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These new buildings on the campus of ETH Zürich, the Swiss Federal Institute of Technology, emerged from a two-stage architectural competition held in 1990/91. They comprise teaching and research facilities organised in a building, which in plan looks like a five-toothed comb, and – linked to this – an auditorium building, plus a separate, smaller services unit. A rigorous, clear differentiation of building volumes and spatial alignment creates a new hierarchy and order in the architecture of the whole campus.

Within the teaching and research building, space is arranged to create five distinct laboratory areas, joined together at one end by a spine of teaching rooms. This alignment enables the department of chemistry and its related areas to be brought together in a single facility, giving greater flexibility and scope in the utilisation of space. Closer physical links between the various sections also facilitate relations between them, and have further spin-offs in terms of operational efficiency.



Plan of campus
Phase 1:
1 Services
2 Piazza
3 Auditoriums
4 Laboratories
Phase 2:
5 Laboratories

View of the laboratories after the first phase of building. All five areas are scheduled for completion in 2004.



The outside of the buildings is dominated by three materials: stainless steel and glass for the rigorously geometric façades, and granite from the Maggia valley for the paving. On the inside, too, the clarity of the design concept and the materials is continued. Only in the lecture halls and library are these basic materials supplemented by the warm tones of wood panelling.

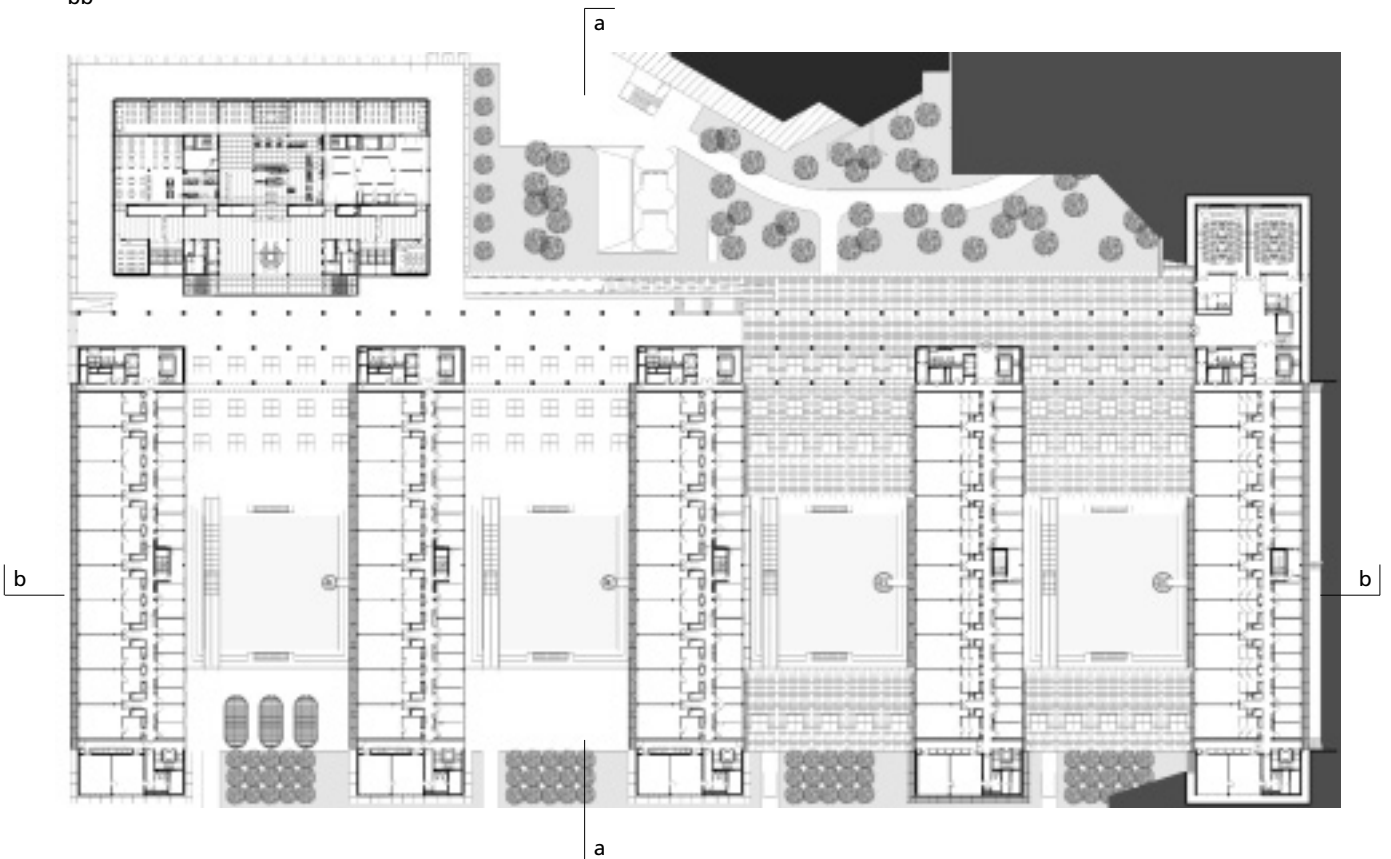


aa

Sections · Plan of ground floor
Auditorium building and laboratory area



bb



The façade consists of a geometric frame system filled in with panels of glass or metal. All the intersections between the façade units are centred on the frame members of the building. Mitred frame corners emphasise this strict arrangement of horizontal and vertical lines.

The façade units are divided horizontally into three sections, and vertically into either three or four sections, in response to the requirements of the laboratories behind in terms of escape balconies, ventilation, closed panels, opening windows/louvres etc.



The escape balconies on the laboratories mirror the geometric grid of the façade itself.

Integrated into the distinctive roof edge are solar collectors that generate around 60% of the energy required for lighting the rooms.

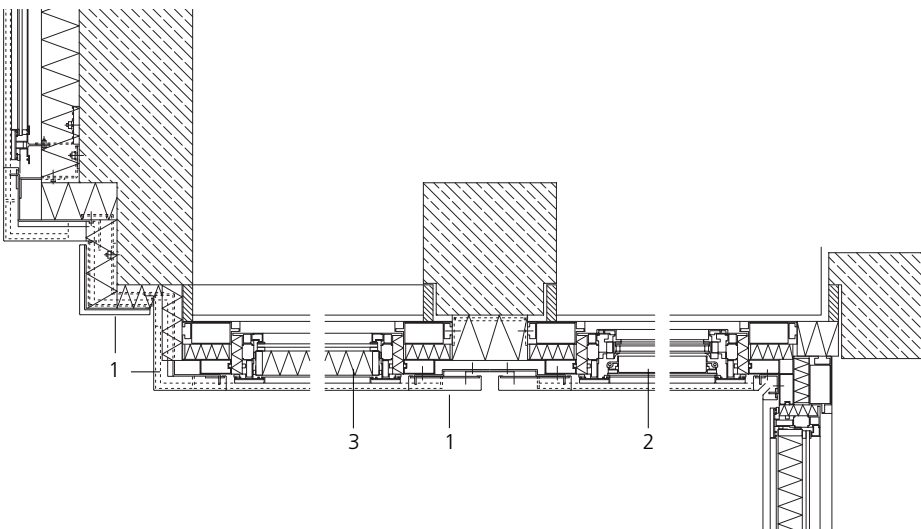


The windows on the sunny east, west and south sides have built-in louvre blinds that both provide solar shading while also enabling optimum control of heat transmission and daylight utilisation. Exploiting the energy potential of the façades was an important part of the cost-benefit analysis.



Horizontal section through façade scale 1:20

- 1 2 mm stainless steel sheet, ground, 220/240 grit size, material grade 1.4301
- 2 Glazing with integrated louvre blinds
- 3 Closed façade unit



Two standard details for the corners of the building ensure consistency in the geometric grid of the buildings.

