MUNICH'S FUTURE IN THE MAKING

Marienhof Station has been designed as a vast underground hub for passengers on the Munich S-Bahn's second main line, currently under construction.

The new station is taking shape in the heart of Munich, at record depth.

While cars and crowds fill the streets of downtown Munich, one of the country's biggest rail projects presses on below. Construction of a second main line for the city's commuter rail network is taking place mostly underground. At record depth, Marienhof Station alone highlights the technical precision involved. It also reflects the scale of the vision – for the line, the city, and beyond.

Grand plans

Creation of the Munich S-Bahn's second main line represents a vital step forward for the city. The expected benefits include shorter commuting times and reduced traffic for an even higher quality of life. The massive project in fact ranks as only one of the major rail projects underway. German rail investments are also on the rise, boosted by the unprecedented CHF 460 billion infrastructure fund that the German parliament approved in 2025.

The Munich S-Bahn's original line, or *Stammstrecke,* opened over 50 years ago to improve connections between the city center and outlying suburbs. Today, the east-west line carries well over the volume of people it was designed for. It also relies on a single-track tunnel for trains heading in either direction every two minutes. This helps to explain why the line ranks as one of Germany's busiest at rush hour, and what inspired calls for change.

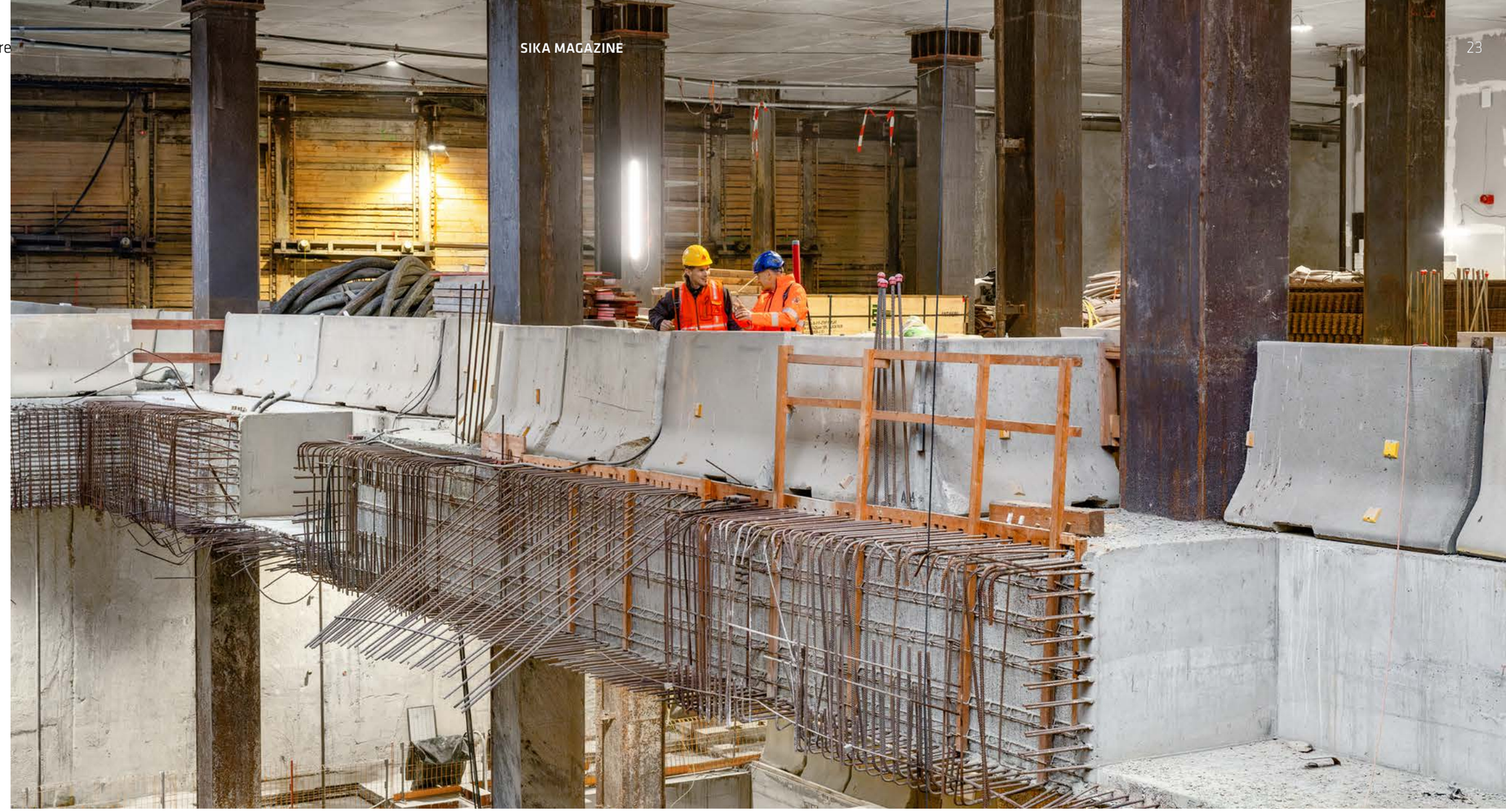
The new 11-kilometer route will run parallel to the original line. With over two-thirds of the line underground, much of the progress remains hidden from view. The ambition, however, is hard to overlook. A new 7-kilometer double-bore tunnel will let trains zip through in both directions at up to 80 kilometers per hour.

