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EDUCATION



教育机构

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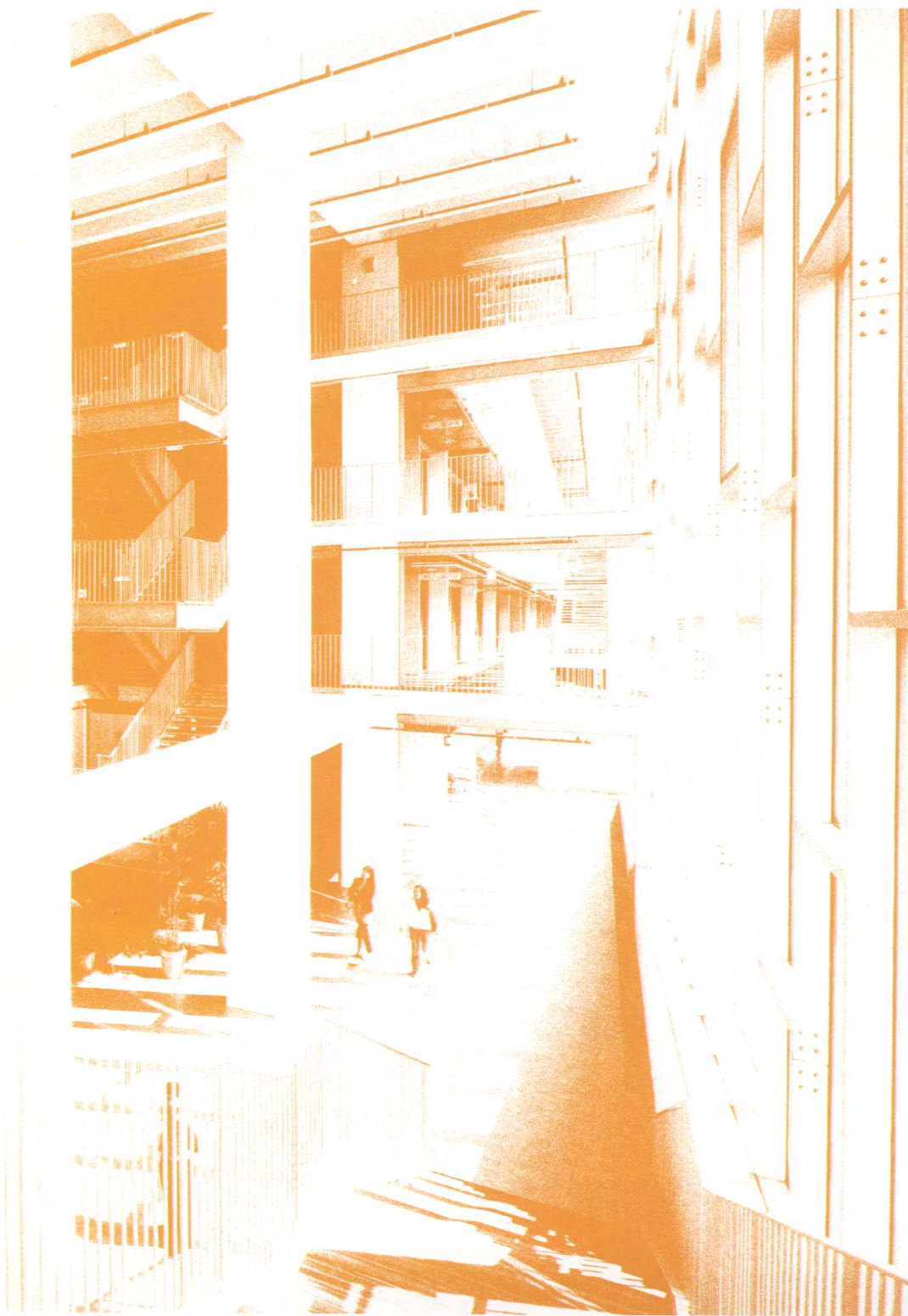
