

INNOVATIVE SLAB TRACK SOLUTIONS

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RHOMBERG SERSA RAIL GROUP

Rail Summit 2024
Copenhagen, Denmark

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0026



DO YOU REMEMBER?

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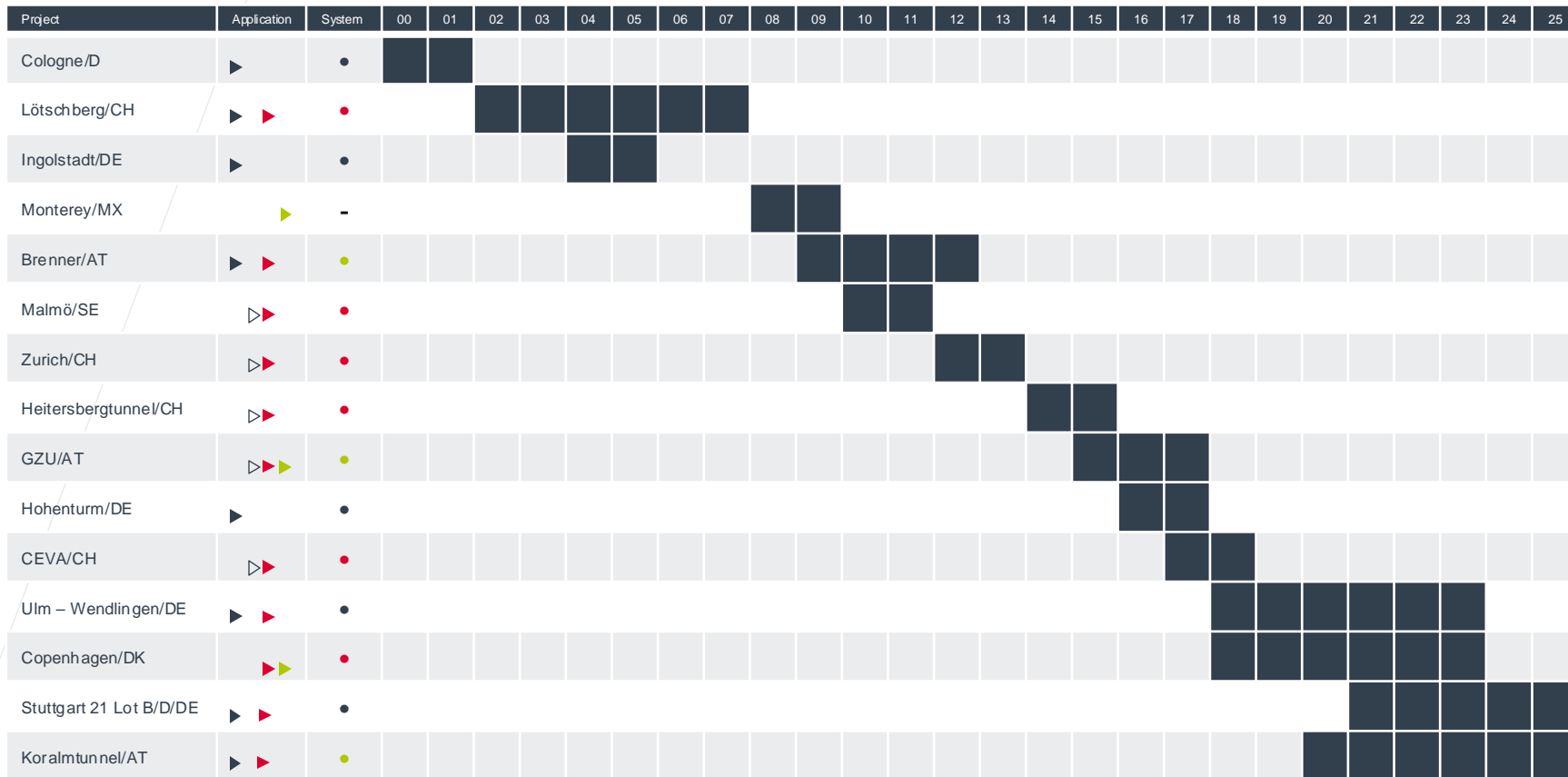


SLAB TRACK DEVELOPMENTS

60 YEARS OF INVENTIONS TO INCREASE AVAILABILITY AND REDUCE MAINTENANCE



DECADES OF SEAMLESS SLAB TRACK PROJECTS



▶ High-speed (HS) ▷ Partial HS ▶ Tunnel ▶ Metro
 • Rheda • LVT • Porr

Rhomberg Sersa Rail Group | Worldwide

**CONSTRUCTION, RECONSTRUCTION AND MAINTENANCE
OF RAILWAY INFRASTRUCTURE**

**OPERATION AND MAINTENANCE OF RAIL-BOUND
VEHICLES**



700

Million Euros
revenue



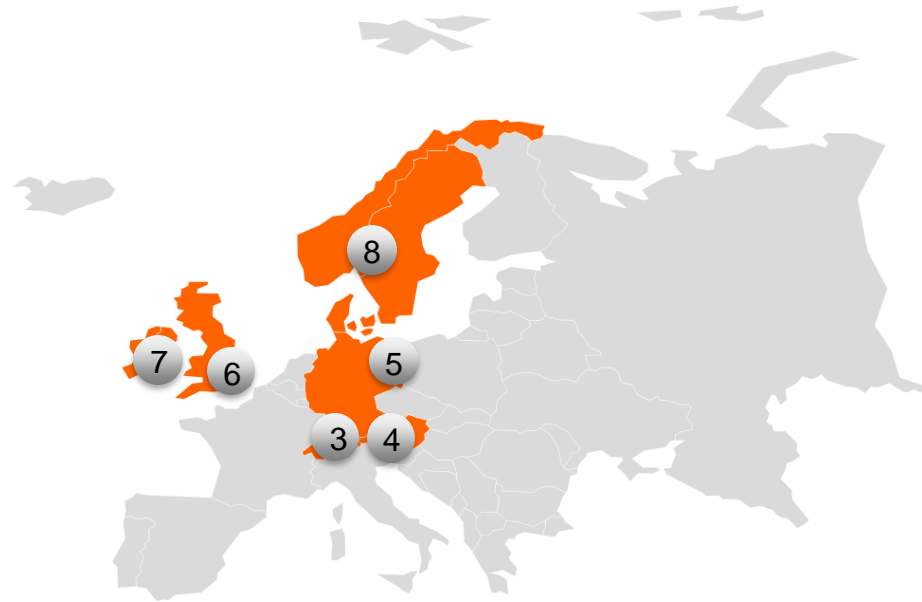
3,000

Employees



> 230

Rail-bound vehicles



3 CONTINENTS
9 MARKETS
100 BRANCHES
WORLDWIDE

North America

- 1 Canada
- 2 USA

Europe

- 3 Switzerland
- 4 Austria
- 5 Germany
- 6 UK
- 7 Ireland
- 8 Nordics

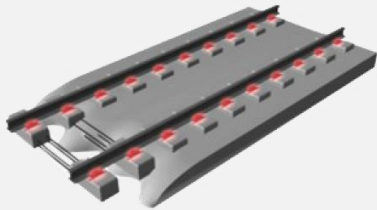
9 Australia

Project business: **selected locations worldwide**

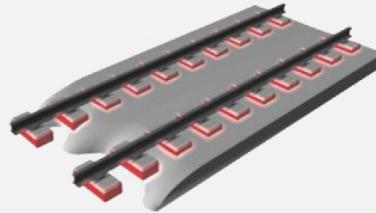


HIGH FIXITY // SLAB TRACK SYSTEMS

MAIN CATEGORIES



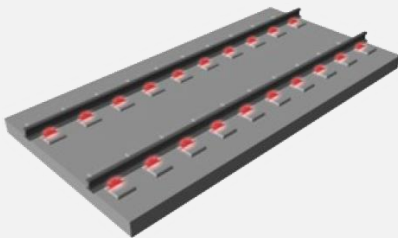
Monolithic (e.g. Rheda)



