



**FASER  
TECH AG**

English

## Swissfiber bars

Lärmschutzwandpfosten aus Fiberglas  
Fibreglass noise damping barrier posts  
Paroi de mur antibruit en fibre de verre  
Pali per pareti fonoassorbenti in vetroresina



Seit 12 Jahren setzen wir uns für ein lärmfreieres Leben ein

**For 12 years now, we have made efforts to reduce the noise**

Depuis 12 ans, nous nous engageons pour une vie avec moins de bruit

Da 12 anni ci adoperiamo per una vita con meno rumore

## General basic data

Increasing demands for mobility result in ever greater volumes of traffic between major population centres. Noise pollution linked to increased demands for mobility and a constant rise in population density lead to more and more people exposed to noise. The Swiss Federal law "Noise Abatement for Railways", which came into force in March 2000, is intended to protect the population against noise. The law requires all Swiss railway companies to lower their noise emissions by 2015. Besides other measures, a large number of noise damping barriers are planned to comply with these regulations. Swissfiber bar s profiles were developed for use as a support element for the noise damping barriers (NDBs). Swissfiber bar s and b is a static support profile approved by the SBB for use as noise damping barrier posts. Their main properties include low weight, durability for a planned service life of 80 years and extremely simple installation.



## Advantages

The use of Swissfiber bar s noise damping barrier posts offers many advantages:

- Highly attractive design: concrete foundations can be poured completely in the ground since fibreglass does not corrode.
- Base board easily joined to post.
- Low weight makes installation fast and simple. No need for heavy installation equipment.
- Direct installation in concrete since Swissfiber bar s is highly resistant to corrosion and alkaline attack.
- Approved for service life of 80 years.
- Suitable for use with SBB NDB elements made of concrete or wood.



## Range of application

Swissfiber bar s or bar b noise damping barrier posts are support elements for noise damping barriers. They were subjected to an approval process and are classified as suitable by the SBB. Swissfiber bar s or bar b complies with Directive FW-IB 01/05 of the SBB for the measurement, construction and design of noise damping barrier posts made of GRP profiles.





## Technical specifications

### Material

The Swissfiber bar s profile is made of fibreglass, a composite material made of fibre glass and vinyl ester.

### Profiling

To raise the characteristic design values, the profile is provided with a profiling in the concreted area. The profiling, which is applied after manufacture, is made of a sand layer embedded in resin.

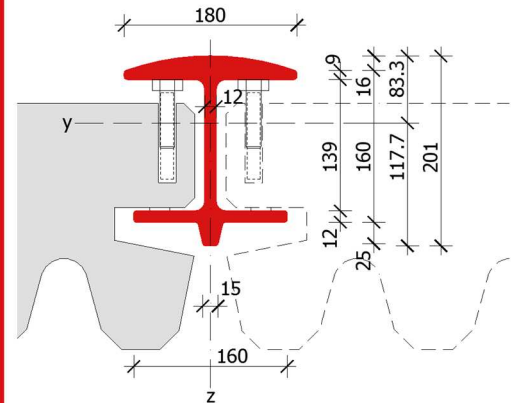
### Surface

Swissfiber bar s is manufactured in a mechanical process. The surface is completely smooth. A protective coating is integrated in the surface but this may weather with time. However, the load-bearing capacity of the profile is guaranteed for the planned service life of 80 years despite weathering.

### Color

FGR profiles are supplied in RAL 7012 color basalt grey. This color tone is not quite identical to the SBB standard NCS 6000N. Although the color is darker, the FGR profiles are still accepted by the SBB. Weathering leads to a change in color over time. This has no impact on the mechanical properties or the load-bearing capacity of the profile.