Two connecting stations, Laim and Leuchtenbergring, will be expanded to accommodate the huge new line. And Marienhof – the line's central and most impressive station – will be built deep underground, as well as the stations Munich Central and Munich East.

Urban realities

Marienhof Station, now under construction, is about the size of a football (soccer) field. At over 40 meters underground, it is the deepest S-Bahn station in the country. It also happens to sit under a bustling city center with medieval roots. Marienhof's platforms, tunnels, and connecting passages must all steer clear of historic landmarks and avoid putting them at risk.

The connecting passages from Marienhof to existing stations must also be built to withstand extreme earth and groundwater pressure.



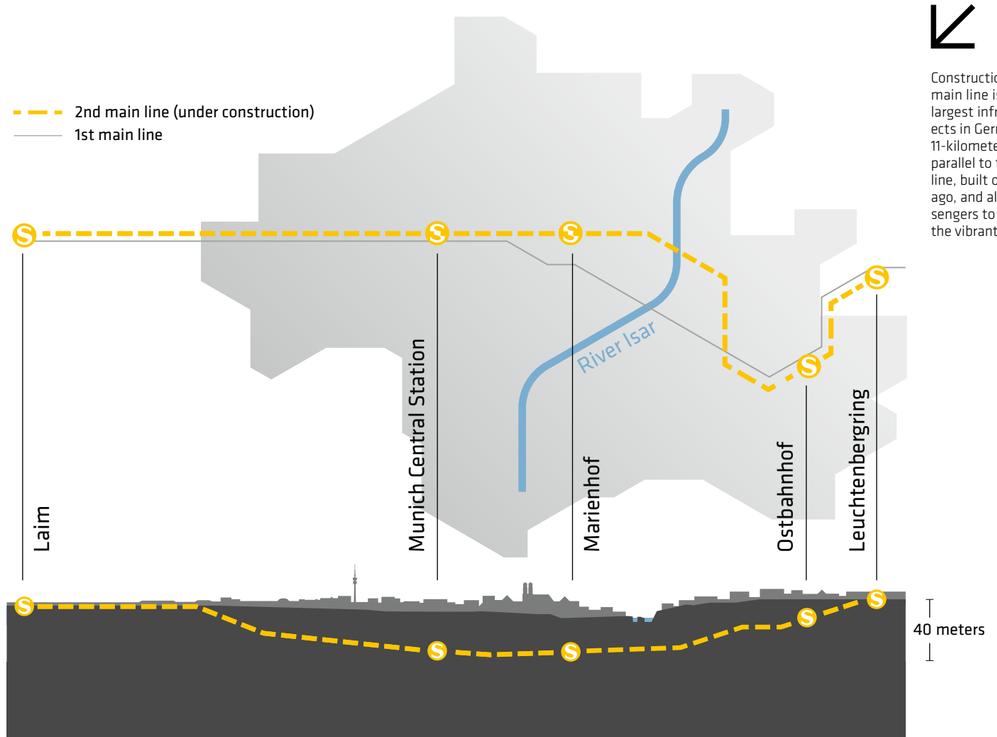
Sika has worked closely with project partners to develop, test, and tailor the waterproofing systems for every section and detail of the structure.