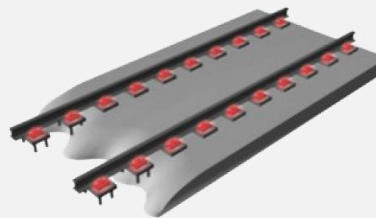
Embedded boots (e.g. LVT)



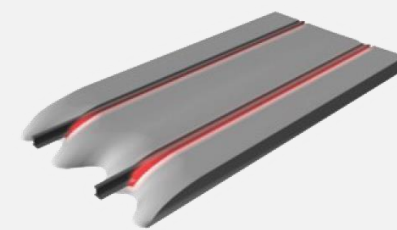
Continually supported slab (e.g. IVES)



Pre-fabricated slabs(e.g. PORR STA)



Direct fastening (e.g. DFF 300 RS)



Embedded rail (e.g. Edilon)

The red colour marks the elastic elements ensuring the stiffness equivalence compared to conventional ballast track.

A high-angle photograph of a railway track system. The image shows several parallel concrete slabs supported by black metal brackets. Steel rails are laid across these slabs. The slabs have embossed markings, including the brand name 'IVES' and 'SLAB TRACK SYSTEM'. A semi-transparent white triangle is overlaid on the left side of the image, containing the text 'IVES SLAB TRACK SYSTEM'.

IVES SLAB TRACK SYSTEM

TYPICAL CHALLENGES OF RAILWAY OPERATORS, ASSET MANAGERS AND DESIGN ENGINEERS



„Our clients are running more trains, so we must plan carefully to ensure a quick return to operations. “

James Cooper, Consulting Engineer



„I have not time for maintenance, but stuff keeps breaking, this is a nightmare! I need a reliable and safe track!“

Sophie Bennett, Track Engineer



«As easy as constructing with LEGO!»

— Hermann Granig (foreman, 20 yrs experience)
about the works at Zierenberg Tunnel (GER)

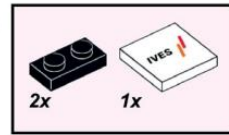
86

AS EASY & FAST AS CONSTRUCTING WITH LEGO BRICKS!

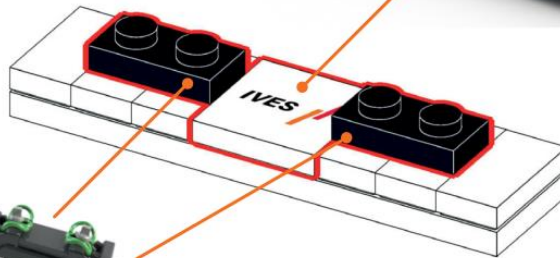
25



29



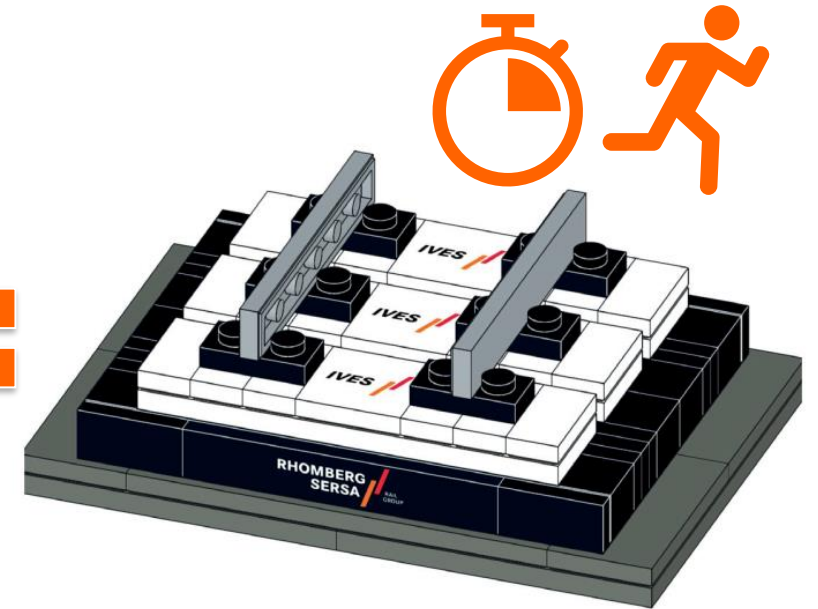
Precast Ives block



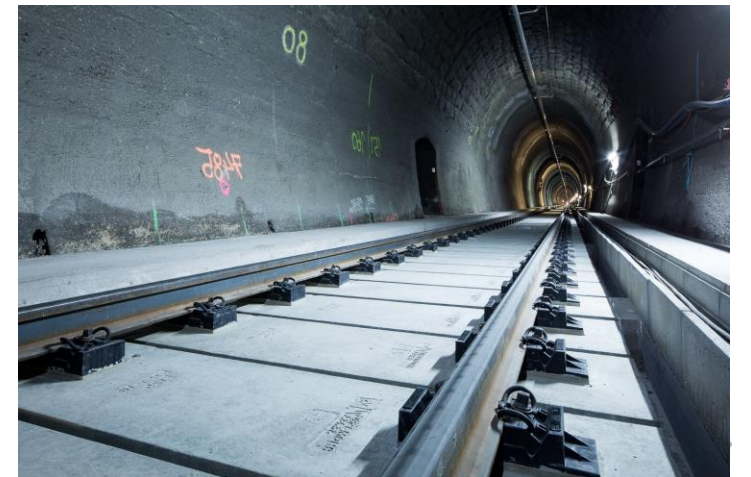
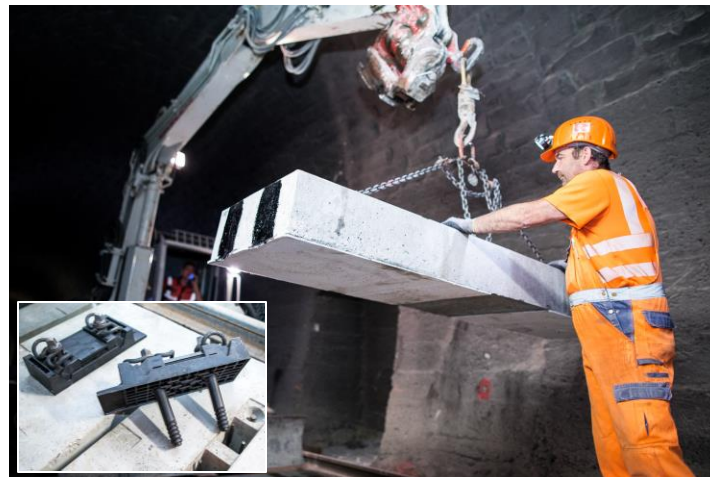
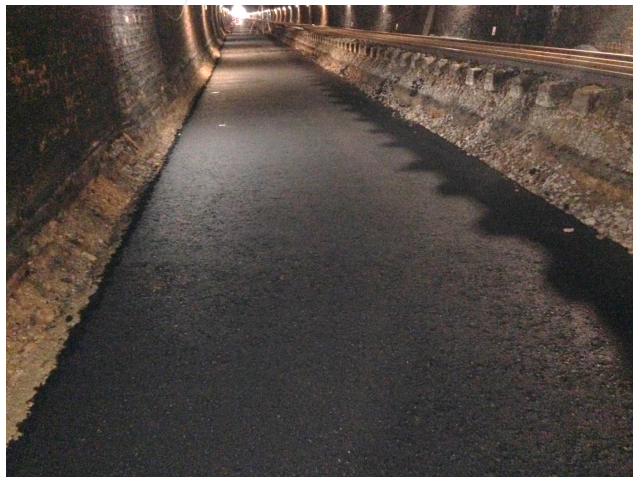
DFF 300 RS



