COMOX VALLEY HARBOUR AUTHORITY



COMOX HARBOUR REVITALIZATION PROJECT
FINAL REPORT

August 10, 2012

Introduction:

The Comox Valley Harbour Authority CVHA) was incorporated by Letters Patent as a federal not-for-profit corporation, in 1991. The organization leases the Courtenay Slough and the Comox, Small Craft Harbours from Fisheries and Oceans Canada. The mandate of the organization is to operate, maintain and manage a public commercial fishing harbour. Our Board of Directors draws representatives from the Commercial Fishing Sector, as well as the communities of Courtenay, Comox and the K'omok's First Nation, providing local perspective and management to the Federal Small Craft Harbours.

The Comox Harbour is primarily a commercial fishing harbour and during the summer the majority of our commercial boats leave their home port for the fishing grounds, leaving our east side harbour floats available for vessel tourism. The B.C. Ministry of Tourism has just recognized Marine Tourism as a new tourism sector and is exploring marketing opportunities for this growing industry.

The Board of Directors of CVHA proposed an expansion of our docks, in conjunction with new infrastructure provided by D.F.O., Small Craft Harbours Branch though the Canada Action Plan. Additional funding was applied for from WestCCAP, ICE-T and combined with a cash contribution from CVHA. Project management was provided by the Harbour Manager of CVHA, and the engineering group from D.F.O. Small Craft Harbours in conjunction with Arrowsmith Engineering Services.

Project Overview and Objectives:

The Project incorporated the construction, installation and servicing of 550 ft. of floats, and the decking and servicing of 320 ft of improved floating breakwater. The project took place within the existing dredged footprint of the east side harbour.

The Objective of the project was two fold. The improved floating breakwater has added additional storm protection to the East Harbour. Decking and servicing the breakwater and providing a connection to the new floats has doubled the capacity of the Comox Small Craft Harbour to provide dedicated space for vessel tourism during the summer months.

Breakwater:

The Project began on October 1, 2010 with the construction of the new floating breakwater at Arrow Marine Services Inc. The breakwater was completed by mid January 2011, and towed to Steveston Harbour for storage to await the tender of the installation contract in the Comox Harbour.



Breakwater under construction December 2010
Arrow Marine Services Inc. Richmond, B.C.

The Breakwater installation tender was let by Small Craft Harbours Branch on June 10, 2011 and closed on June 25, 2011. The contract was awarded to Ruskin Construction Ltd. on July 20, 2011. Material procurement started on July 25, 2011 and was completed on August 12, 2011. The mobilization phase commenced on August 15, 2011 and culminated with the arrival of the breakwater in Comox Harbour on August 24th.
The existing floating breakwater was removed and temporarily repositioned to make room for the site work for installation of the new breakwater.

Site work consisted of surveying the locations for the anchoring systems and steel pipe piles. Pile driving began with 16 - 30 inch steel pilings positioned and driven at the back of the breakwater. Anchor– piles were placed at the back and front of the breakwater to hold the underwater anchor lines in place. Brackets were installed on the breakwater to hold the mooring system of "bobber – logs" (a floating steel structure that wraps around two pilings) in place with chain. This system is designed as a fail safe mechanism, to hold the breakwater in place in extreme storm events.

Once the infrastructure was in place the delicate task of tensioning the mooring system for the new breakwater was completed. 240 ft of the old breakwater was then salvaged to be repositioned at the entrance to the Harbour. H-Piles were driven to provide the anchoring system, and the mooring lines were secured and tensioned.

The installation was completed on October 15th, 2011.