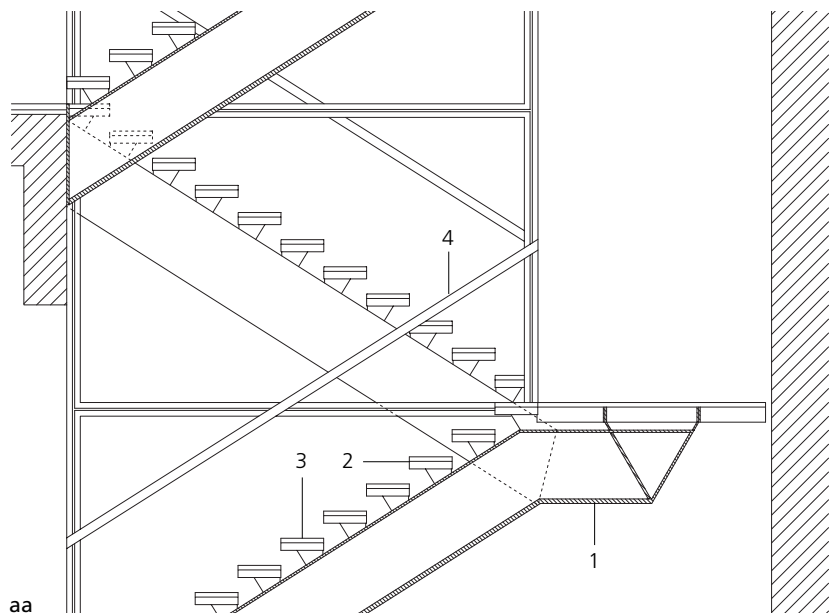


In the centre of the foyer of the auditorium building is a spiral staircase that links the ground floor refectory and cafeteria with the library and lecture halls on the first floor. The suspended, triangular centre string is made from 15 mm stainless steel sheet, welded in a spiral shape and then ground. The centre balustrade, made of 8 mm sheet, and the handrail, brace the central string vertically. Glass panels and flat steel posts are used for the outer railing of the staircase.

Section · Plan of stairs
scale 1:50

- 1 Triangular girder, welded from 12 mm stainless steel, material grade 1.4301, ground surfaces
- 2 Continuous double-angle section
- 3 Glass tread, laminated safety glass (24 + 4 mm), slip-resistant etched finish
- 4 Stainless steel handrail, 60.3 mm dia.

The 20-tonne spiral staircase was entirely prefabricated in the factory and brought to the site by special transporter.

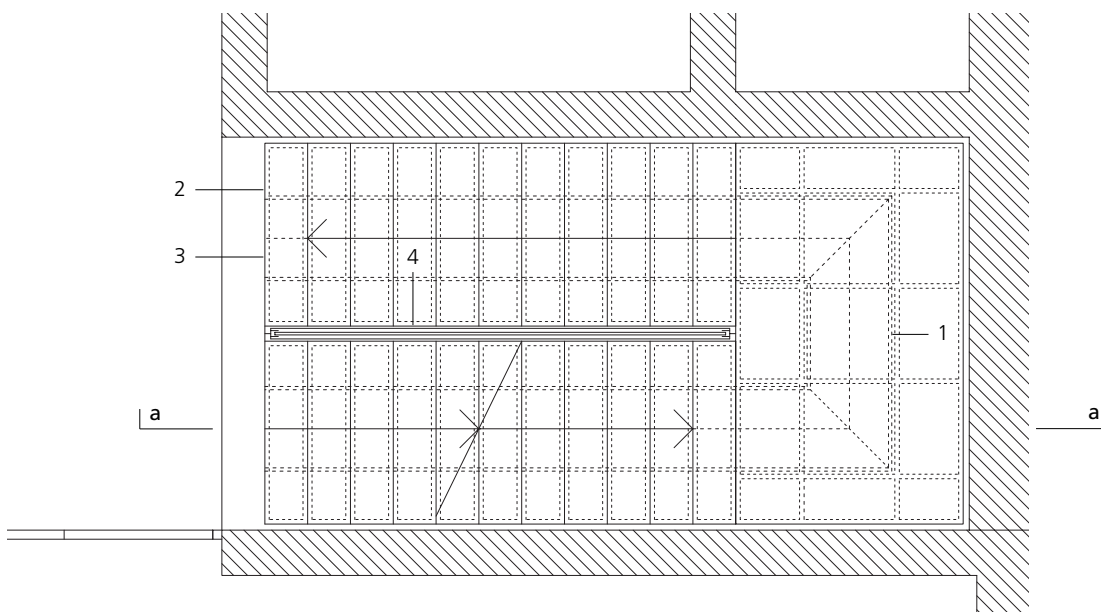


Stainless steel and glass were also chosen for the two double-flight staircases to the right and left of the main entrance, and for a triple-flight staircase in the library. The laminated safety glass treads – etched for a slip-resistant finish – are fixed to continuous double-angle profiles raised above the triangular, suspended centre string. Prefabricated flights spanning from floor to floor were delivered to the site from the factory.



The suspended central string and the glass treads raised above it give a light, open feel to the staircase.

The geometry of the triangular string under the glass landing creates an interesting effect.





The entrance doors fit perfectly into the geometry of the façades, while also fulfilling the essential requirement of being robust, durable and maintenance-free.



The smoke and fire doors are also in stainless steel. As with the façade panels, here, too, the corners are mitred.

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