

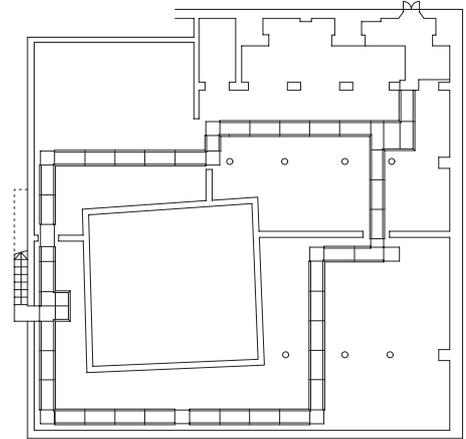
Glass Walkway in the Basilica of Aquileia, Italy



The Basilica of Aquileia in Laguna di Grado in northern Italy contains the largest and best preserved early Christian mosaics. Now listed by UNESCO as a World Heritage Site, this historic monument, dating back to the fourth century, attracts over 300,000 visitors a year.

The stone surface of the mosaic has suffered considerable wear and tear through structural stresses, fungal attack, mould and salt efflorescence, but above all because of the large number of visitors. Measures had to be undertaken to preserve these unique pictorial images.

Transparent walkways enable visitors a close-up view of the mosaics in the Basilica of Aquileia.



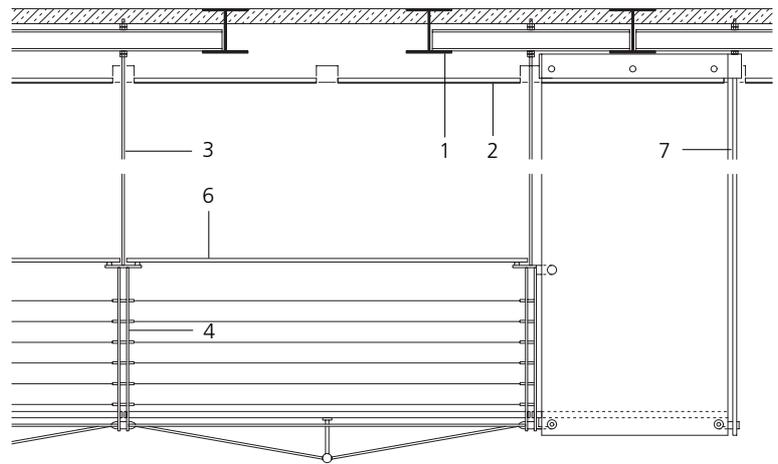
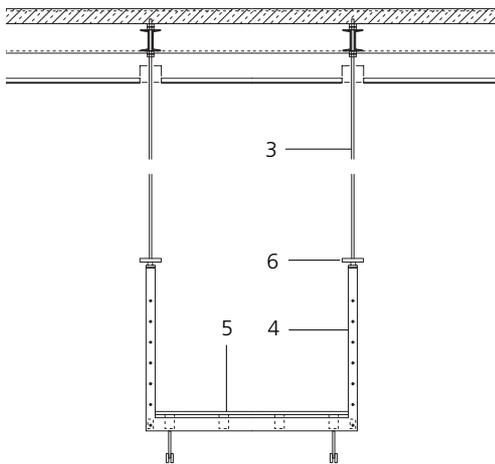
Plan of the walkways in the old northern hall of the basilica scale 1:750





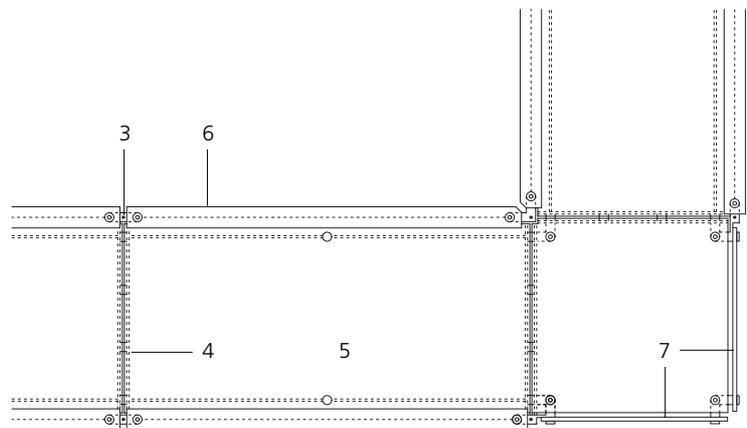
Careful restoration was required, and a solution to the problem of how to keep these art treasures open to the public, without letting people walk on them.

