

First published June 2007
Copyright © China Trend Building Press Limited
trend@building.com.hk



In order to construct the foundations, piers and portal frames for the viaduct, a 1.8 km-long temporary access bridge (TAB) supported by temporary steel pile and equipped with work platform in various locations, was erected to facilitate the carrying out of the required works. The photo shows the TAB near the shallow-water region with steel casing for the forming of a bore-pile in position

HK-Shenzhen Western Corridor

Photo Essay by Raymond Wong Wai-man



Viewing towards Ngau Hom Shek (鰲磡石) from one of the work station with the supporting temporary steel piles on the underside of the access roadway clearly seen. Since Deep Bay is environmentally sensitive, silt-screen was erected (photo centre) during the bore-pile forming process in order to avoid the pollution of the seawater by silt and mud



Close-up view of a work station where a portal frame situated. All the equipments can be seen in working position for the forming of a bore-pile cluster

Close up view of a sheet-pile cofferdam at its formation level. The pile heads were exposed ready for the forming of the pile cap for the portal pier



Viewing from the landside, the entire access roadway with most of the piers for the portal frames being completed. Part of the viaduct sections constructed with the help of launching gantries can be seen in various locations



The first section of the portal pier ascending from the cap ready for the placing of the formwork for the onward pier section



The erection of the first set of launching gantry as seen in October 2004. The first span of viaduct formed in advance by balanced-cantilever method, was used as the work station to support the installation of the gantry



Launching gantry as viewed from sea-level under its operating condition. Note the team of servicing support formed by barges and other work boats stationed around the gantry to assist in the viaduct installation



The use of simple gantry frame to construct the viaduct using balanced-cantilever method was adopted for section within the reach of the TAB. Precast segment weighting more than 50 tons each can be transported conveniently by lorry trailer using the temporary roadway. The arrangement has the benefit to save time for this can allow the carrying out of work at multi-locations, as well as to save cost using simpler and cheaper equipments



The gantry frame as viewed from the side. A set of strand jack was equipped at top of the gantry frame for the lifting of precast segment. Rollers and sliding tracks are provided in the gantry system for the concise positioning of the segment during installation



Another lifting frame simpler in design was also used in the construction of the viaduct near the TAB reachable region



Panoramic view on the deck level of the viaduct during the low tidal period near the landside at Ngau Hom Shek. The semi-marshland condition of the nearby environment can be seen on the right



The prefabricated back span deck section mounted onto 4 sets of strand jack ready for lifting to the deck level



The lower portion of main tower of the bridge with the first deck segment placed in position. The tower structure would continue upward working at the same time with the back span, which was prefabricated and lifted to the deck level in one section and field weld afterward



The construction of the cable-stay bridge and the back span as seen in July 2005. The 158 m tower was still under construction at the same time meeting with the progress of the installation of the main span. The bridge has a main span of 210 m and a back span of 99 m. There are also two 74.5 m spans that are proceeding and structurally continuous with the back span. The photo shows only the back span and the two continuous spans already lifted onto the deck level and supported by piers at the early stage pending for the installation and stressing of the stay cables



Side view of the back spans. The main span at the front of the bridge tower was still pending for the completion of the upper structure of the bridge tower where the anchor head for the stay-cable would be located



Lifting of a segment of the main span from barge



Placing the first segment onto the deck level of bridge tower. The coupling bars anchored in the tower structure and the shear studs on the sides of the segment would embed the deck segment rigidly and in one-piece at a later stage

View of the bridge tower with the stay-cable for supporting the deck of the main-span in place and temporary stressed. There are 13 pairs of stay cables arranged under a single-plane configuration. The cables are used to balance the large moments caused by the main span onto the inclined bridge tower and the back span





View on the deck of main span with a heavy-lift gantry positioned and anchored for the onward lifting of the next prefabricated deck segment



After serving for almost 15 months, the launching gantry was dismantled and removed upon the final completion of the viaduct as seen in September 2006



Overview of the viaduct construction at its peak period in late 2005. At that moment, there were more than 6 sets of launching machines in various size and capacity under operation, including the 175 m long launching gantry working mainly outside the temporary access bridge



The construction setting of the China counterpart as seen from the northern tip of bridge toward China side





Viaduct and bridge structure basically completed as seen in late 2006. The temporary access bridge on the underside of the viaduct would soon be dismantled



Close up on the segment installation detail under the practice on China side. Similar lifting frame was also employed at the same time with the in-situ installation with precast segment placed onto falsework (temporary platform) for final connecting onto pier heads (photo right)



Close up look at the cable-stay bridges constructed by Hong Kong and China with Shekou of Shenzhen forming the background in the photo. The north and south navigation channel are situated under the main span of both bridges

The Hong Kong Shenzhen Western Corridor with all its associated works completed as viewed from an upper ground in Ngau Hom Shek in May 2007





The entire 5.5 km long carriageway of Western Corridor as viewed from the marshy beach of Lau Fau Shan



The 3.4 km long carriageway of Western Corridor on Hong Kong marine boundary as viewed from an upper ground in Ngau Hom Shek