

February 25, 2020

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Re: Concrete Float Inspection

David,

Please find below the results of Foreshore's inspection of the Department of Fisheries and Oceans Small Craft Harbours' concrete float located in Steveston Harbour, British Columbia (see Images 1 and 2). The purpose of the inspection was to determine the general condition of the float.

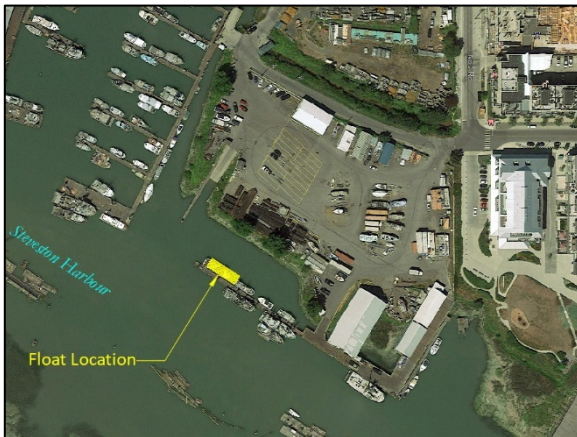


Image 1. Concrete float location in Steveston Harbour at Foot of No. 2 Road.



Image 2. Concrete float surface partially covered with anthropogenic debris.

Inspection Methodology

A Level I general visual inspection of the concrete float and attachments was carried out to collect information on the physical characteristics of the float including dimensions, freeboard and general condition. A more detailed Level II visual inspection was performed to delineate the extent of damage identified during the Level I inspection including the size and degree of any cracking, spalling, decay and mechanical damage. Hammer sounding of the concrete deck was performed to locate internal bulkheads. Level III inspection including the drilling of over 200 3/8" diameter test holes, use of pulsed radar to detect reinforcing steel and an inspection camera was carried out to determine; thickness of concrete deck and base slab; presence and dimension of any internal bulkheads; presence of reinforcing steel; and, contents of flotation chambers (see Images 3 and 4).



Image 3. Test holes drilled to determine location of bulkhead walls below the concrete deck.



Image 4. Pulsed radar showing the presence of reinforcing steel within the concrete deck.

A remote measuring device was used to determine the shape/slope of the outside surfaces of the float's hull (see Image 5). To aid internal investigation of the floats a sampling of deck bungs (see Image 6) were opened and metal rods and feelers used to determine the depth and contents of the underlying floatation chambers.



Image 5. Remote measuring device provides a measure of the elevation and horizontal distance of float hull relative to the edge of the concrete deck.



Image 6. Deck bung with removable plastic cap and internal sleeve set into concrete deck.

Observations (see Drawings 9047-D-01.1 and 02.1 for Float Details)

The float is 75' in length with a width of 24' and a typical thickness of 46". Three of the four corners of the float have rectangular notches. The freeboard of the float ranged from 10½" to 11½". A 36' long section of steel pipe bull rail is still present along the starboard side of the float as well as a number of the steel bull rail deck plates (see Image 7).

Anthropogenic debris is scattered in piles about the surface of the float including a small shed, cook tops, buckets, hoses, vent pipe, wooden and metal stands, ropes, paint cans and cables (see Image 8).



Image 7. Steel pipe bull rail welded to steel deck plates set into concrete deck.



Image 8. Typical debris found on the float.

Remote sensing with a rod below the water surface showed all four sides of the float are sloped (see Sections A and B on Drawing 9047-D-01.1). In addition to being sloped, the starboard and port sides have horizontal linear irregularities resulting in “stepped” hull surfaces (see Section B on Drawing 9047-D-01.1).

Portions of the timber fascia system remain in place but have sustained significant fungal and/or mechanical damage (see Image 9). Cracking, typically <math>< 1/8''</math> in width, was observed at locations on the surface of the deck (see Image 10).



Image 9. Heavy fungal damage in fascia.



Image 10. Typical cracking observed on the surface of the concrete deck.

Test holes identified there are internal bulkheads that run lengthwise down the float with an estimated thickness of 2" to 2½". While no other bulkheads were found during the inspection, pony walls and/or other structures may exist internally within the structure.