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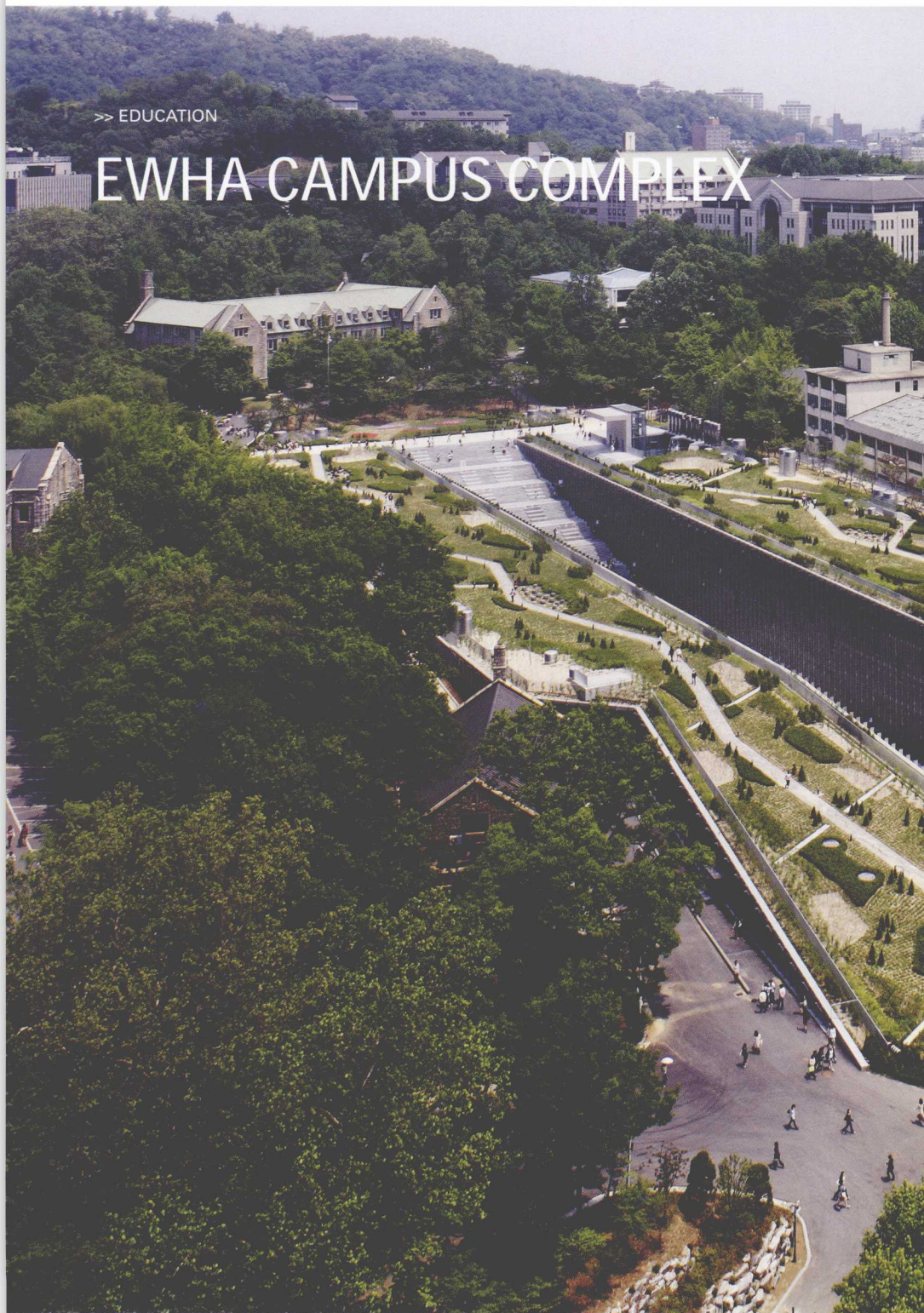
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>> EDUCATION

