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ENGINEERING, INC

CIVIL ♦ STRUCTURAL ♦ MARINE

WOOD ISLAND LIFE SAFETY STATION WOOD ISLAND – KITTERY POINT, MAINE STRUCTURAL OBSERVATIONS

Town of Kittery, Maine
200 Rogers Road Ext.
Kittery, Maine 03904
Attn.: Jonathan Carter, Town Manager

December 6, 2010
Project No.: C129-10

• Introduction

This report provides a preliminary evaluation of the Wood Island Life Safety Station, located at the entrance of Portsmouth Harbor, east of Whaleback Light and west of Fort Foster in Kittery Point, Maine. The report and findings are based on a site visit performed on November 30, 2010. Staff members Kenneth A. Wood, P.E. and Lewis S. Chamberlain, P.E. observed the condition of the structure; measurements of structural members were not taken nor has a structural analysis been accomplished. The sole purpose of the visit was to observe existing conditions and evaluate if the structure could be repaired. Jonathan Carter, Kittery Town Manager, Paul Schumacher, Executive Director, Southern Maine Planning Commission and Bion Pike, Kittery Harbor Master were also in attendance.

• Site and Project Description

The Life Safety Station is a timber-framed building, approximately 40' X 60' containing three stories, including the basement area, and a two-level look-out. Construction dates to the early 1900's and consists of a cast-in-place concrete foundation, timber columns, beams, joists and rafters and asphalt shingles. The building has a former two-bay area for life boat storage, launched via a steel marine railway, and common living areas on the main (1st) level. Sleeping quarters are located on the upper (2nd) level; the basement contained a work shop, concrete cistern and hot-water gravity boiler room; two brick masonry chimneys provided venting for the boiler (east side) and venting for the 1st floor kitchen and 2nd floor sleeping area wood stoves (west side). Wood Island is approximately 2+ acres in area and contains Lyman (Ly) soils¹. The entire island is located within a Zone A flood zone². The Life Safety Station is centrally located on the small island.

• Observations

The south-east corner of the building, containing a portion of the boat storage area, appears to have sustained the most damage, probably from re-occurring storm surges which have caused a partial collapse of the floor and attic joists, rafters and roof sheathing. The roof rafters and second floor joists have separated from supporting wall plate; additionally, portions of the first floor wall and floor joists have been compromised, allowing storm surges to deposit sand, gravel and other debris within the basement area. In other areas, the roof ridge appears to be relatively level and plumb.

The concrete basement walls appear to be cracked in several locations, although no wall sections appear to have separated from adjacent sections. The basement contains a large concrete cistern, located in the northwest corner and a hot water boiler and tanks, located in the easterly portion; heat and water supply pipes have been lagged with asbestos.

1. *Soil Survey of York County, Maine*, 1978, Soil Conservation Service.

2. *FIRM Flood Insurance Rate Map*, July 3, 1986, Com-Panel 230171 0001-0010.

First floor sill members have deteriorated in several locations. The northern portion of the boat storage area contains some deteriorated sill members, floor joists and laid-up board flooring. Timber column and beam members supporting the second level floor, which are visible within this area, appear to be in good condition. Flooring and support members located in the kitchen and living area in the westerly portion of the first floor appear to be in fair to good condition. A majority of the area is covered with seabird guano and remnants of the original lath-plaster applied to the ceiling and walls. Water intrusion appears to be minimal. A few of the original window and door openings are open to the weather.

Second level floor joists and flooring are in fair condition, the westerly portion of the building is in better condition than the east sleeping quarters. Access to the cupola/lookout is limited, although portions of the stair stringers are in-place, the treads and risers have been removed; we were only able to access the first level landing of the lookout; access to the top level was not possible.

- **Summary**

Our observations and evaluation of the Wood Island Life Safety Station were limited to areas accessible and visible for observation – as mentioned in the introduction, no structural analysis was requested or accomplished. Our initial opinion, based on the visible condition from the exterior and our first glance at the boat storage area was that the structure may be beyond restoration. However, this view changed as we gained access to the other interior spaces of the building. The basement level provided a view of the underside of the first floor joists' a majority of these are in fair to good condition. Although first floor sills, bottom wall plates and some joist connections to these members have deteriorated, these could be repaired through replacement and "sistering" to the satisfactory portion of the joists with new members. The second level appears to also be in fair to good condition, as did the roof attic joists and rafters, with the exception of the damaged south-east portion of the structure.

