

Addition of stories Hospital region Oberaargau SRO, Langenthal

2017



The intensive care unit of the Oberaargau Region Hospital in Langenthal has reached the limits of its capacity. Thanks to a wooden extension, the hospital now meets the increased space requirements.

The project

With the VKF fire protection guidelines of 2015, hospital buildings in timber construction are possible. In order to meet the increased space requirements, an extension to the existing building was realized while the hospital was still in operation. In the case of hospitals, the supporting structure of the fire-section-forming components must meet 60 minutes of fire resistance in encapsulated construction (R60-RF1 or EI60-RF1). This high requirement is prescribed in normal office and residential buildings only for the vertical escape route. The load transfer of the addition to the existing building fabric was only possible at a few defined points. This results in large spans for the timber construction and correspondingly large beam deformations.

The construction

The addition is a skeleton building structure in timber construction. Vertical loads could only be transferred selectively and at specific locations into the existing solid building structure. In the roof, the spans of 7.7 meters were bridged with a partially insulated box girder. An underslung beam bridges an inner courtyard with a span of 16 meters.

The challenge

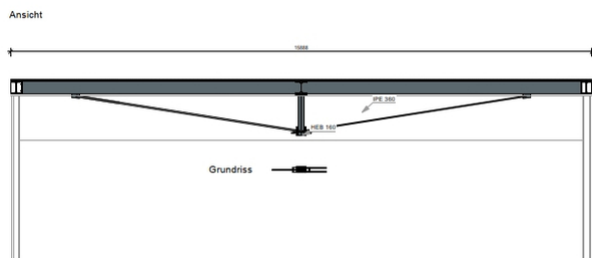
Forming the fire compartments while accommodating the large deformations of the girders and the sliding connections was a major challenge. A specially designed connection of the interior walls to the roof allows the roof elements to deform without transferring loads to the walls. The fire protection authorities approved this special construction with an "approval in individual cases". Another challenge is the high installation density that is common in a hospital.



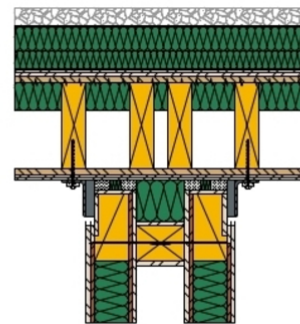
Installation of the under-tensioned beam



Erected interior wall elements with the prepared recesses for the many installations



Sub-span steel girder with a span of 16 meters



Sliding connection for high deformations with "approval in individual cases" from the fire protection authority

Construction Data

- Skeleton structure
- Sub-frame with a span of about 16 m
- Interior and exterior walls frame construction encapsulated
- Requirement REI60-RF1
- Roof partially insulated box girder Span 7.7 m

Services of Timbatec

- SIA Phase 32 Construction project
- SIA Phase 41 Tendering and comparison of offers
- SIA Phase 51 Implementation project
- SIA Phase 52 Execution
- SIA Phase 53 Commissioning
- Structural analysis and design
- Site supervision and site inspections

Architect

Lüscher Egli AG 4900 Langenthal

Client

Spital Region Oberaargau SRO AG 4900 Langenthal

Timberconstruction engineer

Timbatec Holzbauingenieure Schweiz AG 3012 Bern

Timberconstruction

Hector Egger AG 4900 Langenthal

Civil Engineer

Wälchli & Partner AG 4900 Langenthal

Photography

Lüscher Egli AG 4900 Langenthal