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Construction management of prefabricated bridges

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ABSTRACT

In the modern era of global economic and technological development, international trade and free movement of goods and people, transportation systems play an essential role, since transportation is a key driver of the development of human society. Infrastructure is a key driver of transportation, since the geographical restrictions are overcomed and the movement is made possible through infrastructure. The bridges are an important part of transportation infrastructure, a necessity for the infrastructure continuity of a transportation system and a temporal rate of the growth and the cultural level of a society as well. Furthermore, bridges are perhaps the most sensitive parts of transportation infrastructure, to a large number of factors such as traffic, weather conditions and accidental events.

This thesis deals with the management of bridges with precast prestressed beams during their lifetime, from design and construction to their replacement. The structural system of bridges with precast prestressed beams is one of the most representative structural systems of bridges that are constructed in Greece and abroad as well. This thesis presents general data about bridges, the construction of bridges with the method of precast beams, methods of preliminary cost estimates of concrete road bridges, methods of cost optimization of bridges with precast beams, details about construction cost and material quantities of concrete road bridges, the new trends in the construction of bridges, the operations that includes the management of road bridges after the completion of their construction and methods of maintenance optimization of concrete bridges.

KEYWORDS

Concrete road bridges, Method of precast beams, Construction management, Preliminary cost estimates, Cost optimization, Construction cost, Material quantities, New trends in the construction, Life cycle costs, Bridge management systems, Maintenance optimization