



## ■ Marine Structures



### Reference Details:

**Owner** Department of National Defence, Canada +++ **Site Manager** Joint Defence Construction Canada, Canada +++ **Prime Consultant** Acres International Ltd., Vancouver, BC, Canada +++ **General Contractor** NAC Construction, Campbellville, ON, Canada +++ **Subcontractor** Pierre Gagne Construction, Thunder Bay, ON, Canada

**DSI Unit** DSI Canada, Western Division, Surrey, BC, Canada

**DSI Services** Supply and installation of DYWIDAG Post-Tensioning Tendons, DYWIDAG DCP Anchors, DYWIDAG Multistrand Tendons, DSI Field Technical Assistance and rental of specialized DSI equipment



## Colwood Refuelling Facility Upgrade

### Supply of the National Defence on Canada's West ensured

The project located at CFB Esquimalt on Vancouver Island is an extensive upgrade to the refuelling facilities that service the Department of National Defence on Canada's West Coast. Acres International provided the conceptual design, detailed engineering, contract documents and construction services for all aspects of the project.

All works were designed to meet stringent environmental, seismic, and service life requirements for the severe marine environment. The ongoing project includes a new 285m long concrete refuelling jetty and control building; both stabilized with DYWIDAG Post-Tensioning and Anchoring Systems. All of the structures were constructed while the existing facilities remained operational.

The refuelling jetty consists of 19-spans constructed from 3 pre-cast concrete "tub" girders with a composite 12.6m wide cast-in-place concrete deck and pier caps. Both the girders and deck are horizontally post tensioned with approximately 80t of Ø32 and 70t of Ø26 high strength THREADBAR<sup>®</sup> tendons. THREADBAR<sup>®</sup> was the preferred material since it can be easily coupled and fit inside of the thin wall and slab. The cap beam at each bent was vertically post-tensioned with 12-0.6" strand anchors, which were installed into concrete filled steel pipe piles. The jetty abutment structure was additionally anchored using 8t of 27-0.6" strand anchors. These anchors are intended to secure the jetty to the shore during a seismic event.

There are 15 pedestal foundations in the control tower anchored using 60 pcs (15t) of Ø57 double corrosion protected (DCP) THREADBAR<sup>®</sup> anchors. Each of the pedestals incorporates 4 anchors of various lengths to suit the topography of the area. The anchors were well suited to this application given their ease to be adjusted for the varying length.

DSI Field technicians and testing equipment were utilized during all of the testing and stressing operations of this complicated project. The post-tensioning and anchor works for this project were completed in December 2003.

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