Post cross-section in mm



Weight	13.5 kg/m
Surface A	7'775 mm <sup>2</sup>
Circumference U	980 mm
max. length	400-600 cm
Life cycle	80 years
Principal moment of inertia	Jz 11'583'085 mm <sup>4</sup> Jy 40'684'675 mm <sup>4</sup>
Moment of inertia	Wy 345'664 mm <sup>3</sup>





## Profile length

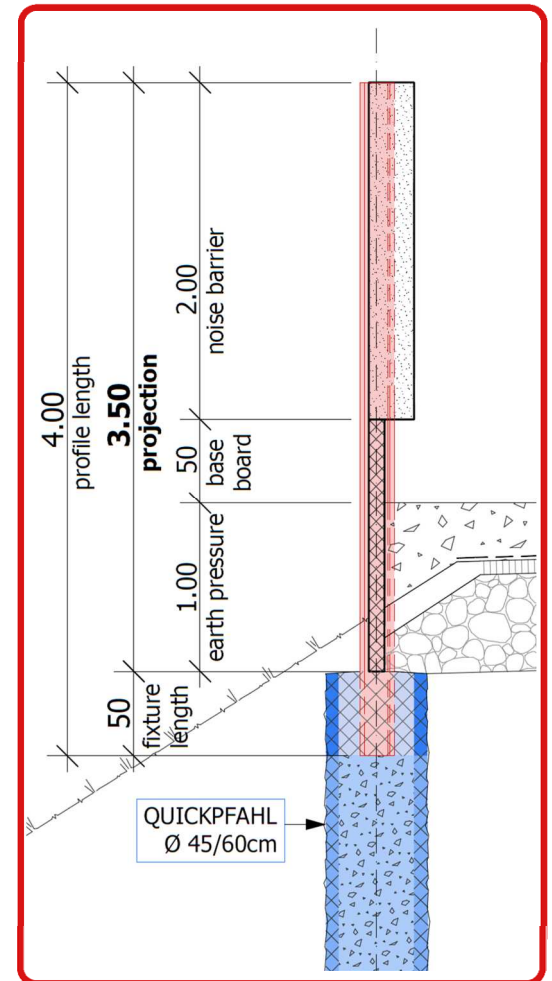
Swissfiber bars profiles are stocked in lengths of 400 cm. With sufficient lead time, profiles can be produced "to size" (max. 600 cm). The cut edges are sealed with resin after sawing at the factory. If additional cutting is required on the construction site, the cut edges must be resealed (using protective paint contained in the building site kit).

## Post length

This length comprises the projection and the fixture. The projection is the difference between the top edge of the foundation to the top edge of the noise damping barrier. The fixture length is 50 cm. The specified data represents projections from top edge of the foundation to the top edge of the noise damping barrier.

## Projection

A maximum projection of 350 cm is possible. This is divided into 200 cm for the noise damping barrier, 50 cm for the base board and 100 cm for soil pressure. The actual length of the profile is 400 cm since the embedding depth of 50 cm in the foundation is also added to the projection.



## Calculating the projection length:

Soil category acc. to SIA 261	Reference value of back pressure kN/m <sup>2</sup>	Projection with a support distance of <u>400cm</u> in cm	Projection with a support distance of <u>500cm</u> in cm
II	0.9	<b>300</b>	<b>250</b>
	1.1	<b>275</b>	<b>250</b>
	1.3	<b>250</b>	<b>225</b>
IIa	0.9	<b>300</b>	<b>275</b>
	1.1	<b>300</b>	<b>275</b>
	1.3	<b>275</b>	<b>250</b>
III	0.9	<b>350</b>	<b>300</b>
	1.1	<b>325</b>	<b>300</b>
	1.3	<b>300</b>	<b>275</b>
IV	0.9	<b>350</b>	<b>325</b>
	1.1	<b>325</b>	<b>300</b>
	1.3	<b>300</b>	<b>275</b>

## Example:

- Soil category III
- Reference value of back pressure: 0.9 kN/m<sup>2</sup>
- Distance between posts is 4 m with fixture profiling

## Remarque

Load-bearing weight of most noise damping barriers is projected with Soil Category III acc. to SIA 261.



## Characteristic data for measurement

The following characteristic data were determined for the Swissfiber bar s profile taking account of stability properties:

	Characteristic data	
	without profiling	with profiling
Shear force $V_{RK}$ (kN)	47.7	112.0
Moment $M_{RK}$ (kNm)	71.2	115.0

## Safety factors

In consideration of constant alkaline exposure of Swissfiber bar s, the characteristic data must be reduced by a factor of 1.41.

