

Central – Wan Chai Bypass Tunnel Hong Kong - CHINA

Automatic structural & geotechnical instrumentations for mined tunnelling works underneath existing Cross Harbour Tunnel for Central – Wan Chai Bypass Tunnel (Causeway Bay Typhoon Shelter)

The Central – Wan Chai Bypass (CWB) commissioned by the Hong Kong SAR Government will be a strategic road along the north shore of Hong Kong Island targeted to alleviate the serious traffic congestion along the existing coastal roads. The construction of CWB commenced in December 2009 and is expected to be commissioned by 2017.

The CWB will be a 4.5km long trunk road consisting of a 3.7km tunnel section. The tunnel section will pass underneath two existing prominent structures, the existing HKCEC, and the Cross Harbour Tunnel (CHT).

The supposedly floating CHT portal is stabilised by tie down rock anchors. As such, the CHT structures will be very sensitive to the underneath mined tunnelling works. It will not be affordable if the CHT structures are damaged, thus paralysing one important road link.

The most critical automatic instrumentation is to devise an automatic deformation monitoring system (ADMS) and concrete surface-mounted strain gauges system on the CHT portal and its tunnel structures. The ADMS, based on our CYCLOPS architecture, and strain gauges system were devised to provide real time monitoring of the CHT structures to ensure that the engineer can respond quickly, and prevent costly damages and disruptive events.

Apart from the structural monitoring, an extensive geotechnical instrumentations programme was also defined and will be carried out phase by phase to cater for the construction of the project.



OWNER :	<ul style="list-style-type: none">Highways Department, HKSAR Government
MAIN CONTRACTOR:	<ul style="list-style-type: none">China State Construction Engineering (HK) Ltd.
DATE OF WORKS :	<ul style="list-style-type: none">Approx. 4 years starting from Dec 2010
WORK DONE:	<ul style="list-style-type: none">CYCLOPS (ADMS), and surface-mounted strain gauges and vibrograph systems to monitor Cross Harbour Tunnel portal and its tunnel structuresGeotechnical instrumentations involving vibrating wire piezometers, magnetic & rod extensometers, inclinometers, and settlement and tilting markersReal time data acquisition, visualization, reporting and alert message dispatching via internet on GEOSCOPE WEB