Cementitious:
Epoxy:

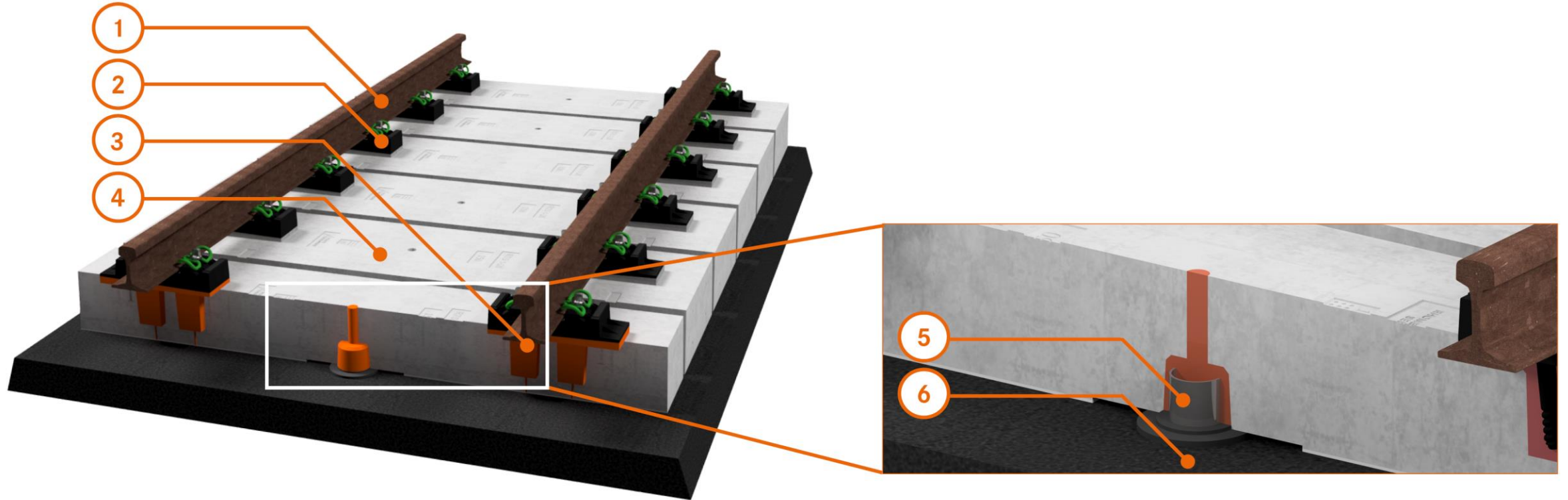


Concrete: ▶
Asphalt: ▶▶





The Building Blocks



- 1. Rail (UIC60)
- 2. Direct fixation fastener (DFF 300 RS)
- 3. Grout for DFF & dowel
- 4. Precast IVES block
- 5. Shear dowel (incl. lost formwork)
- 6. Base layer

COMBINING THE BEST OF BOTH WORLDS: BOTTOM-UP AND TOP-DOWN APPROACH

Bottom-Up-Approach

General Characteristics

- Fast installation
- Pre-cast elements with easy to handle dimensions
- Geometrical corrections possible
- Easy replacement of components



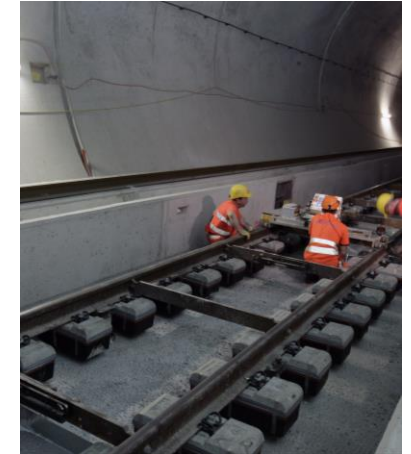
Examples

ATD, Getrac

Top-Down-Approach

General Characteristics

- High accuracy
- No corrections after casting
- Replacement challenging
- Big, heavy slabs
- In-situ concrete logistics & curing time



