

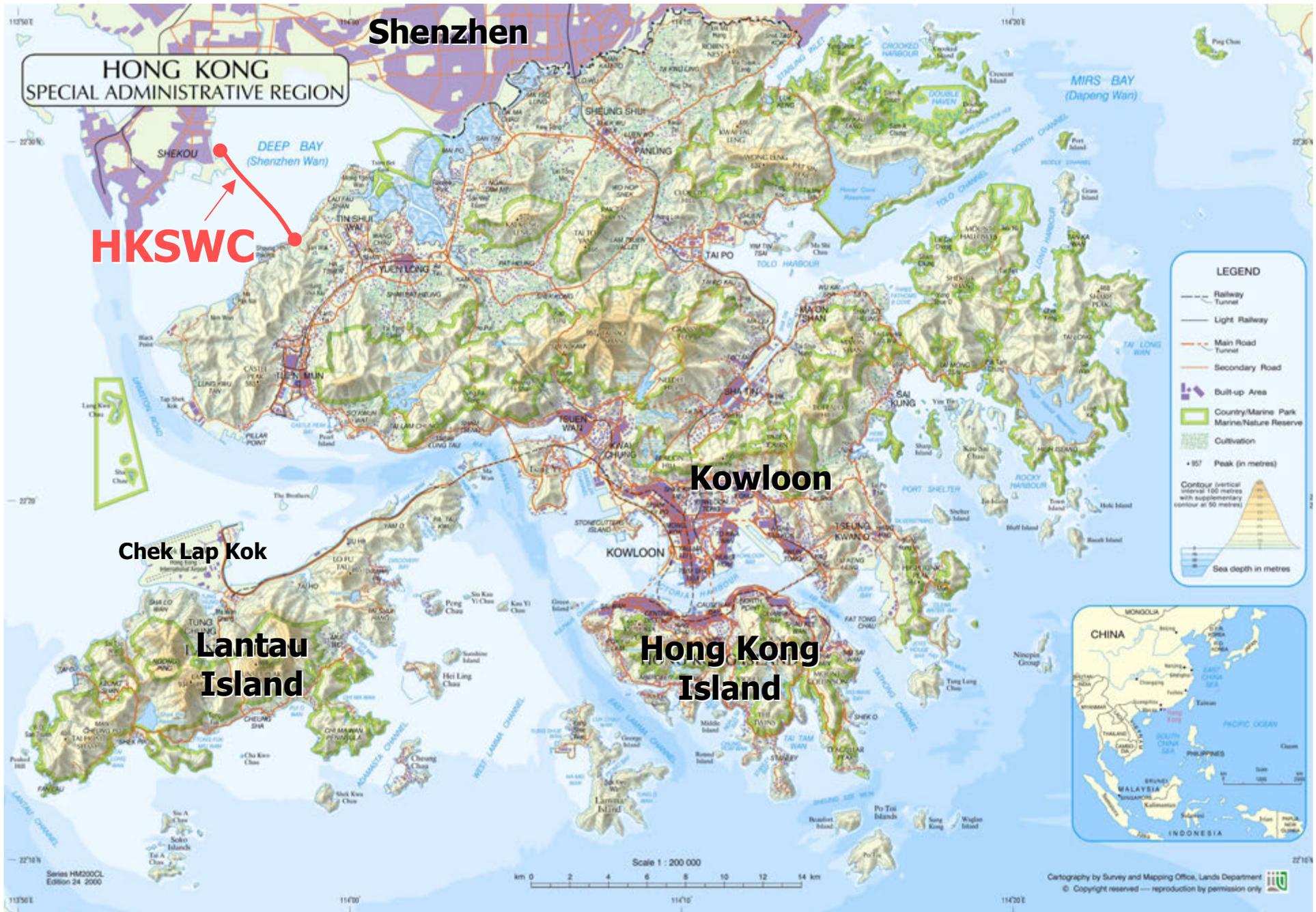
SCCT

Annual Concrete Seminar 2007

**High Performance Concrete in
Hong Kong-Shenzhen Western Corridor**

28th February 2007

ARUP



Location Plan of HKSWC

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Mainland China

Sha
Tau
Kok

Man
Kam
To

Lok
Ma
Chau

DEEP BAY

SHEKOU

Dongjiaotou

DEEP BAY LINK

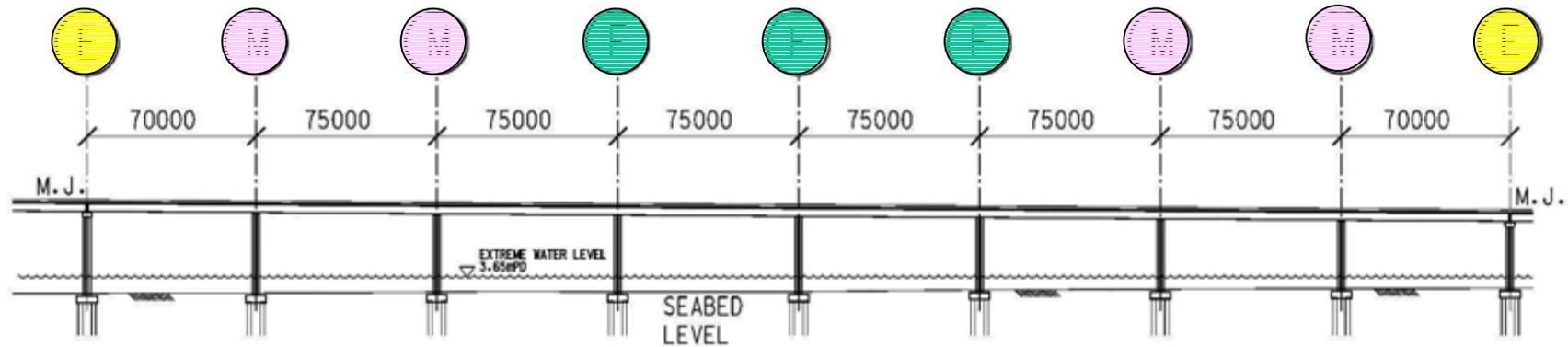
Hong Kong SAR

HKSAR Boundary

**HONG KONG-SHENZHEN
WESTERN CORRIDOR**
