ARCHITECTURE TODAY • 127

April 2002

Housing – from a different angle

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Alberto Campo Baeza in Granada

Technology: Hudson Featherstone in Cambridge

Product: Safety security access, Refurbishment

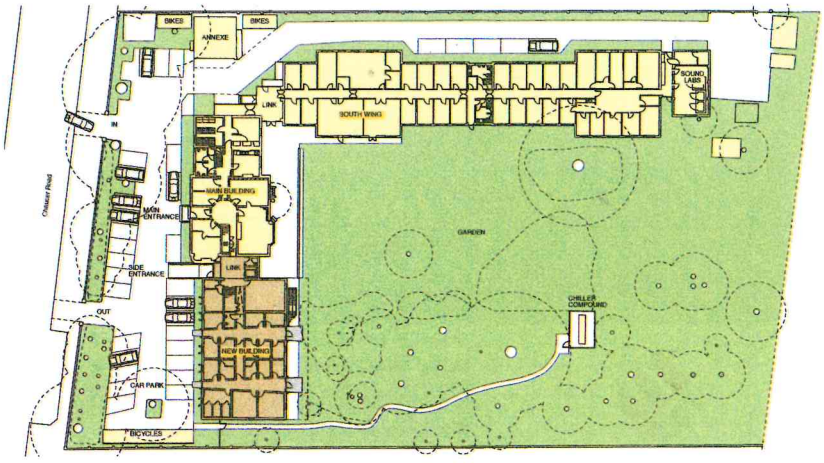
Rainscreen cladding is combined with traditional masonry in a building dedicated to cognitive science. Photos: Tim Brotherton.

Hudson Featherstone's extension to the Cognition and Brain Sciences Unit (CBU) plays a key role in the restructuring of the Cambridge facility undertaken by the Medical Research Council (MRC). The new £1.6m building, which became operational last October, comprises laboratories, a lecture theatre and seminar room. To create the conditions needed for psychological and response testing, acoustic performance was central to the success of the scheme. Externally the architects were presented with the challenge of designing a building which not only responded sympathetically to the existing Edwardian building and residential street frontage but which also established its own sense of identity and presence. To this end they combined traditional brickwork with Eternit fibre cement board to striking effect.

The facility, which was founded in 1944 as the Applied Psychological Research Unit, grew out of wartime needs to study the effects of combat on services personnel. Following the war, research has been conducted for civilian purposes into psychology, memory, emotion, and language. Since the unit's inception demands for more space have led the MRC to expand out from the original building. In the 1960s an extension was added to the east along Chaucer Road (demolished to make way for the new building) and a further extension was added to the south in the 1970s, creating an L-shaped arrangement of buildings around a mature garden.

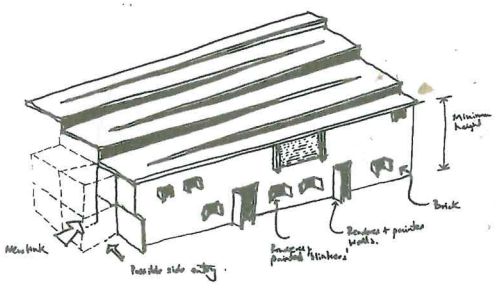
The appointment of William Marslen-Wilson as the director in 1997 led to a major reappraisal. Particularly problematic were the laboratories, which were located in disparate parts of the site and did not have adequate acoustic or thermal control. Through close collaboration with the director (who acted as user's representative for the MRC), Hudson Featherstone were able to develop a detailed feasibility study which identified both the main problems facing the unit and its future spatial needs.

The strategy has been to group the technically and environmentally high specification spaces into a purpose-built facility, covering an area of approximately 340 square metres. The existing buildings were then completely replanned and renovated to provide more efficient and usable ancillary spaces. In response to tight cost constraints the architects specified relatively inexpensive materials and



Right *The south elevation contrasts the red brick of the ground floor with the rainscreen cladding to the first floor.*

Architecture Today acknowledges the support of Eternit UK in the preparation of this Technology feature. Enquiries to Eternit UK: tel 01763 264686 (www.eternit.co.uk).

