Case Study - Traffic Control and Surveillance System for Hong Kong - Shenzhen Western Corridor and Deep Bay Link

The Hong Kong–Shenzhen Western Corridor, Deep Bay Link (DBL) and the Yuen Long Highway road network form a strategic route from Hong Kong to mainland China across Deep Bay, avoiding the bottleneck of existing border crossings which are congested and cannot be further developed. This key route between China and Hong Kong is anticipated to carry upwards of 28,000 two-way vehicle crossings per day on opening, rising to 80,000 two-way vehicle crossings per day by 2016. By managing traffic this way, the Traffic Control and Surveillance System will reduce carbon emissions and improve safety on this strategic network.

This is the first Hong Kong strategic road network project and the requirements called for a system with extensive capability for expansion to meet longer-term additional requirements. The new crossing itself is a 5km, dual three-lane elevated carriageway incorporating a cable-stayed bridge across the central navigation channel.

The project is a joint venture between Serco Hong Kong, Serco Civil Government and KML Engineering. Serco Civil Government have supplied the control system together with associated testing, training and support. Serco Hong Kong will manage the contract on the ground, supply and install the CCTV, vehicle detection, traffic control devices and communications in association with KML Engineering.

The Traffic Control and Surveillance System includes 8 full-function, dual-language, Chinese–English signs. The control system and workstations are located at the Hong Kong Transport Department’s Traffic Control Central (TCC) at Immigration Tower in Wan Chai. The roadside equipment is controlled by the central system, either as part of a co-ordinated response to an incident or manually by the operator. An interface with the Shenzhen authorities ensures effective management of the entire corridor. The system automatically responds to bad weather conditions on the bridge (high wind speed and poor visibility) setting VMS signs, lane control and speed signals as part of a staged process to close the bridge if required.
The Traffic Control and Surveillance System is the third deployment of the Traffic Scotland System, originally developed by Serco for the Scottish Executive. The system was further developed and deployed as the CMCS (Central Management Computer System) for the Road Traffic Authority of New South Wales, Australia.

The Government of the Hong Kong Special Administrative Region and the Shenzhen Authorities awarded separate contracts for this project. The field equipment, on both the Hong Kong and Shenzhen supplied sections of the bridge, was integrated by Serco into the overall system.

The fully integrated system provides facilities for:

- CCTV surveillance system
- Dual Language variable message signs
- Prismatic variable message signs
- Environmental monitoring on the bridge (wind speed and visibility)
- Equipment control and monitoring on the mainland China side of the bridge
- Vehicle detection
- Incident detection
- Fully variable message signs
- Variable speed limit signs
- Communication system

System Overview

The Traffic Control and Surveillance System went into interim operation in May 2006 and into full operation in July 2007 when the cross boundary link opened to traffic.

Using technology to reduce congestion and carbon emissions, increase safety and journey quality

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