

**UNDERWATER ARCHAEOLOGICAL  
INVESTIGATIONS AT THE RODD POINT JETTY,  
FORT RODD HILL NATIONAL HISTORIC SITE**

Prepared for:

**PARKS CANADA**  
Western Canada Service Centre  
711 Broughton, 2<sup>nd</sup> Floor  
Victoria, B.C.  
V8W 1E2

Prepared by:

**Charles D. Moore, Maritime Heritage Consulting**  
In association with:  
**ARCAS CONSULTING ARCHEOLOGISTS LTD.**  
55A Fawcett Road  
Coquitlam, B.C.  
V3K 6V2

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## CREDITS

|                      |                                       |
|----------------------|---------------------------------------|
| PROJECT COORDINATION | Charles D. Moore, M.A.                |
| PROJECT DIRECTION    | Rob M. Field, B.A., RPCA              |
| PROJECT RESEARCHERS  | Charles Moore<br>Jacques Marc (UASBC) |
| REPORT AUTHOR        | Charles Moore                         |
| REPORT EDITOR        | Rob Field                             |
| REPORT DRAFTING      | Michele Whitlow, B.A.                 |

## Underwater Archaeological Investigations at the Rodd Point Jetty, Fort Rodd Hill National Historic Site, October, 2002

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Parks Canada Agency Site Number: 10T44  
Permit Number: WRA02-14

Arcas Project Number: 02325  
Permit Holder: Charles D. Moore, M.A.

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### Overview

Project investigations took place off the eastern shore of Esquimalt Harbour around the end of a projection of rock located about 200 m north of the base of the causeway to Fisgard Island (Figures 1 and 2). On some maps (including NTS 92 B/6) the specific point where the jetty is located is identified as Rodd Point. The natural formation of this point has been artificially enhanced by various structures dating back to at least 1861. Structures currently in place consist of a rock and concrete jetty, or breakwater, stretching approximately 40 m into the harbour. At the offshore end is a concrete deck measuring roughly 4 by 3 m. This deck is currently being used to secure a ramp and a float extending to the north.

### *Development Proposal*

The proposed development is a repositioning of the float (12 m long by 3 m wide) off the end of Rodd Point jetty. The float is currently located in water that is too shallow for use at low tide by some vessels. Two new positions are proposed (Figure 3). Option #1 involves moving the float farther north and using a longer ramp. Option #2 sees the ramp and float set in a generally northwesterly direction. The principal impact on potential cultural resources will come from the float anchoring system, consisting of heavy chains secured to four concrete blocks (measuring an estimated 1 x 1 x 1.5m) dropped at specified points. The anchor blocks and chains would damage cultural material on the surface of the seabed, while the anchor blocks themselves are of sufficient weight to crush certain subsurface resources. For reasons of clarity the four existing active anchor blocks and float in its current position are not shown in Figure 3.

### *Summary of Research Activities*

The proposed development area was investigated under Parks Canada archaeological permit number WRA02-14 on October 11, 2002, by Charles D. Moore (Maritime Heritage Consulting), Rob Field (Arcas Consulting Archeologists Ltd.) and Jacques Marc (Underwater Archaeological Society of B.C). Archival research indicated a potential for the remains of at least two historic structures in the area, in addition to the possibility that pre-contact material might be contained in the inter-tidal sediments. A swim search of the entire area was conducted and three test units were excavated. No significant submerged cultural resources were encountered in the course of the survey.

## Archival Research

Archival research consisted of a review of archaeological publications related to Fort Rodd Hill and Fisgard Lighthouse; a review of relevant charts and maps, plans, and historic photos held by Parks Canada at Fort Rodd Hill (FRH); a review of charts, maps, and historic photos held by the Maritime Museum of British Columbia (MMBC); and a review of pertinent historic aerial photos held at the Geographical Information Centre (GIC) Department of Geography at the University of British Columbia.

Major archaeological investigations were undertaken in 1978 on shore between the jetty and the Lower Battery (Steers, et al. 1979). The limits of the prehistoric component at the site (12T) are outlined in Figure 2. The foundation of a boathouse is also indicated in Figure 2.