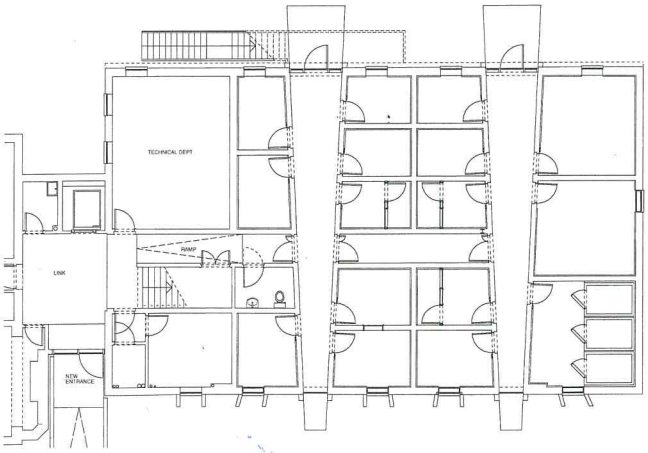


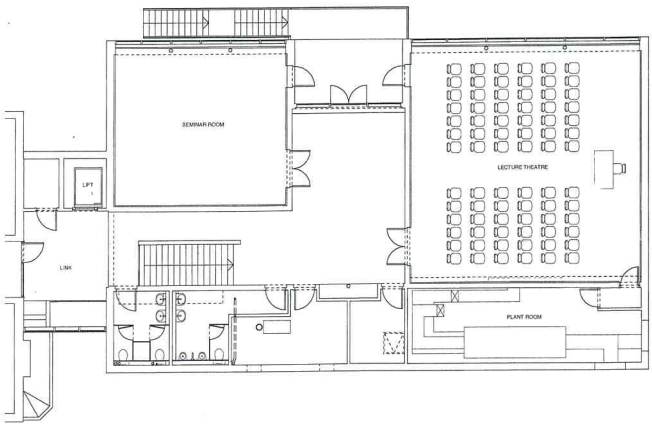
used traditional construction techniques. In order to further reduce costs the project was undertaken as a phased development, with the new extension providing temporary accommodation for staff while the existing buildings were redeveloped.

Externally the north-facing entrance elevation forms a clear break with the existing Edwardian building, with a glazed link formed with aluminium curtain walling connecting new and old. The stepped roof section gives the impression that the new extension is only single-storey, reducing its visual impact on the adjoining structure and surrounding residential buildings on Chaucer Road. The red brick chosen for the facade, which matches the colour of the existing building, creates a sense of continuity. Angled 'blinkers' formed around the windows limit views in and out of the laboratories and corridors, giving the required privacy; formed in timber framing and finished with acrylic render these elements also animate the elevation.

A narrow strip of black Eternit Glasal rainscreen cladding forms a crisp cornice to the top of the brick facade, denoting the service spaces behind. A syphonic drainage system with a single internal rainwater pipe ensures that the facade remains clean and uncluttered. The connection between inside and outside spaces is explored by exposing the brick and Eternit cladding on the inside of the double-height entrance space behind the curtain walling. Similarly a panel of coloured render turns the corner of the

Top *Concept sketch showing multi-stepped roof profile with glazed infill panels.*
Above *A galvanised steel stair provides secondary means of escape from the first floor.*
Below *The ground-floor plan incorporates trapezoidal corridors to eliminate standing sound waves. The first-floor plan clearly defines the servant and served spaces.*

