

Float-in Cofferdams New Carquinez Bridge, Crocket, CA



Float-in cofferdams at dock side.

Ben C. Gerwick, Inc. first proposed the use of float-in cofferdams to construct marine bridge foundations on the Bath-Woolwich Bridge in Maine. Caltrans recognized the schedule and cost advantages of this construction method and applied it to the design of the main tower foundations for their new suspension bridge across Carquinez Strait at the North end of San Francisco Bay.

Services Performed:

- **Float-in Cofferdams**
- **Rock Drilling**
- **Drilled Shafts**
- **Construction Engineering**



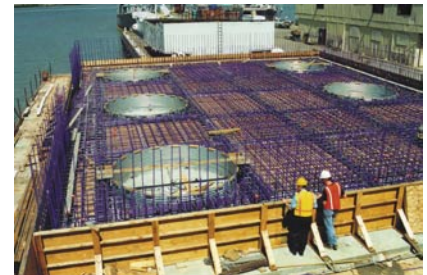
Interior of completed float-in cofferdam.

The contract for the new bridge was awarded in early 2000 to a Joint Venture of FCI Constructors, Inc./ Cleveland Bridge California, Inc. Shortly after contract award, the Joint Venture selected Ben C. Gerwick, Inc. to modify Caltrans' float-in cofferdam concept and further reduce the need for on site work.

Six three meter diameter drilled shafts support each of the four main tower legs for the new bridge. The tops of the drilled shafts are capped by 5.14 m deep footings, 18 m by 20 m in plan. The bottom elevation of the footings is set at 2.34 m below mean sea level. The original design provided by Caltrans envisioned casting the footing shells off site, floating the shells to the bridge and landing them on pre-installed erection frames (or falsework). The intended concept was to use the footing shells as temporary cofferdams and as templates for the installation of drill shaft casings.

Ben C. Gerwick Inc. modified the original concept by designing a temporary support system that allowed the float-in cofferdams to be landed directly on the pre-installed drill shaft casings rather than on a separate falsework system. The modified design offered the following significant advantages:

- Early start for the drilled shaft installation (an activity on the critical path) by allowing casing installation to commence before completion of the float-in cofferdam.
- Shorter construction schedule by allowing casing installation to run independently of and concurrently with cofferdam fabrication.
- Lower construction cost by completely eliminating the need for erection frame or any other temporary falsework support for the float-in cofferdam.



Casting of cofferdams on the deck of a barge.

Year of Completion: 2003

Construction Cost: \$238M

Client: FCI Constructors