ceEntek

PROJECT NAME: SWISS RAILROAD UHPC OVERLAY

Photo: Placing ceEntek ce200SF-t™ thixotropic UHPC with a virbrating screed

Location: Göschenen, Switzerland
Owner: Swiss Federal Railways
Product: ceEntek ce200SF-t™

Product Volume: 11 m^3 (14.5 cy)
Job Area: 370 m^2 (4000 sf) x 30 cm (1.25 in.)
Completion Date: June 2020

PROJECT SITE

The Göschenen, Swiss Railway station opened in 1882 and is located in the Swiss canton of Uri and municipality of Göschenen. It is situated at the northern mouth of the Gotthard Tunnel in an environmentally-sensitive intersection of a river and two rail lines connecting Zurich to the North and Milan to the South. This very heavily trafficked standard gauge line is operated by the Swiss Federal Railways.

Photo: Göschenen station with MGB train at centre left and Swiss Federal Railways tracks at centre right (Wikipedia)

PROJECT PROFILE

POJECT DESCRIPTION

The Swiss Federal Railways operating a busy railway corridor through an environmentally sensitive river valley decided to apply a 3cm (1 ¼") thick Ultra-High Performance Concrete overlay to rehabilitate and extend the life of the track slab over and adjacent to the River Reuss, which winds through Göschenen. The existing slab was deteriorated and required an upgrade to provide enhanced durability from the constant tie and rail abrasion, minimize the risk of delamination from vibration and provide a waterproof barrier to protect the environmentally sensitive River Reuss.

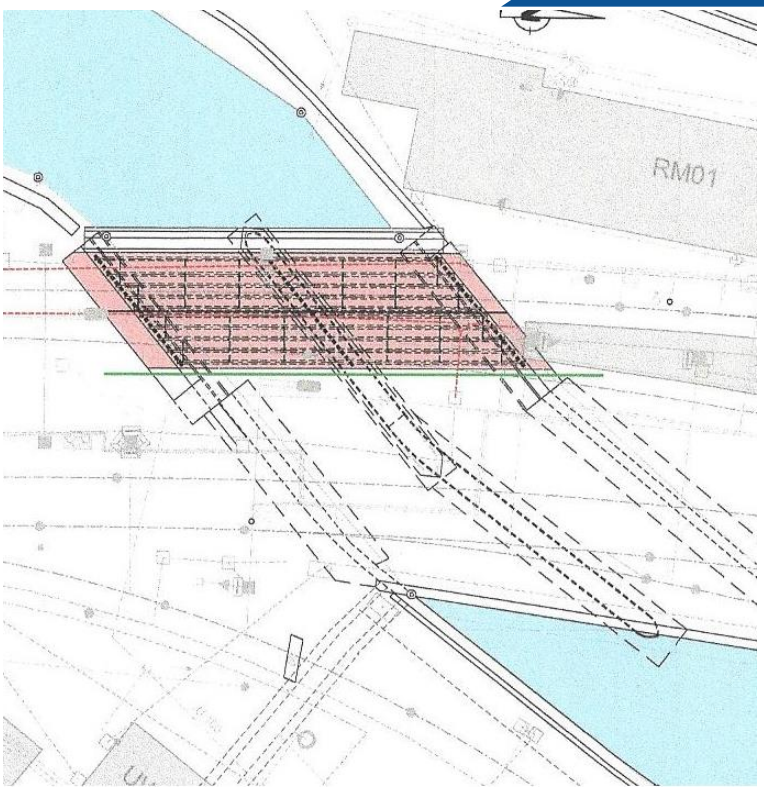

Photo: Plan of the Bridge Showing the UHPC Overlay Area (Shaded)

PROJECT EXECUTION

Speed of construction and minimizing "out of service" time was the job's major consideration, resulting in the use of the thixotropic UHPC system providing high early strength. The UHPC overlay was batched on site with twin DZ 750V Mixers (0.5 m3 [0.65 cy] capacity) supplied in one metric ton (2200 lb) bulk-bags, with 0.2 mm x 13 mm (0.008" x 0.5") steel fibers and ceEntek's CNF enhanced paste. Due to the tight and congested site with active trains, the thixotropic ce200SF-t™ was transported on rail buggies from the mixing station to the slab where it was deposited at an 8% slope, consolidated, and later profiled with a vibrating deck screed. Curing was accomplished by the application of a spray curing compound and finally a vapor barrier. The project required a total of 24 metric tons of UHPC.

Photos: Container delivery of ce200SF-t™ Bulk-Bags (L); Batching of ce200SF-t™ and delivery in rail buggies on-site (R).