

The Marine Scene

By Correspondent Tonia Jurbin

As just about everyone in Canada has heard or read by now, housing is booming and developers and buyers alike are almost frantic to find land within a reasonable distance of urban centres.

Waterfront properties have always been preferred sites and in Vancouver, for instance, the city's upscale False Creek area is one of those most in demand.

Parts of the old Expo '86 site have been gradually developed with condominiums by Concord Pacific since about 1988, but along with the lands came several water lots, three that had development potential.

In light of a stronger economy, Concord recently decided to build a strata lot marina and market these pleasure craft spots, ranging from 25 to 100 feet, for up to six figures.

The new marina was carefully designed to optimize the number of lots and the distribution of the different sized berths. Concord got approvals to build 150, but went with 127. Some of the lots were marketed to US customers, but the majority of the buyers were Vancouver based.

This was the first strata marina ever built within Vancouver's city limits and all of the units come with all the amenities; electricity, telephone, cable TV, water and sewer.

Simple in its concept, the marina consists of a walkway or a header float, several main floats that branch off of the header float, and finger

floats that branch off of the main floats. There are also berths on either side of the finger floats.

Average water depth is about 9 m at low tide, but since there were no obstructions in the protected areas, tides were not an issue for the contractor, West Shore Constructors of North Vancouver.

To build the marina, the contractor started by driving 121, 13 mm

floats and the piles. The design and fabrication of the floats was subcontracted out to International Marine Flotation Systems (IMFS).

This site, like many in the False Creek area, was heavily contaminated from past industries and therefore had to be cleaned up before the property was parcelled off to more than 100 owners.

Although site clean up was not

part of the contract, special care had to be taken to minimize disturbance of the contaminated mudline.

Typically on marine development, the floats are brought in and set in place with temporary piles or anchors.

Mike Nightingale, one of West Shore's owners, explains one of the major challenges of this job.

"Normally the floats are carefully set before driving the permanent piles

because once the piles are in place, access to parts of the site can become restricted. The reason that we like to set the floats first is because accurate survey for the pile setting is not required; we just drive the piles at the end of the finger floats.

"On this job, however, there were some delays in the permitting process. Once the approvals were given, IMFS started manufacturing the floats immediately. However, since our crews and equipment were available, we decided to drive the piles without waiting for the floats. This made accurate survey important."

Specifications called for the piles to be embedded about 4 m into the



Marina starts to take shape during early stages of construction.

thick, open-ended steel piles vertically at a full length ranging from 20 to 24 m. The diameter of the piles ranged from 254 mm to 610 mm depending on the depth of the water and the size of the berth, or the load.

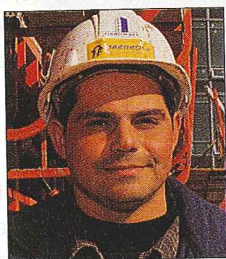
The berths closest to the shoreline, designed to accommodate the smaller boats, required the smaller 254 mm piles, and the berths in deeper water naturally required larger ones.

All of the piles had corrosion protection from the top to below the mudline.

West Shore's three-month contract for about \$2.5 million included the supply and installation of the

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ON THE WATERFRONT

till so the majority of the piles were driven using a 100 ton crane with a 10,000 pound drop hammer.

There were eight piles that took almost as much time to set and drive as the remaining 113.

"There was one area of the site where the till was higher and harder than anticipated so the piles had to be advanced by churn drilling them into place, but because of the contaminated mud, we had to find a way to keep everything contained," says Nightingale.

Churn drilling is a little like using a percussion drill. In this case a bit with a sharp cross was dropped into the pile to break up the concrete plug. Once the concrete was removed, the till was broken up with the churn bit and the pile was slowly advanced.

Some of the contaminated material had to be bailed out of the pile to advance the system, so full containment was required during the churning process.

"This involved a lot of work because as we bailed the waste out of the piles, most of which was wet mud, we couldn't release it back into the water. We couldn't even let it drip into the water when moving the bailer from the pile to the lined disposal bins," says Nightingale.

To contain the wet mud slurry coming out of the piles, the crews built a chute between the pile and the scow with lined disposal bins on it. The bailers were emptied into the disposal bins and the water was pumped off, filtered, settled, tested and eventually discharged back into False Creek. Some of the extracted mud slurry was later placed into empty piles.

All of the costs associated with advancing the eight piles; extraction, redoing the splice, making the concrete plugs, churn drilling, and containment were handled as a change order. ♦