



Key Technology for Planning and Construction of Automated Production Lines in Large Bridge Factories

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Abstract

Prefabricated bridges are one of the key means to realize industrialized bridge construction. Traditionally, bridge components are produced in temporary prefabricated girder yards serving a single specific project, which produce prefabricated components with limited use and low utilization rate. Therefore, the construction of permanent prefabricated production bases has gradually become the trend of the highway bridge industry. This paper discusses the planning method and construction technology of permanent precast production plants for different concrete members of highway bridges. The construction method of bridge precast plants in terms of production line selection, equipment selection and application is introduced. Eventually, the key technologies for the automated production lines and construction of large bridge precast factories are systematically established to provide reference for the construction of highway bridge precast factories.

Keywords: bridge precast factories; automated production lines; equipment selection; factory construction.

1 Introduction

Industrial construction means replacing the decentralized, low-level, and inefficient methods of traditional construction through modern manufacturing, transportation, installation and information management techniques. The industrial construction of concrete bridges can accelerate site construction. It greatly reduces the environmental impact and traffic disruption at the bridge site. Also, industrial construction easily ensures project quality and reduce the life-cycle costs of bridges. Its technical and economic advantages are increasingly recognized

by the bridge industry in various countries^[1-2]. Compared with traditional bridge cast-in-place construction, it has the following obvious advantages: (1) It is suitable for many types of bridges, which is less limited by span; (2) The proper application of prefabricated assembly technology can reduce costs compared to traditional construction methods; (3) It avoids impact on the environment and traffic; (4) The quality is guaranteed. The loading age and curing time are long, which can reduce the prestress loss of the girders; (5) Simple construction and short construction period. On the other hand, many studies^[3-6] have proved that prefabricated bridge structures have certain seismic performance.