Live infrastructure presents another challenge. Project teams need to navigate the dense network of pipes, cables, and equipment that deliver energy, water, and other essential services up above. Then there are the more literal pressures of the job. The extreme earth and groundwater pressure, due in part to high water levels, has driven every engineering and construction-related decision to date. The goal, after all, is to deliver a Marienhof for many generations to come – only possible if the structure withstands the forces that could weaken it.

Deep determination

Marco Bloch, Product Engineer for Building and Basement Waterproofing at Sika Germany, recalls tackling the daunting build long before ground was broken. “Five years before excavation, we started spending a lot of time with key project partners to find solutions. We talked about the specific challenges and the materials we could use to keep the water out and the structure permanently stable. Yes, we started early, but with this kind of project, you don’t want to be problem-solving too late.”

The headstart gave them time to explore meticulous construction and waterproofing solutions for the entire structure as well as different sections. If each colossal wall, ceiling panel, and reinforcement column needed to be robust and watertight, so did every millimeter of concrete in between. These transitional areas would be even more crucial to protect given the top-down construction method: first, building the ceilings of each level from top to bottom and, later, the walls from the foundation up.



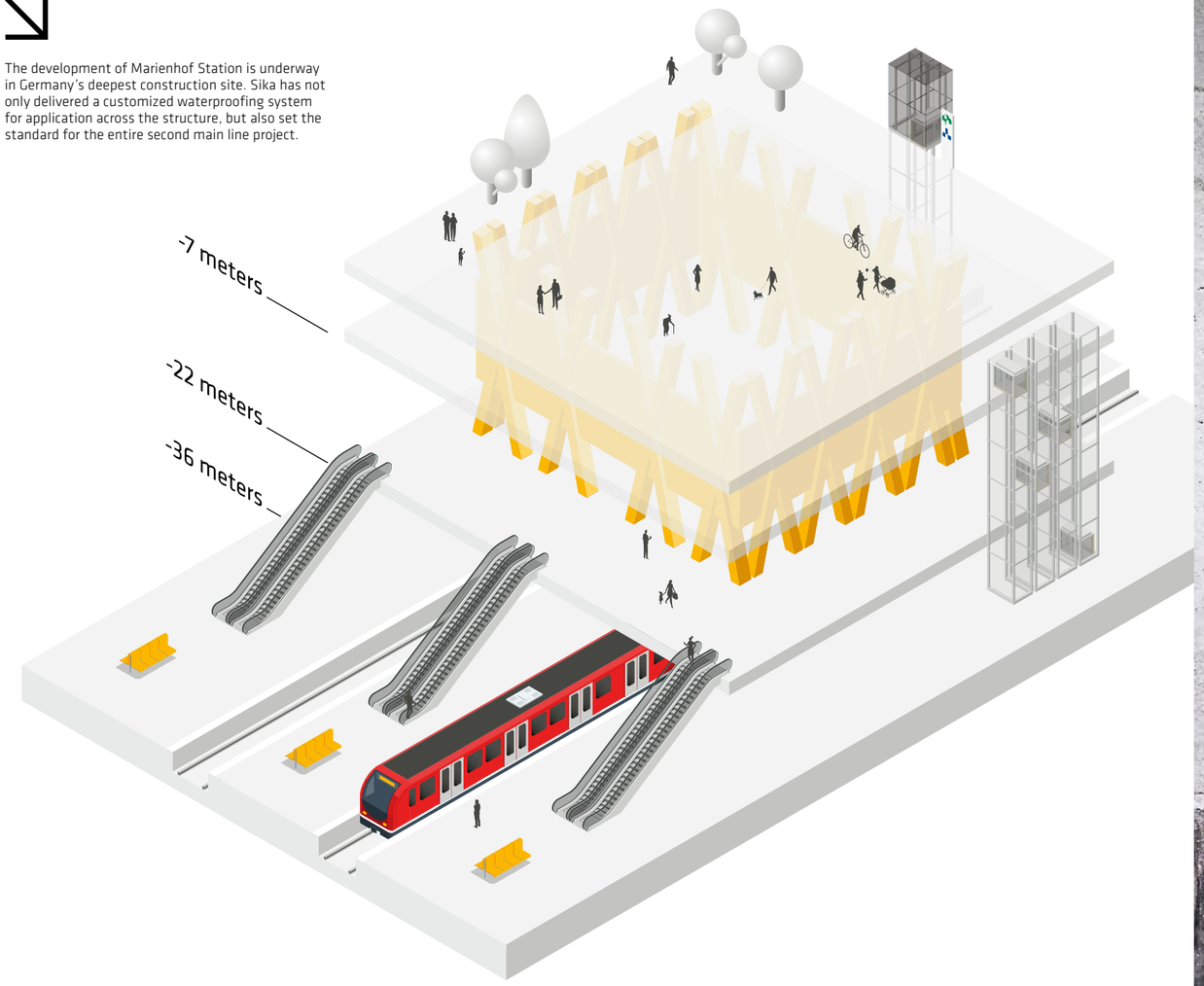
Construction of the second main line is one of the largest infrastructure projects in Germany. The new 11-kilometer route will run parallel to the original main line, built over 50 years ago, and allow more passengers to reach and cross the vibrant city center.

7 kilometer double-bore tunnel

45+ meters deep

120 year lifespan