The boathouse is documented in a detail of the General Site Plan of Fort Rodd Hill, 1905, Record Plan 5. The plans indicate a "slip", or marine railway, that extends from the boathouse down through the inter-tidal zone. The plan calls for wooden rails capped with iron supported just above grade on rectangular concrete piers. While the boathouse foundation is evident today there are no obvious remnants of the slip. These may be represented in the Canadian Hydrographic Service chart 3416 dated to 1947 (MMBC N1331), but there are no signs of the rails in aerial photos dating back to 1932.

Aerial photos suggest the accumulation of sediments on the north side of the jetty. This appears to have already begun by 1946, or prior to construction of the lighthouse causeway. On the other hand, in aerial photos taken in 1975, the contour of the beach at mid-water suggests that the area had been dredged around a float. This float was secured directly to the north of the stairs still extant on the north face of the jetty about midway along its length. Today, at low low water the beach dries for about 16 m north of these steps. Despite these apparent foreshore changes in the vicinity of the historic slip, some piling stubs were sighted by Fort Rodd Hill NHS staff at low tide (Mark Peterson, personal communication, October, 2002) and it is suggested that these may be remnants of the slip, or of the more recent float

The first structure built on the point was one of the first non-Native structures to be built in the Fort Rodd Hill area. A long narrow dock-like representation is identified with the term "freshwater" on Captain G Richard's chart of 1861 (MMBC N1288). No structure of any sort is indicated on Lt. James Wood's chart of 1859 (MMBC CM/A1115).

R. Lovatt states that a fresh water flume was being used in 1895 and it "supplied the naval vessel *Water Lilly* which delivered water out to Coal Island ["Cole" Island was where the "Royal Magazines" were located in 1903 (see MMBC CM/C750)] and Navy ships in the harbour" (cited in Steer et al. 1979:65). Public Archives of British Columbia photos dated to 1896, 1897, and 1912 (FRH 004964, 004965) show the raised flume structure still in place and located along the northern side of the pier. The same photos and others (e.g. FRH, Banting

Collection 1276) show that the outboard end of the jetty is built out in the form of a short pier consisting of a single row of pilings aligned roughly north-south beneath a wooden deck apparently supported on the inner end by a timber and rock crib. The pier deck is still intact in a 1943 oblique aerial view (FRH -P-001339). Ruins at the end of the jetty were indicated on Canadian Hydrographic Service chart 3413 as late as 1961.

## Survey Objectives

Survey objectives consisted of excavating shovel test units in the lower inter-tidal zone around the end of the jetty where the three blocks anchoring the inshore ends of both float options would be located (see Figure 3). Because the project was scheduled during a period of relatively high tidal levels during daylight hours, it was proposed to execute these shovel tests at a relatively low water level early in the morning of October 11, when the water in these locations was estimated to be somewhat over waist deep. Equipment for the archaeologists would consist of dry suits, weights, facemasks and snorkels. Due to budgetary constraints a water dredge (the normal archaeological excavation tool in water less than 7 m in depth) was not used to excavate these units.

Shovel tests would be used in determining the nature of the seabed matrix to a depth of 50 cm. Potential for locating pre- and post-contact artifacts within the matrix of the seabed, and subsurface remnants of historic pier structure was considered to be moderate. In addition to the shovel tests, shallow investigations of the seabed matrix would be undertaken in the vicinity of the offshore anchor locations for Option #2.

Finally, the survey would consist of a swim search on SCUBA over the entire area contained within the wedge-shaped area defined by all four anchor locations for Option #2 (survey area X in Figure 3). The object for the swim search was to locate and identify historic structures such as remnants of the pier and slips structures, or artifacts visible on the seabed.

## Survey Results

### *Survey Controls and Methodology*

The primary datum for the survey work is a brass Canadian Hydrographic Service survey pin (9179109) located on the concrete deck at the end of the jetty. Shallow water shovel test locations were placed using offset measurements taken from the corners of the concrete pad and aligned by sighting along the pad faces.

