

FBD

Fraser Burrard Diving LTD.

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(24 hours)

fbdiving.com

Your first choice for
a complete range
of diving services

ALRT Bridge in New Westminster. This bridge required dewatered cofferdams 22 meters deep. The sheet pile cofferdams had to be reinforced internally with complex whalers, installed by divers in zero visibility.

Welding an anode on a barge





In 1963 WES MAGGSP.Eng. started his diving career with the Aqua Society while at the University of British Columbia where he graduated in Metallurgical Engineering. Since 1969, Wes Maggs has owned and operated Fraser Burrard Diving Ltd. creating cost-conscious solutions for a wide range of underwater problems. Fraser Burrard Diving Ltd. brings an engineering approach to all its contracts.

Wes has accumulated extensive knowledge and expertise in the commercial diving industry. He trained and taught many divers and engineered, designed and manufactured specialized equipment for underwater use.

Fraser Burrard Diving Ltd. is known for solving the impossible.



Cindy Kaufman, partner in Fraser Burrard Diving and president of ICBA is seen here with Fraser Burrard Diving founder Wes Maggs. Cindy attributes Fraser Burrard's success to teamwork between the company's divers, Wes' propensity for invention, and her attention to detail.

Superior solutions for your underwater problems

We have the equipment to do the job right!

At Fraser Burrard Diving, we believe that efficient tools make for productive divers. That's why we own all our own equipment — a wide selection of very specialized and unique marine equipment, much of it custom-designed — so we can make sure the job is done right!

Designed by professionals for professionals, we have equipment for:

- 4 Jetting
- 4 Diver Dredging
- 4 Welding
- 4 Burning
- 4 Blasting
- 4 Hull Cleaning
- 4 Timber and Piling Work
- 4 Photography
- 4 TV and Videotape



Preparing to weld a 300 pound anode on an H pile.

Our specialized tools include

- 4 Underwater Hydraulic Tools
- 4 Unique Water Jet System
- 4 Buoyancy Billet Placing Machine
- 4 Decompression Chamber
- 4 Underwater Excavator
- 4 Pipe Fusion machine
- 4 Color imaging sidescan sonar
- 4 Scanning unit
- 4 Magnetometer
- 4 Metal detector



Welding an anode on a barge

We specialize in:

- 4 Marine construction
- 4 Salvage
- 4 Underwater dredging and jetting, including explosive work
- 4 Pipe laying, inspection and repair
- 4 Bridge construction, inspection and repair
- 4 Underwater burning and welding to AWS standards
- 4 Underwater photography and video
- 4 Sidescan and magnetometer search and recovery
- 4 Marine inspections
- 4 Water Tank Services

We emphasize equipment portability, to allow us to respond quickly and keep mobilization costs low.

Miles of pipelines

Our pipeline work includes welding, assembling, burying and installing numerous pipelines. We have experience working with extremely long lines and placing lines in deep water.

...and we're equally at home with pipe inspection and repair

Preventive maintenance is the most important application of inspection. Early recognition of potential problems could save vital shut-down time and protect the safety of your personnel. We inspect pipes with minimum diameters of 762 mm, and we include underwater photos and video upon request.

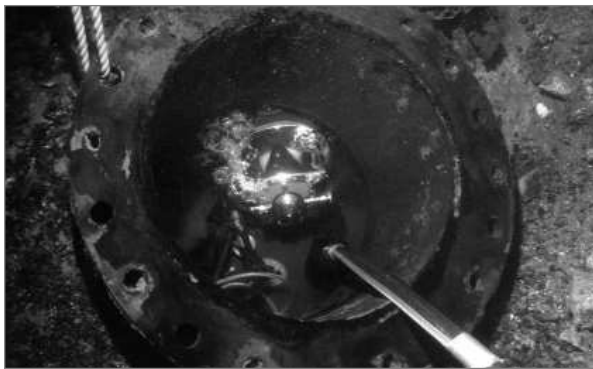
We service various types of pipe including:

- 4 Effluent
- 4 Sewage
- 4 Intake
- 4 Storm water



Fusing 30" pipe in Nanaimo

Previous pipeline contracts include a North Vancouver intake where approximately 80% of the pipeline had to be buried. Intake structures weighing 10 tons were constructed and placed in 28 meters of water. The pipe was laid in an area of Burrard Inlet notorious for strong tidal currents. This job was proof of our willingness to take on a challenge — and succeed!



Entering a pipeline to begin an inspection.

In 1999 FBD led a design build team to route 2.7 km of 356 mm sewage interceptor through the Okanagan lake. The design included a number of unique features:

- 4 6 lateral lines from the houses along the lakeshore
- 4 110% weighting
- 4 laterals to allow for air or gas bleed off
- 4 grading of pipeline to allow air or gas accumulations to bleed off



Trenching in Okanagan Lake.