Total length: 5.5km
(3.5km within HK waters)

Overview

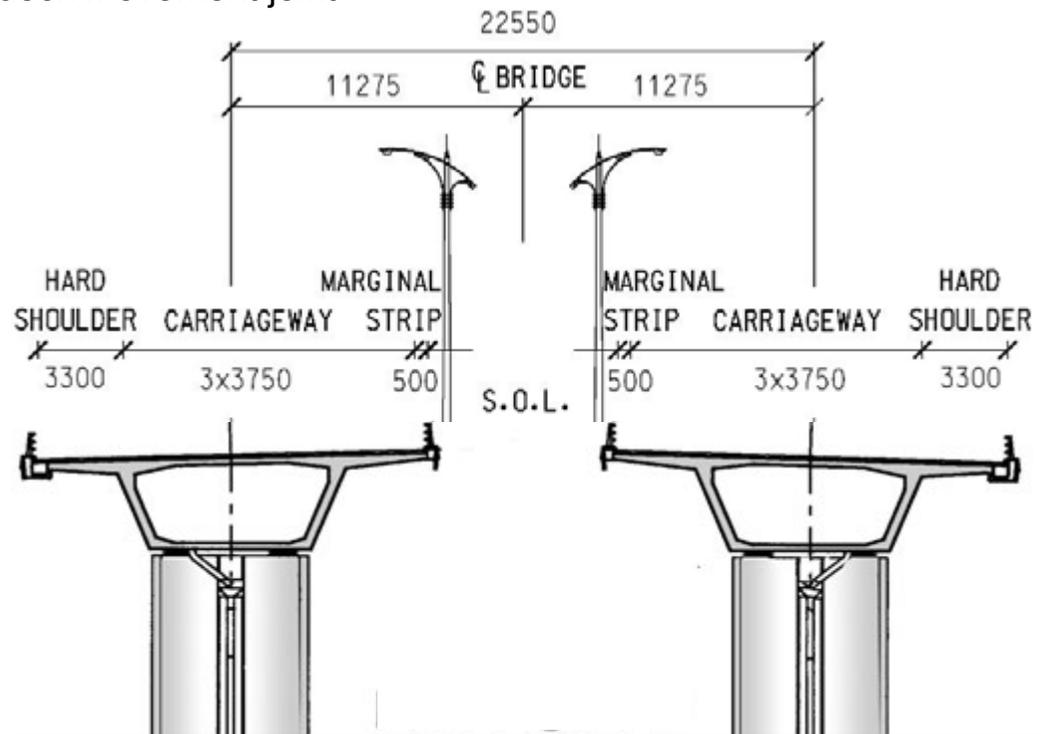
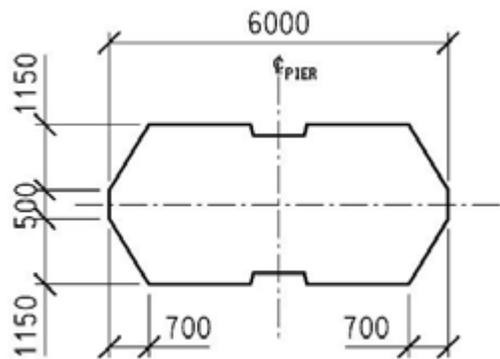
- **Fourth vehicular boundary crossing between HKSAR and the Mainland**
- **Total length : 5.5km (Divided by Boundary of HKSAR)**
- **HKSAR section : 3.5km, Shenzhen section : 2km**
- **Dual 3-lane elevated carriageway with hard shoulders**
- **Cable-Stayed Bridge at navigation channel**



