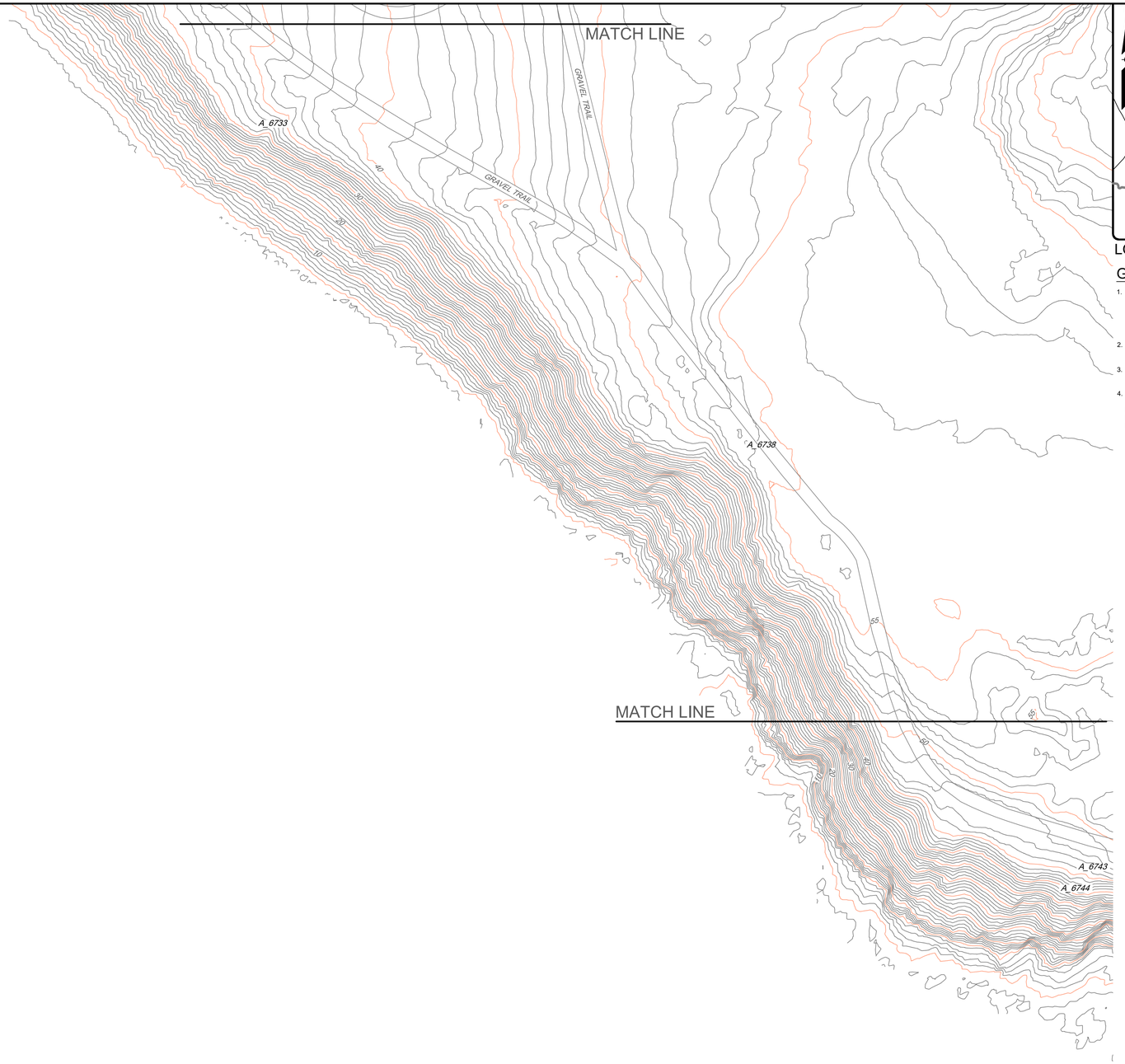
SHEET 8 OF 10

220594-dwg, TAB:NSE Sh 8

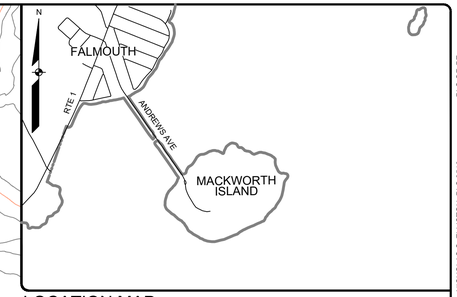
N

GRID

MATCH LINE



MATCH LINE



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- SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY:	DATE	STATUS:

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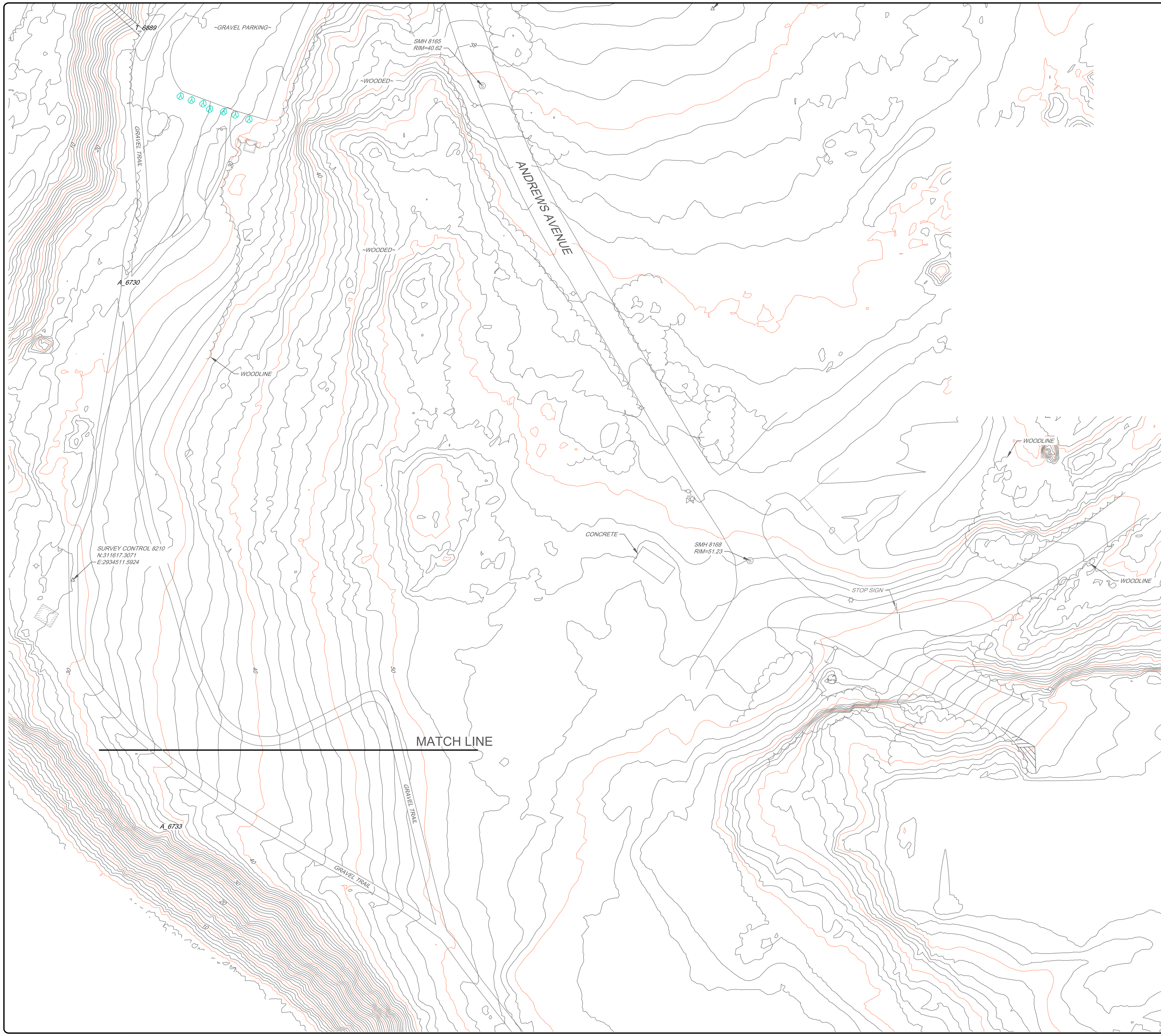
