

February 25, 2020

Foreshore File No.: 9047-R-01.1

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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 removeable 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