

Bangladesh : Jamuna Rail Bridge Project: Eastern Part of Civil Works : Package – WD1

[Obayashi Corporation, TOA Corporation, JFE Engineering Corporation]

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In the People's Republic of Bangladesh (hereinafter referred to as Bangladesh), container transportation by rail has increased rapidly in line with economic growth of Bangladesh and the neighboring countries, and further efficiency improvements of the transportation are expected. Conversely, while Bangladesh possesses a total railway network spanning 2,877 km, the majority of its facilities and equipment were constructed during the British colonial era (prior to 1947) and are now in the condition of the deterioration. Consequently, the advantages of railway transportation, including regularity, punctuality, large-scale capacity, safety, and energy efficiency, are not being fully shown. This necessitates urgent prioritization of the construction of new lines or the maintenance and renewal of existing ones. The Jamuna River, which flows north-south through the central part of Bangladesh, currently has the Jamuna Multipurpose Bridge, a combined railway and road bridge. However, the railway section is constituted by a single-track configuration and is implemented with the speed restrictions that have been identified as the main factors in the occurrence of transportation delays, resulting to the state of a logistics bottleneck. The objective of this project is to construct a new railway bridge, the Jamuna Railway Bridge, which will be located 300 meters upstream from the existing Jamuna Multipurpose Bridge. The bridge is exclusively for railways and comprises three lines, including both broad-gauge and narrow-gauge tracks. This will reduce the crossing time, which currently takes 20 minutes when using the existing bridge, to a minimum of 3 minutes. This will contribute to “meeting the railway transport demand”, “improving safety”, and “enhancing the efficiency of transport networks within Bangladesh and with neighboring countries”. The project was funded by a grant from JICA and constitutes part of the eastern section (6.8 km) of the two construction parts (east and west) that were contracted separately.

The commencement of this project coincided with the global spread of Covid-19 pandemic. However, through the implementation of comprehensive prevention measures and the operation of the effective remote communication with local staff, the impact of Covid-19 was mitigated, thereby facilitating a successful initiation of the project. Furthermore, the utilization of wearable cameras for materials manufactured in third countries was initiated, accompanied by rigorous remote quality control measures, ensured the delivery of products that met the specifications.

Furthermore, the project incorporated the advanced technologies in its design, including the ultra-long steel pipe sheet pile foundations and the direct rail fastener which is characterized by ease of maintenance, yet their utilization in Japan has been limited in recent years. For the ultra-long steel pipe sheet pile foundations, in order to guarantee vertical accuracy and ensure that the joints are correctly aligned during the installation of the ultra-long steel pipe sheet piles, the reinforcement bands were attached to the inner surface of the steel pipe sheet piles heads. In addition, the modification of the number of joints from the originally designed three to four resulted in the successful completion of the challenging work within the scheduled timeline. For the track construction, Japanese engineers with the extensive experience provided comprehensive guidance and support to the local subcontractors, leading to the establishment of advanced infrastructure systems and the transfer of technological expertise. Conversely, with the exception of essential skilled personnel, the project was primarily executed by local Bangladeshi

personnel. For example, in the production of steel superstructure materials, which was traditionally conducted at the company's own factories or Southeast Asian factories with experience in ODA projects. However, for the first time, a company in Bangladesh was selected that had no experience in manufacturing permanent components and which was actively utilizing local resources.

Furthermore, a significant design change was implemented during the course of the project, involving the augmentation of the railway line from four tracks to six tracks. This changing gave rise to concerns regarding delays in the construction schedule. However, through the incorporation of expertise and experience in civil engineering construction and track construction, coupled with the implementation of stringent schedule management under rigorous safety and quality control measures, the project was successfully completed within the contract period, with no occurrence of major accidents.

Towards the end of the contract period, the civil unrest broke out, precipitating a shift in governmental leadership. In the midst of the chaos in Bangladesh, a close collaborative effort was initiated between the project, the Japanese Embassy in Bangladesh, JICA, the Employer, and the police to formulate and implement appropriate action plans. As a result, the project was completed on schedule without any accidents or disasters.

Due to the above outstanding achievements and future developments, this case deserves an award in the field of international contributions.



Completed Railway Bridge



Completed Station and Platform