RAIL.ONE
The way to go.

RHEDA CITY BALLASTLESS TRACK SYSTEM

THE CITY AS LIVING SPACE

An intelligent system of public transit is the nervous system of our cities. Cost-efficient and ecological solutions are in great demand – in planning and logistics, as well as during the construction phase and for actual transit operations.

MOBILITY AND FLEXIBILITY

Today, the need for mobility is of course taken for granted. Urban residents, especially those in metropolis areas, are critically dependent on an effectively functioning system of urban infrastructure. A rapid-transit network that meets these modern needs is one of the most vitally necessary facilities of any modern city.

The better such a network functions, the more attractive a city becomes as a place to live and as a location for businesses. For these reasons, we feel that it is especially important to offer high-performance systems for urban transit – including all the essentials for safety, cost effectiveness, and environmental compatibility.

RHEDA CITY SYSTEM

If you have a goal, you need a way to get there.

Tram systems and suburban passenger lines are the backbone of an effectively performing mass rapid transit system. To ensure smooth flow of traffic, the interdependencies among all modes of transport dictate that compromises and combinations be implemented in construction of roads, streets, and track lines. In cases of rails installed flush with the street surface, grooved tramway rails are as a rule employed. In tracks with conventional design, the rails are installed directly onto a supporting layer of asphalt or concrete. In con-

junction with rail tie bars, which are bolted to the web of the rail, these rails make up a track panel. Normally, height adjustment of such tracks takes place by insertion of wedges, and by pouring compound under the track panel.

In contrast, the RHEDA CITY system consists of bi-block sleepers concreted into place with lattice girders, to form a monolithic concrete track-supporting layer. The result here, depending on the track model, is either a system of elastic point support, or of continuously elastic support of the rails.

The rail fastening systems in the RHEDA CITY models are preassembled in the sleeper factory. In conjunction with the rail fastening systems, the sleepers create a specified track gauge. The adjustable rail fastening systems compensate for any tolerance deviations. The track panel is measured at the top edge and at the gauge side of the rail, adjusted as necessary, and finally fixed into place. These measures produce an extremely high degree of precision and, later, an outstanding quality of track position and geometry. The track covering can be provided in several layers of asphalt, concrete, or paving blocks. The elastic rail joint sealing between the rail and the covering is provided in the form of special compounds. The elasticity of these compounds ensures that the sealing effect of the joint is not impaired by movements caused by rail operations.

THE BENEFITS OF RHEDA CITY:

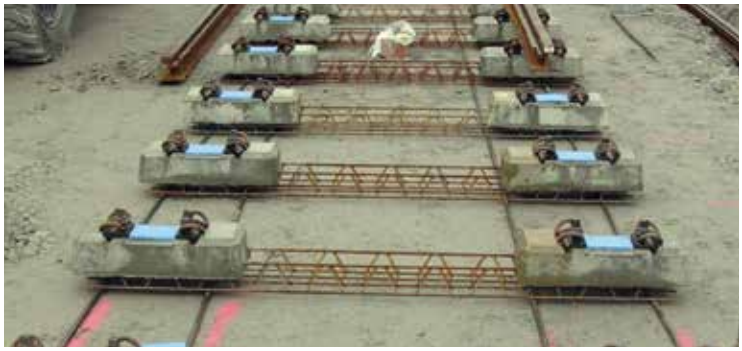
- Flawless track position and geometry
- Great precision in gauge and track geometry as a result of the cross sleeper
- Monolithic design owing to the optimized system structure, with superior bonding quality
- Elastic point support, or continuously elastic support of the rails
- Simple and logically transparent system structure
- Great safety and long life cycle
- Conformity with regulations involving electrical insulation

SYSTEM OVERVIEW

Example of installation of the RHEDA CITY -D system, with elastic point support of the rail on the sleeper:

- Sleeper interval: 75 cm
- The sleepers are delivered with the completely pre-assembled rail fastening systems and elastic pads, e.g. type K-W 25