LEGEND

-  pier with sliding bearings and deck movement joint
-  pier with sliding bearings
-  pier monolithic with deck

ELEVATION



Approach Viaduct: Elevation & Section

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Approach Viaduct

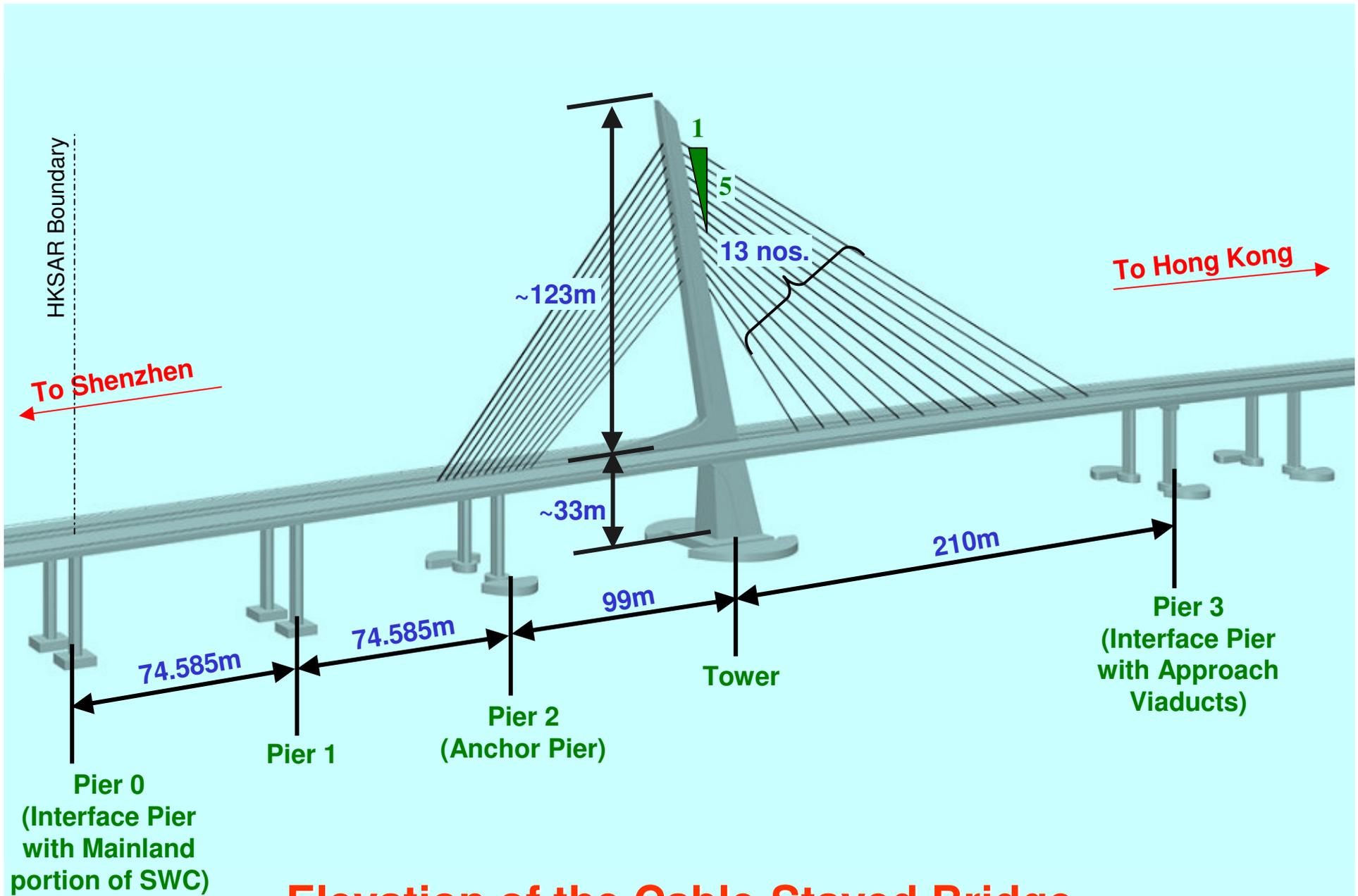
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