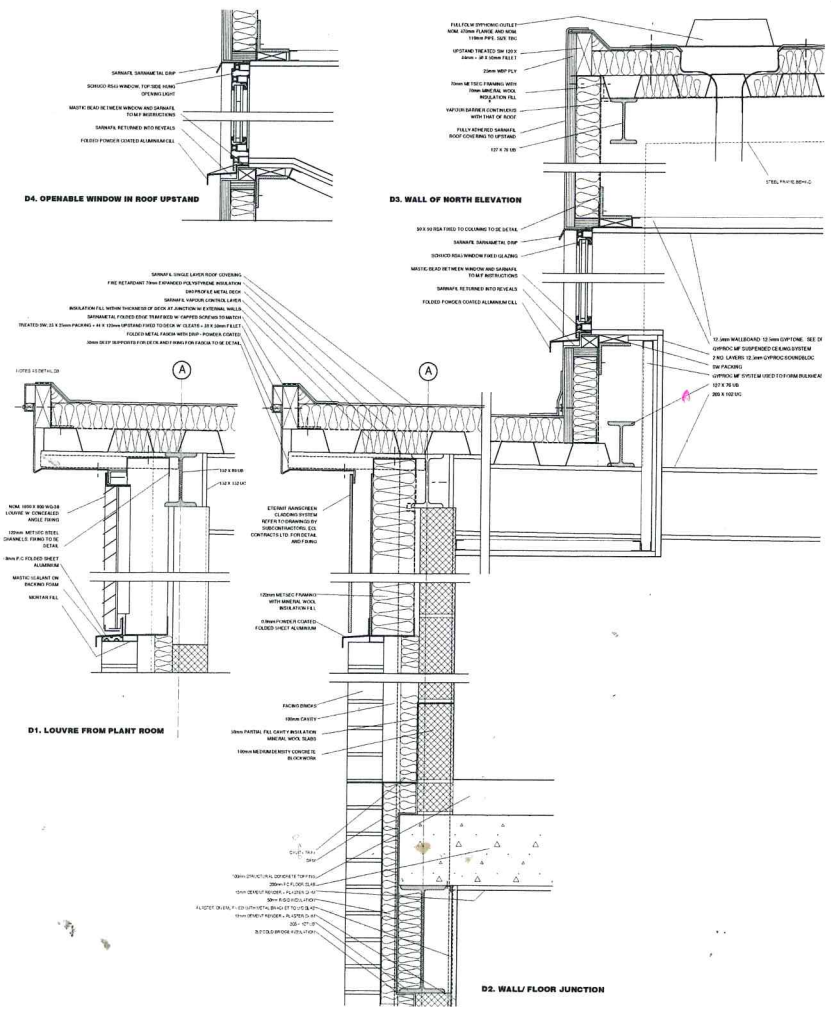




brick elevation, leading visitors to the entrance and into the lobby. The full-height blinkers surrounding the corridor windows are coloured to match the internal walls, giving the impression of the internal spaces flowing to the outside.

The garden elevation is altogether more exuberant. The red brick base of the ground floor expresses the cellular and highly protected nature of the laboratory spaces while the rainscreen-clad first floor, containing the lecture theatre and seminar room, appears as a much lighter element floating on top. Here the architects specified an Eternit Eflex rainscreen cladding system incorporating naturally finished non-colour coated panels.

The 5mm thick inner panels are fixed to horizontal aluminium channels, which are bolted back to the blockwork and infilled between with insulation quilt. A lapped and jointed breather membrane is bonded to the outer face of the panels, to which vertical aluminium rails are then fixed. The external face of the wall consists of 7.5mm panels, which are bonded to the rails using a flexible adhesive. Shadow gaps of approximately 12mm separate the panels, giving a clean and smooth appearance. Fire escape doors from the lecture theatre and seminar

