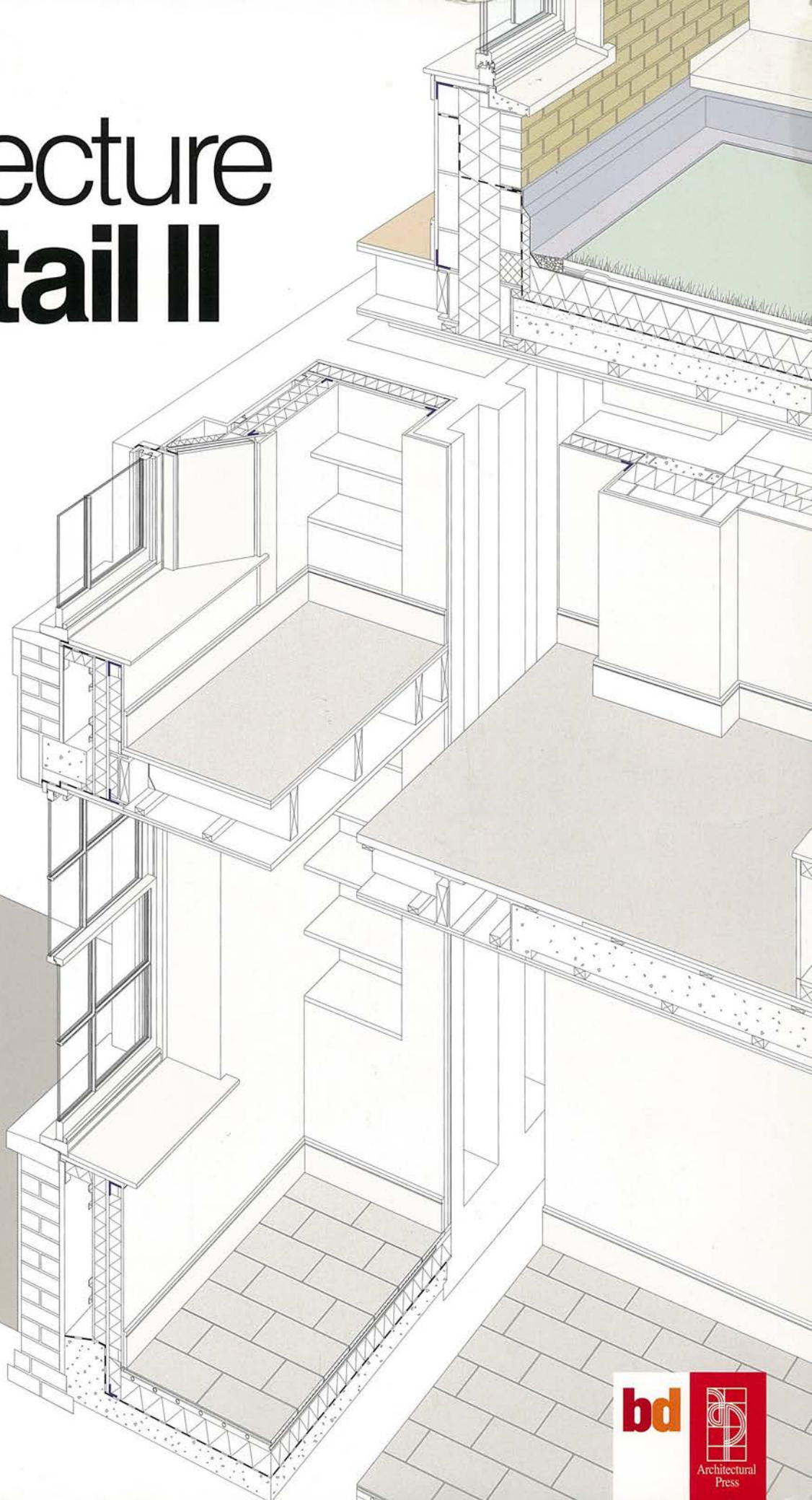


Architecture in Detail II



Graham Bizley



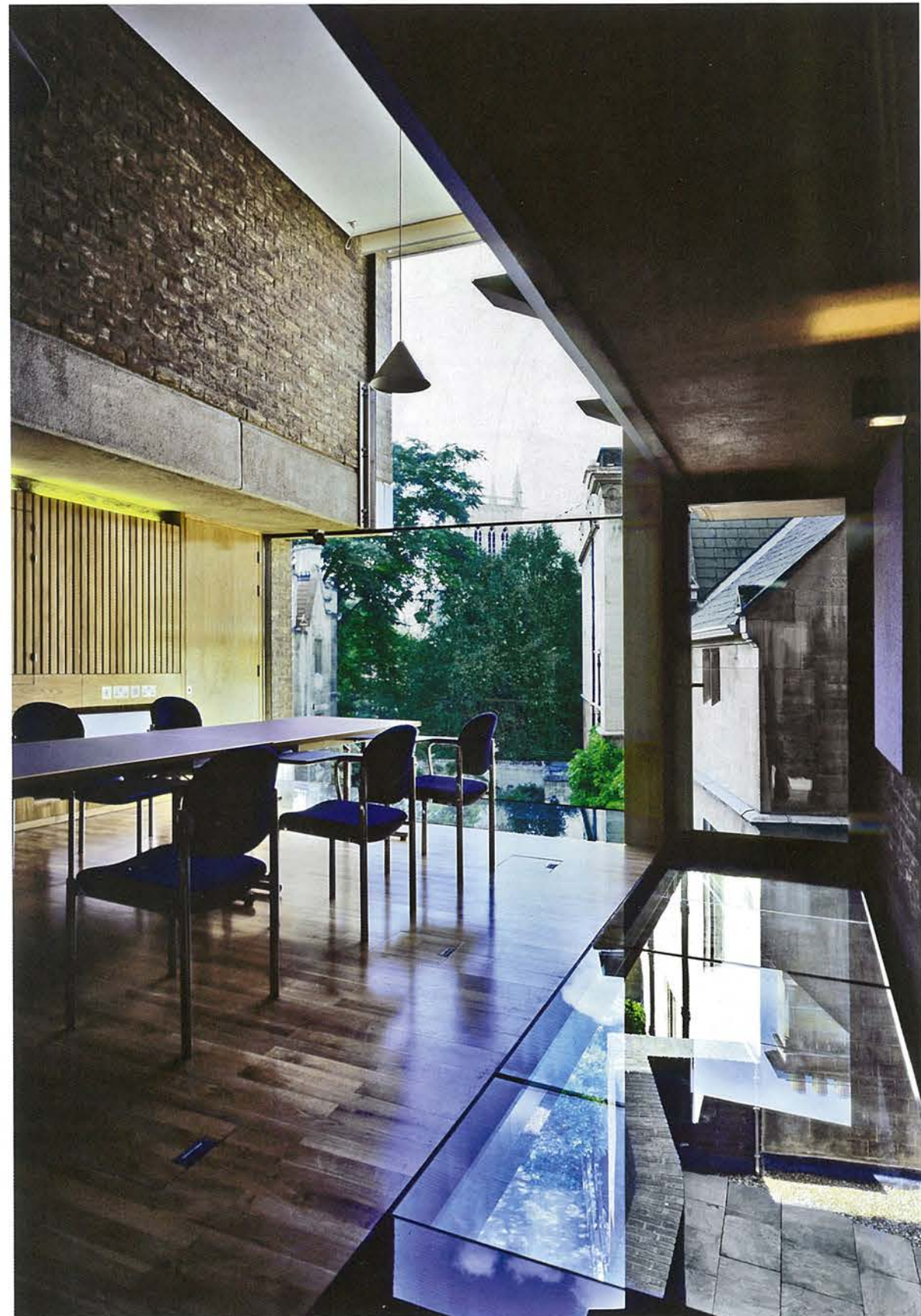


Photo: David Stewart



Photo: 5th Studio



Photo: 5th Studio



Photo: David Stewart



Photo: David Stewart

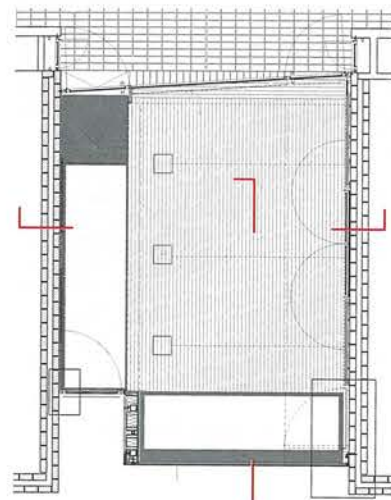
Wolfson Building Trinity College, Cambridge

Architect: 5th Studio
Structural Engineer: Cameron Taylor
Glazing Installer: F. A. Firman

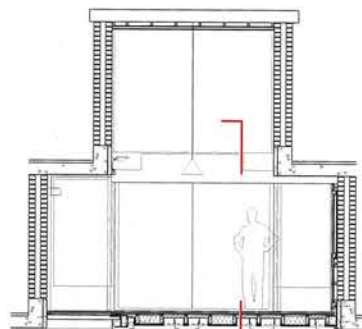
Two new glass seminar rooms have been hung beneath the cave-like undercrofts of the Wolfson Building, a 90-bedroom student hall of residence for Trinity College hidden amongst the courtyards of central Cambridge. Designed by the Architects Co-Partnership's and completed in 1972, the Wolfson Building exhibits a primitive palette of rough in-situ concrete and exposed brickwork in a wilfully monastic interpretation of college life. 5th Studio's refurbishment has raised the quality of the accommodation to reflect the more demanding expectations of the university's current students and conference clients.