3 Fusing 14" pipe and floating into Okanagan Lake

Salvage

Salvaging sunken vessels and equipment requires expert knowledge and specialized equipment. Fraser Burrard Diving has the know-how and the resources to respond to any marine casualty, quickly and effectively. Over the years we have used air bags and crane salvage techniques to recover more than 200 vessels — some in deep water.

Careful operation during salvage

Without due care, salvage operations can cause extensive secondary damage to sunken vessels. Our expertise enables us to raise the vessels gently and efficiently without causing further damage.

Notable examples of our vessel salvage work:

- 4 We pulled the 350 ton suction dredge “Centennial” out of the Fraser River
- 4 We salvaged the 160 ton seiner “Ocean Cavalier” from 55 meters of water near Nanaimo
- 4 We recovered the suction dredge “Big Julie”, sunk in a potash lake in Saskatchewan
- 4 We have also performed numerous underwater repairs, such as welding a 22.3 square meters steel plate under the deep sea vessel “Kranj” to repair a tear in the bottom caused by the vessel hitting a rock
- 4 We salvaged a 70 ton excavator sunk in a remote lake on Queen Charlotte Island
- 4 Numerous aircraft
- 4 Many kinds of heavy equipment, including forklifts, bulldozers, railcars, logging equipment and more



Fraser Burrard divers work carefully to salvage a large pleasure boat.

Salvage Cape Scott

On May 1995 a barge overturned dumping 3600 tons of steel grinding balls intended for the copper mine at Port Hardy. The barge flipped near Cape Scott in an area noted for high winds, big waves and 3 knot currents. The balls were lost in an average depth of 83 meters. FBD modified an electromagnet for underwater use and was able to salvage 2500 tons before further work became uneconomical

Deep water electromagnet; Taking advantage of good weather at Cape Scott.



Underwater inspection, construction and repair

Our background in structural inspection, construction and repairs includes work on more than 30 bridges and docks. We will perform jobs ranging from pipe fitting to concrete construction to meet your specifications.

Bridge inspection

Our engineering expertise enables us to professionally inspect all underwater bridge structures, looking for:

- 4 Undermining
- 4 Marine borer attack
- 4 Cracks in concrete
- 4 Collision damage

Construction

Skilled use of pneumatic tools and hydraulic equipment ensures quality workmanship and efficient use of underwater time.

Dock inspection and repair

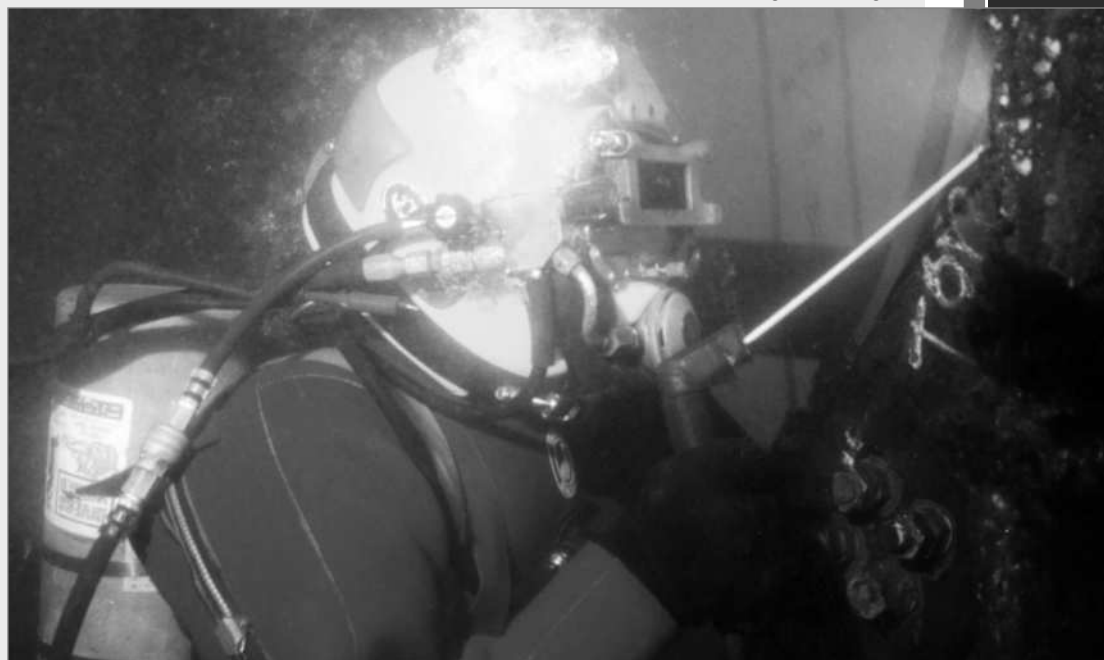
Our services include:

- 4 Repair of undermining with reinforced concrete
- 4 Placing gabion scour protection
- 4 Sheet pile bracing
- 4 Pile protection and encasement
- 4 Adding floatation to correct listing
- 4 Inspecting and replacing anchor chains
- 4 Anchor burial.