The development of Marienhof Station is underway in Germany's deepest construction site. Sika has not only delivered a customized waterproofing system for application across the structure, but also set the standard for the entire second main line project.



This highly collaborative approach to technical detailing has emerged as a clear advantage. Sika partners include project owner Deutsche Bahn, building consortium ARGE Marienhof, engineering firm Schiessl-Gehlen Sodeikat, and, above all, waterproofing applicator and civil engineering specialists August Reiners Bauunternehmung GmbH. Ingo Lehmberg, Head of the department for building waterproofing of the August Reiners Bauunternehmung GmbH, credits the achievements to teamwork and frequent joint visits on site. The benefits, he believes, go beyond the technical. "Developing and implementing innovative technical solutions has been a huge experience, but being part of a team that is breaking new ground has been immensely inspiring and strengthened our partnership."

More momentum

Teams are now sealing the station's enormous base slab, which, at up to six meters thick, can absorb the structural load. Waterproofing the walls will follow before the finer interior work begins. Meanwhile, compressed air tunneling continues with the aim of linking the new station to another metro station nearby. Workers must use a customized pressure chamber to safely transition to and from the elevated air pressure – just one reminder of the human effort and risk involved.

With every milestone achieved underground, the city moves closer to its goals. The prospect of a quicker, more enjoyable ride to and from central Munich is now at last in reach.

Rigorous testing of solutions and application techniques, both on site and off, has sparked innovation and reinforced the level of trust between partners.

Facts & Figures

5 years
How long Sika provided technical support before the start of construction

3 years
Time it took to test and certify the tailored waterproofing system

CHF 10.1 billion
Overall investment in the second main line project