On one side the hanging room's steel floor structure is bolted into the existing second floor concrete slab. The other side is suspended from the third floor on a single 50 × 50 mm steel box section hanger. Two larger box section posts support the façade glazing and transfer wind loads back to the concrete structure. The north façade is completely glazed with two sealed units, the largest of which measures 3.7 × 2.6 m. The only road access to the site is via a ramp shared with a supermarket below the building so manoeuvring the panes into place involved several operations using hoists to negotiate the changes in level. To prevent flexial deflection of the glass the units were moved in purpose-made timber cradles.

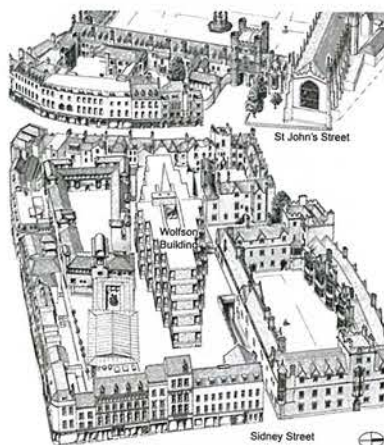
The building's exposed concrete slabs and un-insulated brick cavity walls are uneven so the space had to be carefully surveyed before the steel was ordered. Once in place, the steel was surveyed before the glass was ordered. Stainless steel channels were bonded to the rear of the large glass units with structural silicone so they could be secret-fixed back to steelwork and in places where access to the fixings from behind is restricted the glass is fixed with planar glazing bolts. The back face of the glass is painted black in places to conceal the floor or wall build-up behind. Two sections of laminated glass floor allow views up into the hanging room from the entrance below. The underside of the floor is clad in black laminated glass bringing natural light and reflections of the adjacent gardens into the once dark circulation core.