Driving H Piles for anchoring system



H Piles – Shore Anchor



Steel Piles for Breakwater



Alignment of Steel Pilings



Positioning Breakwater Section



Installation of Bobber Logs



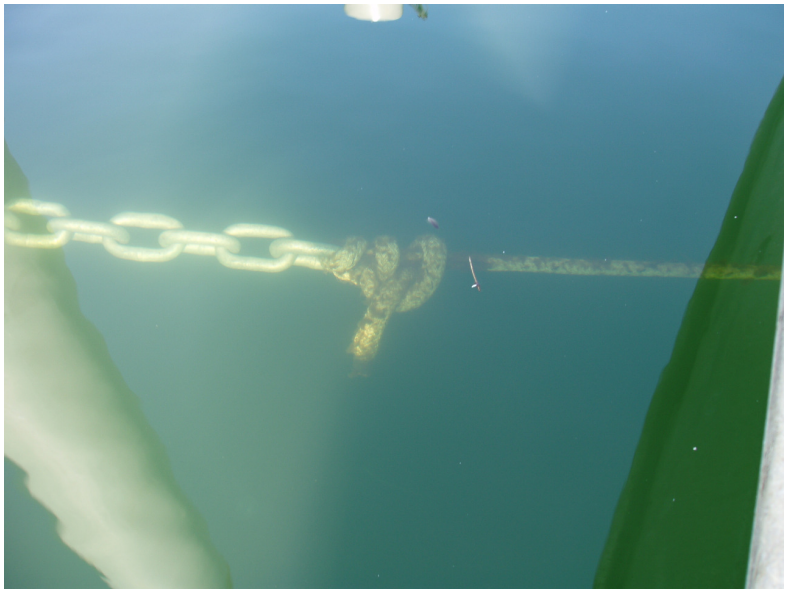
Installation of Second BW Section



Installation of Anchor Chains



Repositioning of Old Breakwater Section



Typical Anchor Line



Anchoring system for Breakwater



Anchoring Repositioned Breakwater



Completed Breakwater Installation

Construction of Floats, Ramps and Breakwater Decking and Servicing:

The Comox Valley Harbour Authority contracted Sawchuck Piledriving (1982) Ltd. and Webster Electric Ltd., both local companies, for the construction and electrical servicing of the floats, ramps and breakwater. Garry Moore Enterprises provided water and fire suppression services to the dock.

Overall project management for this phase of the project was provided by the Harbour Manager, Elizabeth McLeod, and Wharfinger, Robert Clarke. Site supervision was provided by Peter Coleman, of Arrowsmith Engineering Services. A minor site change was made to the original plan, relocating the new access ramp from the shore to an existing dock, rather directly accessing the new dock.

The floats were constructed off-site, by Sawchuck Pile Driving, to alleviate congestion in the Harbour caused by the breakwater installation.

Webster Electric began site preparation with the installation of duct banks to carry the electrical service from the power kiosk to the ramp approach on Sept 21st.

Sawchuck Pile Driving arrived in the Harbour on October 18th. Work began with the delivery of the pilings, ramp and float. The supervising engineer from Arrowsmith Engineering Services was also on site.

Construction began with the installation of stringers on the floating breakwater and was completed on October 19th. The shore side dock was then cleared of vessels and the new float components were positioned beside the dock and joined together. Gary Moore, the contractor for the water and fire lines arrived on site to install the domestic water lines and fire lines on the new float in preparation for decking. Additional bracing was installed by Webster Electric in preparation for the installation of the electrical kiosks and additional floatation was installed in these locations to accommodate the weight of the kiosks.

Upland site work began for the installation of the ramp approach and ramp on October 26th. Temporary piles were put in place to align the new floats with the floating breakwater.

On October 27th the Fire Engineer was on site to review the fire plan with the Town of Comox Fire Department and finalize the plans for the fire line installation.

The Construction Engineer was also on site to finalize the piling plan for the new floats. Pile driving began to permanently install the new floats on October 28th and was completed on October 31st.



Excavation for Ramp Approach



Installation of transition float between new dock and breakwater



Decking new float



Pilings for ramp approach



Installation of pilings for new float



Excavation for Electrical Ducting to Main Power Kiosk



Installation of Electrical Ducting

Breakwater

The breakwater decking started on November 17th and the decking on the first breakwater was substantially complete by the end of November, 2011.



Installation of Stringers Floating Breakwater



Breakwater Decking

Construction of Floats and Ramps

The ramp approach was completed on November 8, 2011 and the ramp installation was completed on November 10, 2011.

The cross float between the existing and new dock was completed on November 10, 2011.

The construction of the jump float at the end of the new dock was completed on November 15, 2011.

The electrical installation was 61% of the contract completed at the end of November 2011.

The fire and domestic water lines were ongoing, with approximately 60% of the work completed by November 30th, 2011.



Ramp Installation





Ramp Installation



Installation of Cross Float



Installation of transition between the new dock and attenuator float.

The dock project was substantially completed, with 500 linear feet of floats in place at the end of December 2011. A security fence and gate were installed at the connection to the transition float to prevent the public from accessing the breakwater and attenuator floats in inclement weather.



New Docks



Security Fence & Gate



Completed Ramp

The electrical installation was substantially complete, with approximately 96% of the contract completed at the end of December 2011.