Survey operations undertaken in deeper water on SCUBA were directed from the surface using compass bearings sighted over the CHS survey pin to surface bubbles, and wireless

underwater communications. Distances were measured by diver with tapes secured to temporary datums TD1 and TD 2 consisting of reinforcing bar driven into the seabed. Tidal current in the area during investigations was minimal, and the accuracy of this survey method was checked during the survey by relocation on a target using a tape and surface direction to within 1.5 m at a distance of 30 m in 18 ft. (5.5 m) of water.

### *Shovel Tests*

Shovel test 10T44-A was conducted successfully excavated by shovel to a depth of about 50 cm in 1.5 m of water depth. Five one-gallon buckets of material were recovered, each bucket roughly representative of a 10 cm arbitrary level. Because of the nature of excavating by shovel in water, virtually all of the clay, much of the sand, and some of the lighter material such as shell and organics in the matrix were washed clear before the buckets were recovered. Sediments washed out of the test unit walls naturally caused some slumpage. Nevertheless, it was possible to ensure that a considerable percentage of the material from the lowest level was *in situ* at that depth. All the recovered material was screened through a 1/4-inch mesh. No cultural material was noted in shovel test 10T44-A. The matrix from different levels seemed homogenous at the screens.

A shovel test was begun on the south side of the breakwater (not marked on plan) in about 1 m of water. This unit was not excavated deeper than 30 cm because a series perhaps six larger than average waves completely filled in the hole, demonstrating the extreme mobility of gravels in this depth of water and on the seaward face of the jetty. The shovel testing at 10T44-A was successfully completed despite the same wave activity.

Incoming tides prevented the excavation of any more test units in shallow water. However, using SCUBA a second test unit was successfully excavated at 10T44-B. Depth over the unit was approximately 7 ft. (2.1 m). Again, about a 50 cm excavation depth was achieved and five one-gallon buckets of material were removed for screening. No cultural material was noted in shovel test 10T44-B and the matrix seemed homogenous at the screens.

After completion of shovel test 10T44-B, survey objectives were reviewed in consultation with Ian Sumpter, Assistant Archaeologist with Parks Canada Agency. It was determined that a third shallow water test unit was unnecessary. However, given the success of shovel excavation on SCUBA, a third test unit was dug at an offshore anchor location, 10T44-C.

Shovel test 10T44-C was excavated in about 18 ft (5.5 m) of water. As shovel testing underwater effectively reduces visibility to nil, initial excavation of the upper 10 cm was undertaken with a small trowel and hand-fanning to ensure some visual recording of the matrix prior to the loss of visibility inherent in excavating underwater with a shovel. Some sorting was evident with larger pebbles found at the surface. The matrix generally consisted of gravel with sandy clay and some shell. Six buckets of material from a depth up to 60 cm were removed. No

cultural material was discovered in the screens and, consistent with material recovered from the inshore test units, the matrix from all levels appeared homogenous.

Finally, another shallow sub-surface test was made by trowel and hand fanning at the eastern-most anchor location. The immediate area was covered in kelp. Excavation removed about 15 cm of material. No sorting was evident at this location.

### *Swim Survey*

It was decided in the field to expand the swim survey to include areas Y and Z.

Underwater visibility in the survey area ranged between 2 and 4 m. The bottom was generally smooth sandy mud and gravel with slope ranging from nearly flat in the north to a moderate slope to the east. The seabed was host to intermittent kelp beds. Bottom kelp provided less than 20% cover over the seabed in survey area X, rising to over 50% to the north and west in survey area Z. This was regularly lifted or pushed aside by divers to see underneath. In no case was the kelp sufficiently dense or deep to hide any feature rising 25 cm or more from the seabed.