A chance presented itself when the old concrete roof had to be replaced. Glass walkways were suspended from the new roof on a stainless steel support frame. If required at a later date, the entire construction can be removed without impairing the original historic substance.



Cross section, part elevation and plan of the glass walkway
scale 1:50

- 1 New roof construction
- 2 Suspended soffit
6 mm stone facing on backing board
- 3 14 mm dia. stainless steel suspension cable
- 4 Stirrup frame, 2 x 60/10 mm (vertical) and
2 x 80/10 mm (horizontal) stainless steel flats
- 5 Laminated safety glass,
12 + 12 + 12 + 6 mm toughened glass
- 6 Handrail, laminated, 2 x 12 mm toughened glass
- 7 Horizontal bracing, laminated safety glass,
2 x 12 mm toughened glass



The transparent walkway is 134 m in length, and runs through the old northern hall (the Theodorian aula) of the basilica. The dead and live loading of the structure is directed into a steel construction below the new concrete roof, via 14 mm stainless steel cables (grade: 1.4401). These cables are affixed at the top behind a suspended soffit faced with natural stone.

At the bottom, the cables are attached to the stirrup frame composed of pairs of 10 mm steel flats. Resting on this 2.50-m spaced frame is the walkway, made up of glass panels 1.2 x 2.50 m in size. Additional support comes from cross-bracing of 10 mm stainless steel cables on the underside of each glass slab.

To brace the walkway structure horizontally, vertical glass panels are fixed at the corners along the route. The sheet action of these



Vertical glass panels on the corners, and horizontal tensioning bars counteract any oscillation tendencies in the walkway.