Resistant coefficient	$\gamma_M$ short 1.8	$\gamma_M$ long 3.2
Load factors	according to SIA 261	
Reduction factor* <small>*constant alkaline exposure</small>	1.41	

## Rated values

Description	Rated value (incl. alkaline exposure in foundation)			
	short		long	
Profiling	without	with	without	with
Shear force $V_{Rd}$ (kN)	18.8	44.1	10.6	24.8
Moment $M_{Rd}$ (kNm)	28.1	45.3	15.8	25.5

## Material properties on samples

Bending modulus of elasticity	27600 MPa (EN13706-2 Annex D)
Axial bending strength	475 MPa à 20° (EN ISO 14125)
Temperature expansion	$10 \times 10^{-6} K^{-1}$
Fire index number	BKZ 5.3
Weight	13.5 kg/m <sup>1</sup>

## Storage

Swissfiber bar s profiles may only be stored flat and must be protected from weathering (sun, heat, wet and moisture). When using protective sheeting, make sure they are impermeable to light. The equipment used for transportation is not sufficient as long-term protection in storage.

## Maintenance

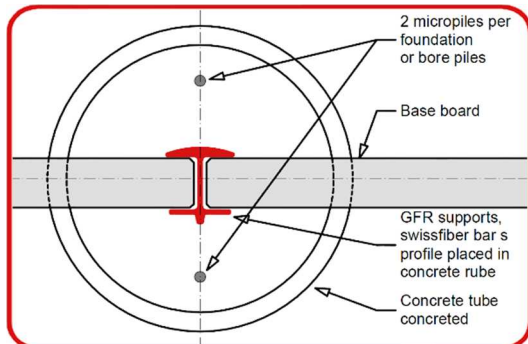
As part of routine maintenance, we recommend checking the following items:

- Visual inspection of surface
- Check tightness of clamping screws



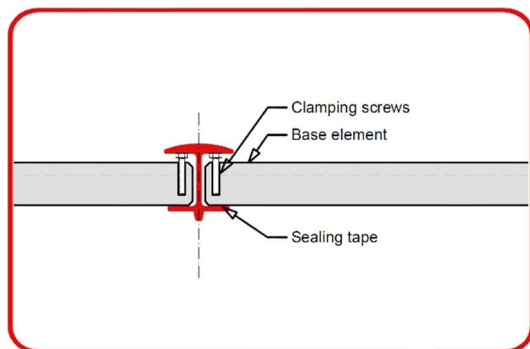


## Installation



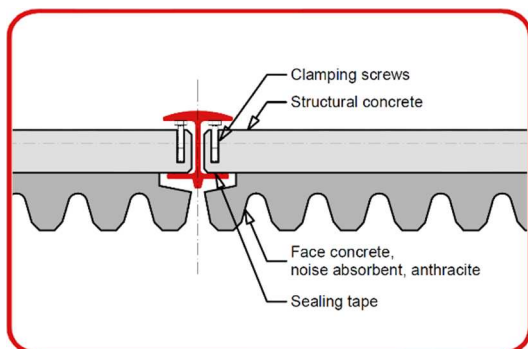
### Foundation

The foundation design of the fundament is listed in the SBB type catalogue in Drawing A-13 (see attachment). An economical solution is to construct the foundation of bore piles retained by a well collar. As opposed to conventional steel piles, Swissfiber bar s may be embedded in concrete in the well collar in contact with the soil without any risk of corrosion.



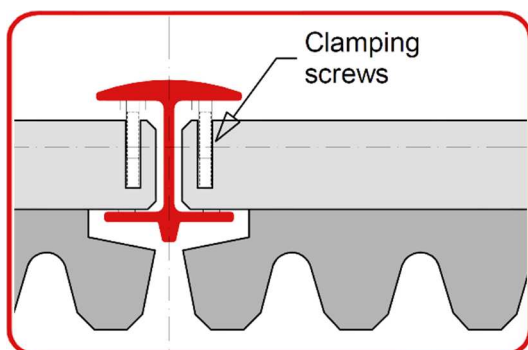
### Base board

Due to the exceptional resistance of Swissfiber bar s posts, the pile head may be completely covered and completely buried. It is then much easier to fix the base board. Similar to the noise damping barrier elements, the base board is embedded between the profile and then clamped with screws.



### Wall elements

Swissfiber bar s is designed in such a way that the same noise damping barrier wall elements can be used as for conventional designs. When the concrete noise damping barrier elements are inserted between the flanges of the Swissfiber bar s, a slip or protection rail must be used. This is then removed before the concrete elements are secured.

