BLACKPOOL SIXTH FORM COLLEGE

Client :	The Blackpool Sixth Form College
Project Manager :	AA Projects
Structural Engineer :	Alan Johnson Partnership
Services Consultant :	Faber Maunsell/Aecom
Contractor :	Bardsley Construction
Value :	£11 million
Completed :	August 2009
Author :	Stephen Hepworth

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FOCUS ON DETAIL | SOLAR SHADING SOLUTION

The Blackpool Sixth Form College was established in 1988 and provides advanced level education for around 1,500 full-time 16-19 year old students. It serves an area within a radius of some twenty miles known as the Fylde Coast.

The original campus was built in the 1960's and the site's development potential had been stretched to the limits by the subsequent erection of a series of single and two-storey buildings/extension. The lack of a considered phasing strategy over this period had resulted in the compromising of facilities and a number of unsatisfactory relationships between blocks.

The Planned Maintenance Programme showed that the majority of buildings were also in a generally poor state of repair.

The highly utilitarian structures provided little in the way of visual impact, dramatic arrival or exciting teaching and circulation spaces, and so the College struggled to promote a strong identity to its potential future users.

The College was inefficient in energy terms, adding to its life-cycle costs, with even the most recent interventions failing to take advantage of any basic modern-day passive heating and ventilation technological solutions.

The buildings are constructed with braced steel frames supporting permanent steel deck and concrete slabs at each upper level and a ground bearing ground floor slab. Bracing is positioned to avoid areas of specific architectural interest. This well-used construction method provides ultimate flexibility to the buildings both now and in the future, thanks to carefully considered structural grid lines.

Materials are bold and contemporary but selected to ensure that the building ages gracefully and stands the test of time. The natural palette of ashlar stone, cedar boarding and landscaping materials contrasts elegantly with the crisp, clean lines of man-made metals and glass. The repeating heavy stone 'fins' or 'book-ends' are conceived as giving an earthly presence to the development, anchoring the built form firmly to the ground, with lightweight infills of glass, metal and cedar boarding providing subtle and suitable counterpoints.

SOLAR SHADING SOLUTION

The deep eaves overhang and louvre shading system are integral to the mechanical and electrical concepts in environmental control. This passive system on the east, west and south facing facades provides significant solar protection, limiting heat gains, minimising requirements for tinted glass and therefore helping to maximise the daylighting levels conducive for learning.

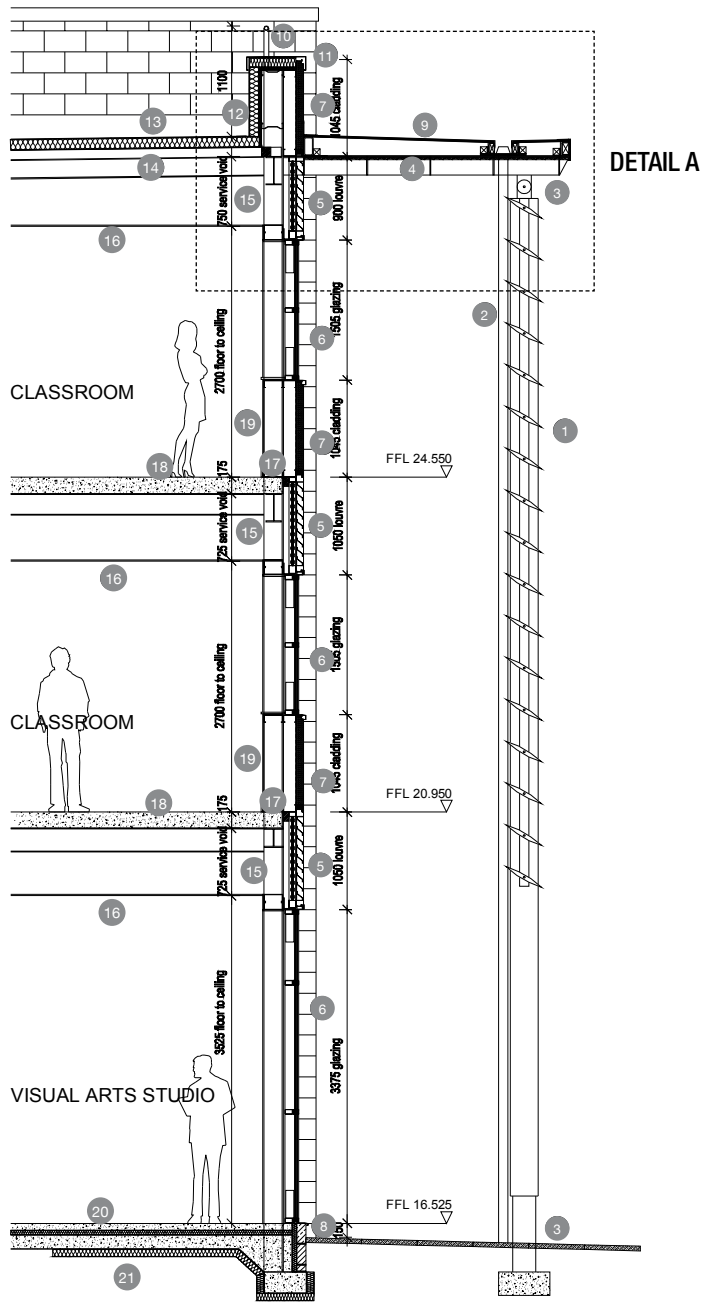
An assimilation model aided in proving this and derived further benefits included a reduction in the plant requirement and the reduction of service void depths, thus resulting in a lower overall structural height.

