



## Railway line drainage with SIMONA® SIMODRAIN® pipes



Top: Open drainage trench with 2/3 slotted SIMODRAIN® pipe, next to the railway line;  
Bottom: Geotextile jacket for the filter gravel bed

**BLS Netz AG operates a rail network spanning more than 900 km. Direct proximity to Lake Thun and Lake Brienz as well as minuscule differences in altitude regularly cause the groundwater level to rise and penetrate the trackbed. To prevent the trackbed from being destabilised, the existing drainage system made of concrete pipes was renewed with SIMODRAIN® drainage pipes.**

### The project at a glance

#### Project

Permanent-way renewal on the Spiez–Interlaken West railway line and renewal of the line drainage system over a total length of 1350 m, with four cross-ducts to the navigational canal over a length of approx. 600 m.

#### Client

BLS Netz AG, Bern

#### Contractors

ARGE BLS Lütschere, Spiez  
Astrada AG, Spiez  
Walo Bertschinger AG, Spiez  
Gerber + Troxler Bau AG, Interlaken

#### Structural planning

Mätzener & Wyss, Bauingenieure AG,  
Unterseen

#### Technical support

SIMONA AG Switzerland, Möhlin

#### Products used

SIMONA® SIMODRAIN® PE 80/PE 100 pipes and fittings

#### Duration of project

2010–2011



From left to right: Site installations and pipe storage area next to the railway line in service; standard-compliant pipelaying in the drain trench; confined space and full railway service during the construction phase called for maximum reliability and precision

## SIMODRAIN® drainage systems for Bernese Oberland

### Initial situation

After more than 30 years of service, the railway line from BLS Netz AG had to be renewed. In parallel with permanent-way renewal, the existing drainage system, made of concrete pipes in an open drain trench along the railway line, and the cross drainage to a navigational canal also had to be modernised.

### Task

According to the requirements of RTE 21110 (Railway Technical Code of Practice, Switzerland, governs requirements for roadbed and ballast), the piping system required for railway line drainage in the roadbed and ballast has to meet the figures specified by the operator, e.g. a clear water inlet opening of at least 100 cm<sup>2</sup> and a minimum slot width of 6 mm. To ensure reliable operation of such a drainage system over a period of decades, demanding static, dynamic and mechanical requirements also have to be met. The gradient requirements are 0.65 to 11.05 per mil.

### Solution

This construction project was realised with SIMONA® SIMODRAIN® drainage pipes with an OD of 250 mm, SDR 21, and 10 mm slotting, specially developed for traffic route drainage. These extruded smooth-wall pipes meet the requirements made of such a system, and with their large water inlet area they are capable of handling the specified 100 cm<sup>2</sup>. Using a special slot geometry and slot arrangement, and with the excellent hydraulic properties of the PE material, the drainage provided by the system is “best in class” and designed for the long term. End-milled slotting avoids undercuts, and hence deposits and incrustations. In addition, SIMONA® SIMODRAIN® pipes are very easy to rinse out, making them the perfect solution for the BLS Netz AG.

### SIMONA® SIMODRAIN®

#### Properties

- Confirmed long service life
- Fracture resistant owing to a high level of flexibility (proof of impact resistance down to -20 °C)
- Can be rinsed out at high pressure (1100 W/mm<sup>2</sup>)
- Suitable for very high static and dynamic loads
- High mechanical resistance
- Resistance to all substances normally found in the ground
- Favourable hydraulic conditions due to smooth interior pipe surfaces (k ≤ 0.01 mm)
- Problem-free open-air storage due to UV and frost resistance
- Fast laying due to socket connection and long overall lengths
- Lightweight design
- Easy to install on a flat trench subgrade
- HPQ and EBA approval

#### Range of products

- Pipes
- Fittings
- Electrofusion fittings
- Welding rods

### Further information

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