Ting Kau Bridge and Approach Viaduct

The Ting Kau Bridge and Approach Viaduct provide the crucial link between the Tai Lam Tunnel and Tsing Yi sections of Route 3 by bridging the 900m wide Rambler Channel between Ting Kau and northwest Tsing Yi Island. It connects the west and northwest New Territories to the urban areas of Kowloon and Hong Kong Island and also the Hong Kong International Airport at Chek Lap Kok via the Lantau Link.

The outstanding feature of the project is the Ting Kau bridge, a 1,177m long cable stayed bridge. From the top of its three single legged towers, four planes of stay cables in fan configurations radiate downwards to anchorages at 13.5m centres which support two interconnected decks each of which accommodates a three lane carriageway with a hard shoulder.

The towers at Ting Kau and Tsing Yi, 168m and 162m respectively above top of footing level, are founded on spread footings to bedrock whilst the central tower is founded on piles within a purposely designed ship impact protection island. All towers were constructed by slipforming.

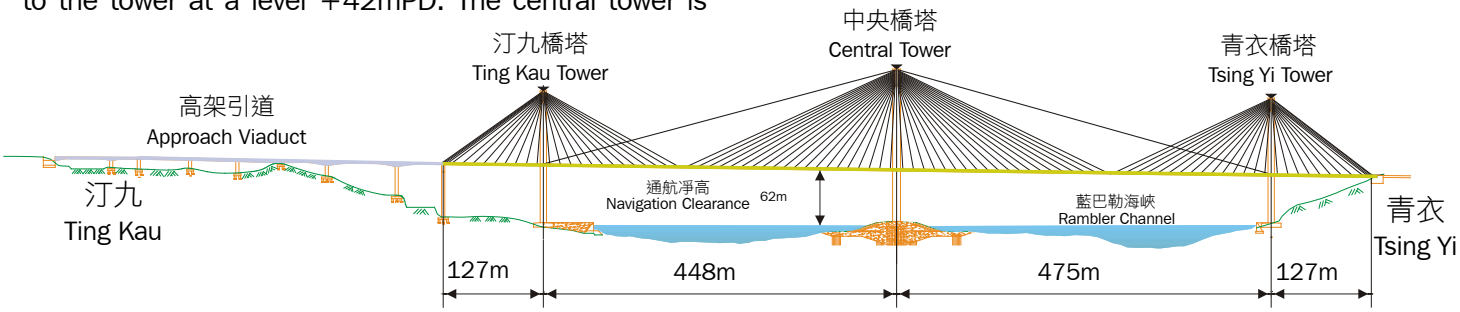
The deck was formed by 174 numbers of composite deck panels. Each typical panel was 13.5m long. The steel girders were fabricated in the yard in Shekou, transported by barge to site and lifted directly to the deck level where they were bolted to the previous panel. Precast concrete slabs were added with insitu concrete joints to form a steel / concrete composite deck.

A unique feature of the Ting Kau Bridge is the arrangement for the single legged towers which are stabilized transversely by stay cables passing from the tower head to cross struts below the deck and downwards to the tower at a level +42mPD. The central tower is

further stabilized with longitudinal stay cables connecting the tower head to the deck close to each of the smaller towers. These arrangements are necessary to provide the towers with sufficient stability to withstand the extreme typhoon wind loads. At 465m in length, these stay cables are the longest ever installed in the world and are provided with vibration dampers to limit the range of movement in adverse conditions. All stay cables consist of seven multiple galvanised wire strands wax, protected within a high density polyethylene(HDPE) sheath, all installed within a HDPE duct with helical beads to minimize the effects of wind/rain induced vibration.

Connected to this bridge is a dual 3-lane approach viaduct and two 2-lane ramps totalling 3.5km of roads half constructed on grade and half elevated up to 62m above ground with spans up to 115m in length. About 675,000m^3 of rock and soft material were excavated from existing slopes along side the Tuen Mun Road.

The HK$ 1.73 billion "Design and Build" Contract was awarded in late August 1994 and the project was opened to traffic in May 1998 after 44 months of intense design and construction activities.



Overall Length	1,177m
Main Spans	448m ; 475m
Navigation Clearance	62m
Height of Towers	
Ting Kau	168m
Central	195m
Tsing Yi	162m
Stay Cables	
Number of cables	384
Tower Cable Number	
Transverse	64
Longitudinal	8
Deck	
Weight of structural steel	9,200 tonnes
Weight of concrete panels	29,000 tonnes
Maximum Movements	
Vertical : at midspan	1,600mm
Lateral : at midspan	400mm
Longitudinal : at Tsing Yi	±390mm
Traffic Speed	100 km/hr (Design speed) (Present speed limit 80 km/hr)