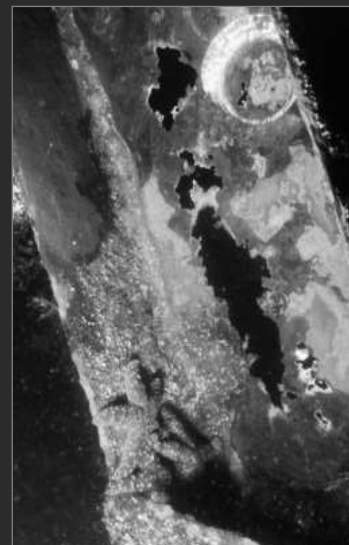
Underwater Welding

In 1999 FBD undertook a project of removing corroded cross bracing, replacing it with new cross bracing and installing a cathodic protection system. The project entailed 3 months of underwater cutting, welding and drilling. In addition extensive bottom protection, using rock filled gabions, were installed to prevent erosion at the base of the piles.

Welding cross bracing.



Dock inspection includes custom-fitting a special camera to locate very fine cracks found inside concrete piles.



This corroded Steel H pile supported a ferry terminal.

Environmental Clean Up

Fraser Burrard Diving Ltd. adopts an environmentally conscious approach to all our contracts. We have specialized in cleaning water reservoirs and water tanks, inspecting them for damage and conducting repairs where necessary. We work closely with environmental companies to achieve environmentally sound practices.

Northern B.C. waters clean-up

In 2000 a chip barge dumped its load. Many of the chips were water-logged and sank to the bottom creating an environmental hazard. We were contracted to remove the chips without disturbing the natural bottom. Of the many pumps we have, one was perfect for the project. We were able to complete the project to the satisfaction of the customer and the Department Of Fisheries and Oceans.



Pumping the chips onto the barge



Lowering the pump to the sea bed

Search and Recovery Operations

Fraser Burrard Diving is fully equipped for fast, efficient search and recovery operations. Our equipment includes :

- 4 Colour imaging sidescan sonar
- 4 Scanning unit
- 4 Magnetometer
- 4 Metal detector

Searching with the sidescan sonar

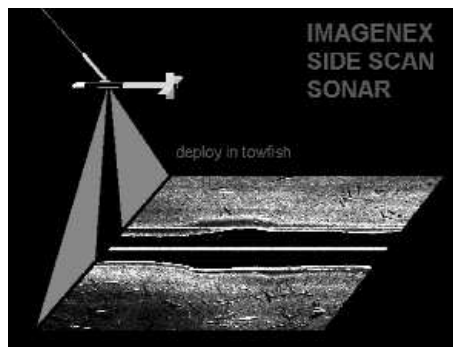
The sonar system offers full resolution playback and data recordings. It is used to paint a picture of the ocean bottom, and can cover a very large area in a short time. It is ideal for finding aircraft, boats and lost equipment.

The sidescan and the scanning unit are used for searching the seabed. The scanning unit is used for more detailed work and highlights smaller objects.

Searching for ferrous materials with the Magnetometer

The magnetometer is the ultimate detector for ferrous material such as iron and steel. It is very sensitive to changes in the Earth's magnetic field caused by ferrous objects such as:

- 4 Sunken steel vessels
- 4 Anchors and chains
- 4 Steel cargo
- 4 Any steel objects (even if buried)



Sidescan "fish" searching ocean bottom



Scanner head image of a boat on the seabed.

Safety

Fraser Burrard Diving has been servicing the Marine Construction Industry for over 30 years. We pride ourselves in over 30 years we have had zero serious accidents. We hold the highest merit available. Safety is No. 1 for all our company operations. Our divers are all certified through professional commercial diving schools, medically certified and registered with the Workers Compensation Board. We employ a Company Safety Manual and maintain an active role to ensure an excellent safe operation.

Unique projects over the years



Ocean Ranger



Underwater photo of holes in an overturned barge. The holes were patched and the barge righted.

The following are more examples of projects completed successfully by Fraser Burrard Diving:

- 4 Drilling and blasting 36 cubic meters of rock in the middle of the Fraser River.
- 4 Placing a 70 ton concrete intake structure in the middle of the South Thompson River together with a 30" dia. intake pipe to the structure.
- 4 Cleaning and videotaping welds on the hulls of the semi submersible oil drilling rig Ocean Ranger.
- 4 Welding patches underwater on an overturned 12,000. ton barge, in order for the barge to be righted.

Placing 70 ton concrete intake structure.



**Complete range of diving services —
24 hours a day! 7 days a week**

**When you have a problem, you need it solved quickly.
That's why Fraser Burrard Diving ensures that all our services
are available around the clock.**

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