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New bridge will link Hong Kong-Zhuhai and Macao

By: Robert L. Wallack | May 05 2015 at 08:28 AM | Channel(s): [Breakbulk & Projects](http://www.ajot.com/news/channel/breakbulk-projects)  [Projects](http://www.ajot.com/news/channel/projects" \o "Projects)

The Hong Kong-Zhuhai-Macao Bridge (HZMB) project is an engineering and construction marvel that will bolster economic growth in the Pearl River Delta region when completed in 2016 and operational in 2017. The Bridge project is comprised of cross border artificial islands, link roads and tunnels by the cooperation and coordination of the three governments. All modes of transportation, logistics intermediaries and various businesses will benefit from the HZMB.

The bridge will be 34 miles long from the artificial island of the Hong Kong Boundary Crossing Facility (HKBCF) in the east end connecting with the artificial island of the west end Zhuhai-Macao Boundary Crossing Facilities (ZMBCF) and the Zhuhai Link Road before ending at Hongwan, Zhuhai. The total investment is about $16.886 billion (RMB 105 billion) with capital funding for the bridge project from the governments. The cost of the main bridge project alone is $6.1 billion. The Boundary Crossing Facilities of the three regions and the link roads are built independently by each jurisdiction. Construction began December 15, 2009.

Mr. Wei Dongqing is the Executive Director of the Hong Kong-Zhuhai-Macao Bridge Authority. He spoke in glowing terms of the “one country and Three Governments” management of the construction of the HZMB. This includes a HZMB Taskforce led by the National Development and Reform Commission, the Joint Works Committee of the Three Governments and the HZMB Authority, or legal agent established by the three governments, and responsible for the construction and operation of the Main Bridge Project. In addition, a HZMB Technical Experts Group by the Ministry of Transport, gives technical advice for critical construction methods and engineering issues. “We are striving to build a landmark and world class service,” he told worldwide visitors to the HZMB Authority offices in Zhuhai in November 2014.

The construction employs a number of new technologies, equipment and methods to turn water into land for the island and tunnel sections. As such, flexible segmental pre casted concrete elements are used for the immersed tunnel. A standard element is 590.5 feet long and weighs 80,000 tons and uses over 27,000 cubic meters of concrete. It is the first time that immersed tunnel elements are manufactured by a factory process in China for shorter construction period and continuous pre casting. The largest barges in the world carry the elements for eight tugs to position them into assembly of the tunnel. The tunnel sections are at both ends. One tunnel is almost a mile long at the southern perimeter of the Hong Kong International Airport (HKIA) connecting with the Hong Kong Boundary Crossing Facility, then to the Link Road leading to the Main Bridge. The Ganbei-Nanwan tunnel section is 3.8 miles by the Zhuhai Link Road connecting to the Zhuhai Border Crossing Facility.

The reclamation works are constructing artificial islands from open waters northeast of HKIA and south of Gongbei Bay and at the West Lingdingyang. The Hong Kong Boundary Crossing Facility (HKBCF) will be on about 321 acres to become a multi-modal transportation hub in the region. The HKBCF will be full service cargo and passenger clearing and vehicle inspection facilities and house departments of Immigration and Customs. Similarly, the Zhuhai-Macao Boundary Crossing Facilities (ZMBCF) will be situated on 516 acres for three administrative districts: Zhuhai Border Crossing Facility (265 acres); Macao Border Crossing Facility (176 acres) and the Main Bridge Project (73.8 acres).

The Bridge sections are manufactured and assembled in factories, then transported to the construction sites for installation. Floating cranes are used in maneuvering the 400,000 tons of bridge steel super structures. The length of the bridge sections totals 18.5 miles. In addition, the engineers contend with flood control, hydro dynamics and typhoon conditions. To limit obstruction to the water flow in the Pearl River estuary, nearly 200 pile caps are embedded within the seabed. The Main Bridge Project is designed for a working life of 120 years and the benefits will flow to transportation providers since travel time will be only 40 minutes from Zhuhai to Hong Kong across the new bridge

**Hong Kong & Zhuhai**

Hong Kong and Macao have a long history with an international reputation and since 1980 Zhuhai is rising in prominence by a number of central government policies and investments. Zhuhai is on the west bank of the Pearl River estuary with a population of 1.59 million (2013) and because of transportation constraints was never fully developed. “Zhuhai has more land to develop and can now connect to the three cities,” said Mr. Wei. The southwest of China has importance for distribution and logistics centers for all of Southeast Asia. An international metropolitan region will be created by the HZMB. In fact, Zhuhai was named China’s most livable city by the China Academy of Social Sciences in 2013 and the per capital gross domestic product of $17,000 is higher than the Pearl River Delta region of $13, 454 in 2012.

International trade and logistics are anchored in the region by the Zhuhai Macao Cross Border Industrial Zone and the Zhuhai Free Trade Zone. Preferential policies are for Customs supervised bonded district, manufacturing and processing for export and a bonded commodity exhibition center covering an area of 18,000 square meters. The Port of Zhuhai is composed of seven main port areas and is key feature of the west bank as are the international airport, Beijing-Zhuhai Expressway and rail connections. Plans are in the works for a Zhuhai-Hong Kong-Macao logistics park integrating all transport and logistics functions in the Hongwan port with the Bridge and the Zhuhai Free Trade Zone.

In addition, the State Council of the People’s Republic of China (PRC) unveiled the Hengqin New Area, situated just south of the Zhuhai Free Trade Zone on December 16, 2009. On July 14, 2011, the State Council officially approved Hengqin Island preferential policies that differ to those from the special economic zones in the PRC. There are special Customs clearance policy, tax policy, industrial policy and an innovative financial policy. Mr. Wei explained that the Hengqin and Zhuhai bonded areas have electronic clearance as in Hong Kong, warehouse and cold storage, an e-commerce platform and generated $1 billion (RMB 6 billion) with the Customs clearance center.

By 2011, over 200 enterprises established operations of which 150 are foreign funded companies for $2 billion invested. These industries include precision processing, electronic component manufacturing, and aircraft engine maintenance. For example, MTU Maintenance Zhuhai is a 50-50 joint venture between Germany’s engine manufacturer MTU Aero Engine and China Southern Air Holding Company.

A tour of the facility in the Zhuhai Free Trade Zone in November 2014 showed the engine repair operations accommodating engines of up to 150,000 pounds of thrust. The customers are mainly from China and 30 percent are from airlines from Asia, Europe, the Americas, Africa and the Middle East.