Examples

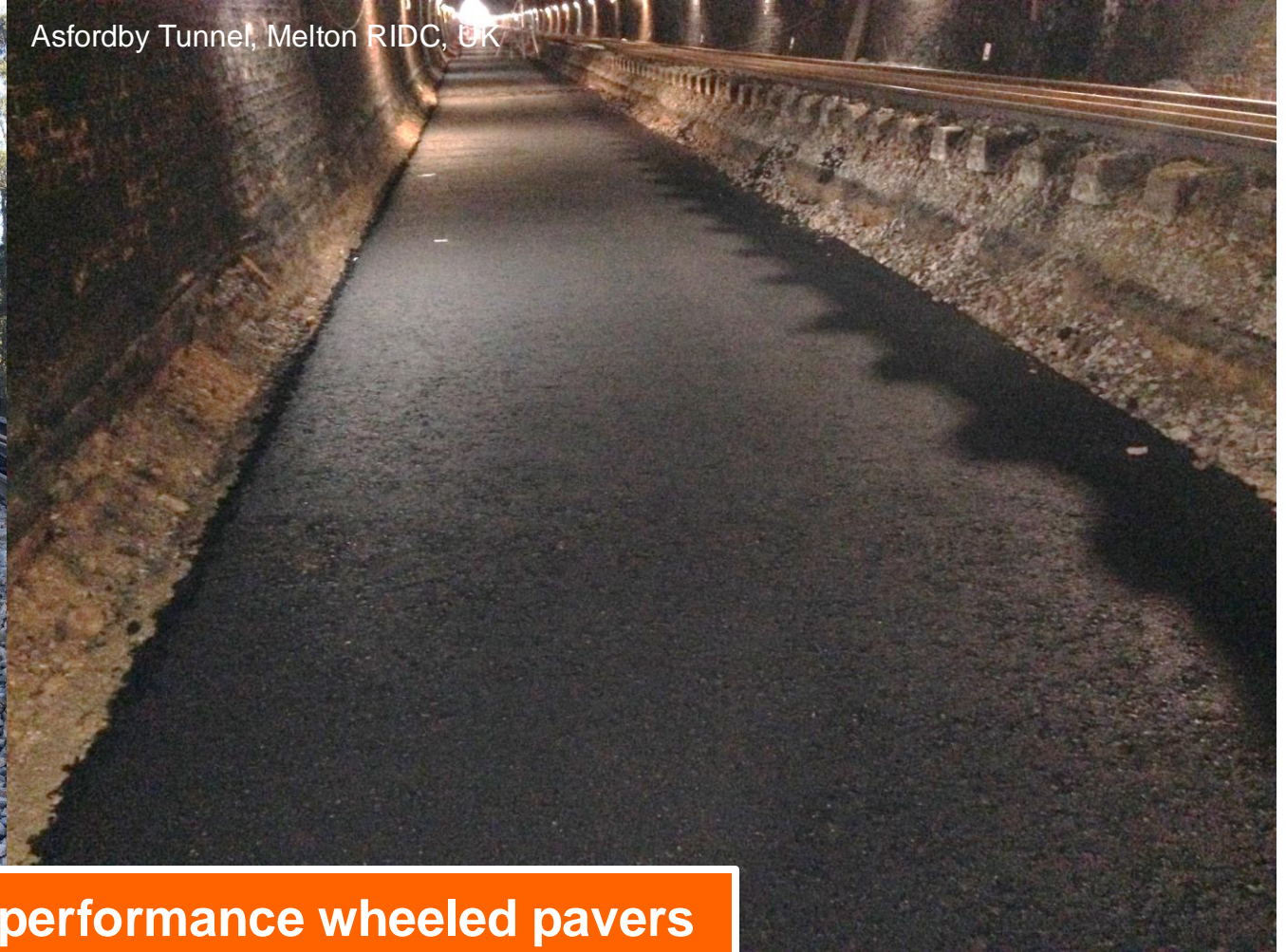
Rheda, LVT, PORR STA

IVES CONSTRUCTION PROCESS: ASPHALT LAYER

Branxton Weighbridge, NSW, AUS

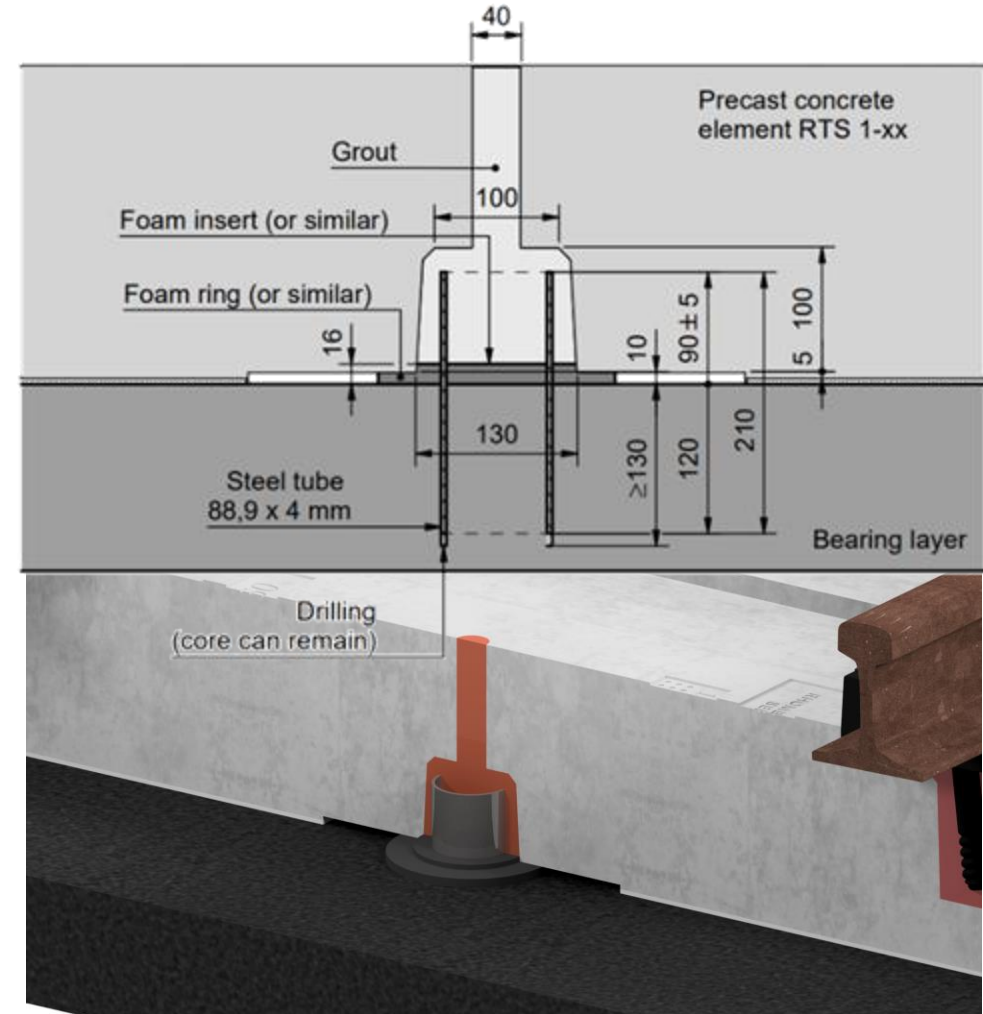


Asfordby Tunnel, Melton RIDC, UK



High-performance wheeled pavers
from road construction

OPTIONAL DEPENDING ON ROUTING: SHEAR DOWEL



IVES CONSTRUCTION PROCESS: PLACING OF IVES ELEMENTS

Zierenberg Tunnel, GER



IVES CONSTRUCTION PROCESS: PLACING OF DFF

Bruggwald Tunnel, SWI



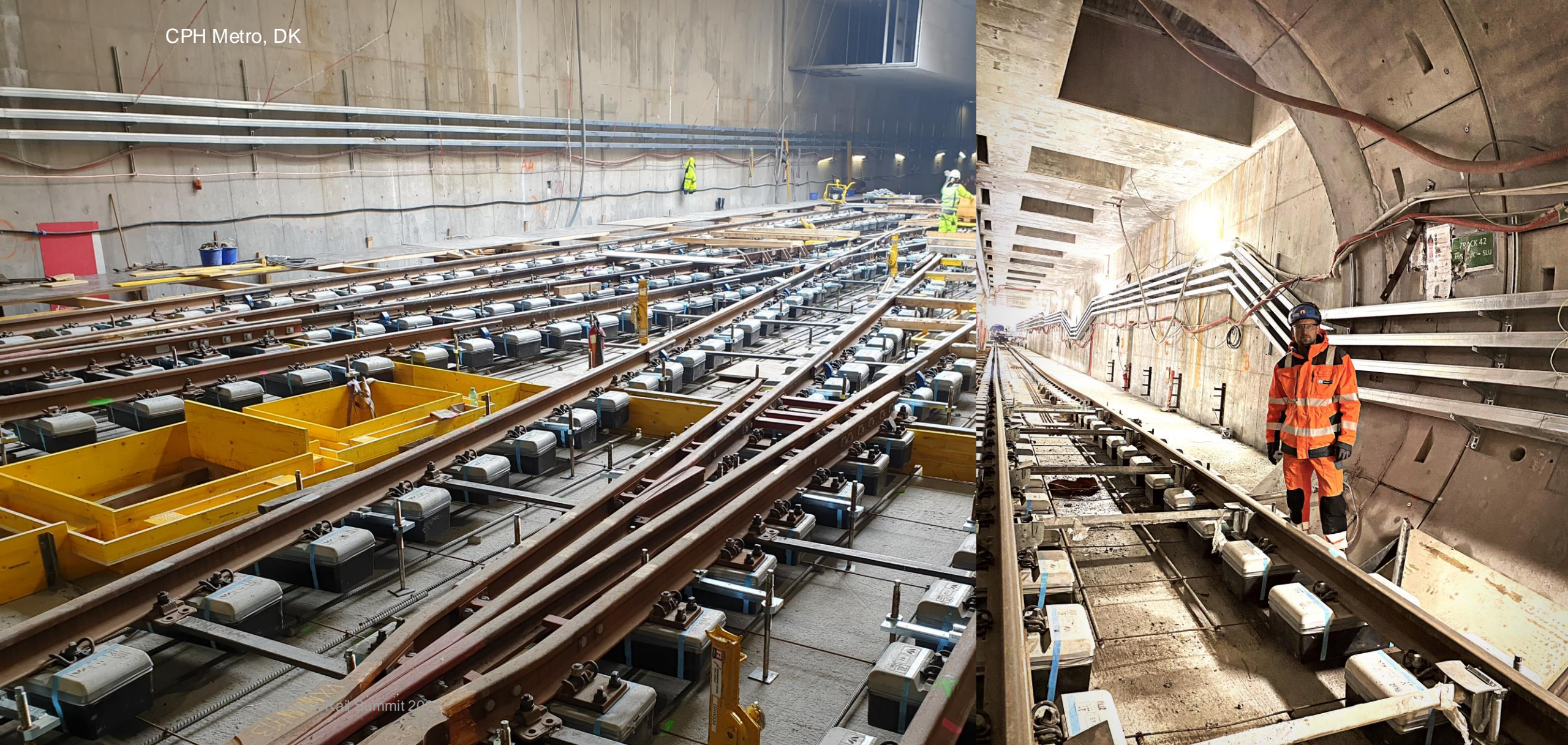
IVES CONSTRUCTION PROCESS: ASSEMBLY OF TRACK PANEL