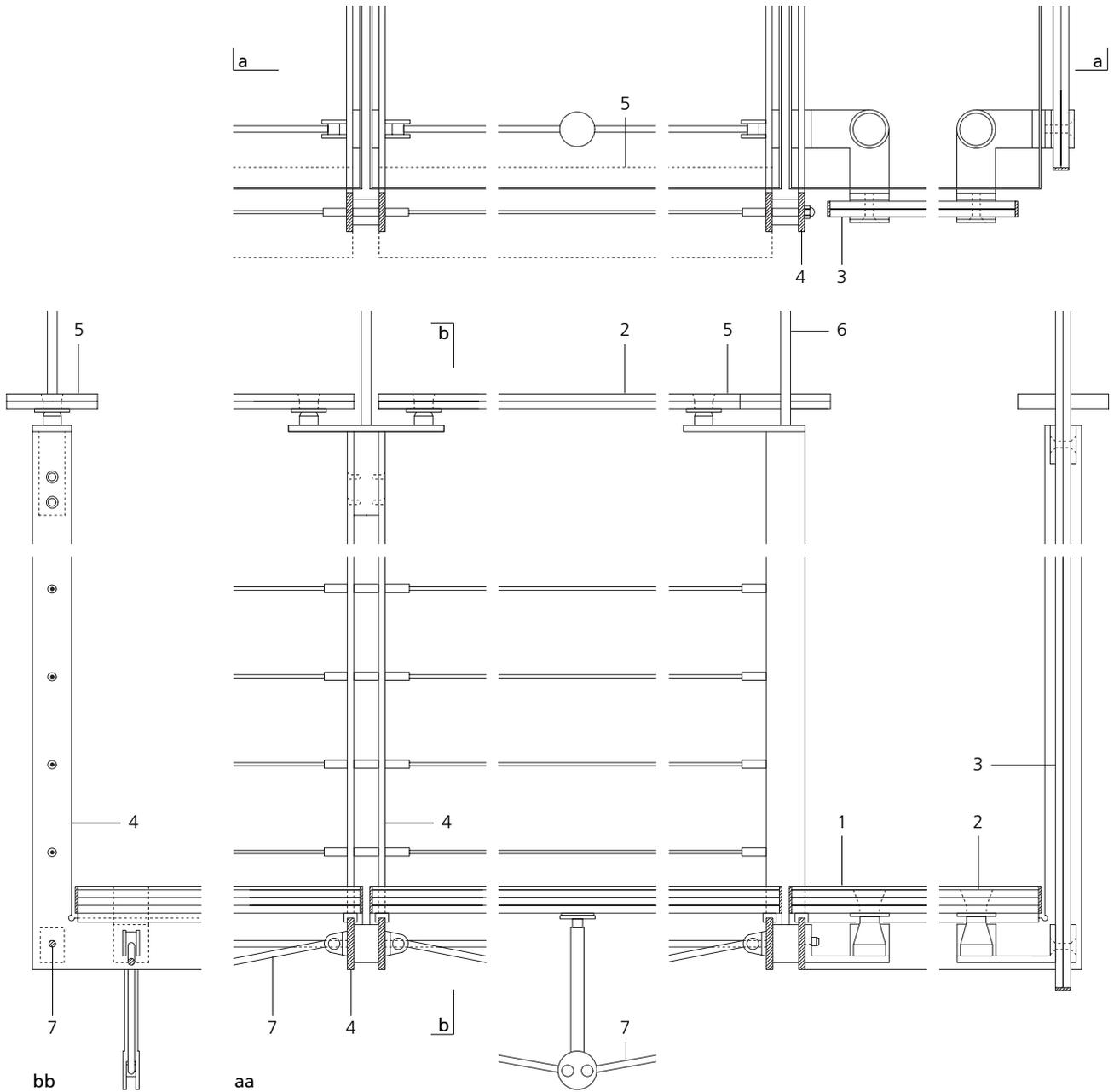
panels prevents any oscillation of the structure. Additional rigidity comes from the tensioning bars spanning horizontally between the uprights either side of the walkway.

Highly transparent glass was chosen for the walkway, so as to ensure that the mosaic colours, as seen by the visitors, should be as true as possible. The individual glass slabs consist of a structural layer (two panes of laminated safety glass) with a thin sheet of toughened glass on top as a wearing layer. This protects the structural layer and is easy to replace every two years or so, when scratched through wear and tear.

The handrails were also made of glass, to keep visibility of the mosaic as high as possible. Stainless steel fixing points connect the glass handrails to the railing posts; they are jointed to help prevent stresses building up in the glass.

Jointed stainless steel fixing points stop any bending or rotation stresses in the glass panels.





Details scale 1:10

- 1 Laminated safety glass, 12 + 12 + 12 + 6 mm toughened glass
- 2 Stainless steel fixing point, grade 1.4401
- 3 Horizontal bracing, laminated safety glass, 12 + 12 mm toughened glass
- 4 Stirrup frame, 2 x 60/10 mm (vertical) and 2 x 80/10 mm (horizontal) stainless steel flats, grade 1.4401
- 5 Handrail, laminated safety glass, 12 + 12 mm toughened glass
- 6 14 mm dia. stainless steel cable
- 7 10 mm dia. stainless steel cable

GLASS WALKWAY IN THE BASILICA OF AQUILEIA, ITALY



The handrails, too, are of glass, so as not to impede the view of the mosaic floor.

The visual transparency of the stainless steel and glass walkway was achieved through clever exploitation of the technical characteristics of each material. The structure permits continued public access to this sensitive historic site and gives visitors an unimpeded view of the precious mosaic floor.

Barely perceived by the visitor, the stainless steel connection points give maximum stability to the walkway.

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