EWHA CAMPUS COMPLEX





Location Daehyeon-dong, Seodaemun-gu, Seoul, Korea Site Area 19,000m² Building Area 70,000m² Building Volume 350,000m³ Landscape Area 31,000m² Start of Conceptual Design 2004 Construction Start 2005 Completion 2008.4 Architecture Design Dominique Perrault Architecture(Paris) Partner BAUM Architects, Engineers & Consultants, Inc.(Seoul) Design Team DPA_Gaelle Lauriot Prevost, Simon Guillemoz / BAUM_Won Hyung-joon, Son Sung-ho, Shin Jeong-hoon Engineer Perrault Projets(Architectural Engineering, Paris); VP&Green Ingenierie(Structural Engineers, Paris); HL-PP Consultt(Building Services, Munich); Jean-Paul Lamoureux(Acoustic); Rache-Willms(Facades, Aachen) Consultant Jeon and Lee Partners(Structural Engineer, Seoul), HIMEC(Mechanical Engineer, Seoul), CG E&C(Civil Engineer, Seoul), CnKb Associates(Landscape, Seoul) Client Ewha Campus Center Project T/F, Ewha Womans University Photographer Namgoong Sun, Dominique Perrault Architecture



SITE & ROOF PLAN

008

The new campus center of Ewha Womans University was inaugurated in April 2008 and accommodate 20,000 students. A contemporary metropolis as Seoul seems to have a dramatic need of building who creates a breath in the city to balance the fast densification of real estate developers. By burying the complex, I have the desire to appropriate the territory, to mingle the constructed material with the ground, the desire to exploit to its paroxysm the idea that 'concept and matter have to grapple one with another'. The tree sunken architectures buildings are buried to liberate the territory above. The genealogy with the previous projects, as in the French National Library in Paris with its sunken garden in the middle of a wood deck framing, or in the Velodrome and Olympic swimming pool in Berlin engraved in an apple tree orchard, is evident when we consider the fantastic excavation required by this construction.

A SUSTAINABLE CAMPUS The idea of this underground university was born out of the desire to preserve a large green space in the center of the university campus. The six-stories building is organized around a long ramp sloping down in opposition with the gently rising natural topography. The two large glass curtain walls facing the external circulation ramp serve as elements for day lighting and allow natural ventilation of parts of the building as well. In fact, the first architectural ideas that give its strong identity to the building enable extraordinary performances in terms of sustainability.

THE HIDDEN VALLEY OF EWHU First, the new entrance leads to a transversal platform. A landscape then, more than an architectural work, 'The Campus Valley' is engraved into the ground and marks the entrance of University site like a furrow. Starting by a long sloping down esplanade, it rise up at its edge with benches and steps which can be used as an outdoor amphitheatre. The two mirror facades erected face to face design two high glass cliffs who bring natural light to the buried spaces mixing opportunely the study places, administration with cultural and commercial. Designed and rigorously built to resist to high wind stress, with its very material, strong and heavy the full stainless steel blades, bolts, brackets and canopies are disappearing due to the huge scale. In the middle of the valley, only remains become dreamlike immersion between two cascades of light. All together, by using simple shapes which allow the materials to show their pure appearance, we can reach an immaterial effect which participates to the disappearance of the building. Finally the building disappears under the rooftop garden. It has a very natural aspect, walk paths are made of rough natural stones, evergreen bushes and

flower trees like spiraea prunifolia, rhododendron, kerria, are planted randomly. This harmony reinforces the disappearance of the building.

PROCESS Due to the particular position of its stainless steel fin, the realised curtain wall is the result of a long study involving Korean, German, French engineers and architects. In order to resist to the wind load, the aluminium mullion stiffness of the 17m high curtain wall needs to be reinforced with a steel wale in order to resist to the particularly difficult wind conditions, typhoons of Korea. Normally, the wale is placed inside the building, just behind the aluminium vertical profile. By placing it outside, by shaping it as a fin and by using a mirror polished finish we transform those structural elements into a visual experience and offer to the building and users an installation similar to a contemporary art work.

During construction design phase, we designed it as a completely flat plate in order to get a pure geometry. By connecting the 5.4m invisible fitting screws hidden in the 20mm thickness of the stainless steel plate, we wanted to give the impression that they are made in one piece. The fact that the fin is outside complicates the work: the wind going laterally into the Valley has an effect on it. In order to resist to the wind stress, we added horizontal brackets perpendicular to the fin. Secondly, we have to make the fin connected to the mullion in order that the last one benefits the stiffness of the first one. When both elements are inside, the connection is easier, but as the wale is outside, we have a polyamide insulating element in between. As this element has no structural qualities, we had to connect punctually the mullion and the fin. This connexion creates a very local thermal bridge. During the mock ups testing phase, we realised that the theoretical exactitude required during construction design phase was too difficult to reach. The workmanship quality was too difficult to maintain in industrial production conditions. We had to replace the fitting screws by cap nuts bolts with treated rods to connect the fins together. The result is amazingly more interesting than the previous version. At a small scale we have a much more material, heavy elevation. We even reinforced this aspect with full stainless steel canopies fixed to the fin by angles and similar bolts. But at a larger scale, because of the huge dimensions of the valley the connections seem to be a very little motive, dispatched randomly to animate the rigorous design. They don't get in conflict with the very immaterial visual perception, the impression of light reflection.