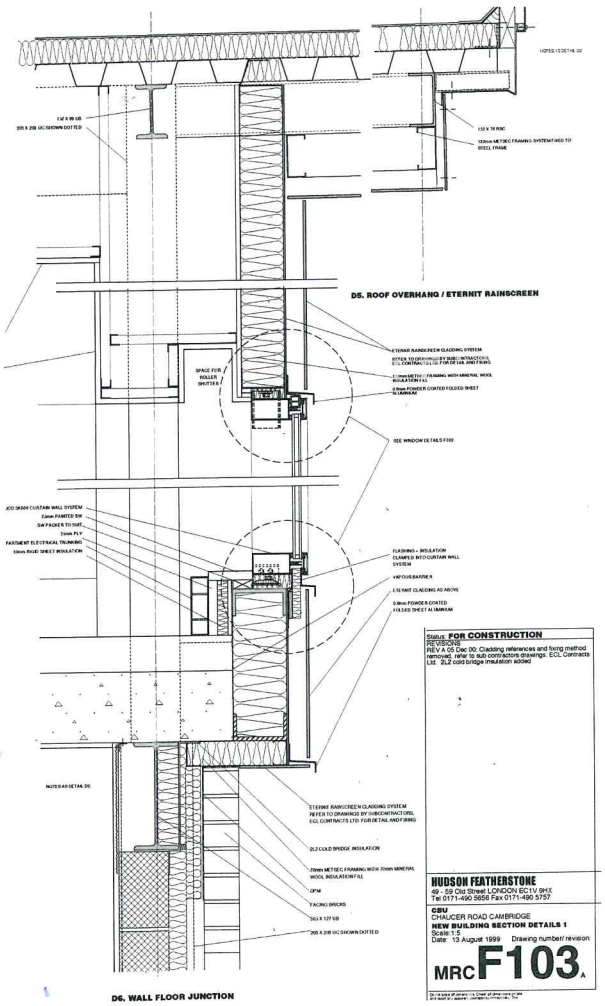


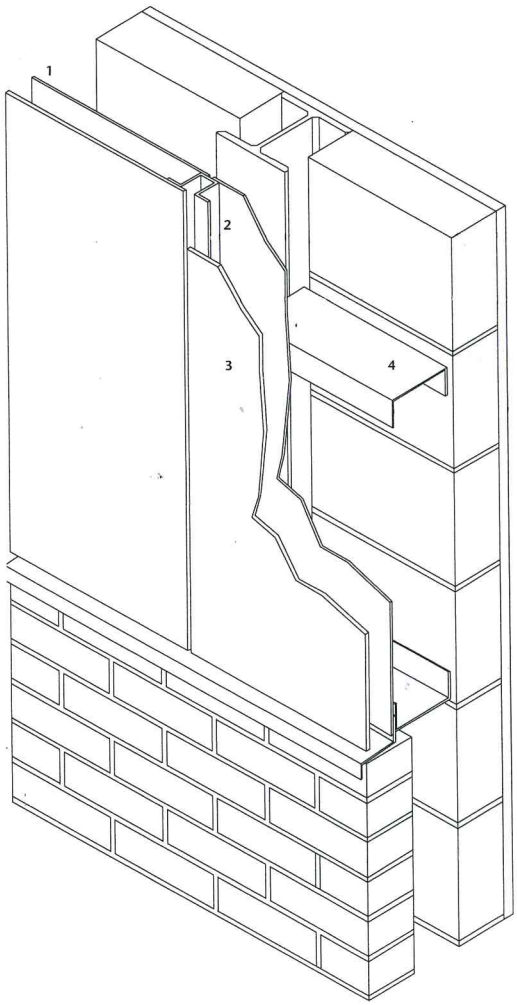
room have been skilfully concealed within the cladding and are aligned flush with the external face of the wall. The large roof overhang provides some solar shading for the south-facing curtain walling of the lecture and seminar rooms.

The link between the extension and the existing building is clad in black Eternit Glasal boards that make a contrast to the light-coloured cladding to the first floor. The dark panels form a recessive element, visually reducing the height and impact of this item.

On the ground floor the two trapezoidal corridors which bisect the plan and link the laboratories are key design generators, their shape chosen to eliminate standing sound waves. The irregularly shaped laboratories resulting from the skewed walls also benefit from this effect. By confining all the air-conditioning

Left *The ground floor slab appears to run from inside to out connecting the building to the site.*
Right *Fire escape doors from the first floor are discreetly concealed within the cladding system.*
Below *Detail cross section through the building.*
Axonometric *Rainscreen cladding. Key: 1 Inner layer of 5mm Eternit Eflex faced with breather membrane; 2 vertical aluminum supports; 3 facing layer of 7.5mm Eternit Eflex, site-bonded to extrusion with 12mm open joints; 4 horizontal supports fixed to steelwork (insulation quilt not shown).*