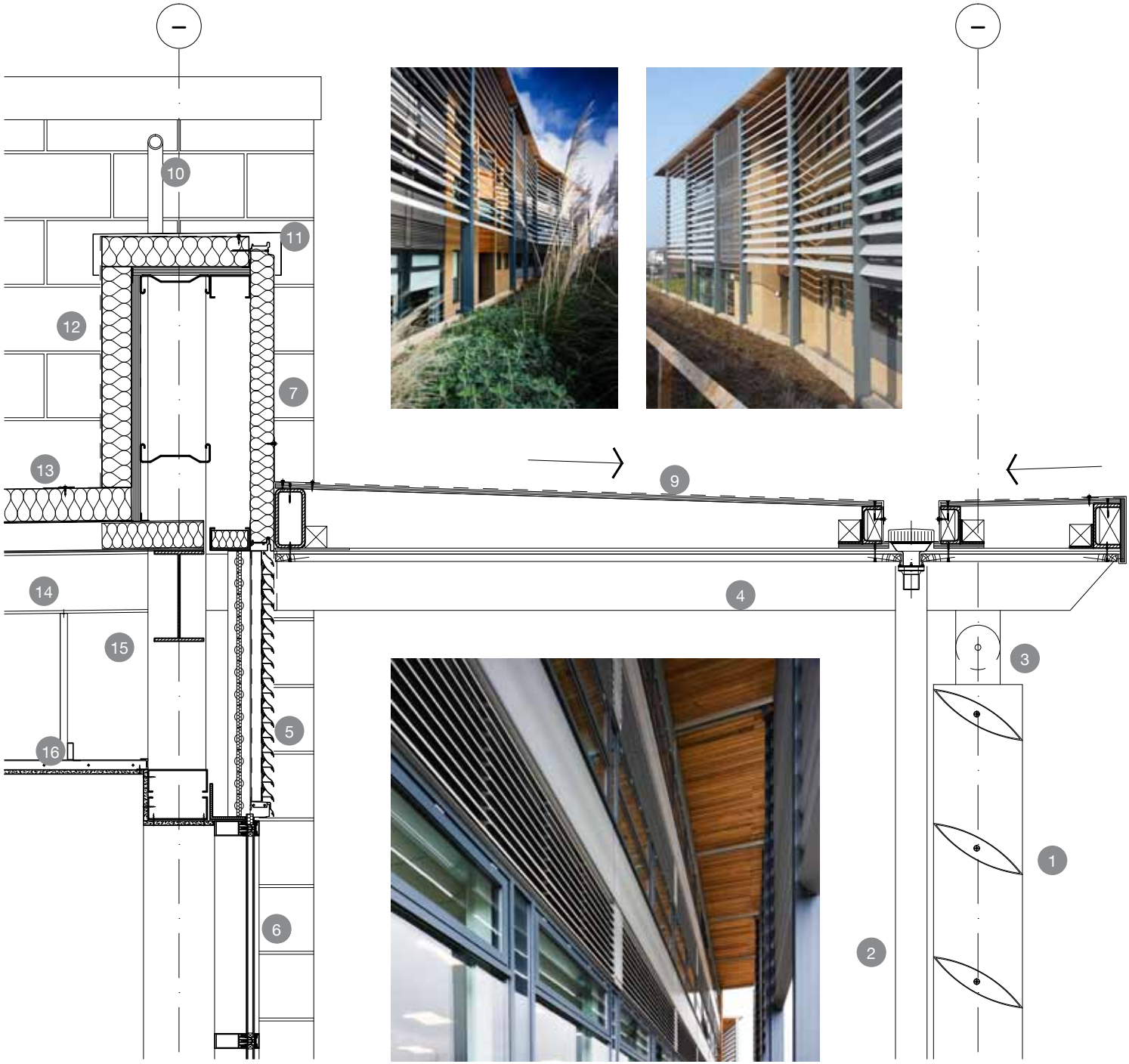
In addition, it was appreciated that the issue of 'overlooking' may have been an issue to owners of residential properties facing The College, though the distance between structures remains at least 45m.