Text by Dominique Perrault Architecture

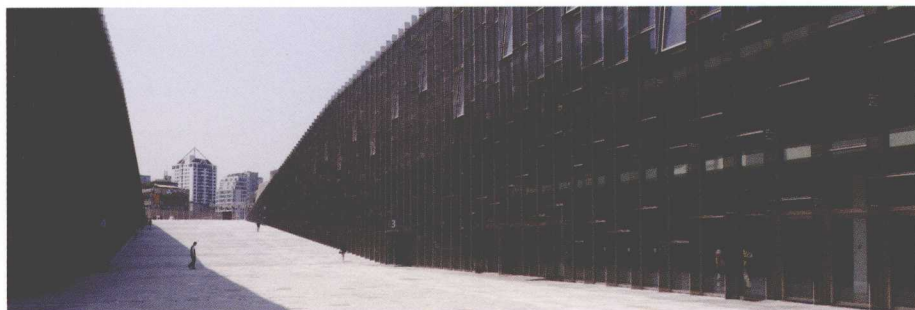
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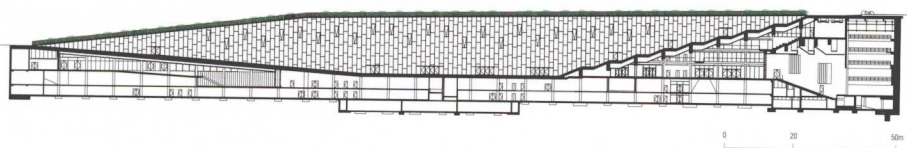
B4 FLOOR PLAN