Limitations to the repair and restoration of the Wood Island Life Safety Station, however, are numerous. The building is located on an island and materials and craftsman would all need to be shuttled by boat or landing barge and shore access is questionable as there is no pier and vessels may not be able to pull up on the beach due to numerous obstacles and varying tides. The structure is also located within a flood and storm surge zone; flood-proofing of the existing building may be difficult. Also, the hazardous materials present in the building (asbestos, lead paint and guano) would need to be remediated prior to any construction – these materials would need to be removed from the island by qualified personnel. The level of repair and the governing requirement(s) for repair and restoration would also need to be determined, to develop a construction budget. These could include the International Building Code (IBC) for construction and life safety; existing members and loading conditions would need to be analyzed and reviewed to determine if the structural and access/egress requirements of the IBC could be achieved. Also, the Americans with Disabilities Act (ADA of 1990) should be reviewed for a determination of accessibility requirements which may be pertinent, depending on the intended use. The design and installation of a wastewater disposal system also needs to be considered if the public will be accessing the site, in addition to limitations imposed by State and Local Shoreland Zoning. Review of the Town's Floodplain Management requirements (Ref: Chapter 15.3, *Building and Construction*) should also be considered to ensure that all improvements can be designed to meet the Code requirements. Finally, the end-use of the building should be determined prior to any restoration as this could affect the governing requirements assumed for the project, and any change to these assumptions could adversely affect post-construction restoration.

Sincerely,

Kenneth A. Wood, P.E.
President

THE PROJECT TO RESTORE AND PRESERVE
THE WOOD ISLAND LIFE SAVING STATION

BUILT IN 1908



HELP US RESTORE THIS STRUCTURE AND ISLAND
AND OFFER EVERYONE A
MUSEUM TO OBSERVE THE HISTORY, STUDY MARINE LIFE,
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WOOD ISLAND OWNED BY TOWN OF KITTERY, MAINE



SOUTHERLY ELEVATION



NORTHERLY ELEVATION



EASTERLY ELEVATION



WESTERLY ELEVATION



NORTH SIDE OF LIFE BOAT AREA



MARINE RAILWAY

WOOD ISLAND LIFE SAFETY STATION –
PHOTOS OF 11/30/2010
SHEET 1/5



ACCESS RAMP – NORTH ENTRANCE



STORAGE TANK CRADLE - BASEMENT



SOUTHEAST CORNER – 1ST FL. DAMAGE



FOUNDATION WALL CRACKS/DAMAGED SILL



BASEMENT AREA – CISTERN



FOUNDATION CRACKS – EXTERIOR

WOOD ISLAND LIFE SAFETY STATION –
PHOTOS OF 11/30/2010
SHEET 2/5



BASEMENT – STORM SURGE DEBRIS



BASEMENT – ASBESTOS LAGGING



BOAT STORAGE AREA – LKG. NORTHERLY



BOILER/HOT WATER TANK - BASEMENT



COLLAPSED SOUTHEAST SECTION



ASBESTOS LAGGED HOT WATER TANK

WOOD ISLAND LIFE SAFETY STATION –
PHOTOS OF 11/30/2010
SHEET 3/5



FIRST FLOOR JOISTS – BASEMENT



FIRST LEVEL – ALCOVE AREA



DAMAGED FIRST FLOOR



FIRST FLOOR KITCHEN AREA



FIRST LEVEL – LKG. AT BOAT AREA



SECOND FLOOR LOCKER AREA

WOOD ISLAND LIFE SAFETY STATION –
PHOTOS OF 11/30/2010
SHEET 4/5



SECOND FLOOR SLEEPING AREA (WEST)



SECOND FLOOR SLEEPING AREA (EAST)



CHIMNEY/THIMBLE – 2ND FLOOR (WEST)



SOUTHEAST ROOF - FROM LOOKOUT STAIR



SECOND FLOOR BATH AREA



STAIRWAY TO LOOKOUT