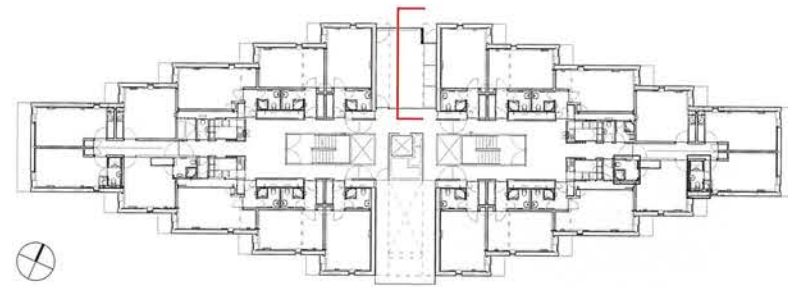
North hanging room Level 2 plan – 1:125



North hanging room east-west section – 1:125



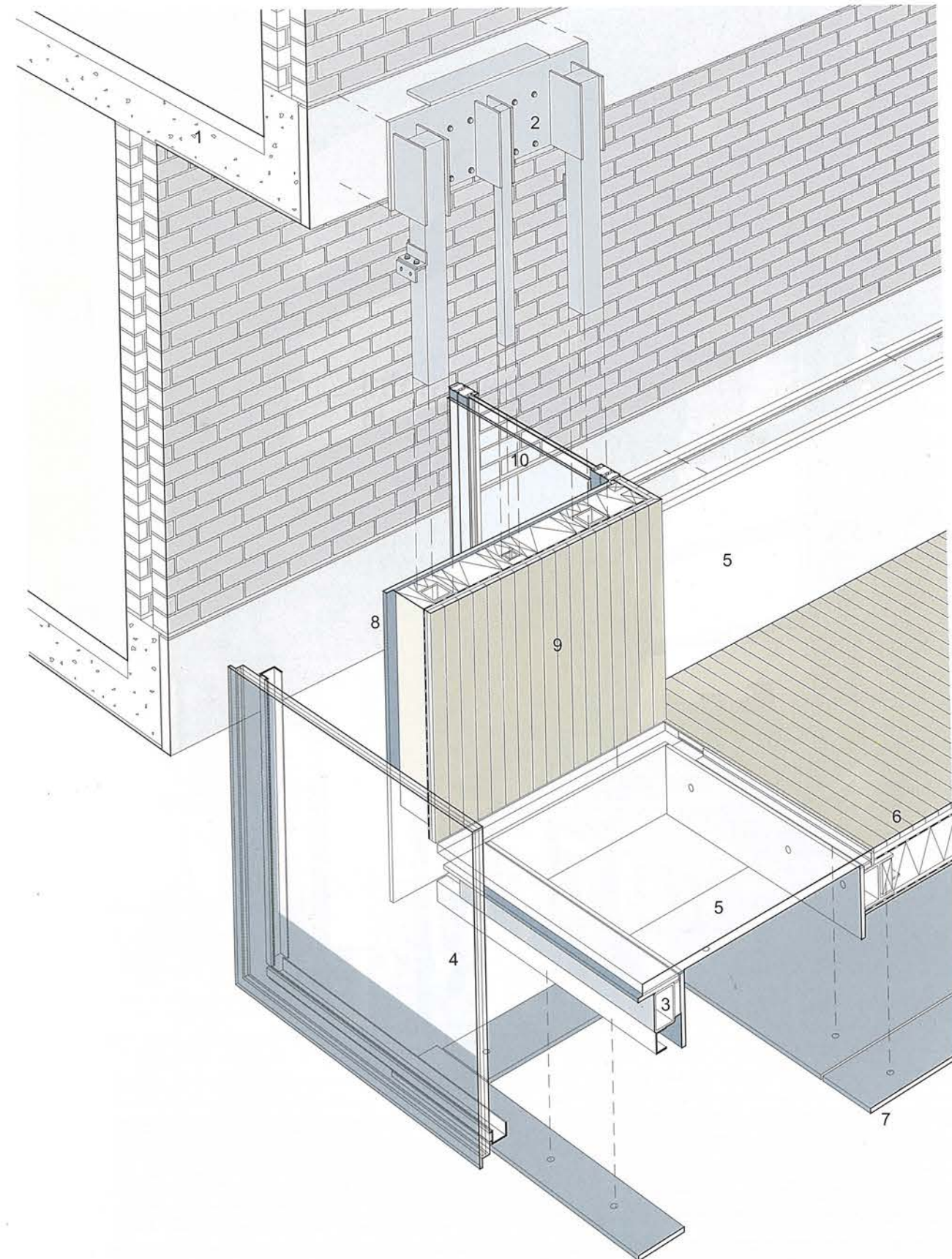
Site location diagram



Level 2 floor plan – 1:600

Drawing labels:

1. Existing building fabric
185 mm thick reinforced concrete floor slabs with 475 × 235 mm upstand beams at edges. 300 mm thick cavity walls with brick inner leaf, 90 mm cavity and brick outer leaf.
2. Corner steelwork
1000 × 350 × 20 mm head plate bolted into existing second floor slab with twelve expanding anchor fixings. 600 × 150 × 15 mm bearing plate welded to top of head plate to sit on top of concrete upstand beam and relieve shear force on bolt fixings. 50 × 50 × 6.3 mm SHS (square hollow section) hanger welded to head plate via 10 mm flat plates. Two 100 × 100 × 5 mm SHS windposts welded to head plate via 10 mm flat plates. 120 × 100 mm T-section welded to bottom of hanger and windposts for attachment to floor beam below.
3. Structural steel floor
203 × 203 mm UC (universal column) floor beam with 900 × 100 × 10 mm flat welded to top to connect to hanger above. Three 152 × 152 mm UC joists bolted to floor beam and to existing second floor. 150 × 100 mm RHS (rectangular hollow section) edge beam bolted to floor beam and to existing second floor.
4. Large fixed window
Two double-glazed sealed units fixed to steel cleats welded to steelwork or brackets bolted to existing walls and soffits. Glass fixed using both proprietary countersunk black headed M8 bolts and stainless steel channels factory bonded to glass with structural silicone and bolted to steel cleats. Sealed units made up from 12 mm toughened outer pane and 18 mm thick clear toughened laminated inner pane.
5. Glass floor
Clear laminated glass floor made up from two thermally toughened glass layers and one heat strengthened layer bearing onto neoprene strips and packers. Joints pointed with silicone sealant. Edges printed black to conceal supporting structure and floor build up.
6. Solid floor
22 mm thick oak boards secret-nailed and glued to 18 mm plywood sheathing. Vapour barrier. 150 × 50 mm softwood joists located in webs of steel joists. 150 mm mineral wool insulation. 12 mm calcium-silicate board fixed below steelwork to provide fire protection.
7. Soffit glazing
Black laminated glass made up from 6 mm float upper leaf and 12 mm thermally toughened lower leaf bolted to brackets off primary structure.
8. Vertical black glass
Black laminated glass made up from 6 mm float upper leaf and 12 mm thermally toughened lower leaf bolted to brackets off steel windposts.
9. Solid panel
175 × 50 mm softwood stud frame. Mineral wool insulation between studs. Polythene vapour barrier. 22 mm thick oak boards secret-nailed and glued to 18 mm ply substrate.
10. Window
Inward opening steel framed door and frame with micaceous iron oxide paint finish. 1450 × 1055 mm toughened glass balustrade bolted to steel angle below cill of door.



Cut-away section through north hanging room