

Inner-city major construction site at a depth of 40 m

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Msheireb Metro Station, Doha, Qatar

PERI engineers supported the fast construction progress of the Msheireb Station, the key element of Doha's new metro system, with an individually tailored system concept and continuous on-site support.

The Msheireb subway station is situated in the heart of Doha and is the lynchpin of the ultra-modern metro system currently under construction in the capital of Qatar. It is here that the three most important connections converge: the "Gold Line", "Red Line" and "Green Line". By 2020, 82 km of tunnel routes and 25 stations will have connected the residential and commercial centres with the suburbs and the stadiums for the 2022 World Cup. In the final phase, the Doha metro system will feature a total of four lines and nearly 100 stations.

Impressive major construction site

The Msheireb subway station has been designed as a major interchange and features a total of four main levels at a depth of up to 40 m. The inner-city location of the jobsite, along with the imposing almost 200 m long and 180 m wide structural dimensions, placed extremely high demands on the execution of the construction work. For this, PERI has planned and delivered the formwork and scaffolding systems in order that the ambitious infrastructure project can be realized within the tight construction schedule.

The complex structural geometry as well as the massive reinforced concrete components, with up to 3 m thick reinforced concrete slabs and wall thicknesses reaching 2 m, required a customized implementation concept and rapid material availability of the corresponding system equipment. Thus, within a very short time period, PERI Qatar delivered 10,000 m² of wall and column formwork as well as 150,000 m³ of shoring to the construction site.

Wall formwork and shoring

For forming the mostly large-sized massive walls, the proven and individually customized VARIO Girder Wall Formwork system is being used. In turn, for the single-sided forming of the up to 9.50 m high wall sections

against the retaining walls, SB Brace Frames supplement the PERI formwork solution and which reliably transfer the fresh concrete pressure to the sub-structure. For the higher wall sections, VARIO elements together with CB Climbing Platforms form crane-movable climbing units. The DK anchor system is used for the subsequent sealing of the tie points. These are reliably closed by means of concrete cones using a special sealing compound.

The project-specific shoring concept developed by PERI engineers for transferring the high loads is based on proven PD 8 Shoring Towers, MULTIPROP Aluminium Slab Props and PERI UP Flex Modular Scaffolding System. In particular, the PERI UP Flex allows optimum adaptation to suit the wide range of geometries and load requirements due to the 25 cm system grid.

World Cup stadiums with rail connections

A total of six stadiums for the 2022 World Cup in Qatar are based in the capital Doha, with a further six others located in cities in the surrounding area. All sports venues will be connected to the rapid transit system (Light Railway System) currently under construction and whose core is formed by the Doha Metro.

Msheireb station is one of two major stations awarded to the SOQ Joint Venture (Samsung C&T, OHL, QBC) by Qatar Railways Company (Qatar Rail). The Msheireb station in Doha's historical city centre is the biggest station within the Qatar Rail's Doha Metro development program. Under the so called Doha Metro Major Stations Project package, PERI Qatar is also providing formwork and scaffolding solutions for the Education City major station.

In addition, for numerous other stations along the "Gold Line" PERI Qatar was also selected by the ALYSJ Joint Venture to provide efficient formwork and scaffolding solutions. With Ras Bu Abboud, Al Sadd, Joann, Al Waab, Sports City and Al Aziziyah it is the biggest package of the ambitious metro project being constructed in Qatar.

Source: PERI