230km/h Class

Precast Concrete Track

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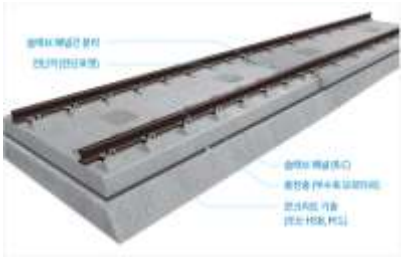
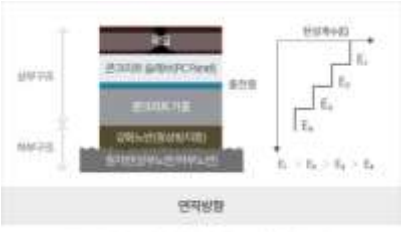


[PST-B type precast concrete track]

[Formation of a horizontal structure by shear key]



Background of Technology Development

- The conventional concrete slab track (on-site placing) is structurally stable compared to the existing ballast track and is sufficiently competitive due to a decrease in maintenance, but it entails problems such as delayed construction speed and poor concrete quality due to concrete curing period.
- It is necessary to develop an track construction method that can effectively reduce maintenance costs and significantly improve durability, workability, and economic feasibility.

Technology Overview

- This is a technology for a track structure in which a shear anchor is installed on a concrete base layer, a precast concrete slab panel is placed on the concrete base layer, a filler (non-shrinkable mortar) is injected through a shear pocket at the slab to form a shear key with the shear anchor, and at the same time, the lower part of the slab is filled with a filler to form a support structure.
- Fast construction and high-quality concrete roadbed can be secured, and maintenance such as replacement of slab panels is easy

Technology Realization

- Precast concrete slab track
- Formation of a vertical support structure by injection of a filler
- Securing stability in the horizontal direction by forming a shear key.

Characteristics of the Technology Developed

The limitation of existing technologies

- Deformation of concrete slab track caused by train operation, temperature, and dry shrinkage
- Delayed construction period due to installation of tracks by placing concrete at the railroad construction site.

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Characteristics of the technology developed

- On-site work is minimized through pre-production in factory and panel quality is secured through automated curing control system.
- Shortening the construction period of railroad tracks through the production of pre-cast concrete slabs
- Minimizing deformation by dispersing the load on the concrete slab
- Minimizing deformation due to temperature and dry shrinkage.

Technology Readiness Level

TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Basic principles and experiment	Technology concept formulated	Experimental proof of concept	Component and/or system validation in lab	Performance test of trial manufactured goods	Performance test of pilot-level prototype	Reliability evaluation of pilot-level prototype	Certification and standardization of prototype	Commercialization

※ TRL 9 : Commercialization
Technology development is completed

Application Fields of Technology

	Design condition	Application section	Panel size
PST-B type	230km/h(170kN), 230km/h(220kN)	Tunnel section	4,950(L) × 2,380(W) × 180(T)

Main Drawings and Photos

[Construction site of precast concrete track]

Current State of Intellectual Property Rights

No.	Patent Name	Date of Application	Patent No.
1	Precast Concrete Slab Track and Constructing Method	2011-09-01	10-1294013