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Location: St Lucia, Brisbane, Queensland

Owner: Bud Brannigan

Architect: Bud Brannigan

Engineer: Les Adsett

Builder: Craig Ferguson

Constuction Date: 1994

written by: Bernard Toogood | **design:** Peter Walker

Brannigan Residence

St Lucia, Brisbane - Queensland

Bud Brannigan's own house, set on a narrow, lushly vegetated block in the suburban Brisbane suburb of St. Lucia, is a contemporary interpretation of the traditional Queensland elevated lightweight timber house, a building type ideally suited to the sub-tropical climate.

Fighting against the tide of ground dwelling masonry clad structures that owe more to the building traditions of the southern regions of Australia, this design takes advantage of the economy, environmental performance and the natural warmth and beauty of modest timber products, and uses them in a simple and ingenious way.

It is a light and breezy building, with a generous interplay of outdoor and indoor spaces that relates to its site, climate, and function in a relaxed and unpretentious, yet intelligent way. Fittingly, the house won the 1994 Robin Boyd National Architecture Award for housing.

top right:
north west facade seen from the street with the entrance to the right

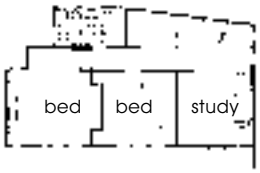
main image
corrugated steel clad south western facade
all photos + drawings courtesy of the architects

•**Description** - The site, measuring 42 metres by 9 metres, generated the form of the house and dictated that it follow a narrow north west axis up the block. The two-storey building is elevated off the ground on steel posts allowing the sloping landform to run undisturbed beneath the house, providing a carport at the front and reaching grade at the rear. Timber is extensively used throughout the building for internal flooring and external decks, and **plywood** for lining of ceilings, and for the cladding of exterior walls.

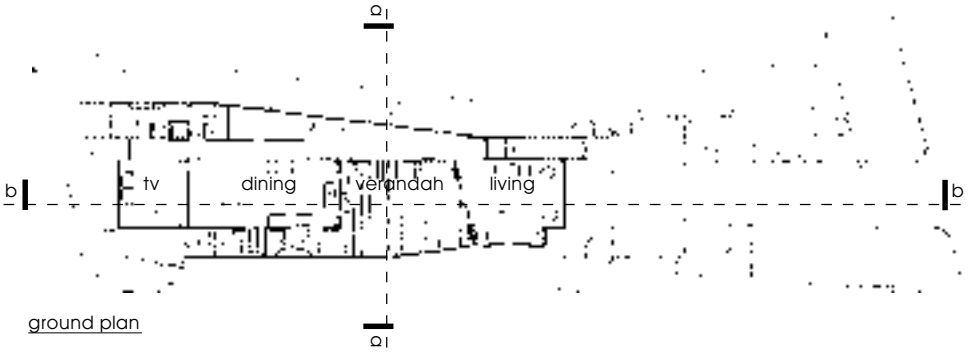
The downstairs living spaces are connected to a series of decks and wrap around a large court cut into the heart of the building between the living room and the kitchen. This is then connected to a narrow verandah running along the north east side to the rear of the building, where it reaches grade. The inside spaces are connected to the decks and court via large openings in the wall. The second storey of bedrooms and studio is to the southeast end with the roof gradually sloping and stepping down to the living room on the ground floor. The roof continues over the courtyard adding to the ambiguity of its nature as a room or outside space.

Louvres and external timber blinds ventilate and shade the building although the dense vegetation of the landscape, which comes right up to the edge of the building, has a role in the climate control of the building. The thin form of the house allows for cross ventilation from cooling breezes. On the south west, and south east side the exterior walls are angled in to provide a roof overhang yet allow the walls to go right up to the minimum setback.

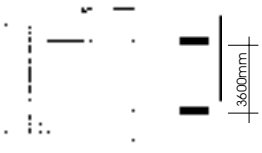
site plan



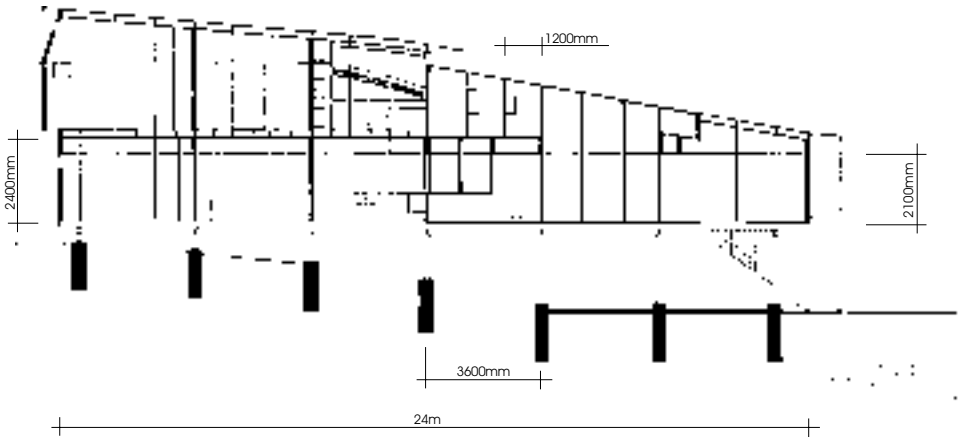
first floor



ground plan



section a-a



section b-b

top right
site plan of the Branigan house

top left
first floor plan

middle left
ground floor plan showing how the shape of the block generated the house's form and circulation patterns

above right
section a-a

left
section b-b

•**Structural Description** - The building is supported on braced steel posts and bearers set to a grid 3600mm wide and six bays of 3600mm long. In places the steel bearers **cantilever** beyond the grid to allow rooms and decks to follow the irregular shape of the block at the minimum setback allowed.