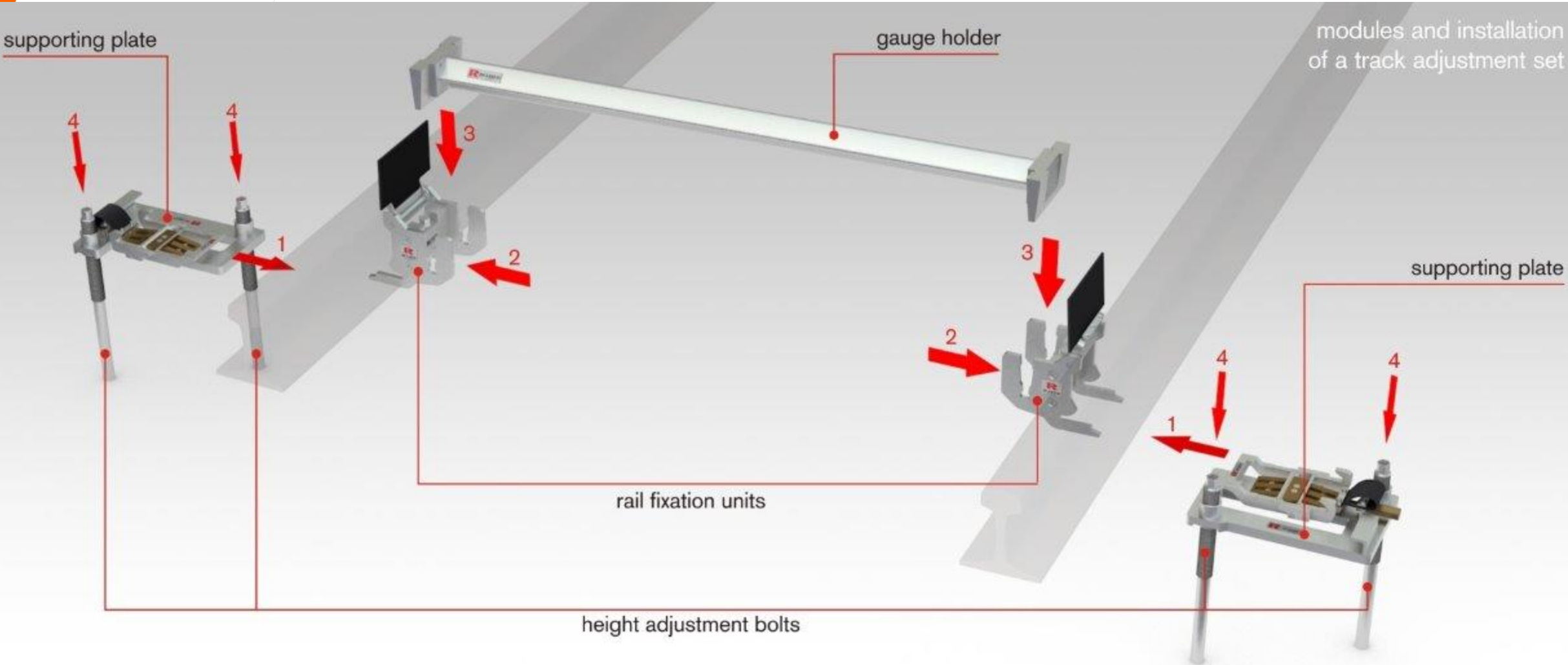
Bruggwald Tunnel, SWI

IVES CONSTRUCTION PROCESS: TRACK ALIGNMENT

CPH Metro, DK

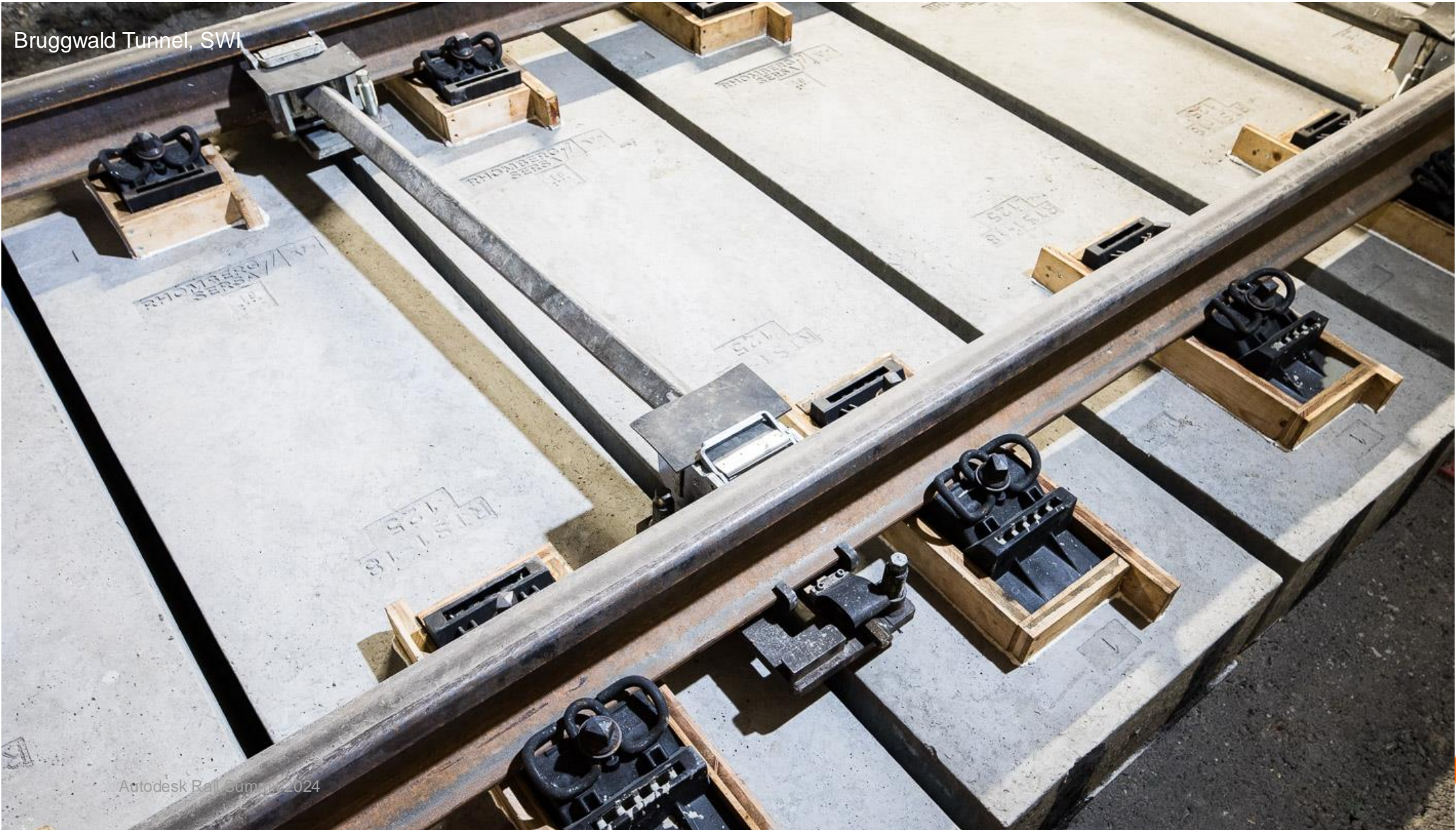


