# Improved track stability around 350km/h

# Precast concrete slab track

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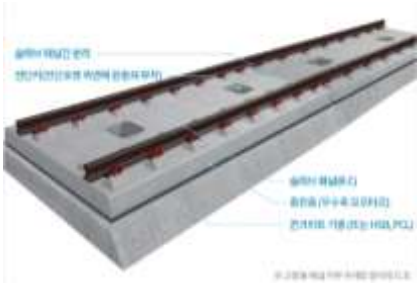
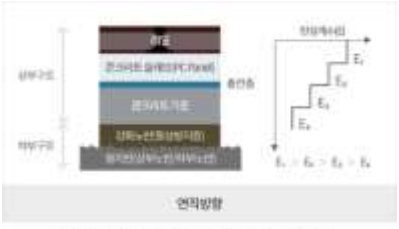


[Precast concrete slab track]



[Shear key horizontal support structure]



## Background of Technology Development

- Concrete slab track is structurally more stable than ballasted track, and has sufficient competitiveness due to reduced maintenance, but it is accompanied by problems such as delay in construction speed and deterioration of concrete quality according to the concrete curing period
- To develop a track construction method that can effectively reduce maintenance and significantly improve durability, constructability, and economic efficiency is required.

## Technology Overview

- Precast concrete slab applicable to slab track for railway driving and construction method of horizontal support structure of precast concrete slab that can improve track stability

## Technology Realization

- Track structure that a shear anchor is installed on the concrete base layer, a factory pre-fabricated concrete slab panel is placed on the concrete base layer, and a filler is injected through the shear pocket provided on the slab to form a shear key together with the shear anchor, and at the same time the lower part of the slab is filled with filler to form a support structure
- The restraint stress was relieved by attaching a cushioning material to the side of the front pocket of the panel, and separation from the substructure by attaching a separator to the bottom of the bridge panel

## Characteristics of the Technology Developed

### The limitation of existing technologies

- Construction delay due to track installation by concrete pouring at the track construction site
- Deformation of concrete slab track caused by train operation, temperature and drying shrinkage

### Characteristics of the technology developed

- Minimize field work through factory pre-production and acquire panel quality through automated curing control system
- Precast concrete slab production shortens the railroad construction period by pre-cast method
- Formation of vertical support structure by injection of filler
- Acquisition of stability in the horizontal direction by forming shear keys

[Concrete slab panel factory production]

[View of prefabricated concrete track construction]

[Prefabricated concrete track ]

## 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 conditon | Application section | Panel dimmension |
|---|---|---|---|
| PST-C type | 350km/h (HL-25) | Earth section<br>Bridge section<br>Tunnel section | 4,950(L) ×<br>2,380(W) × 180(T) |

## Main Drawings and Photos

## Current State of Intellectual Property Rights

| No. | Patent Name | Date of Application | Patent No. |
|---|---|---|---|
| 1 | Precast Concrete slab for Precast Slab Track, Its Horizontal Supporting System, and Its Construction Methods | 2005-12-07 | 10-0721609 |