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# KT Drawbridge

## Bridge Infrastructure

Malaysia's first drawbridge project, which is located at the mouth of Kuala Terengganu River, connects the northern and southern divided developments. With an overall length of 632m, the 23m wide bascule bridge provides three lanes of traffic flow in each direction. Two heavy foundations provide support for the 5m high drawbridge towers and the 76m long bascule decks, allowing unobstructed naval traffic along the river.

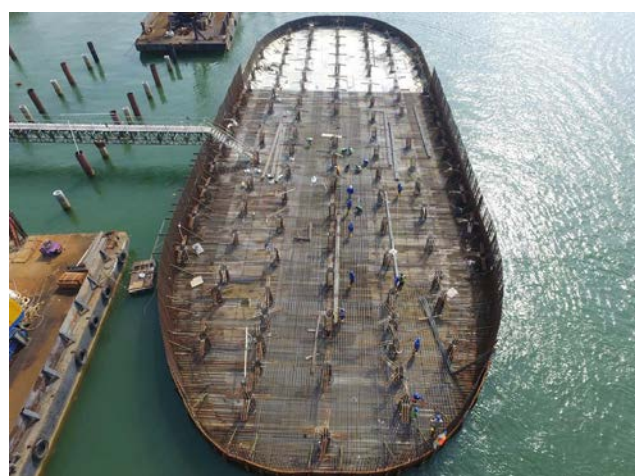
These heavy foundations which were subjected to daily tides of the South China Sea were constructed over Quaternary Alluvium formation which generally consists of marine deposits of the dominant sand and gravel with some clay and silt of intermediate plasticity. The STP'N value of subsoil is generally less than 15 for 22m depth below riverbed and hard residual formation stratum was reported at 21m to 26m below riverbed as revealed from the proposed boreholes. Durability of the bridge as a marine structure was a key requirement.

The alternative marine spun pile foundation had to be designed for several non-conventional extreme cases ranging from up-lift of the bascule deck under wind loads, accidental ship collision and earthquake impacts on the foundation, to adverse hydraulic forces generated during storm river flows.

Adding on to the list of challenges, in order to meet the strict demands of the drawbridge's operation system, the maximum allowable displacements under service conditions were less than 10mm and 20mm in both vertical and horizontal directions respectively.

Other than design considerations mentioned above, construction methodology and sequencing were also evaluated to ensure that the proposed method could meet design requirements at all times. Quality assurance and control measures during construction **work were also**

**of importance such as temperature** control and the provision of construction joints for large pour concreting of the gigantic pilecaps.



**Pilecap of bridge tower**



**Site progress at May 2018**