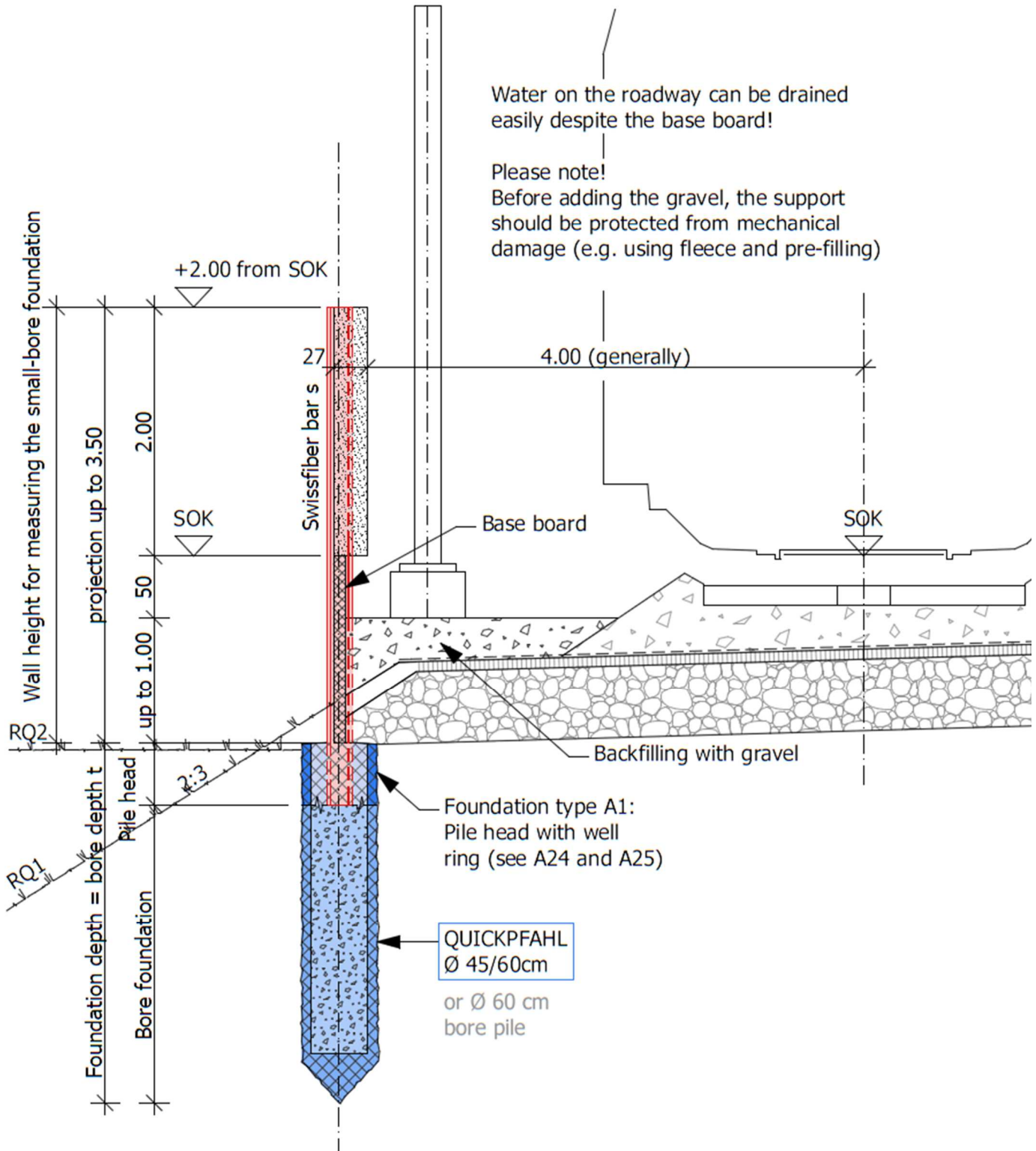


### Clamping screws

When the noise damping barrier elements are clamped with the proper screws, make sure they are fully tightened to 20 Nm.

## Situation foundation type A1/B2

For FGR posts, pile head covered



Original extract from SBB Type Catalogue for Fibreglass/FGR posts