The innermost portions of the survey areas X and Y were defined by the rock and concrete toe of the existing breakwater. The swim survey method consisted of radial "spoke" pattern. The centre-point for each survey was a length of reinforcing bar functioning as a temporary datum and driven into soft sediments near the base of the jetty at locations TD 1 and TD 2 (Figure 3). A tape measure was secured to each datum and the outer spoke radii were between 27 and 30 m. Outer spoke locations were set approximately 4 m apart. One diver held station on the tape at the outer end while the second diver twice swam the length of each spoke, all progress being monitored by the surface support diver.

No remains of the pier structure or pilings were observed in search areas X and Y. One abandoned concrete anchor block was located. A bolt (approximately 2 cm in diameter and 80 cm in length, bent) with a washer (approximately 10 cm square) was noted as well and has been mapped, although it was lying loose on the seabed.

The search through survey area Z consisted of swimming along depth increments measured by depth gauge. Specifically, these lines consisted of 5, 6, 8, 10, 12, 14, and 16 ft. depths swum while the tide was approximately 8 ft. (2.4 m) above datum. The area covered corresponds approximately to contour lines +1.0 to -2.5 m on the site plan.

The piling stubs that were expected in survey area Z were not located. Nor were there any signs of the slip that once ran down from the boathouse. A steel cylinder, (perhaps from a portable cement-mixing drum, with a diameters ranging between 40 and 60 cm) was located in close proximity to a second abandoned concrete anchor block (see Figure 3). An extrusion of bedrock was located to the north and west of these. The bedrock would probably be visible at

low tide and can be seen in some historic photos. The cylinder and block may be visible at low-low tides and may have been confused with the tops of pilings. Pilings that once were part of the Belmont dock were visible above low water as late as 1947 (MMBC N1331) and may still be present off the next rocky point to the north about 150 m, but this area was not examined as part of this survey.

### Conclusions and Recommendations

Proximity to the pre-contact midden (12T, DcRu-65) suggested the possibility that there might be pre-contact deposits present in the near-shore sediments. Shovel testing indicated no cultural resource of this type present in the proposed development area. The homogeneity of the test unit matrices also indicates a high degree of turbation and/or recent sedimentation in all test units. Testing underwater with a shovel, as opposed to using a water dredge, proved an effective and inexpensive method for recovering small matrix samples in similar types of sediments to a depth in the seabed of 50 cm.

Historical research demonstrated the potential for the remains of two structures: the supports for the water flume and pier structure at the end of the jetty (although a 19<sup>th</sup>-century construction, the pier was extant and decked in aerial photos as recently as 1943); and the marine railway, or slip, to the north of the breakwater and extending from the boathouse. No sign of any features or artifacts associated with either structure or related activities were observed underwater.

No significant cultural remains were encountered in the course of this survey. Experience demonstrated that the sediments around the toe of the jetty are very mobile due to wave activity. While the proposed development may proceed without concern for impact on known cultural resources, the development crew should be aware of the continued potential for extant wharf structure that are now hidden in the sediments near the toe of the breakwater, but that may be exposed by winter storms. If these appear while work is underway, an archaeologist should be notified.

Historic photos also suggest gradual changes in the shape and depth of the inter-tidal zone to the north of the jetty. If the pattern of infill changes or if dredging and/or excavation is involved in any future development in the area to the north of the jetty then further archaeological investigation using probes in the inter-tidal zone in front of the boathouse is recommended. Without an environmental change that reduces sedimentation rates then a development similar to the one proposed for survey area X could proceed in survey areas Y and Z without further archaeological investigation.

### Acknowledgments

Thanks to Jacques Marc of the Explorations Director of the UASBC who undertook most of the archival research and assisted during the underwater survey. A particular thanks is due to Mark Peterson of Ft. Rodd Hill NHS staff who kindly agreed to open the gates at 05:00. Thanks are also due to Annette Dick of the Songhees FN who screened the underwater shovel test material.

### Citation

Steer, D.N., H.J. Rogers, J. Porter and S. Rogers  
1979 Archaeological Investigations at Fort Rodd Hill National Historic Park, 1978. *Parks Canada Manuscript Report Series*, Number 449, Ottawa.

