



Sharq Crossing, Doha (QA) Integral safety concept and tunnel ventilation



From top to bottom: West Bay Bridge, Cultural City Bridge, Al Sharq Bridge

Description

The Sharq Crossing will form a road link in the bay of Doha, Qatar. It shall connect the Hamad International Airport at Al Sharq in the southern part of Doha with the Central Business District at West Bay and the Cultural City in the northern part of Doha.

Conceived by the world renowned architect and engineer Santiago Calatrava on behalf of the State of Qatar's Public Works Authority ASHGHAL, the unique 21st century bridge-tunnel connection across the Doha Bay comprises three bridges, two immersed tunnels with a total length of approx. 6 km and three cut-and-cover tunnels.

The overall length of the road link is about 12 km.

Within the scope of the Sharq Crossing are also unique features, like an artificial island in the Doha Bay - the Marine Interchange - with pedestrian zones, an automated people mover system over the span of the bridge at West Bay – which will have the world's largest arch span – and a marina on the Marine Interchange.

Services

HBI Haerter Consulting Engineers provided the following services:

Development of the integral safety concept comprising of

- An identification of potential hazards (HAZID-study)
- The development of the operational concept incorporating the general operational schemes and modes as well as detailed emergency responses to operational scenarios
- The development of a safety philosophy
- The selection of appropriate safety measures for the tunnels and bridges, for pedestrian zones, automated people mover and the marina based on international codes and standards, the HAZID and the operational concept
- A validation of the safety concept for functional completeness

Design validation of the tunnel ventilation

- Design validation of a longitudinal ventilation system for three tunnels less than one kilometre, where two of the tunnels are tunnel networks with access and exit ramps
- Design validation of a ventilation system with longitudinal ventilation and air extraction for a 6 km tunnel network comprising of two tubes, access and exit ramps and an open air plenum for fresh air intake