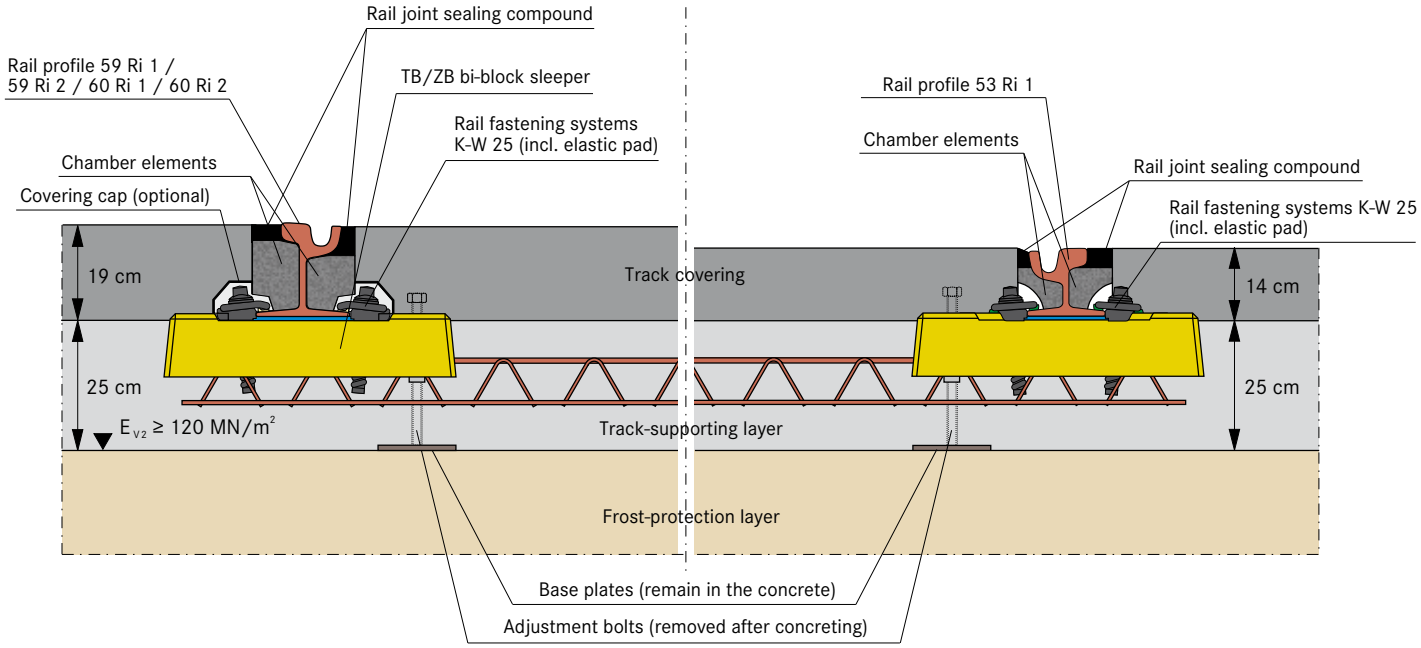
Laying out the bi-block sleepers, and placing the rails down onto them



Adjustment and fixing of the track panel, laid out onto the subgrade, in proper direction and height

Concreting of the track panel

Installation of chamber elements in the spaces between the rail head and the rail flanges



Final adjustment of the track panel in proper direction and height

Installation of the sleeper-crib intermediate layer

Placement of the top layer: e.g., asphalt

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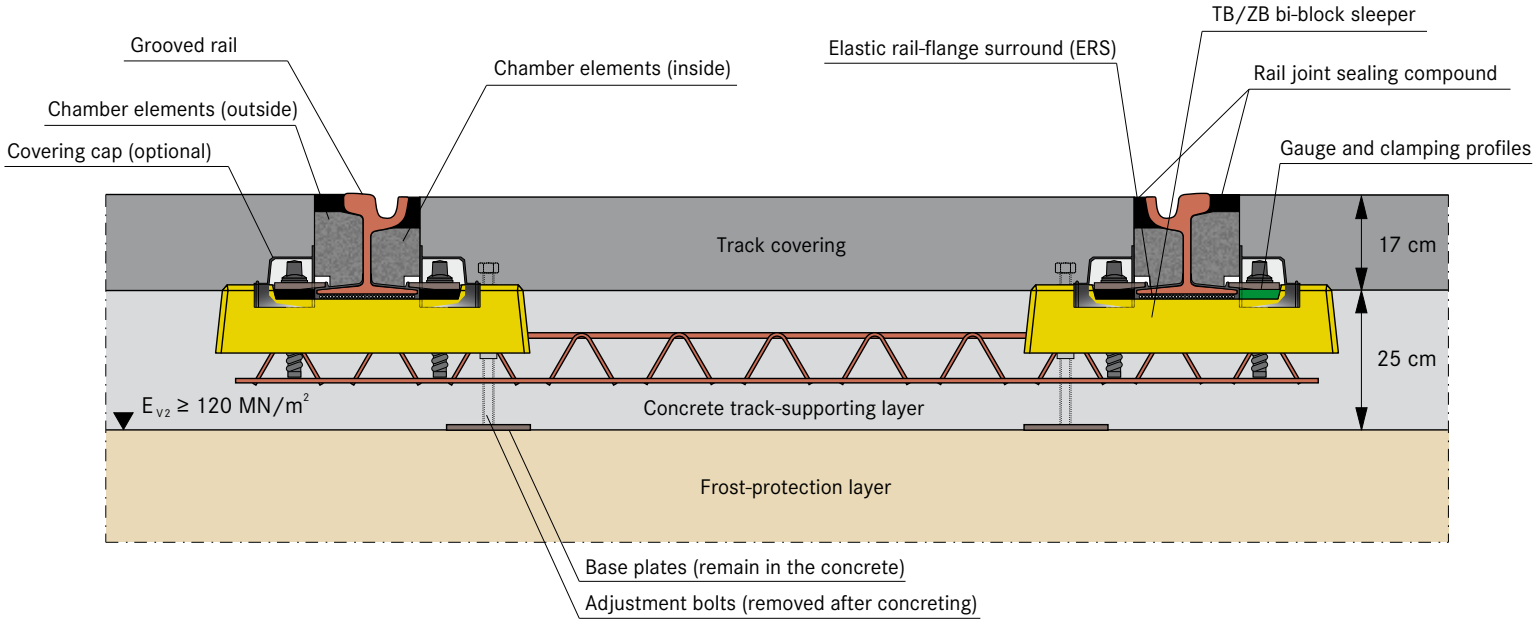