TRACK ADJUSTMENT SYSTEM: RHO FAS (FINE ADJUSTMENT SYSTEM)

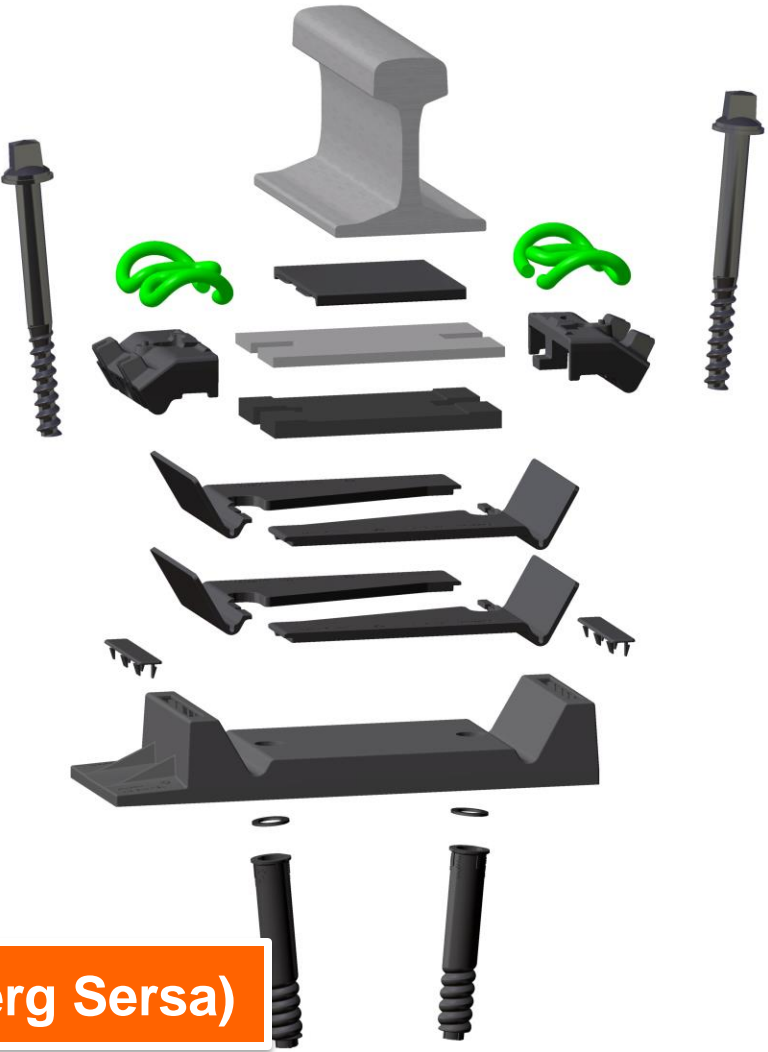
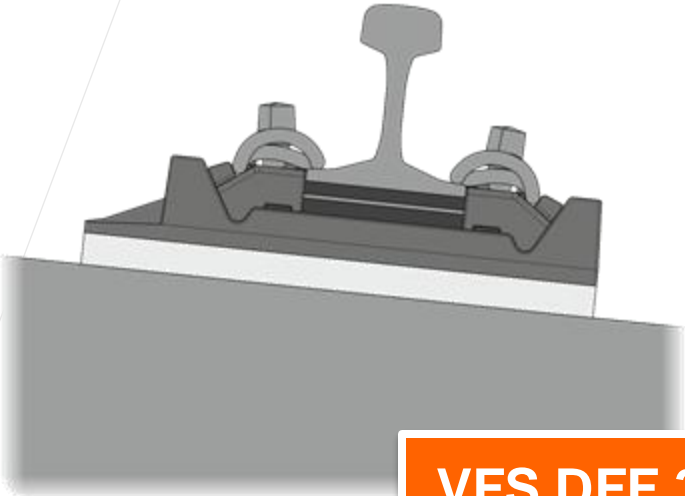
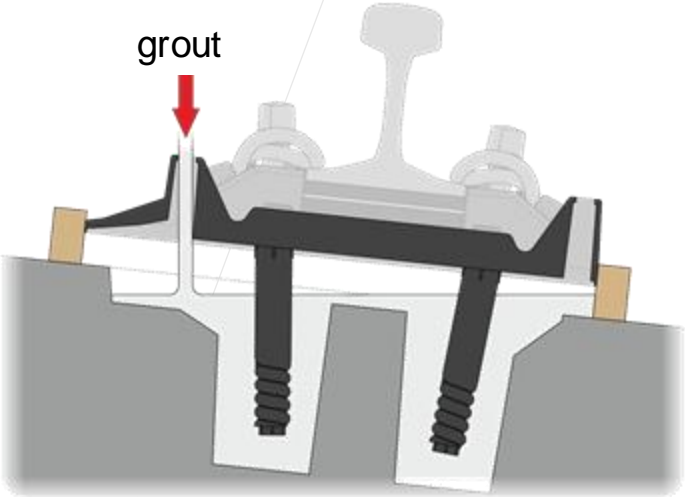