Electrical Kiosks on Breakwater



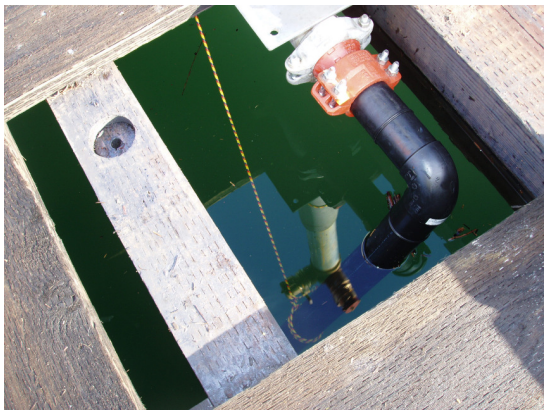
Typical Breakwater Installation



Typical Dock Installation



Typical Fire Standpipe



Fire line connection under dock

Project Completion:

The Comox Harbour Revitalization Project was completed by March 31, 2012. Material delays, an influx of vessels for herring season and severe winter storms caused delays and shutdowns from January to March.



New Ramp Entrance to Floats

Floats

Transition plates were installed between the cross float accesses to the new dock, between the new dock and transition float and between the transition and attenuator float. Additional floatation was installed where required.



View of New Floats from Breakwater



Completed floats

Breakwater

Materials for the completion of the second breakwater arrived in February, 2012 and the decking and bull rails were completed by mid February, 2012. The breakwater was tensioned and ballasted.



Completed Breakwater

Ramps

The upland fill was completed around the main ramp approach in January, 2012. Access ramps between the two floating breakwaters and the attenuator floats were delivered and installed the last week of March. Signage was installed throughout the project to identify floats, and navigation hazards.



Ramp at Attenuator Float



Ramp between Breakwater sections

Electrical
The electrical was completed for inspection on February 9, 2012. Deficiencies as per inspection report were corrected and the electrical was complete on February 15th ,2012.



Electrical Boxes on Breakwater

Fire Lines and Domestic Water
The fire line system was completed on the floats and breakwater. An additional standpipe was installed for service to the Comox Fire Department fire boat. Isolation valves were installed so the system could be isolated from the rest of the dock to allow quick charging of the dry fire lines in the event of a fire.



Fire Boat Standpipe Connection



Fire Line Isolation Valve



Fire line flex connection to B W



Typical fire line standpipe

Visitor Feedback:

We are getting extremely positive feedback from visitors using our facility. The new breakwater float provides ease of access to the facility for larger vessels. Increased power servicing (50-100) amp has also been an extremely popular addition. The increased dock space has resulted in several yacht clubs making arrangements for groups of 15 to 20 vessels.

First time visitors are delighted with the ease of access to downtown Comox, for shopping, dining and provisioning their vessels. Most vessels staying more than one night take advantage of the bus service to access downtown Courtenay.

The addition of Wills Marine Services, in downtown Comox has also been a welcome addition for vessels requiring parts or repair services.

The Comox Nautical Days and Filberg Festival on the B.C. Day weekend is always a popular venue for boaters. This year we had 52 vessels per day topping our average of 42 vessels per day in previous years. This year we were able to accommodate all the visitors on the east side of the Harbour, without having to raft vessels together.



Visiting Vessels – Nautical Day Weekend

Economic Impact

The overall cost of the project was 1.94 million dollars with approximately .6 million dollars flowing directly into the local economy through contracts to local firms. The remainder of the project dollars were spent in fabrication contracts with British Columbia based firms.

The boating season got off to a poor start this year, with record breaking bad weather in early July, but overall numbers of visiting vessels were still increased from the previous year. Tourism revenues have increased by 9% over the same time period in the previous year. August numbers indicate a steady increase in vessel traffic from the previous year. There is also a marked increase in vessel days in the Harbour. The average vessel is now staying 2 to 3 days.

Employment:

The pile driving and dock construction contracts resulted in 3.9 man months of employment for a crew of 4, while the electrical contract resulted in 2.6 man months of employment for a crew of 2. Water, fire lines and engineering resulted in 1.24 man months of employment for a crew of 3.

The Comox Valley Harbour Authority has hired an additional employee for the .25 person year position created by the summer tourism season.

Conclusion:

In spite of unforeseen delays, the project was completed in time for the 2012 boating season, and can be viewed as a complete success. Early numbers and boater feedback indicate that the increased space, will in time double the number of recreational vessels visiting the Comox Harbour, increasing the economic impact of vessel tourism to the Comox Valley.

Total project costs of 1.94 million provided better breakwater protection, resulting in an increased level of safety for our home port vessels during the fall and winter storm season. The ability to use the breakwater for moorage of large vessels and expanded dock facilities has enhanced the level of service we are able to provide for vessel tourism.

Leveraged funding included 1.2 million dollars from Fisheries and Oceans Canada through the Canada Action Plan, 400 thousand dollars from ICE-T and 250 thousand dollars from WestCCAP, in addition to the CVHA's investment of 90 thousand dollars. This funding provided jobs in our local community , Vancouver Island and the Lower Mainland of B.C.. This project clearly shows the economic benefit of local communities working in conjunction with government and funding agencies.