Control Survey for a 6.7 Km Immersed Tunnel in Chinese Lingding Ocean

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SUMMARY

The immersed tunnel which is composed of elements has drawn more attention nowadays because of new advancements and developments. The elements are prefabricated somewhere else and floated to the tunnel site to be sunk into the prepared trench. Each element must line up exactly for the watertight gaskets to seal properly. The HZM immersed tunnel, a key part of the Hong Kong-Zhuhai-Macao Bridge (HZMB) that crosses the Pearl River Estuary and links Hong Kong to the east, and Zhuhai and Macao to the west, is 6.7 km long, one of the longest immersed tunnel ever realized in the world. For the construction of such a long immersed tunnel, particular care should be taken in the perspective of geodetic control. This paper described the design and implemention of the geodetic basis and hierarchical surface control networks. And to decrease the influence of lateral refraction and to improve the configuration strength and increase the number of redundant observation compared with traverse, the design of underground surveying network named duo-linear joint chain and the results of gyro checks are presented. In the end HZM immersed tunnel surveying data is analysed and the performance of the control networks is demonstrated.