

Long Span Road Bridges Of Bangladesh: Design Concept Problem Faced And Lesson Learnt

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Abu Saleh Md. Nuruzzaman was born in 1962. He received his Bachelor and Masters degree from the Bangladesh University of Engineering and Technology- BUET. Later on he also received another Master degree in Bridge Engineering from the University of Surrey, UK. His areas of specializations are bridge design and construction.

1. Summary

Bangladesh is situated on the biggest delta of Ganges and Bhramaputra river systems. Many rivers, distributaries and tributaries pass over this country. Due to these river systems, development of road network is very much difficult. During the last five decades 22,000 kilometers paved road network along with 18,000 bridges and culverts were built. Some of the large bridges are constructed over the major rivers with a length, close to one kilometer each. These major river systems require wider clear span for navigational purpose.

Bridge super structure design concept, problem faced and lesson learned are the integrated part of this study. Most of these bridges are made of concrete, and a very few are made of bolted steel truss. Due to the improvement of analyzing capacity and construction techniques, bridge designing concept has been changed over the last five decades, radically. It is assumed that this paper would be helpful in designing new bridges in Bangladesh with indigenous context.

2. Problem Faced and Lesson Learnt from Long Span Bridges of Bangladesh before the Independence in 1971

All the bridge foundations are brick masonry well or RCC well. Usually well sinking is a difficult job; proper and careful attention should be given during its construction. RCC well are light and it faces more problems during sinking in moderate to stiff soil at greater depth. It was not possible to produce high strength concrete at that time, so the concrete sections were used to chose larger in size.

3. Problem Faced and Lesson Learnt from Long Span Bridges of Bangladesh after the Independence in 1971 to 1998

During this period, remarkable changes take place in foundation design and construction. Large diameter cast in situ bored pile foundation replaced well foundation. Introduction of pile foundation reduces bridge construction time. Defect less cast in situ bored pile construction was the main challenge. Ultrasonic pile testing device and placing of steel pipe in the cast in situ pile helps to overcome this challenge.

Problem Faced and Lesson Learnt from Long Span Bridges of Bangladesh after the Construction of Bangabandhu Bridge

High strength concrete is required to produce for long span bridge and it is found difficult to produce high strength concrete from locally available coarse aggregate. To overcome this problem very selective local sources were used for coarse aggregate. At the beginning proper skilled manpower and engineer were not available and after completion of these long span bridges a good number of trained skilled worker & engineer is produced.