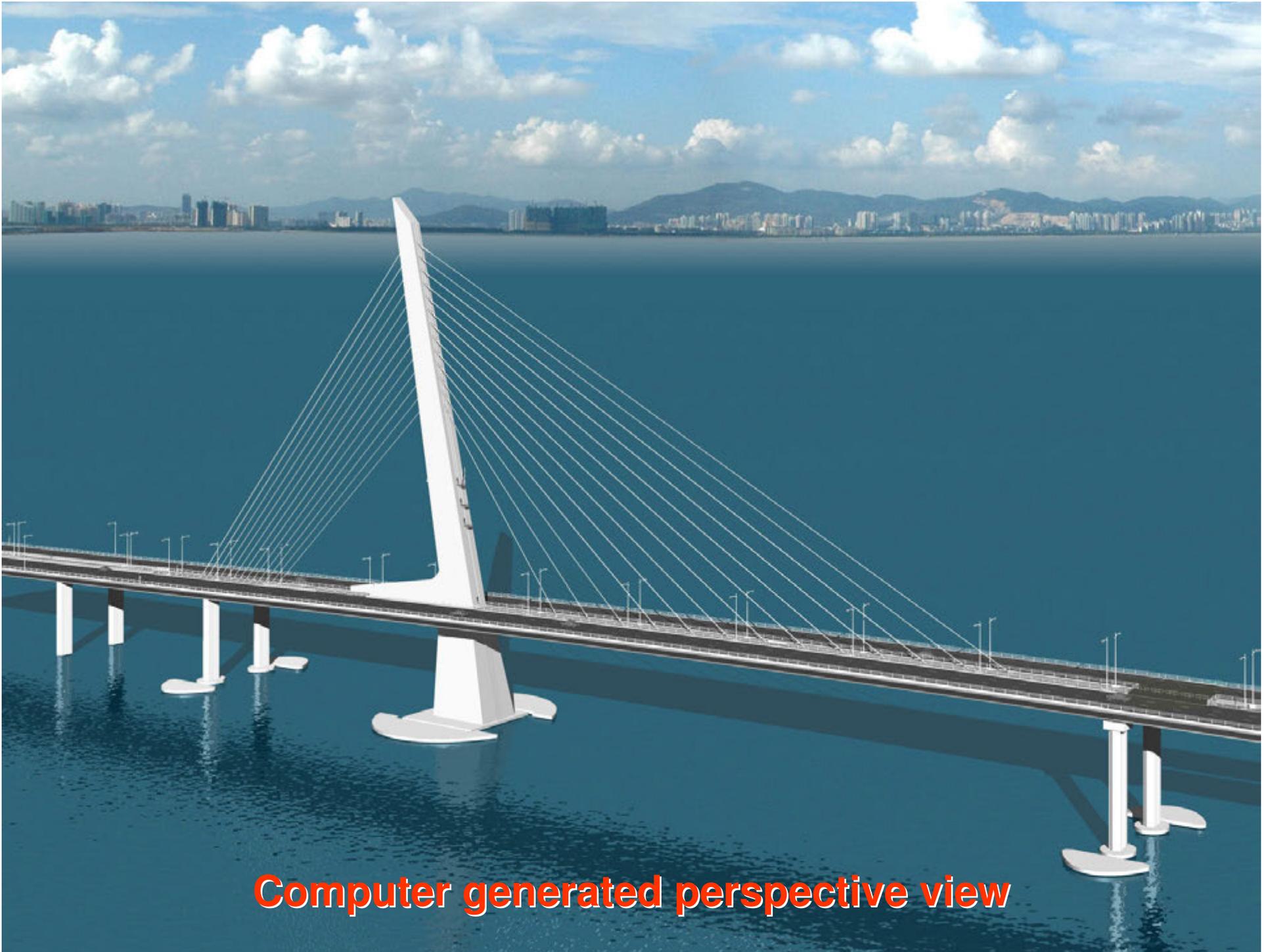
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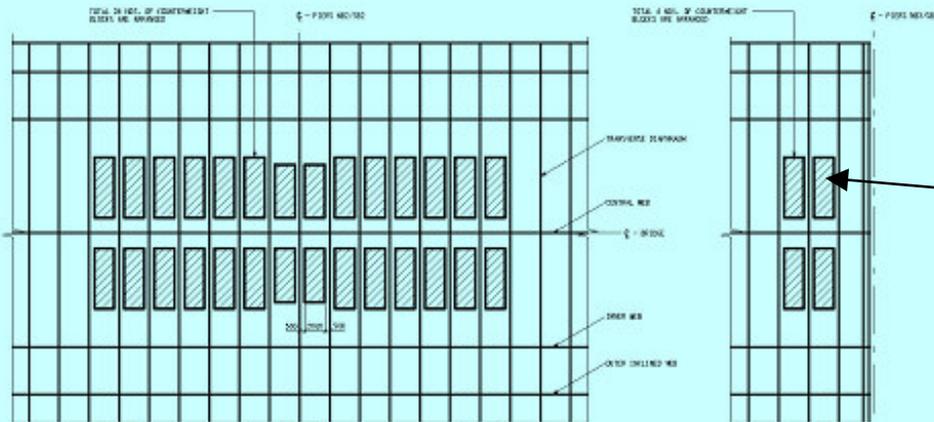
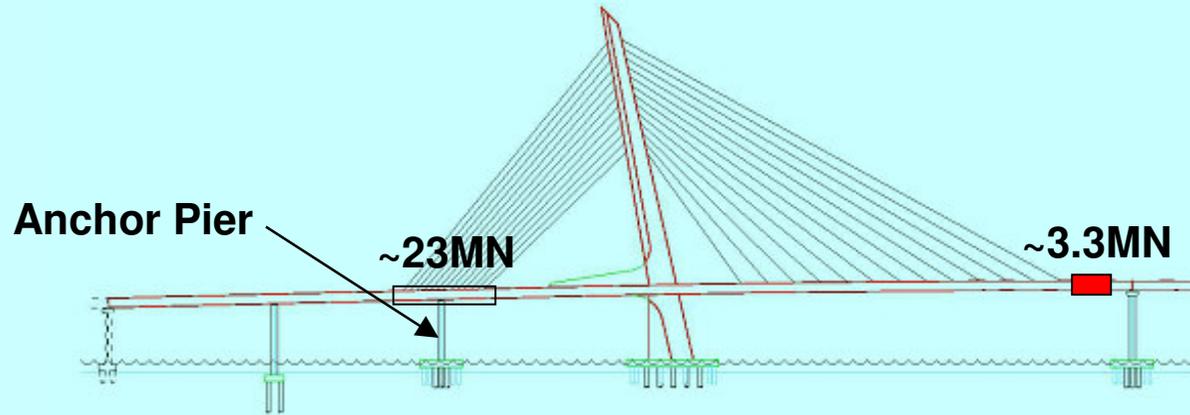