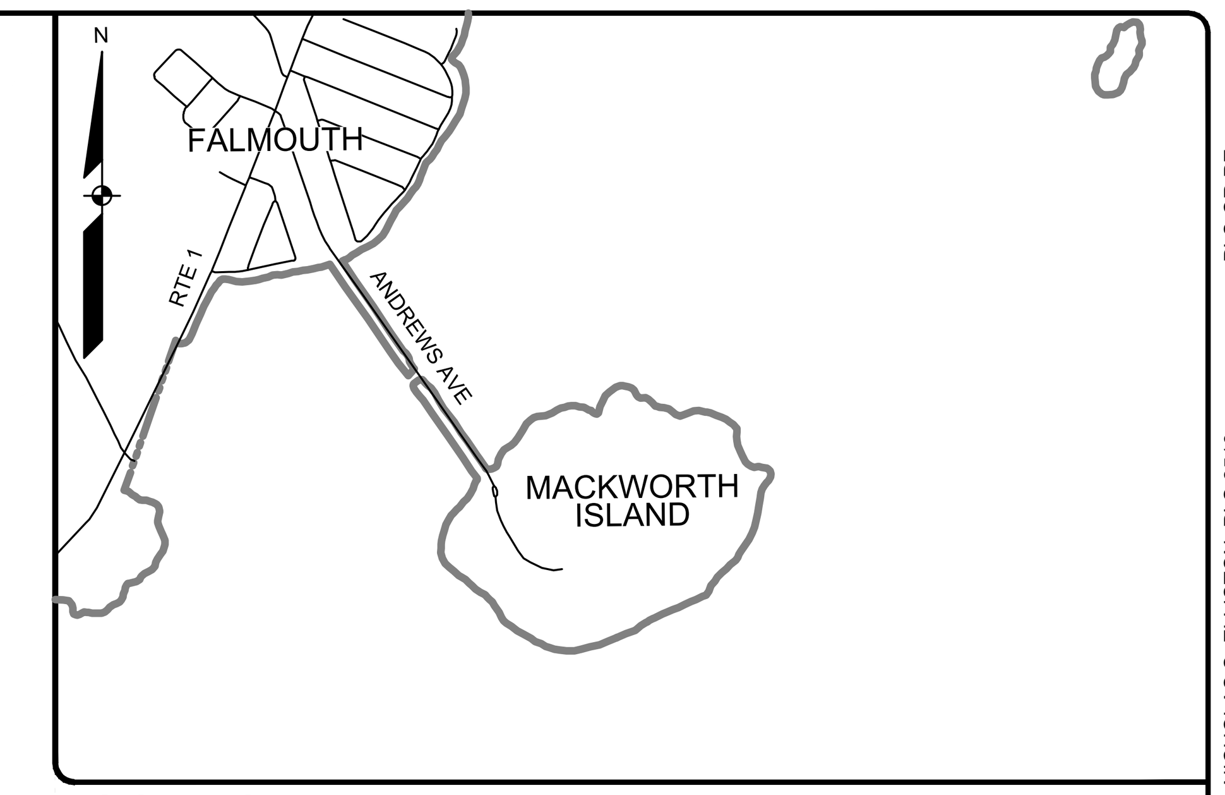
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET 9 OF 10