The valley in the light seen from the main entrance to campus



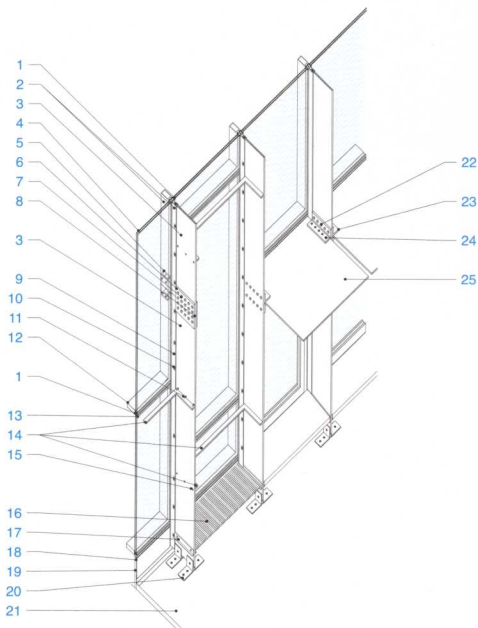
In the valley



SECTION A



People inside can see through outside

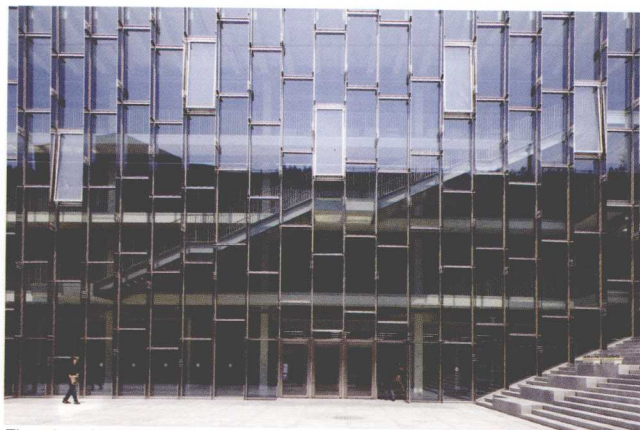


FACADE SECTION



Curtain wall detail

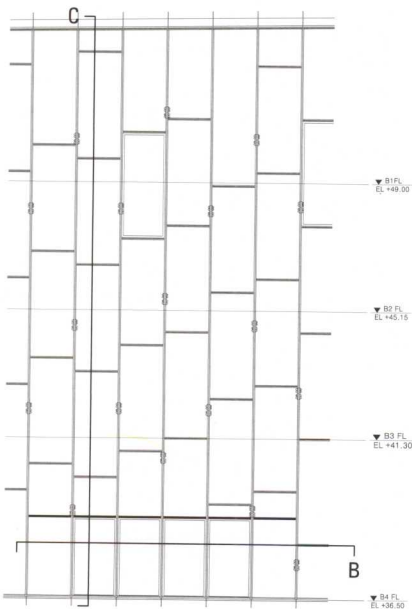
- 1 DOW CORNING 993 STRUCTURAL GLAZING SEALANT OR SIMILAR - CW PACKAGE
- 2 ALUMINUM PROFILE
- 3 POLISHED STAINLESS STEEL FIN
- 4 INSULATED GLASS UNIT TEMPERED GLASS GROUND FLOOR, HEAT STRENGTHENED GLASS UPPER FLOORS
- 5 SPICED ALUMINUM PROFILE BOLTED TO INTERIOR STEEL REINFORCEMENT AS REQUIRED
- 6 POLISHED STAINLESS FULL THREADED ROD AND CAP NUT
- 7 POLISHED STAINLESS STEEL PLATE
- 8 SPLICE IN FIN WITH FIN LENGTH NOT TO EXCEED 5,400MM
- 9 SLOTTED MOLE(SLOT IN FIN) FOR VERTICAL DIFFERENTIAL MOVEMENT BETWEEN ALUMINUM AND STAINLESS STEEL
- 10 FLUSH THREADED STAINLESS STEEL BOLT EVERY 400MM
- 11 BRACKET BOLTED TO FIN FLUSH THREADED STAINLESS STEEL BOLT
- 12 HORIZONTAL ALUMINUM PROFILE
- 13 ALUMINUM COVER PLATE
- 14 POLISHED STAINLESS STEEL HORIZONTAL BRACKET
- 15 FLUSH THREADED STAINLESS STEEL BOLT FIN / BRACKET CONNECTION
- 16 GALVANISED STEEL GRILL
- 17 ALUMINUM PROFILE - GRILL SUPPORT
- 18 ALUMINUM FLASHING
- 19 INSULATION
- 20 GALVANISED STEEL ANGLE SUPPORT
- 21 CONCRETE SLAB
- 22 POLISHED STAINLESS FULL THREADED ROD AND CAP NUT FIN / ANGLE CONNECTION
- 23 POLISHED STAINLESS STEEL ANGLE
- 24 FLUSH THREADED STAINLESS STEEL BOLT CANOPY / ANGLE CONNECTION
- 25 POLISHED STAINLESS CANOPY



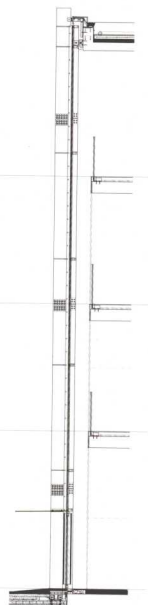
The mirror facade reflects scenes of the exterior