Elevation of the Cable-Stayed Bridge



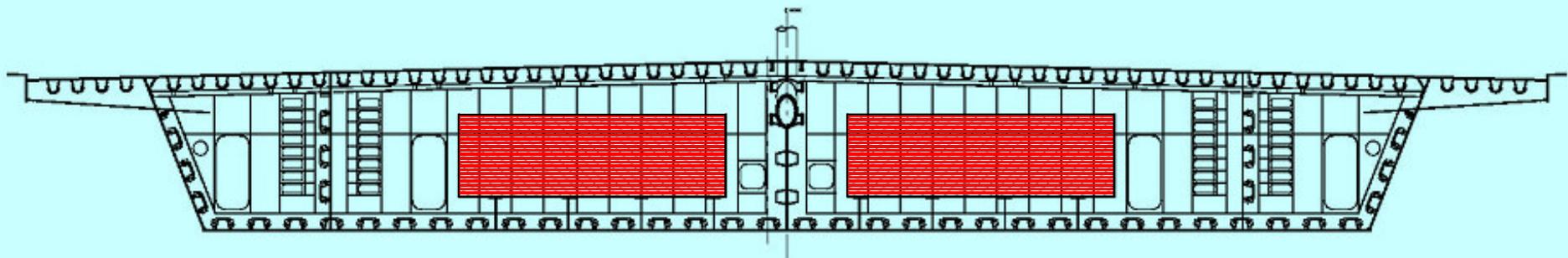
Computer generated perspective view

Counterweight



Counterweight Unit:

- Adopt heavy aggregate to achieve min. 31.5 kN/m^3





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Durability Assessment

- Concrete design documents reviewed included:
 - BS 5400
 - BS EN206
 - BS 8500
 - SDMHR
 - GEO Publication No. 1/96 ‘Pile design & construction’
 - BRE SD1 ‘Concrete in aggressive ground’
 - CS TR 40 ‘The use of GGBS and PFA in concrete’
 - CS TR 41 ‘Microsilica in concrete’

Durability Assessment Recommendations

- Concrete bored piles and pile caps:
 - C45
 - PFA 40%
 - Max. w/c ratio 0.38
 - Min. cover to rebars: 75mm for piles and pile caps in water, 50mm for pile caps fully submerged below seabed or ground

Durability Assessment Recommendations

- Concrete piers:
 - C50 (C60 for Cable-Stayed Bridge tower & piers)
 - PFA 35%
 - Microsilica 8%
 - Max. w/c ratio 0.35
 - Min. cover to rebars: 75mm for external faces (60mm for tower external faces which have painting), 40mm for internal faces

Durability Assessment Recommendations

- Concrete deck:
 - C50
 - PFA 35%
 - Microsilica 8%
 - Max. w/c ratio 0.35
 - Min. cover to rebars: 50mm for external faces, 40mm for internal faces

An aerial photograph of a long, multi-lane bridge spanning a wide body of water. The scene is captured during sunset or sunrise, with a warm, golden glow over the horizon and the water. The bridge has several support pillars and a few vehicles are visible on its surface. In the background, a city skyline is visible across the water, and some hills are in the distance. The foreground shows a dark, silhouetted area, possibly a hillside or a forest.

***Let's now go to the
construction part***

Hong Kong-Shenzhen Western Corridor

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