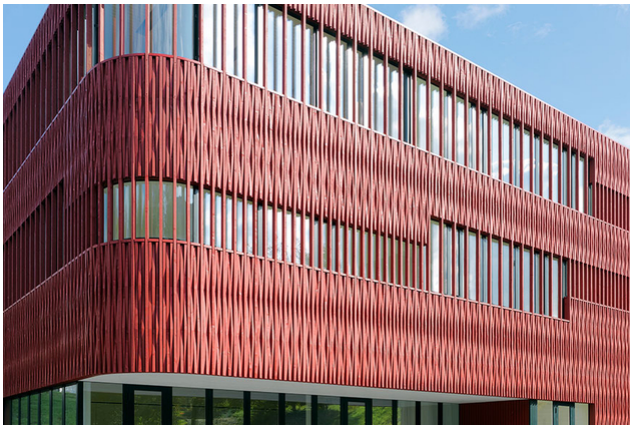


New construction of the Büttenen school complex, Luzern

2009



According to a decision of the Lucerne City Council, the small school building in the residential district of Büttenen was to be demolished and not replaced. The children would have had to go to a school much further away. The solution?

The project

The affected residents of the neighborhood successfully resisted and convinced the parliament to erect a new school building. The new school building was to be built of wooden elements, and its architectural design was to give it a light, attractive appearance. With the idea of building the schoolhouse closer to the street, a large break area with a lot of green space was created. To ensure that the new building is also in harmony with the green surroundings, the school building was built according to the Minergie-ECO standard. The building consists of a basement in solid construction and two upper floors in wooden element construction. The generously designed, bright classrooms placed high demands on the structural concept.



Interior view; Photo: Roger Frei, Zurich

The construction method

Due to the geometry and the arrangement of the classrooms, the ceiling had to span 7.3 meters, the roof even 9.0 meters. These large spans could be achieved with box-girder ceilings made of ribs in glulam and planking of three-layer boards and OSB boards. The high forces of the cantilevered ceiling were taken up by box girders made of Kerto-Q panels. The loads were transferred from the floor elements to beams, some of which are integrated into the box girder floor.

The challenge

In order to design the large cantilevers and distribute the forces to the pile foundations, high beams made of glulam were inserted in the roof as well as in the floor slabs. Another highlight were the round skylights: due to the filigree support in four points, the skylight roof seems to float on the surrounding light band.



Work niche with cantilevered BSH beam



Overhanging floor slab in the area of the entrance



Exterior view from Büttenbergstrasse

Construction Data

- Timber: 120 m³
- Kerto-Q for wooden ceilings and beams: 12 m³
- Three-layer boards for box-girder ceilings: 1320 m³
- OSB boards for wooden box ceilings: 830 m³

Services of Timbatec

- SIA Phase 32 Construction project
- Statics and construction
- SIA Phase 51 Implementation project
- Technical site management and site inspections

Owner

Structural Engineering Office of the City of Lucerne
6000 Lucerne

Timber construction contractors

Zimmerei Kühni AG
3435 Ramsei

Timber construction engineers

Timbatec Holzbauingenieure Schweiz AG, Thun
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General Contractor

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