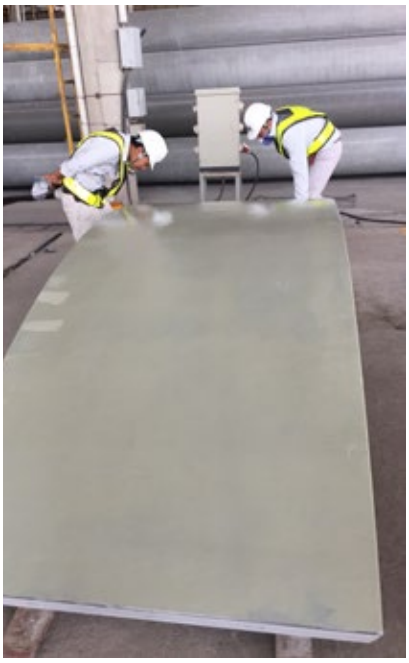
SIKA AT WORK

METRO LINE 1 - PACKAGE CP 1B, HO CHI MINH CITY, VIETNAM

CONCRETE: Sika® ViscoCrete®, Sika® Stabilizer, Sikafloor®

BUILDING TRUST



PROJECT DESCRIPTION

The Ho Chi Minh City metro system is an extensive underground and at grade/elevated metro network that will provide mass rapid transport for the Vietnamese city of Ho Chi Minh.
Owned by M.A.U.R. (Management Authority Urban Railway) the design of this huge infrastructural project took long before coming to the reality: first designs and plans date back to early years 2000. The Line 1 has a total length of 19,7 km of which 17,1 km elevated and at grade section and 2,6 km underground. Line 1 include as well 14 stations 11 of which are elevated and 3 are underground.
The TBM works of Package CP1b, originally engineered to be delivered in early 2017, was partially delayed and finally construction started in May 2017.
The Package includes the two stations of the Opera House (190 m long and 27 m depth), the Ba Son Station (240 m long built 18 meter underground) and the twin tunnel EPB TBM driven for a total excavation of 1562 m with an external diameter of 6.65 m and a ground overburden of 8.1 to 22.3 m thickness, 534 m of cut and cover tunnels. It's the first project of a mass transport tunnel in Vietnam built with an EPB TBM machine.
Completion of the construction is forecasted for 2020.

PROJECT REQUIREMENTS

Concrete

Excavation rate forecast is based on a 10 rings a day advancing rate for the TBM.
Concrete grade C48 with a slump of 50+/- 15 mm, demoulding of precast segments in short time requires a strength of >15 MPa at 5 hours.
Segments are protected on the estrados with an epoxy water based resin.

2C - Backfilling grout

A two component grout based on bentonite, stabilizer, accelerator is adopted as a backfilling solution for the anular gap between segments and ground. The backfilling grout has to be stable and flowable for 48h after batching.

SIKA SOLUTIONS

Sika Vietnam LTD was able to provide a complete solution for the challenging requirements of precast segments concrete production and for segments durability.
With Sika® ViscoCrete® 3000-10M concrete reached a proper slump for the cast while strengths at 5h reached >22 MPa and 65 MPa which are far beyond the requirements.
Sika® Stabilizer BF is used to ensure a proper viscosity at 48h for the 2 component backfilling grout.
Sikafloor® 2530 W New coating on the estrados of segments protects from aggressive ground water ensuring a durability in the range of the tunnel service life.

SIKA PRODUCTS

- Sika® ViscoCrete® 3000-10M - superplasticisers and ultra-plasticisers
- Sika® Stabilizer BF – stabilizer for backfilling grout
- Sikafloor® 2530 W New – water based epoxy costing for concrete protection

PROJECT PARTICIPANTS

Owner: M.A.U.R. Management Authority Urban Railway
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