



Temburong Bridge Brunei- Aesthetic Design to Principles of MIB

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Summary

The new 30km dual 2-lane highway (Temburong Bridge Project) across the Brunei Bay will connect the relatively isolated district of Temburong with the other three more developed districts of Brunei-Muara, Tutong and Belait. Improved connectivity will enhance the movement of labour, goods and services to and from Temburong, and will facilitate the development of eco-tourism and agriculture in the Temburong District.

The alignment crosses two navigation channels resulting in the need for two cable stayed bridges – the Brunei Channel Bridge (145m main span) and the Eastern Channel Bridge (260m main span). The towers of the cable-stay bridge form a natural gateway to and from Temburong.

The paper describes the architectural and engineering design of the towers to fulfil the goals of Brunei MIB architecture. MIB stands for Melayu Islam Berajas (Malay Islam Monarchy)

Keywords: cable stay bridges, sea-crossing, Islamic architecture

Abstract

The Brunei district of Temburong is separated from the other three Brunei districts by the Brunei Bay and Malaysian. The journey time between Temburong and the rest of Brunei can take several hours by road through Sarawak, or else, the journey can be made by boat across the Brunei Bay. This separation has limited the potential economic growth of Temburong compared to the more prosperous Brunei-Muara, Tutong and Belait districts. The Temburong Bridge Project is a proposed 30km long dual two-lane highway project to connect Temburong and Brunei-Muara, thus giving Temburong an economic boost from direct highway access to the country's airport, sea- ports and commercial areas

The whole crossing comprises of a 14.6km long marine viaduct, 12km long section of elevated structure over peat swamp forest, 3km of tunnel and viaducts on land at the western end.

There are two navigation channels along the marine section of the crossing – the 130m wide



Brunei Channel and the 235m wide Eastern Channel. To cross these channels cable stayed bridges will be constructed, with main spans of 145m and 260m respectively. These two cable stayed bridges are the subject of this paper and are here in referred to as the Brunei Channel Bridge (BCB) and the Eastern Channel Bridge (ECB).

Figure 1: Symbolic Representation of the 4 Districts



It was important that the tower shapes symbolised the physical connection between the four districts of Brunei. In classic Islamic fashion archivolt of four planes or ribs was introduced in the arch to visually create 4 lines or planes of arches to represent the four districts and a long vertical 'window' introduced on top to represent the unification of the districts. The 'window' had 4 panels to represent the four districts, Figure 1. Various widths of the window were studied to get a harmonious proportion.

The final tower shapes for the single tower Brunei Channel Bridge and the two towers Eastern Channel Bridge are shown in Figures 2 and 3. It was realised that symbolism of the unification of the four districts could be better represented by a single opening in the window. Koranic words were also added to the towers.



Figure 2: Brunei Channel Bridge



Figure 3: Eastern Channel Bridge

The side legs have a curved tapering shape in the front view from the deck, while they linearly reduce in section when viewed from the side elevation. The side faces of the tower, perpendicular to the bridge axis, are slightly curved in a way to reduce the perception of its mass and at the same time to be consistent with the curvilinear architectural language

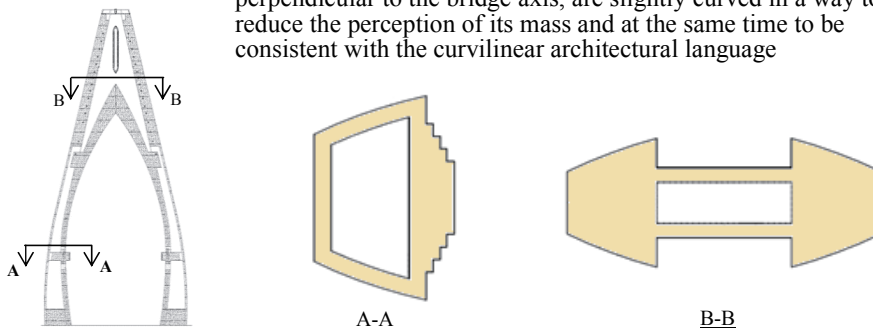


Figure 18: Tower Cross Sections: section along mid plane (left), side legs hollow section (centre), side legs solid section (right)