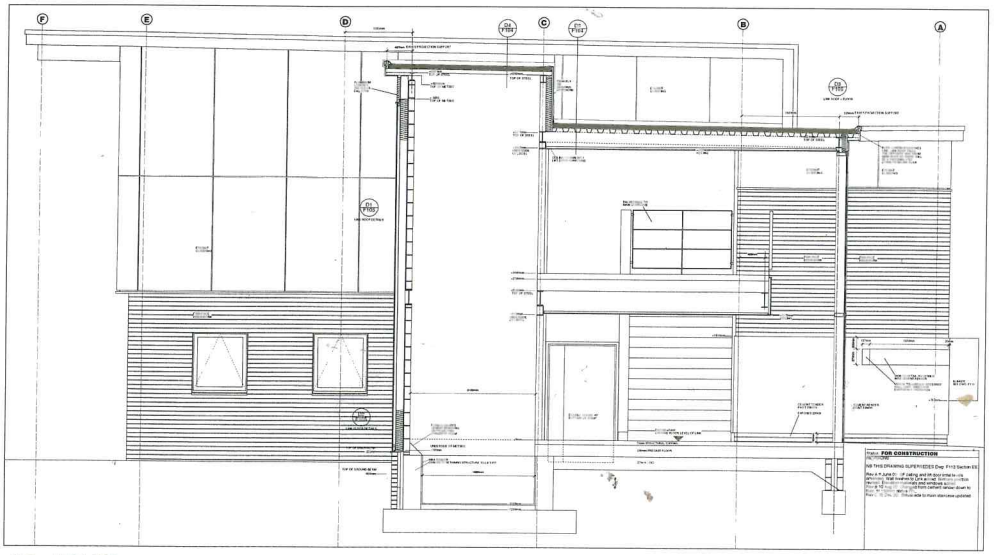




ductwork to the ceiling voids above these corridors, the architects have ensured that the laboratories are free from background noise. A suspended ceiling provides high acoustic absorbency and access to ducting in the corridors. The tapering corridors establish strong visual links to the outside, allowing the building's users to orientate themselves and creating a calm, reflective space, which does not feel institutional or clinical.

To minimise sound transference from the corridors and adjoining rooms, the laboratory spaces are formed with 220mm dense concrete block walls. Internally sound reverberation is dampened by the use of proprietary grooved chipboard acoustic panels, consisting of a series of narrow slots which connect with larger internal cavities. The 600mm deep panels are stapled to a timber sub-frame, which is fixed back to the wall. An aluminium outer frame provides a crisp edge. The control of airborne and impact sound from the floor above relies on the mass of the 200mm deep precast concrete floor planks and 100mm deep structural screed topping. Noise from the car park and Chaucer Road is countered by triple-glazed units, comprising an outer double-glazed skin with a timber-lined acoustic cavity (containing a metal louvre blind) with a single-glazed inner skin.

Above *The stepped roof profile of the entrance elevation gives the impression that the new unit is only single-storey, reducing its visual impact on the street. The rendered 'blinkers' control views in and out of the laboratories aiding privacy.*
Below *The lecture theatre incorporates wall mounted timber acoustic panelling; the tapering corridors are calm reflective spaces with strong links to the exterior.*
Bottom *Section through the new glazed link with double-height entrance space.*



Project team
Architect: Hudson Featherstone; design team: Anthony Hudson, Duncan Holmes, Jeremy King, Carlos Kucharek, Richard Trew, Francis Henderson, Wayne Head, Ross Coathup, Sophie Bates, Naomi Hawkins; structure: Andrew Firebrace and Partners; acoustic consultant: Cambridge Architectural Research; services engineers; Integrated Building Services; telecom consultant: Bridgegate Communications; qs: Keegan Associates; project manager: Integrated Building Services; contractor: Haymills; client: Medical Reseach Council.

Selected subcontractors and suppliers
Eternit rainscreen cladding : Marco Industries; brick: Hanson Brick; steel frame: AC Bacon; external steelwork: Construction Steel Services; air conditioning: RMJ Engineering; pc concrete: Milbank Floors; Sarnafil roofing: KGM Roofing; Schüco Windows: Claydon Aluminium; ceilings: British Gypsum; custom signs; Sign Systems.