All test holes and sampled deck bungs indicate the chambers between the bulkheads contain Styrofoam. Dip stick tests show the Styrofoam fills the chamber from the underside of the concrete deck down to the bottom of the bilge. The lower regions of the Styrofoam are wet. As there are cracks and openings in the surface and the float is filled with Styrofoam, the water present in the chambers could be the result of rainfall or river water.

Test holes in combination with internal and external measurements of the float indicate the thickness of the concrete float elements range from 2" to 6" (see Table 1).

Table 1. Estimated Concrete Thickness

Item	Estimated Thickness		
Upper Deck	2.5"	to	3"
Hull Side Walls	3"	to	4"
Hull Bottom	5"	to	6"
Internal Bulkheads	2"	to	2.5"

Test holes indicate the presence of a 1/2" layer of wood on the underside of the concrete deck.

Pulsed radar measurements identified the presence of reinforcing steel within the concrete deck. Due to limited access no pulsed radar measurements were made of the float hull.

Summary

The overall condition of the float is poor with cracking present over the entire deck surface. All attachments to the float including fascia and bull rails are heavily damaged by fungi, corrosion or mechanical impact. The presence of water internally indicates there are leaks in the concrete deck or hull.

If you have any questions concerning the information provided, please contact me.

Sincerely
 Foreshore Technologies Inc.



Scott Christie
 President

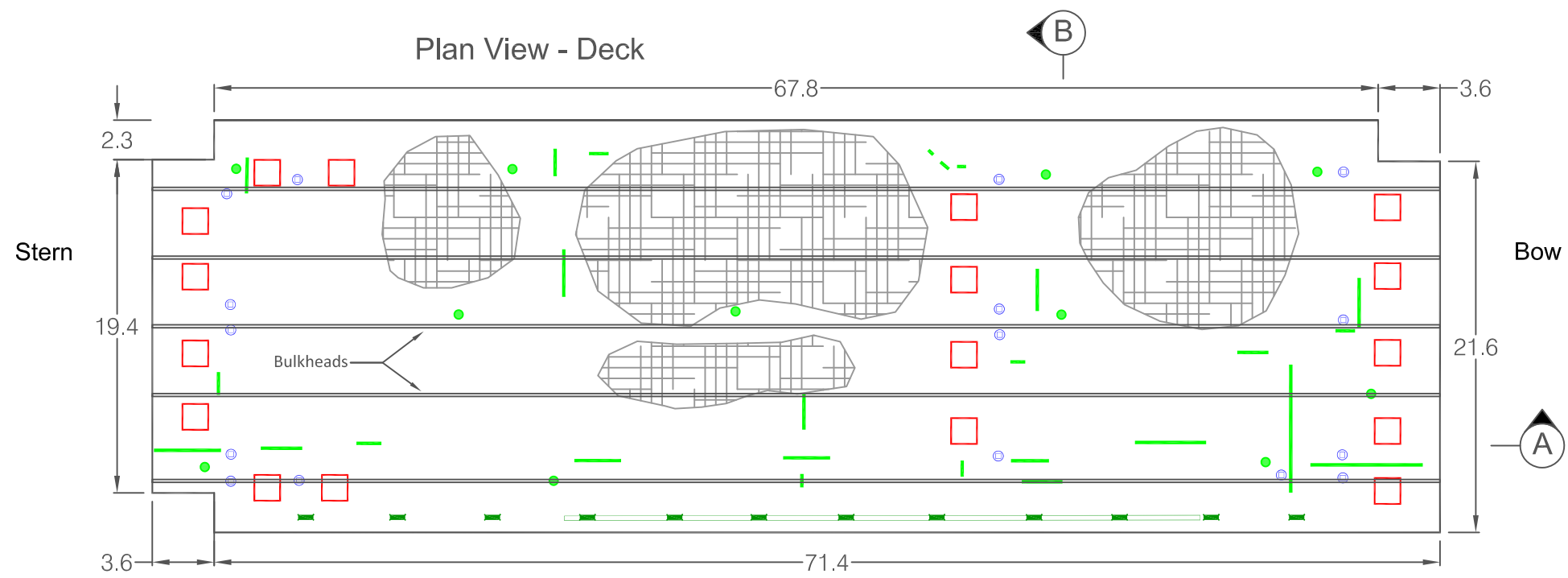
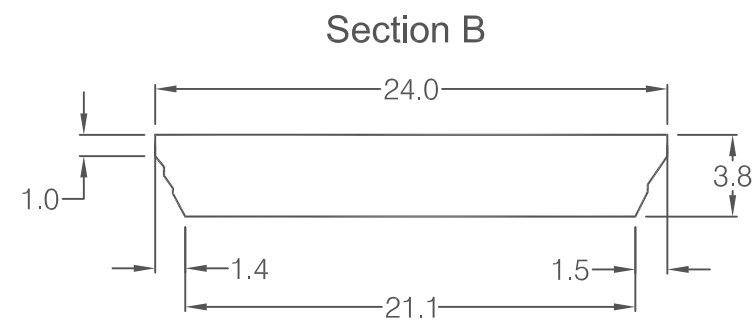
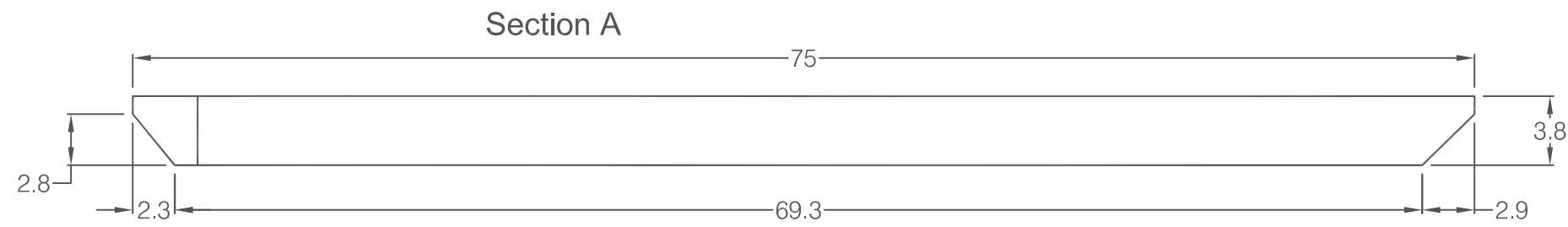


