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DEVELOPMENT OF PRE-STRESSED CONCRETE BRIDGES FOR RAILWAYS

by

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Master of Engineering in Structural Engineering Design



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Abstract

The pre-stressed bridge developments in most of the countries focus to the Road bridges. The steel was basically used to construct the railway Bridges in the world wide and also in Sri Lanka. Basic reasons in construction steel railway bridges in European countries are, availability of steel, manufacturing facilities and quick construction. But from Sri Lankan point of view, we have to import the steel and the technology to fabricate. Alternatively, it should be pre-fabricated structures which may incur higher cost. Another aspect is that most of the railway bridges in Sri-Lanka are located close to the coastal areas and considerable effort and action should be taken to prevent the corrosion and other deterioration of steel due to severe exposure condition. According to the Sri-Lanka Railways, a considerable amount of money needs to be allocated to construction of railway bridges and their maintenance. This research present a feasibility study to construct the pre-stressed railway bridge so that local expertise could be used to construct them with locally available material with long life span and less maintenance.



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The special attention should be given to the construction of railway bridge using pre-stress beam rather than using steel girders since to railway diversion is little bit difficult than highways. There are several places where the pre-stress bridges can be constructed in railways very easily.

a) The new railway tracks. (Tracks Under construction)

In the case of new railway tracks, the pre-stress beam bridge can be constructed easily. The Matara - Kataragam railway extension and Panadura - Ingiriya new railway lines are the examples of this type of bridges

b) Duplication of railway tracks.

In the case of duplication of tracks, the one track can be allowed to be used by the trains while the bridges on other track can be constructed or repaired. The examples of this type of railways are Colombo – Kalutara Duplication and proposed Kandy – Peradeniya duplication.

Considering all above aspects, there is scope to develop the pre-stressed concrete bridges for railways.

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