SIKA AT WORK
SEISMIC RETROFITTING AT SEMBRANCHER (VS) SCHOOL BUILDING, SWITZERLAND

STRUCTURAL STRENGTHENING: SikaReinforcer®
CONCRETE REPAIR: Sika MonoTop®
ANCHORING: SikaGrout®, Sika AnchorFix®

BUILDING TRUST

SEISMIC RETROFITTING OF MASONRY

PROJECT REQUIREMENTS

As part of various renovation works at the primary school in Sembrancher (VS), Switzerland, the building was also strengthened according to the current earthquake protection requirements. The earthquake analysis showed that individual masonry walls could be used to resist the seismic forces so that no additional measures (such as new concrete walls, steel frames, etc.) would need to be implemented.

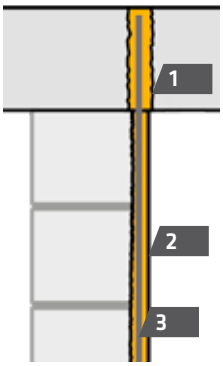
In order to be able to transfer the seismic loads (shear forces and bending moments) via these masonry walls, the statically permissible stress state of the wall had to be verified. Vertical axial forces help to increase the shear resistance of the masonry. Since this is not guaranteed on the upper floors due to the low dead loads, this would be compensated for with a pre-stressed wall.

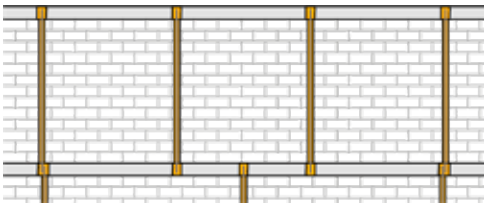
SIKA SOLUTION

With the aim of introducing a constant and evenly distributed vertical force into the walls, SikaReinforcer®-16 Rebar were arranged in previously cut slots over the entire height of the affected floors. To anchor these SikaReinforcer®-16 Rebar, breakthroughs were made in the concrete slabs at the head and foot of the walls. The anchoring in the concrete slabs was then carried out with a reprofiling mortar/grout using either SikaGrout®-314 N or Sika Anchor-Fix®-3030. The SikaReinforcer®-16 Rebar rods were prestressed with a gas torch with the temperature checked at regular intervals. After completion of the work, the slot in the free length outside the anchoring areas is also filled with Sika Monotop®-412 Eco mortar.

Advantages of the strengthening method
This method of strengthening the structure is particularly useful because it offers the possibility of applying ductile prestressing and thus additional normal force in a simple and efficient way, without hydraulic equipment. The additional reinforcement with prestressing is completely embedded in the walls as well as the two adjacent slabs.

In addition to the static advantages, SikaReinforcer®-16 Rebar can be integrated into the production cycle of stainless steel in the event of future dismantling and can thus be completely recycled. This minimises the ecological footprint compared to non-recyclable products. In addition, only recyclable mortar products from Sika with a reduced CO_2 footprint were used, which makes the preservation work on this old building structure not just economical, but also sustainable.





1. Sika AnchorFix®-3030 or SikaGrout®-314 N
2. Sika MonoTop®-412 Eco
3. Memory®-steel 16 mm rebar

SEMBRANCHER (VS) SCHOOL BUILDING, SWITZERLAND

PROJECT PARTICIPANTS:
Building owner: Community Sembrancher
Engineer: THETAZ Ingénieurs Civils SA / Ronald Troillet
Construction company: MF Manenti Farquet SA

SIKA PRODUCTS USED:
- SikaGrout®-314 N
- Sika AnchorFix®-3030
- Sika MonoTop®-412 Eco
- SikaReinforcer®-16 Rebar

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