



## Application status and developing foreground of CRTS III ballastless track

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### Abstract

The technology of high-speed railway is one of the central driving forces in national economic growth. To increase the speed of high-speed trains and ensure their safety, the research and development of brand-new ballastless track techniques are of vital significance. This article simply talked about China's domestically designed CRTS III ballastless track. This technique is famous for some technical characteristics: it replaced CA mortar with self-compacting concrete as adjustment layer, which not only simplified the structure but also reduced the cost; 2-D scalable steel mould was adopted to materialize the track slab with high precision shoulder post-tensioned prestressed spatial curved space, which simplified the construction craft a lot; it adopted flexible longitudinal coupled structure of the subgrade as bridge-tunnel unit structure, which weakened the influence of temperature stress; unit-separated structure and flexible-separated structure were widely used, which made the maintainability of all unit structure. This article was based on the analysis of these technical characteristics and discussed the application status and developing foreground of this technique in some way.

**Keywords:** CRTS III; ballastless track; self-compacting concrete; 2-D scalable steel mould; flexible longitudinal coupled structure; unit-separated structure; flexible-separated structure

### 1 Introduction

In the 21st century, the technology of high-speed railway was consisted of transportation systems around the world as a significant sector, which could be seen as the aorta for its role in one country's resource distribution and economic development. Therefore, it goes without saying that the invention of a new technology of ballastless track played a vital part in speeding up of high-speed trains and assuring their safety. Catering for this need, the China Railway 23rd Bureau Group Co., LTD developed one technology utilized in high-speed track, the CRTS III ballastless track[1], independently in 2010. This totally new

system can be described as a quantum leap under the national strategy of researching and developing intellectual property rights independently and promoting high-speed trains' use in foreign countries, which not only exerts an extensive and far-reaching influence on the creation and independence on Chinese high-speed trains, but also provides a crucial reference for international peers when designing.

From then on, considerable relevant research on CRTS III ballastless track were made by Chinese scholars. In 2011, Wang[2] carried out a research on its mechanical characteristics and optimized its structure and further perfected the design theory and method. What deserves to be mentioned is