220594 dwg, TAB:NSE Sh. 9





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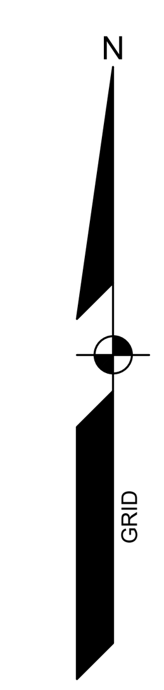
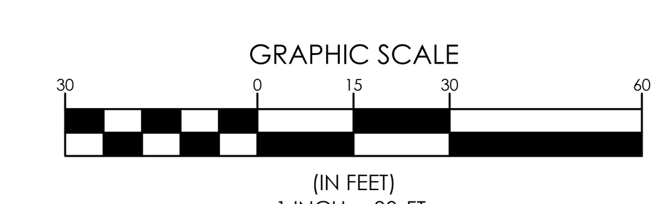
4. UTILITY INFORMATION DEPICTED HEREON, UNLESS OTHERWISE NOTED, IS OF QUALITY LEVEL D PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD CI/ASCE 38-02. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION AND/OR EXCAVATION.

LEGEND

- DECIDUOUS TREE
- SIGN
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- 120 — 118 CONTOURS
- SANITARY MANHOLE
- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- SURVEY CONTROL





PLS OR PE

NICHOLAS S. ELLISTON, PLS 2518

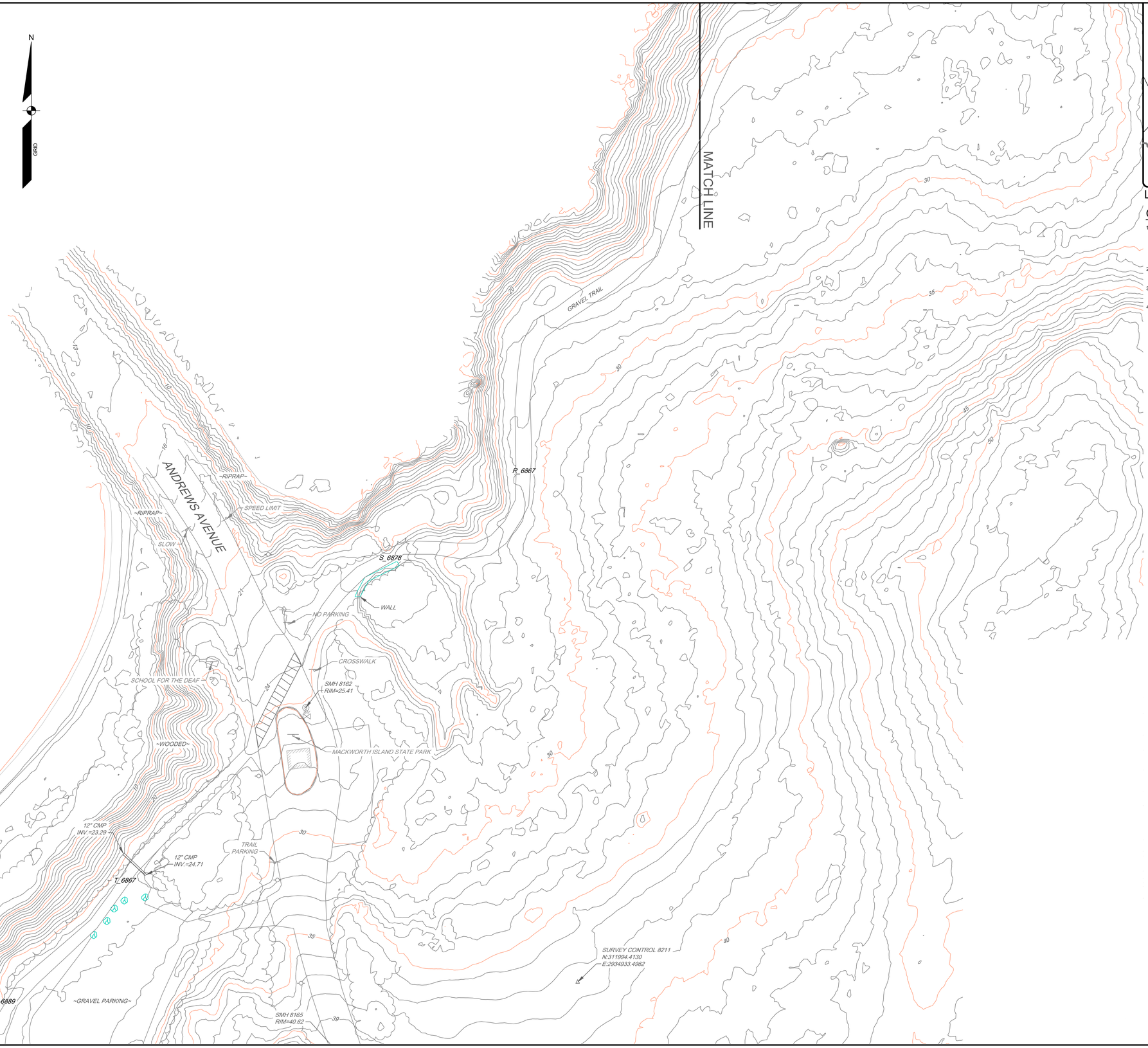
REV	NSE	DATE	STATUS
REV:	BY:	DATE:	STATUS:

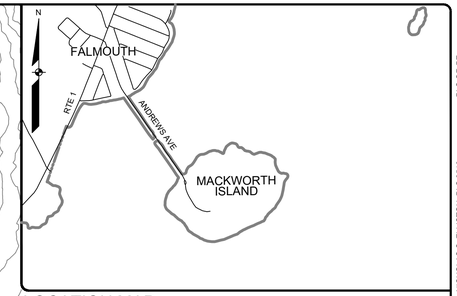
TITCOMB
ASSOCIATES
A Division of Sebago Technics
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
MACKWORTH ISLAND TRAIL LOOP
ANDREWS AVENUE CAUSEWAY
FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

220594.dwg, TAB:NSE Sh. 10





LOCATION MAP

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN NOVEMBER , 2022.

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2. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
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LEGEND

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- (S) SANITARY MANHOLE
- CULVERT
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOULDER
- A_1234 PHOTO LOCATION
- △ SURVEY CONTROL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	NSE	DATE	STATUS
REV	BY	DATE	STATUS

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FALMOUTH, MAINE 04105
FOR:
HARRIMAN
23 HARRIMAN DRIVE
AUBURN, MAINE 04210

DESIGNED	
DRAWN	JMC
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

SHEET10 OF10

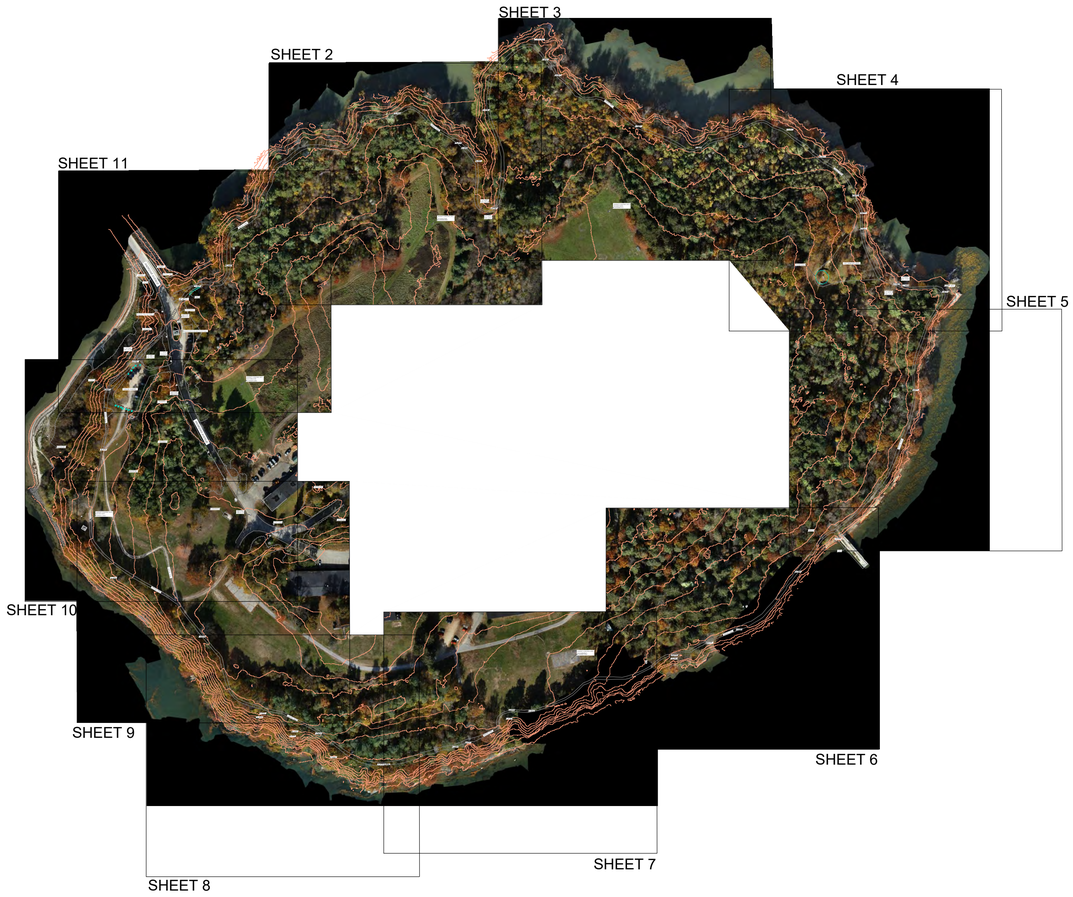
220594.dwg, TAB:NSE Sh: 11

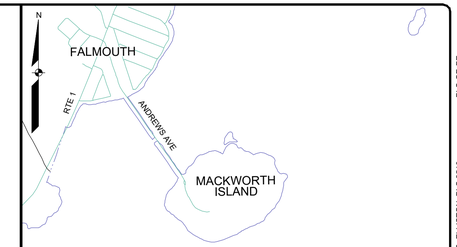
N

GRID

MACWORTH ISLAND PROJECT LAYOUT

NOT TO SCALE





LOCATION MAP

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NICHOLAS S. ELLISTON, PLS 2518