FACADE HORIZONTAL SECTION B

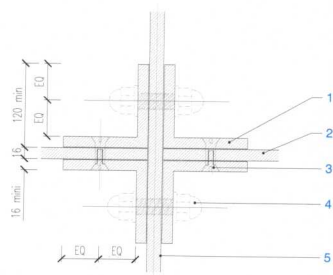


FACADE PARTIAL ELEVATION

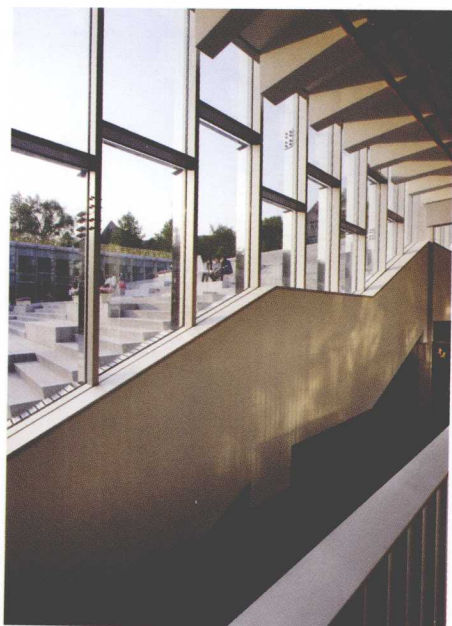


FACADE VERTICAL SECTION C

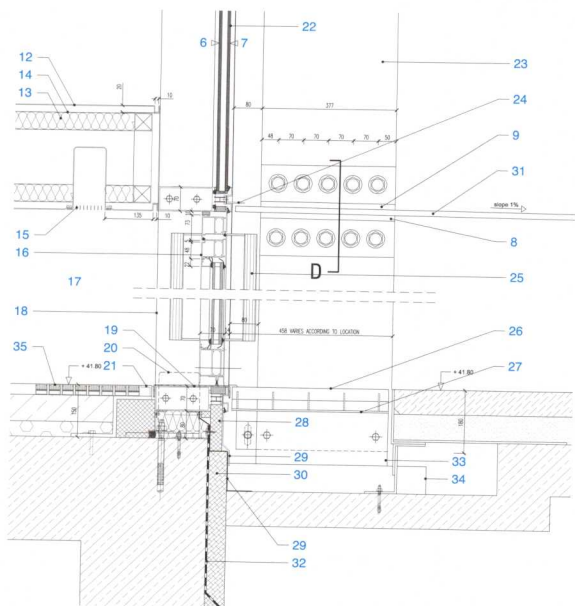
- 1 STAINLESS STEEL ANGLE MIRROR FINISH
- 2 STAINLESS STEEL PLATE T16 MIRROR FINISH
- 3 S'STL FLUSH THREADED BOLT
- 4 S'STL FULL THREADED ROD & CAP NUT M24X95
- 5 POLISHED STAINLESS STEEL BRACING FIN 20MM
- 6 INTERIOR
- 7 EXTERIOR
- 8 STAINLESS STEEL ANGLE SUPPORT T10 HAIRLINE FINISH
- 9 STAINLESS STEEL FLAT T10 HAIRLINE FINISH
- 10 FIN LENGTH 300MM
- 11 FIN LENGTH 450MM
- 12 FOLDED ALUMINUM PANELS
- 13 INSULATION
- 14 STEEL TUBULAR STRUCTURE
- 15 HEATING UNIT TO BE DEFINED OUTSWINGING DOOR-ALUMINUM
- 16 FRAME WITH INSULATED GLASS UNIT
- 17 VESTIBULE TO BE INCLUDED IN CURTAIN WALL PACKAGE
- 18 VERTICAL ALUMINUM PROFILE WITH STEEL REINFORCEMENT AS REQUIRED
- 19 HORIZONTAL ALUMINUM PROFILE
- 20 STEEL ANGLE
- 21 STAINLESS STEEL ANGLE
- 22 INSULATED GLASS UNIT
- 23 MIRROR POLISHED STAINLESS STEEL BRACING FIN 20MM
- 24 ALUMINUM SHEET
- 25 FULL HEIGHT STAINLESS STEEL TUBULAR HANDLE
- 26 GALVANISED STEEL GRILL BY MEISER GRUPPE OR SIMILAR
- 27 ALUMINUM ANGLE - GRILL SUPPORT
- 28 THERMAL INSULATION - CW PACKAGE
- 29 FLASHING - CW PACKAGE
- 30 BRICK
- 31 STAINLESS STEEL FLAT T16 POLISHED FINISH
- 32 WATERPROOF MEMBRANE
- 33 GALVANISED STEEL ANGLE - CW PACKAGE
- 34 CONCRETE BASE FOR FACADE SUPPORT BEYOND
- 35 TUFT GUARD RUBBER STRIPS IN ALUMINUM GRID FRAME



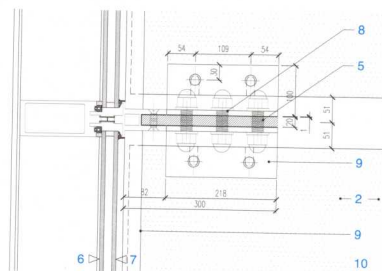
FACADE JOINT SECTION D



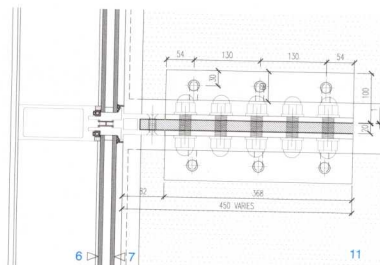
The main stairs of the valley permeate inner space naturally



FACADE CANOPY SECTION



JOINTTYPE 300MM DETAIL



JOINTTYPE 450MM DETAIL