IVES CONSTRUCTION PROCESS: CASTING OF DFF 300 RS

Bruggwald Tunnel, SWI

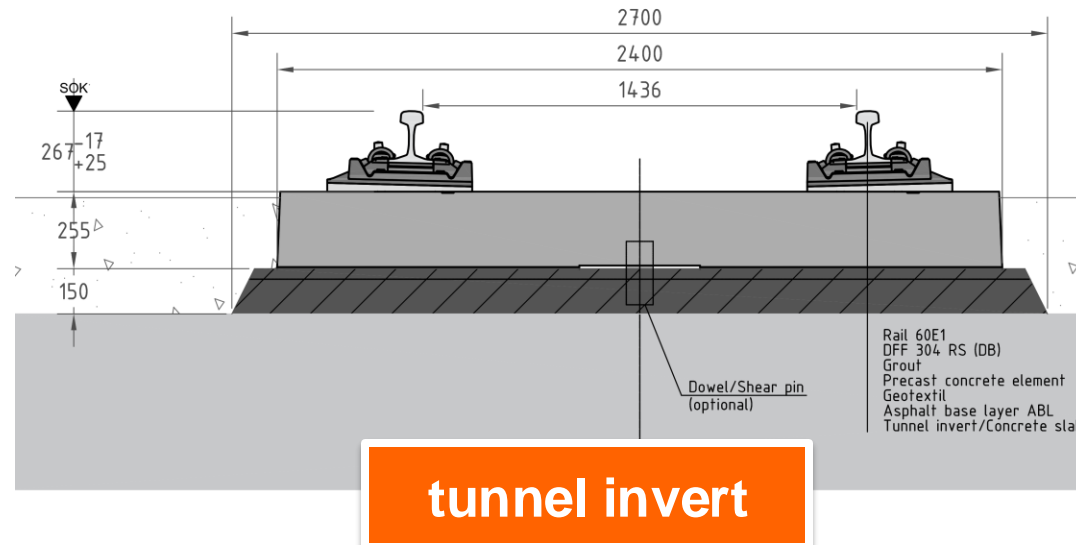
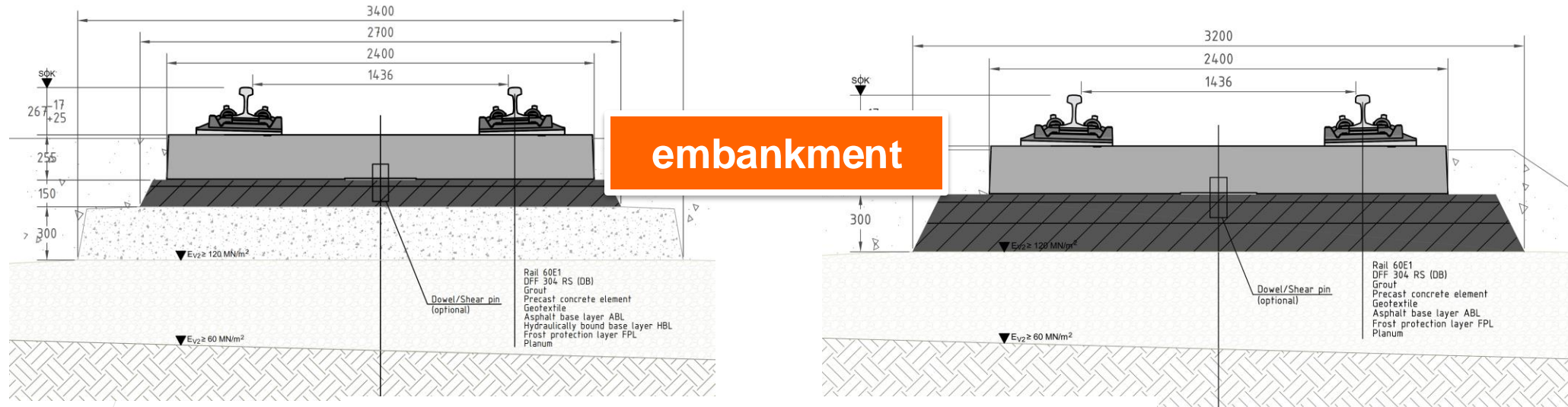


IVES CONSTRUCTION PROCESS: FIXATION SYSTEM

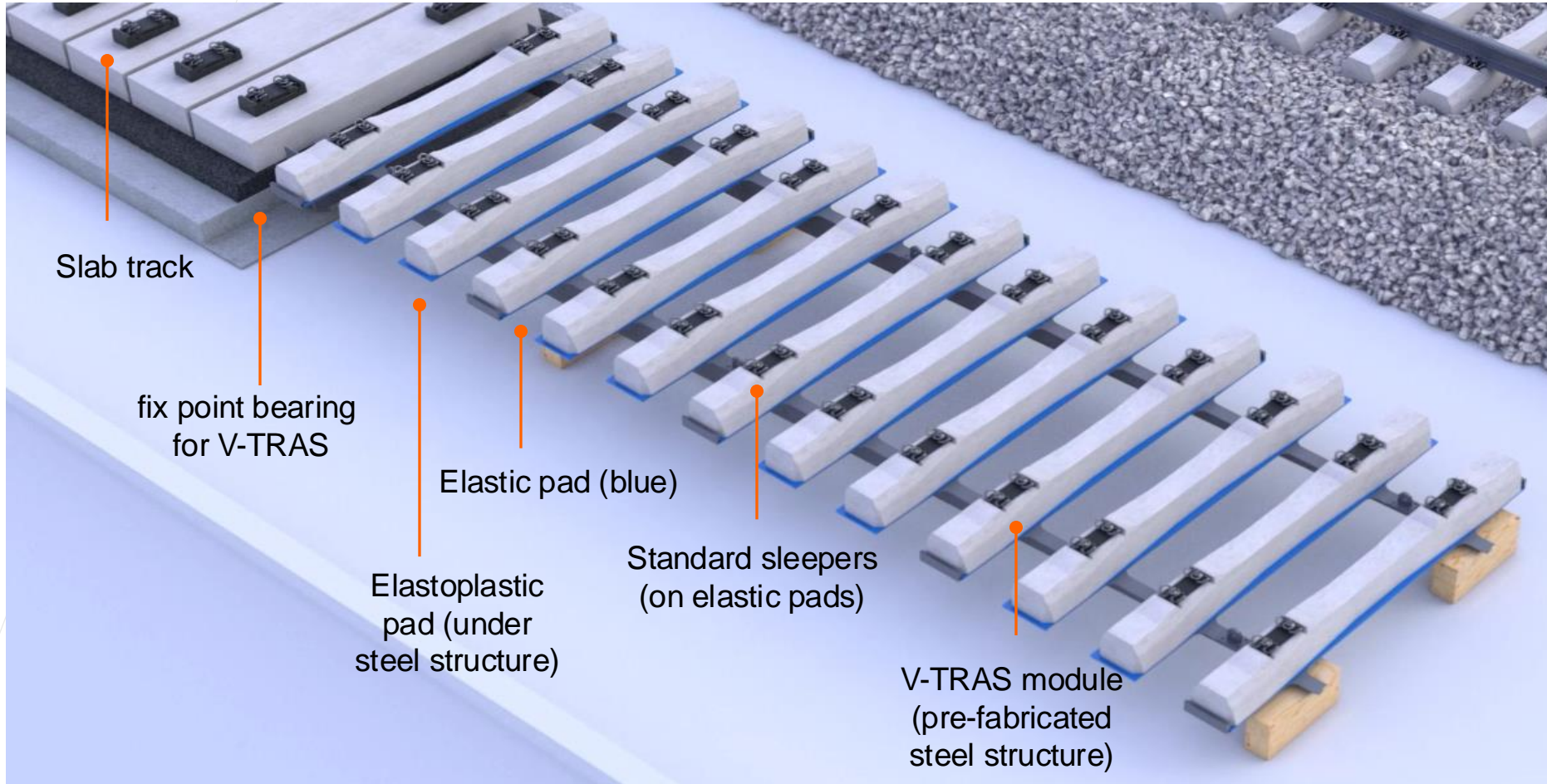


VFS DFF 300 RS (Rhomberg Sersa)

DIFFERENT CROSS-SECTION DESIGNS AVAILABLE



HOW TO TRANSITION FROM SLAB TRACK TO BALLASTED TRACK V-TRAS VERSATILE TRANSITION MODULE



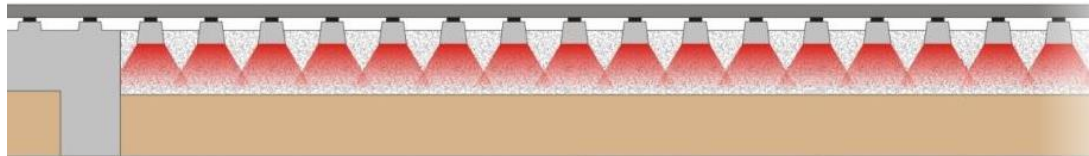
HOW TO TRANSITION FROM SLAB TRACK TO BALLASTED TRACK V-TRAS VERSATILE TRANSITION MODULE