**Underwater Archaeological Investigations at the Rodd Point Jetty, October, 2002**

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**Appendix – Dive Logs**

**RECORD OF DIVE**

**Diver:** Charles Moore **Date of Dive (y/m/d):** 02/10/11  
**Dive Location:** Fort Rodd Hill/Esquimalt Harbour  
**Dive Supervisor:** Charles Moore **Study Leader:** Charles Moore  
**Study:** Rodd Point Jetty **Project No.** 10T44/02325  
**Dive Equipment:** SCUBA with wireless communications  
**Standby Diver(s):** R. Field & J. Marc **Vessel:** (shore dive)  
**Total Bottom Time:** 114 min. **Max. depth of dive:** 25 ft.  
**Dive Profile** 25 Ft. 43 Min. **Surf. Interval:** 56 min.  
 20 Ft. 17 Min. **Surf. Interval:** 146 min.  
 20 Ft. 54 Min. **Surf. Interval:**

| DIVE | IN | OUT | DEPTH | DIVE PROFILE |
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**Job Description:**

- 1) Seabed swim survey of area X.
- 2) Support for shovel test 10T44-A.
- 3) Seabed swim survey of areas Y and Z.

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**Observations:** **Visibility** 0-12 ft. **Bottom type:** Gravel with sandy mud – some kelp cover

## RECORD OF DIVE

**Diver:** Rob Field **Date of Dive (y/m/d):** 02/10/11  
**Dive Location:** Fort Rodd Hill/Esquimalt Harbour  
**Dive Supervisor:** Charles Moore **Study Leader:** Charles Moore  
**Study:** Rodd Point Jetty **Project No.** 10T44/02325  
**Dive Equipment:** SCUBA on tether, or buddy with wireless communications  
**Standby Diver(s):** J. Marc **Vessel:** (shore dive)  
**Total Bottom Time:** 84 min. **Max. depth of dive:** 20 ft.  
**Dive Profile**

|        |         |                                 |
|--------|---------|---------------------------------|
| 8 Ft.  | 30 Min. | <b>Surf. Interval:</b> 196 min. |
| 20 Ft. | 54 Min. | <b>Surf. Interval:</b>          |
| Ft.    | Min.    | <b>Surf. Interval:</b>          |

| DIVE | IN | OUT | DEPTH | DIVE PROFILE |
|------|----|-----|-------|--------------|
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**Job Description:**

- 1) Excavate shovel test 10T44-B (solo dive on line tether).
- 2) Seabed swim survey of areas Y and Z.

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**Observations:** Visibility 0-12 ft. **Bottom type:** Gravel with sandy mud – some kelp cover

## RECORD OF DIVE

**Diver:** Jacques Marc **Date of Dive (y/m/d):** 02/10/11  
**Dive Location:** Fort Rodd Hill/Esquimalt Harbour  
**Dive Supervisor:** Charles Moore **Study Leader:** Charles Moore  
**Study:** Rodd Point Jetty **Project No.** 10T44/02325  
**Dive Equipment:** SCUBA with buddy on wireless communications  
**Standby Diver(s):** R. Field **Vessel:** (shore dive)  
**Total Bottom Time:** 55 min. **Max. depth of dive:** 25 ft.  
**Dive Profile** 25 Ft. 38 Min. **Surf. Interval:** 56 min.  
 20 Ft. 17 Min. **Surf. Interval:**  
 Ft. Min. **Surf. Interval:**

| DIVE | IN | OUT | DEPTH | DIVE PROFILE |
|------|----|-----|-------|--------------|
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**Job Description:**

- 1) Seabed swim survey of area X.
- 2) Excavate shovel test 10T44-C

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**Observations:** Visibility 0-12 ft. **Bottom type:** Gravel with sandy mud – some kelp cover



Figure 1. Location of Fort Rodd Hill (NTS 1:50,000; 92 B/6; 5th Ed).