Laying out the sleepers

Laying out the rails, followed by welding

Final installation and fixing of the track panel

Concreting of the track panel

SYSTEM OVERVIEW

Example of installation of the RHEDA CITY -C system, with continuous elastic support of the rails:

- Sleeper interval: 150 cm
- The sleepers are delivered with the completely pre-assembled rail fastening systems, type SP

Installation of the elastic rail-flange surround (ERS)

Installation of the chamber elements

Placement of the top layer: e.g., asphalt

THE RIGHT SOLUTION FOR EACH APPLICATION

RHEDA CITY is an ideal choice for any location – as shown by its great success in many cities worldwide. The track requires practically no maintenance, supports heavy loads, and offers superior ride comfort together with great safety and a long life cycle.

CHUR, SWITZERLAND The train station in Chur is the hub of local public transport. As part of alterations of the station forecourt, the tracks of the Chur-Arosa line were relocated. The RHEDA CITY ballastless track system was then installed there, for the first time in Switzerland. In addition to delivery of the main-track and turnout sleepers, RAIL.ONE was also responsible for system supervision of track installation.

THE HAGUE, NETHERLANDS The City of The Hague has installed over 3 km of track with the system variants RHEDA CITY and RHEDA CITY GREEN, for its tram line “Aaltje Noorderwierstraat” and for the tram line along the Royal Library. RAIL.ONE was furthermore responsible for system supervision of track installation.

SAMEDAN, SWITZERLAND During the construction activity for lowering the Samedan-St. Moritz railway line, around 270 meters of track were laid with the RHEDA CITY system as mass-spring system. Due to the specific project requirements a height-adjustable bi-block sleeper with rail fastening was developed that allows compensation for subsidence in the engineering structure. Plastic fibers in the concrete were additionally used for substitution of the steel reinforcement in the mass-spring system.

UTRECHT, NETHERLANDS The tram operator BRU realized in 2012 an upgrade project of the existing SUNIJ-Lijn in the urban area of Nieuwegein to optimize the track quality. RAIL.ONE supplied for this project the RHEDA CITY system and delivered approx. 820 meters of RHEDA CITY track. In addition, RAIL.ONE supplied turnout bearers for the switches and crossings.

DUBLIN, IRELAND In the City of Dublin the RHEDA CITY system has been installed for extension of its tram network on the Dublin LUAS A1 Line, for Sections 401 and 402. For this project, RAIL.ONE delivered about 7,000 RHEDA CITY bi-block sleepers for approx. 5.6 km of covered track and 2.5 km of open track, with delivery to the Dutch construction company BAM Ireland. RAIL.ONE likewise supplied turnout sleepers for the planned tram turnouts.

GRANADA, SPAIN RAIL.ONE won the contract for delivery of 4,500 metres of RHEDA CITY track for the Granada metro project in Spain. In addition, RAIL.ONE was responsible for the system monitoring during track construction.

WARSAW, POLAND For the upgrading of various tram lines in Warsaw, RAIL.ONE has received orders for delivery of more than 26 km of RHEDA CITY track, in addition to contracts for engineering and quality-control services.

SEVILLE, SPAIN The project Metro Sevilla con Alcalá de Guadaira was for RAIL.ONE Group the first reference project in tram applications on the Iberian Peninsula. For linking of Alcalá to the existing Line 1 of the Metro de Sevilla, RAIL.ONE delivered more than 17 km of RHEDA CITY track. In addition, RAIL.ONE was responsible for system supervision of track installation.

GERMANY At the end of the 1990s, in close collaboration with the Berlin and Dresden public transport services, specific systems of the RHEDA CITY type were developed for these cities. Meanwhile, numerous other cities such as Cologne, Mannheim and Nuremberg also integrated RHEDA CITY into their railway systems. Over 200 km of RHEDA CITY track have been installed in Germany so far.

EDINBURGH, SCOTLAND RAIL.ONE was a key player in one of the largest infrastructure projects in Scotland. On contract from the Dutch company BAM RAIL bv, RAIL.ONE delivered more than 15 km of RHEDA CITY track, in covered and open track, as well as approx. 3 km of tracks with vegetation covering for construction of a new tram line in the Scottish capital of Edinburgh. RAIL.ONE delivered a total of over 20,000 bi-block sleepers for the ballastless track sections – in addition to approx. 18,000 shortened B 70 sleepers for linking the tram line to the depots, and for the track section from Haymarket Station in the heart of the city to Edinburgh Airport.

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