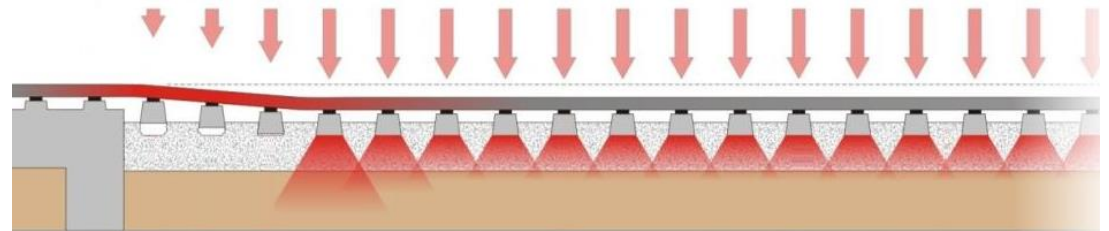
HOW TO TRANSITION FROM SLAB TRACK TO BALLASTED TRACK V-TRAS VERSATILE TRANSITION MODULE

Standard Transition

AFTER CONSTRUCTION

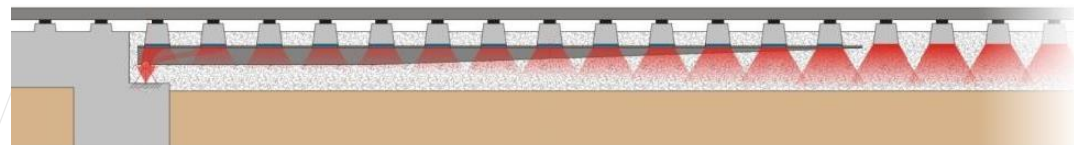


AFTER A PERIOD OF USE

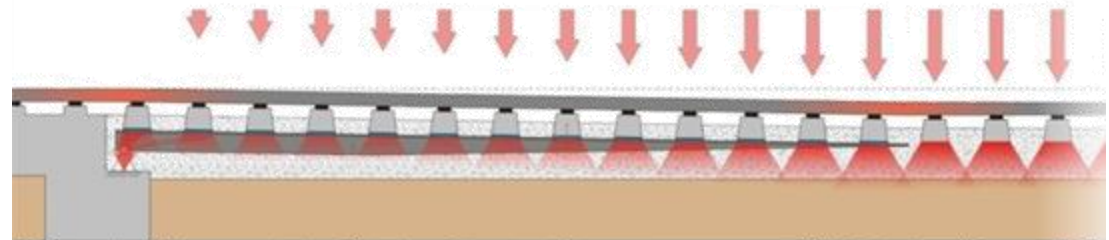


with V-TRAS

AFTER CONSTRUCTION



AFTER A PERIOD OF USE



GREAT DESIGN...

...BUT DOES IT WORK IN REAL LIFE?

LONG TERM EXPERIENCE: BRANXTON WEIGHBRIDGE (ARTC, AUS)



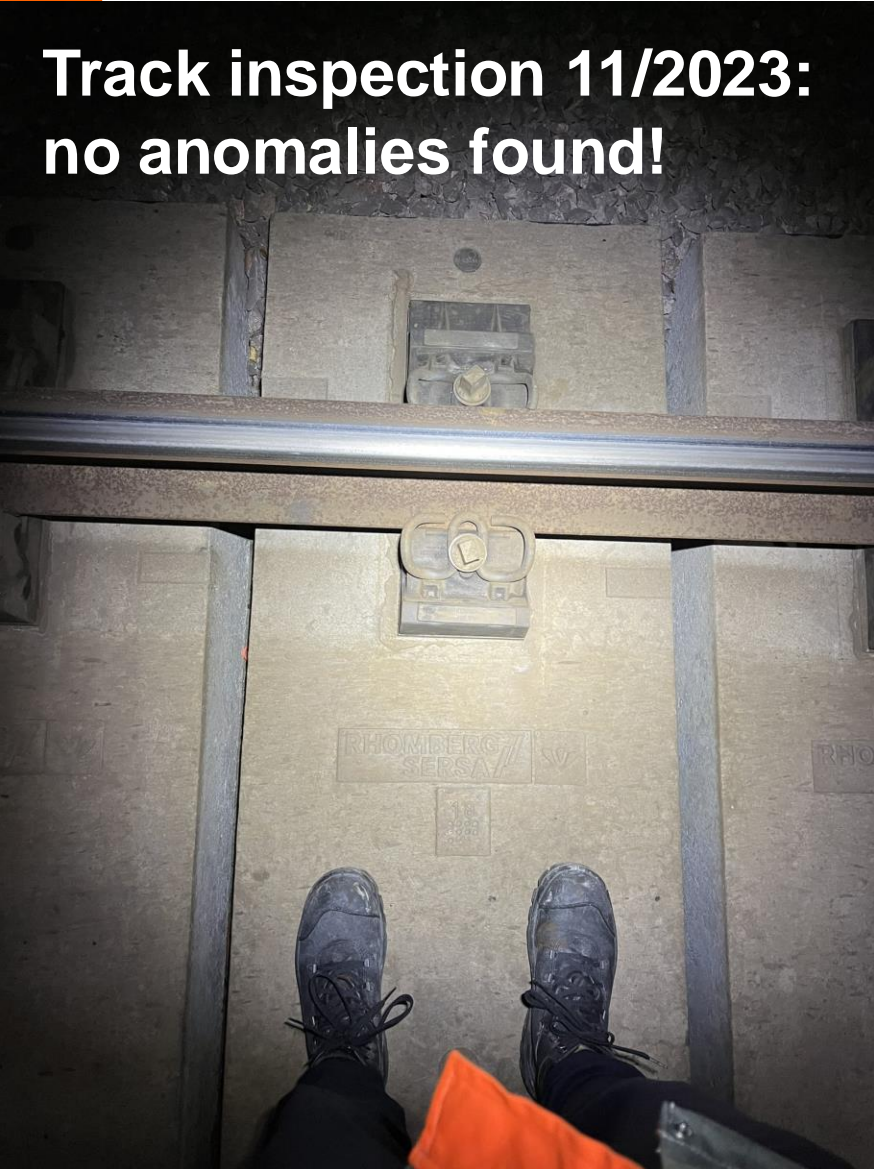
- installed 2017
- epoxy grout: fast curing
- 120 MGT p.a.
- Total tonnage to date: 800 MGT

$$\frac{800 \text{ MGT}}{20 \text{ MGT/year}} = 40^* \text{ years}$$

*equivalent operating time
in a typical European
mainline track

LONG TERM EXPERIENCE: ZIERENBERG TUNNEL (GERMANY)

Track inspection 11/2023:
no anomalies found!



General approval
for network of DB
InfraGO is pending!



**“HE WHO STOPS BEING BETTER
STOPS BEING GOOD.”**

— attributed to Oliver Cromwell

PLACEHOLDER FOR ANIMATION VIDEO



ADDED VALUE OF IVES SLAB TRACK SYSTEM



**Short track possessions
resulting in high track availability**



**Safety through proven
long-term performance**



**Highest precision through
prefabrication & innovative fastening**



**Easy replacement & dismantling
due to modularity**



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**THANKS
TAK**