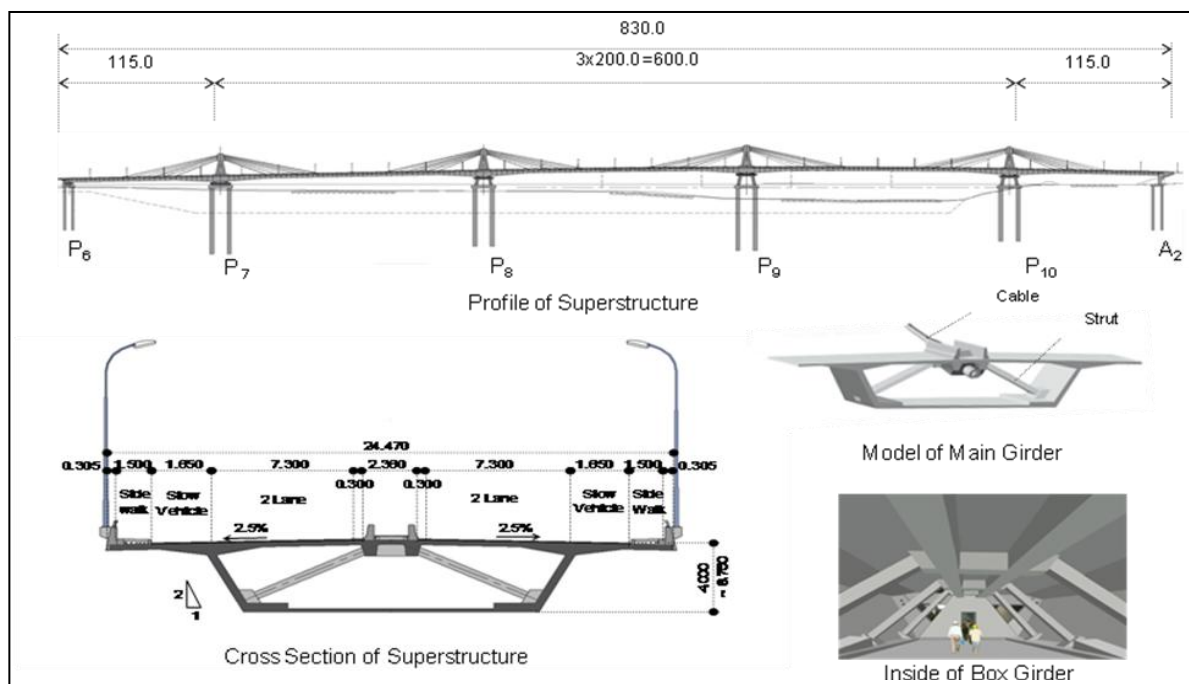


Figure 2: Long and Cross Section of Third Karnaphuli Bridge

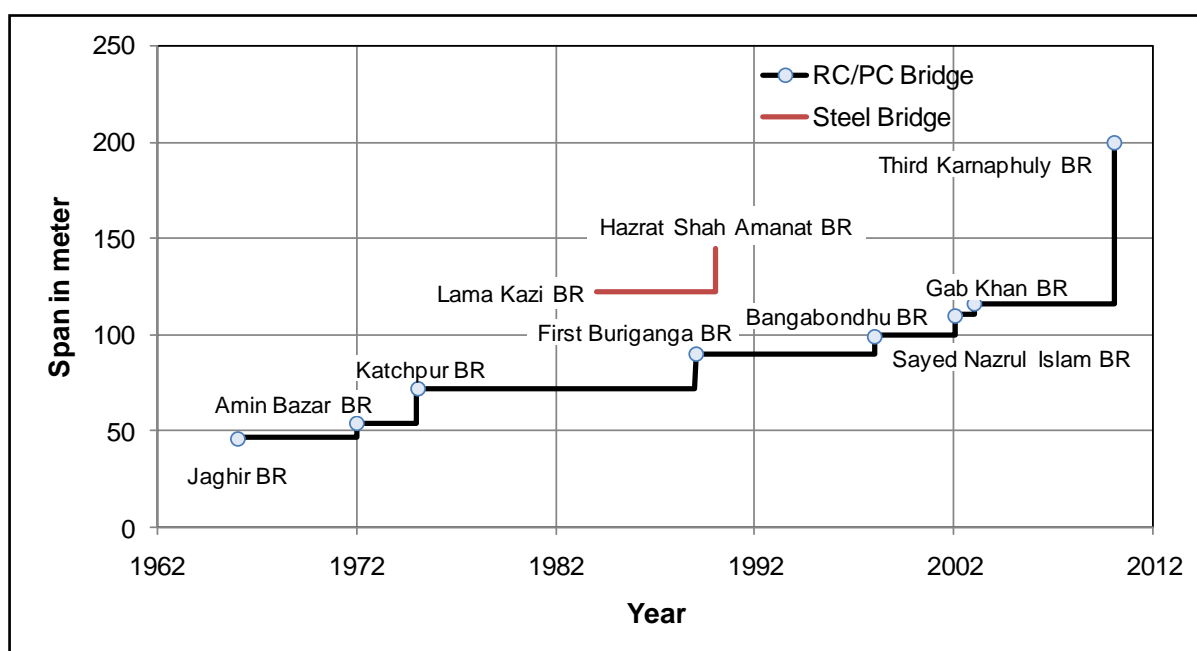


Figure 3: Progress of Center Span of Long Span Bridges of Bangladesh

4. The Achievement of Long Span Bridge Construction of Bangladesh

For the last 50 years a quite good number of long span bridges are built over the wide rivers of Bangladesh through RHD. And RHD always tried to increase the span and this is shown in Figure 3. For building of longest bridge in Bangladesh RHD may give the leadership in future.

5. Conclusion

Design techniques and concepts are improving with the improvement of construction technology and excellence in computer software. With the higher span wide river gaps can be linked with less obstruction to river flow. Bangladesh and RHD are always tried to increase the bridge span by acquiring state of the art technology in bridge and construction.