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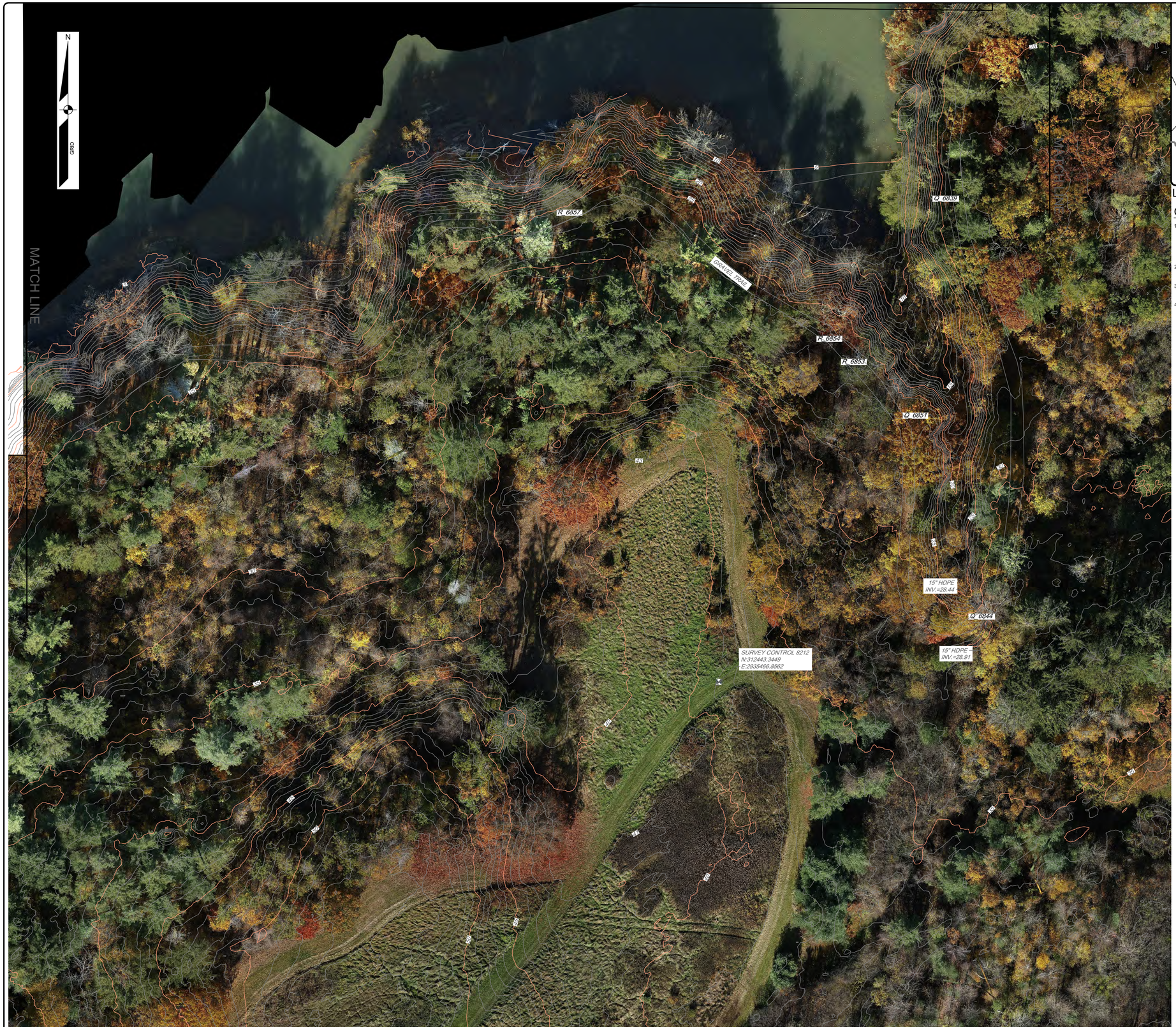
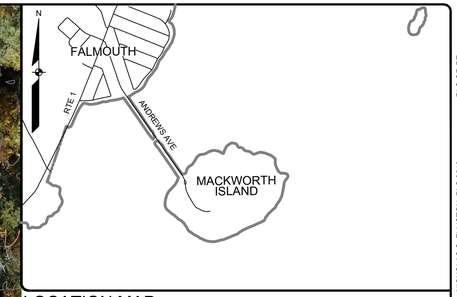
DESIGNED	-
DRAWN	JMC/CNG
CHECKED	NSE
DATE	11/15/22
SCALE	1" = 30'
PROJECT	220594

220594.dwg, TAB:NSE Sh. 1





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GRAPHIC SCALE

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(IN FEET)
1 INCH = 30 FT.

NICHOLAS S. ELLISTON, PLS 2518

PLS OR PE

REV	BY	DATE	STATUS
REV	BY	DATE	STATUS
	NSE		

THIS PLAN SHALL NOT BE ALTERED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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CHECKED	NSE
DATE	11/15/22
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PROJECT	220594

220594.dwg, TAB:NSE Sh. 2

SHEET 2 OF 10