

A striking composition in black and white

The underground station “Rotes Rathaus” in Berlin

Transport projects take a long time to complete and need reliable partners. For example, it took more than 10 years from the planning to the opening of the extension of Berlin’s underground line number 5. However, not least thanks to the lighting from WE-EF, the “Rotes Rathaus” underground station now looks even more impressive than the plans promised.

At the Rote Rathaus, the seat of Berlin’s state government, architect Oliver Collignon designed an underground station that underscores and celebrates the importance of the place for the city’s citizens – with a focus on formal clarity, spaciousness and elegance. Boasting gleaming white floors and ceilings, dark, subtly sparkling walls made of polished concrete and striking flared columns, the 140-metre-long platform hall is a sight to behold; they can best be viewed from the fully glazed connecting gallery facing the hall between the two platforms. The short escalator ride through the anthracite-coloured stairwell subsequently heightens the dramatic effect of stepping back into the light of the hall and directly experiencing its spaciousness.

Working in cooperation with the lighting designers from Licht Kunst Licht, the architect decided not to use additional complex lighting structures and opted exclusively for downlights integrated into the concrete ceiling. The calculated interplay with the reflection from the white floors and ceilings produced the desired, pure lighting effect – with a high level of visual comfort for the station’s users. The planners adjusted the luminaire wattages and beam angles to the different ceiling heights of the hall and intermediate levels – for example, to achieve sufficient vertical illuminances on the side wall of the connecting bridge. The ends of the platforms, where ceiling protrusions prevent the use of downlights, are each marked by pairs of inground luminaires.

Impressive elegance thanks to a ceiling-integrated lighting solution

It is the striking simplicity that makes this lighting solution so elegant: the recessed luminaires from WE-EF line up like a string of pearls, with a precise installation detail setting the luminaires back a few centimetres into the ceiling surface. This impressive result belies no hint of the lengthy construction process that was anything but simple. The usual processes in building construction were literally turned upside down here – with a huge impact on the planning, logistics and installation of the lighting. The station that is directly below street level was built using the “cut-and-cover top-down” construction method.

To start with, side diaphragm walls were built, followed by a waterproof concrete floor to form the bottom of the pit. A “cover” was then concreted over the pit, also forming the later ceiling of the station. The flared support heads were completed early on, whereas the supporting columns grew in a later construction phase and were built from below as the soil for the hall was excavated. This had consequences for the ceiling-integrated lighting concept: the first installation step, the mounting of concrete installation housings, was carried out at a very early stage of the

project. WE-EF delivered the customised modified housings in 2013. In addition to a formwork element for the recessed installation detail, they also featured additional entries for redundant wiring. The later operator, Berliner Verkehrsbetriebe (BVG), did not want to take any risks as reliability was a top priority.

LEDs chosen early on

No risk – that also applies to the choice of WE-EF as a manufacturer entrusted with the task of supplying perfectly fitting recessed luminaires several years after the installation of the concrete installation housings. During the planning phase in the early 2010s it became apparent that LEDs would replace the HIT discharge lamps commonly used at the time. Together with WE-EF, the architect and lighting designer opted for the future-proof LED technology. This also enabled the emergency lighting to be seamlessly integrated into the concept. The zero-maintenance feature was a further argument in favour of LEDs in view of the continuous operation of the lighting underground. When the luminaires were finally delivered and installed in 2017 during the fit-out of the hall, their efficiency and lighting quality exceeded all expectations – LED technology had advanced so much in the space of just a few years.

When the new U5 line was officially opened in December 2020, the lighting of the “Rotes Rathaus” underground station had been in operation out of public sight for several years already. A total of 70 WE-EF type DOC240 luminaires are installed above the platforms. With 24 LEDs in warm white (3000 K) and a connected wattage of a maximum 48 W, they produce a symmetrical medium-beam light distribution. In addition, there are more than 100 DOC220 recessed luminaires with 12 LEDs and symmetrical medium-beam optics in the areas with lower ceiling heights. ETC140 inground luminaires with 24 LEDs in 3000 K have been installed at the ends of the platforms and feature a non-slip “ASC” coating in accordance with DIN 51130. Continuity in the product structure and in project management are aspects that are extremely important to clients such as BVG. This is demonstrated by the fact that WE-EF also supplied lighting systems for the two other new stations of the U5 line that were also individually designed by renowned architects.

Project data

Length: 140 metres; Depth: Up to 16 metres; Platform depth: 7 metres; Dimensions of the flared support heads: 7 x 9 metre; Area: 8,000 square metres; Converted space: 58,400 cubic metres; Reinforcement: 6900 tons; Concrete: 41,750 cubic metres

Client: Berliner Verkehrsbetriebe (BVG)

Architect: Collignon Architektur und Design GmbH, Berlin

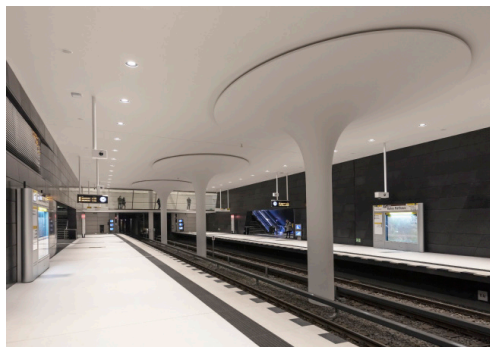
Executing company shell and finishing: PORR GmbH & Co. KGaA

Light planning: Licht Kunst Licht AG, Bonn/Berlin/Barcelona

Underground station "Rotes Rathaus", Berlin / Photos: Frieder Blickle for WE-EF



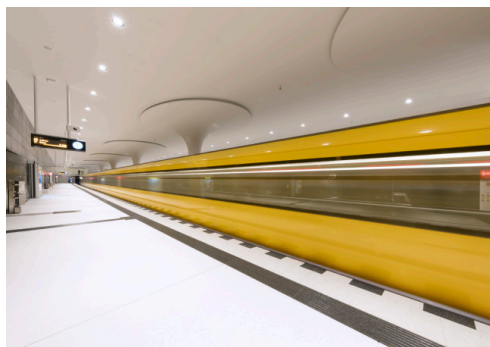
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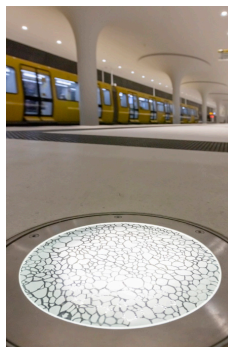


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09 The planners adjusted the luminaire wattages and beam angles to the different ceiling heights of the hall and intermediate levels.



10 In the areas with lower ceiling heights there are more than 100 DOC220 recessed luminaires with 12 LEDs and symmetrical medium-beam optics.

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