Photo 1. Looking from the bow towards the stern of the concrete float. Note debris collected on float.



Legend	
●	Test Hole Sites
—	Multiple Test Hole Sites
⊙	Plastic Bung Location
	Patches in Upper Deck
—	Steel Bull Rail
—	Steel Bull Rail Deck Plates
	Debris

Concrete Cover Estimates

Item	Thickness
Upper Deck	2½" to 3"
Hull Side Walls	3" to 4"
Hull Bottom	5" to 6"
Internal Bulkheads	2" to 2½"

DRAWING NOTES

- All dimensions are best estimates based on available field measurements recorded on February 12 and 21, 2020.
- The information presented may vary from current conditions due to the passage of time.
- Bow to stern bulkheads were identified as shown. Port to starboard bulkheads were not detected but may still exist in some form.
- See Foreshore Report 9047-R-01.1 for additional details.

Client:



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SC

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Date

Feb 21, 2020

Scale

As Shown

Inspectors

Paper

11 x 17

PROJECT

Small Craft Harbours,
Concrete Float Inspection,
Steveston, British Columbia

Ref. No.

REFERENCE

DWG. No. 9047-D-01.1 General Layout



Photo 1. Looking from the bow towards the stern of the concrete float. Note debris collected on float.



Photo 2. Stern starboard corner. Note notch in corner of float.



Photo 3. Looking towards stern port corner. Note rectangular patches in upper deck surface.



Photo 4. Looking towards the bow starboard. Note no notch in corner. Also note test holes to assess presence/absence and location of internal bulkheads.



Photo 5. Typical plastic bung fitting located in upper deck surface



Photo 6. Plastic bung opened to reveal internal Styrofoam used to fill the internal hull of the float.



Photo 7. Broken steel pipe bull rail. Note bull rail welded to steel flat bar stand-offs protruding from concrete deck.



Photo 8. Looking at bow port corner along bow fascia. Note debris collected on float.

Client:



Fisheries and Oceans
Pêches et Océans
Small Craft Harbours Branch

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Small Craft Harbours,
Concrete Float Inspection,
Steveston, British Columbia

DWG. No. 9047-D-02.1 Photo Sheet

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REFERENCE