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Slice House, Brazil

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Slice House in Brazil is an excellent example of a residential property which fully utilises the sustainable benefits of concrete, whilst also depending on concrete for its unique and stunning architecture. Modern Brazilian architecture was respected and a European element was also added, with prismatic geometry creating illusions of space in the interior areas an example being the diagonal walls, which widen the narrow space.

Thin Thinking

The house is built on an urban residue, left over after the construction of a new street cut through a larger plot. This thin site required creative thinking by the architect and engineers working on the project. Reinforced concrete 150mm-thick walls and floors, and 100mm-thick ceilings form a complete structural envelope, where openings are cut-out as required. To create a feeling of space, the building benefited from requiring no interior columns.

Fifty-two concrete micro piles allowed construction on the clay riverbed alongside the neighbouring house, without causing any damage. The linking corridor from the front to the rear bedroom is cantilevered for minimum impact to the open courtyard. It is structurally supported by the east wall and low-level handrail wall beam, which wraps diagonally back up the stairs to the west wall.

The use of concrete throughout the building has meant that both immaculate and rough finishes can be achieved offering a diverse surface-finish throughout the house.

Sustainable living

Concrete provides thermal mass which was essential to meet the client's requirement of a non air-conditioned home. The internally exposed concrete (as well as, the indoor-pool water) provides the heat sink to balance temperature swings. The internal concrete includes two polished floor slabs, concrete desks in both bedrooms and an inclined concrete ceiling, which is insulated above in the loft for a ventilated roof.

Additional features within the house are designed to continue the theme of sustainability, with high ceilings, multiple windows and low energy light fittings and heating. The use of the outdoor space is encouraged with exterior cooking facilities provided in the courtyard area.

Sustainability issues have featured strongly in the design of Slice House. Clearly, a lot of thought has gone into the passive cooling of the building, and the use of an awkward brown-field site has done much to minimise the environmental impact in terms of land use. The recycling of materials has also been a key feature of the

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project: The eucalyptus posts used to brace the concrete formwork were recycled at a local paper factory, and the wall forms were built in stages enabling less timber to be used. The best plywood and timber planking for forming concrete was reused in the roof trusses and to deck under the metal roofing, resulting in very little waste. Any wood that remained was reused by the builder on other projects. All these measures score well in terms of achieving lean construction and managing natural resources.

Record of achievement

Slice House has been internationally recognised, having been awarded the RIBA Worldwide Award in June 2005. The building was also selected to represent Brazil in the IV Latin American Architecture Biennale 2004 in Lima, Peru.

The house has now been occupied for over two years, and feedback from the delighted owner is testament to its success, which in many ways has been made all the sweeter by the somewhat unorthodox and risky nature of the project. For Procter Rihl to take on such a challenge whilst also endeavoring to achieve good sustainable performance is clearly an achievement and will no doubt provide the inspiration for similar designs and concepts around the world.

Project Team

Client: Neusa Figueira de Oliveira

Architect: Procter-Rihl

Consulting Engineer: MBok

Contractor: J.S. Constructions

Sub-Contractor: Pasin Foundations

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