

Project

The Chesapeake Bay Bridge Parallel Crossing, Virginia, United States of America

This 20-mile-long bridge tunnel complex connects Virginia Beach with the eastern shore of Virginia. It is located at the mouth of the Chesapeake Bay near the Atlantic Ocean, an area exposed to severe weather and ocean conditions. The original facility, which includes two tunnels, was built in the 1960s and was considered one of the engineering marvels of the world. This was not only because of its length, but also due to the challenging environment for its construction.

The parallel crossing was built to increase safety by separating traffic in opposite directions. It also would allow major repair work to the old bridge upon opening for traffic of the new spans as was part of the contract. Construction started in September 1995 and the project was handed over and accepted by the client on the contractual completion date of 1 July 1999.



Location	Virginia Beach and Northampton County, Virginia, USA
Client	Chesapeake Bay Bridge and Tunnel District
Contractor	PLC/Hardaway/BAM International joint venture
Contract period	May 1995 - July 1999
Contract sum	\$ 223 million

'A challenging project in ocean conditions that was enabled by application of the specialised marine equipment and skills of BAM International.'

Scope of work

The 12-mile low-level trestle forms the main component of the project. The typical 100-foot spans consist of three precast and prestressed modular deck units, which are connected by transverse post-tensioning. The spans are supported by a bent typically consisting of three 54-inches cylinder piles and a precast bent cap.

Another major part of the project was the high level North Channel Bridge, including a navigation span and large water line footings. Its superstructure consists of steel plate girders with a cast-in-place deck.

Road work, electric and mechanical installations were mainly performed by subcontractors to the joint venture and formed an essential portion of this large turnkey project.

Toll booths



Precast yard

Most of precast manufacturing for the bridge was performed in the joint venture's own precast yard, which was mobilised on a 27-acre piece of waterfront property in Virginia Beach.

North Channel Bridge

Construction of the North Channel Bridge included driving cylinder piles for the large footings. The footings were made by placing a precast slab including wall form as one unit on the piles. Following the placement of these 'bath tubs', the structural concrete was then placed to form the monolithic footing, which measured up to 30x70 feet. This concrete was placed by shuttling ready mixed concrete from shore.

The IB-909 jack-up barge placed most of the 'bath tubs', while the remainder of the substructure was built using crane barges. The steel erection involved the setting of pre-assembled girders and was again done mainly by the IB-909, in view of the exposure to weather and seas in this area. A cast-in-place deck was placed 'over-the-top', completely independent of water-based equipment.

Overview of the bridge serial production



Placing the steel girders



Slope protection



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