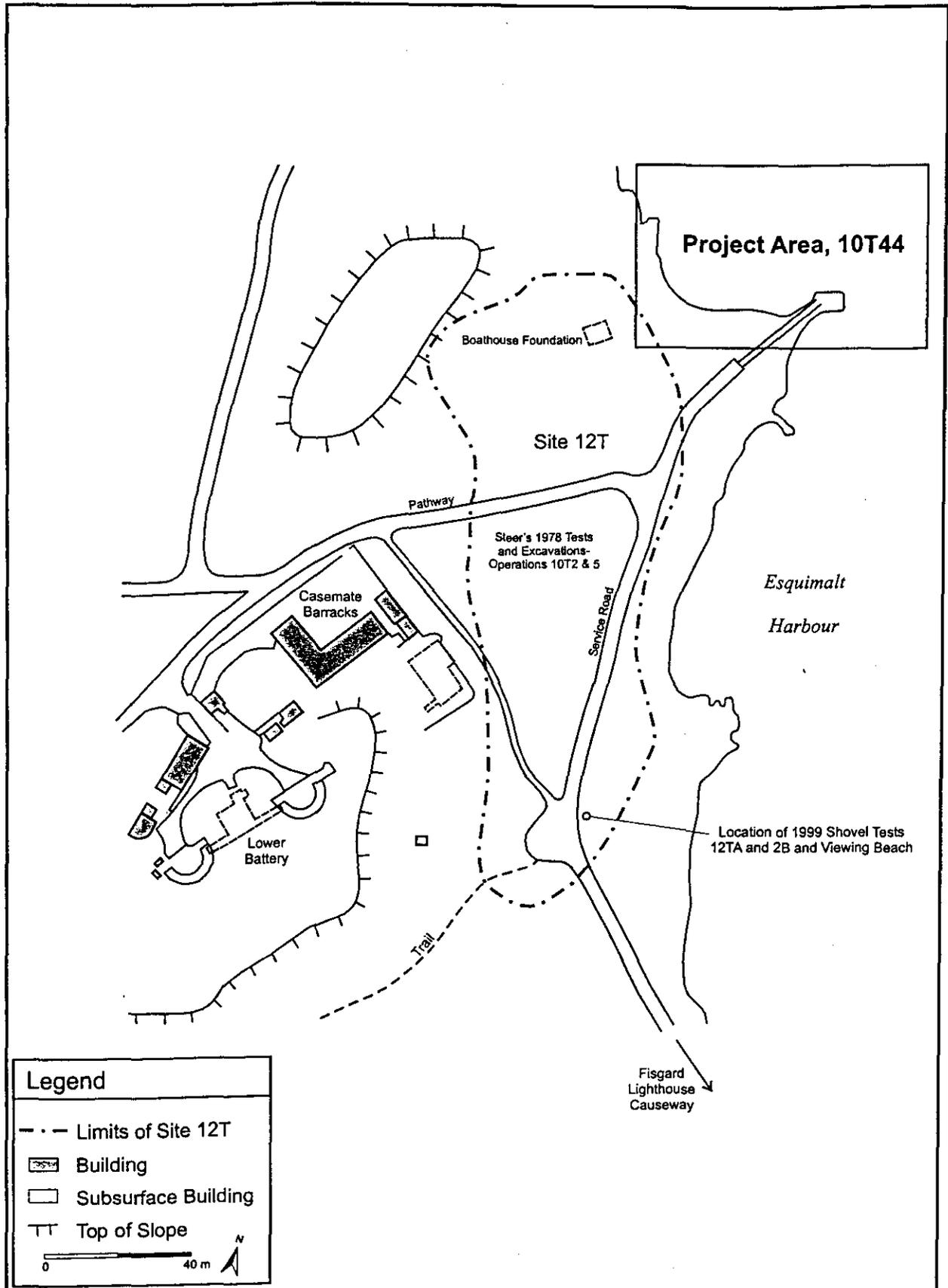
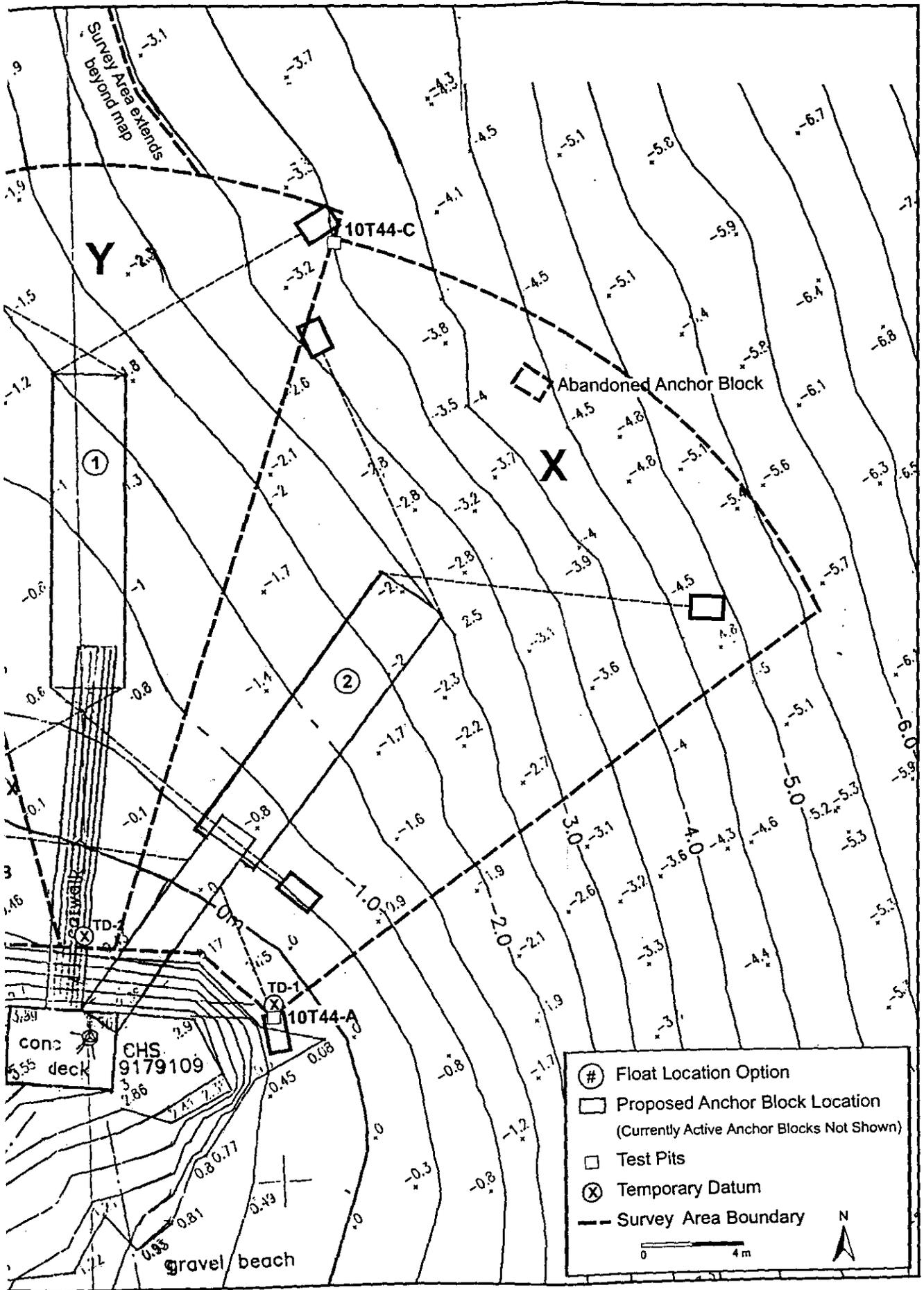


Figure 2. Fort Rodd Hill N. H. S.





|       |  |
|-------|--|
| #     | Float Location Option  |
| □     | Proposed Anchor Block Location<br>(Currently Active Anchor Blocks Not Shown) |
| □     | Test Pits  |
| ⊗     | Temporary Datum  |
| - - - | Survey Area Boundary   |

0 4 m

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