Therefore, as well as providing invaluable passive solar protection, the louvre system on the west elevation had been devised partially in order to help alleviate this potential problem by directing views from classrooms, through fixed blades, down towards the new landscaped frontage.

BREEAM 'Very Good' was achieved.

1. PPC EXTRUDED ALUMINIUM FIXED AEROFOIL SECTION BLADES TO FORM SOLAR SHADING ROD FIXED IN MATCHING FRAMEWORK AND FIXED TO MAIN STEELWORK WITH EXPRESSED CONNECTIONS
2. PPC SQUARE ALUMINIUM RAINWATER PIPES SERVING GUTTER BETWEEN TWIN PROJECTING ANGLES AND FIXED TO REAR OF MAIN STEELWORK
3. MAIN STEELWORK GALVANISED AND PAINTED WITH EXPRESSED CONNECTIONS TO BOTH TOP AND BASE
4. TWIN PROJECTING STEEL ANGLES FIXED TO MAIN STRUCTURAL FRAME AND BRACED WITH TWIN CHANNELS (FORMING GUTTER) AND SOFFIT UNDERDRAWN WITH WESTERN RED CEDAR WEATHERBOARD WITH PPC ALUMINIUM FASCIA BONDED TO EXT GRADE WBP PLY FORMING A DRIP AND SHADOW GAP
5. EXTERNAL LOUVRE TO COMPRISE OF EXTERNAL FIXED WEATHER LOUVRE, INSECT SCREEN AND CONTROLLABLE MOTORISED INSULATED INTERNAL LOUVRES WITH BUTT HORIZONTAL JOINTS AND RECESSED VERTICAL JOINTS ON SECONDARY FRAMEWORK FIXED BACK TO METSEC SFS SYSTEM
6. THERMALLY BROKEN PPC EXTRUDED ALUMINIUM FRAMING WITH HERMATICALLY SEALED GAS FILLED LOW-E GLAZED UNITS AND PPC ALUMINIUM FLASHING TO WINDOW HEAD AND PPC ALUMINIUM PROJECTING SILL
7. COMPOSITE FLAT FACED ALUMINIUM PANELS WITH BUTT HORIZONTAL JOINTS AND RECESSED VERTICAL JOINTS ON SECONDARY FRAMEWORK FIXED BACK TO METSEC SFS SYSTEM
8. 100MM FAIR-FACED RECONSTITUTED ASHLAR STONE FACING MASONRY WITH 5MM STRUCK JOINTS IN COLOUR MATCHED MORTAR
9. SINGLE PLY ROOFING MEMBRANE ON EXT GRADE WBP PLY ON COLD ROLLED FRAME FORMING FALLS FIXED TO PROJECTING STEELWORK
10. SATIN STAINLESS STEEL HANDRAIL AND BALUSTERS TO PARAPET FIXED THROUGH CAPPING (WEATHER SEALED) TO STEELWORK
11. PPC ALUMINIUM CAPPING LAPPING OVER PARAPET UPSTAND FIXED ON RIGID INSULATION ON EXT GRADE WBP PLY WITH VAPOUR BARRIER AND FRAMED OFF STEELWORK
12. SINGLE PLY ROOFING MEMBRANE FIXED UP RIGID INSULATED UPSTAND FORMED IN EXT GRADE WBP PLY WITH VAPOUR BARRIER AND FRAMED OFF STEELWORK
13. SINGLE PLY ROOFING MEMBRANE LAID ON RIGID INSULATION ON VAPOUR BARRIER
14. STRUCTURAL ROOFING DECK INCLUDING FR60 FIRE STOPPING PROFILED INFILLS WHERE REQUIRED
15. STEELWORK TO RECEIVE FR60 INTUMESCENT PAINT FINISH
16. SUSPENDED CEILING AND SERVICE ZONE
17. FR60 CAVITY BARRIER AT EACH FLOOR
18. CONCRETE FLOOR SLAB ON METAL DECK
19. PLASTERBOARD LINING TO SFS WITH HW WINDOWBOARD AND SKIRTING
20. UNDERFLOOR HEATING INSTALLED IN GROUND FLOOR SLAB
21. RIGID HIGH DENSITY BOARD BELOW SLAB INSULATION TO BUILDING PERIMETER





SECTION THROUGH EAVES
DETAIL A

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