Fibre cement sheet was used to line the internal walls. All flooring in the house is hardwood. The exterior of the building is clad in exterior grade plywood, except around the internal court yard, which is clad like the interior walls with fibre cement sheets, and the south east wall, which is clad with corrugated steel. The plywood cladding in the Brannigan residence is a 12mm thick type A bonded, structural ply. It was pressure treated with preservative chemicals to protect it against fungal and insect attack, and painted on site with a clear finish.

The joints between plywood panels must have a two or three millimetre gap to allow for expansion, but the edges of each sheet cannot be exposed to the weather. In the Brannigan residence they are covered with pine cover strips. The horizontal joins have a "Z" **flashing** from the inside of the top sheet to the outside of the lower sheet.

The timber members of the structure are arranged at centres of 600mm, 900mm, and 1200mm. These modules relate to the size of the cladding and lining used. For instance the wall **studs** are at 600 centres. As the sheets of plywood cladding and fibre cement lining are 1200 mm wide the spacing of the studs provide attachment points for the edge of each sheet.

Door openings and windows are also at multiples of 600, 900 and 1200 to fit within the module of the structural grid.

The roof overhangs, while controlling the sun, also help in protecting the exterior of the building from weathering. The floor joists of the second story are cantilevered out on the north east side to provide a sunshade that also helps in weather protection.

top left
cladding detail at the rear of the house

top middle
view of the upstairs study and the staircase leading to the ground floor hallway

top right
the north eastern elevation from the rear of the block

centre
north eastern facing courtyard

far left
north eastern elevation blending with the lush tropical vegetation of the site

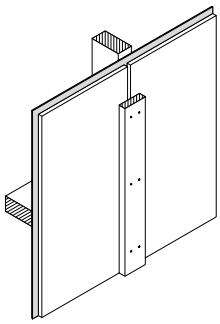
top right
roof overhang and north east sunshade

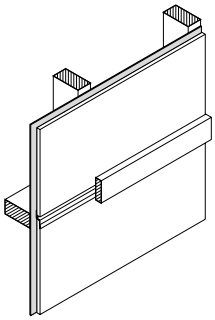
bottom right
handrail and cladding detail

below (top to bottom)
- vertical plywood cladding joint with cover strip
- horizontal plywood cladding joint with z flashing

•Plywood as a Cladding Material - Plywood is an attractive and economical material for use in cladding and lining. With all the natural colour and variation of timber, it is particularly suited to combination with timber framing. When the plywood is attached to a timber frame it creates one structural unit, much stronger than a normal timber frame. The strength of this means that stud spacing can be wider than normal. In the Brannigan residence, stud spacing was 600mm. It also means that **noggings** between the studs are not necessary, their role taken over by the plywood. As the wall acts as one structural unit, rafters or trusses do not have to fall directly above studs. The strength of the plywood lining and cladding, acting in composite with the timber frame, creates a very strong and rigid structure, resisting roof uplift, an important consideration in cyclonic and high wind areas. The plywood braces the building, eliminating the need for separate bracing elements. When each sheet is secured, 3 square metres of the building is covered at a time, offering saving in labour costs. Unlike a lot of other cladding materials plywood can be worked and fixed with normal wood working tools and is easily bent to clad curved surfaces.

To achieve the desired results, the detailing and selection of the correct plywood for each application is important.





•Environmental benefits of Plywood - Plywood offers many environmental benefits to the designer. It is manufactured from plantation-grown timber, a sustainable resource. Compared to other materials, low amounts of energy are used in its manufacture. Its high strength to weight ratio means plywood structures are very economical in the amount of material, and thus resource, used. Plywood can also play an important role in passive solar design. With a low thermal mass, plywood cools rapidly, dissipating the heat of the day, and lessening the dependence on energy consuming air conditioners.

•Designing to the 300 module - The sizes of most materials used in the Australian building industry are multiples of a 300mm module. This dimension is the metric equivalent of the imperial foot, and the size of most building materials are multiples of this module. By designing a building to a structural grid based on the standard sizes of building materials, an architect can ensure that all the elements used within a design relate to each other. This approach helps minimise material wastage and reduces labour costs caused by the need to trim, cut and manipulate building materials.

An intelligent designer, however, does not let this result in a sterile, repetitive building. Bud Brannigan, while working to a structural grid, is not a slave to it. His own house, in parts, breaks the repetition by extending beyond the grid or having courts scooped inside it.

• references

Jackson, D. 1994, 'Queensland Dynamics', Architecture Australia, sep/oct, p. 63

Jackson D. (ed.) 1994, 'RAIA National Awards', Architecture Australia, nov/dec, pp 42-43

• glossary

cantilever: a projecting structural member which is rigidly fixed at one end but unsupported at the other

flashing: a strip of impervious material fitted to provide a barrier to moisture movement into the interior of a building

nogging: a short horizontal timber strut fixed between studs or joists in framed construction to provide lateral stiffening and intermediate fixing points for cladding or lining

plywood: An assembled panel product made up of veneers of timber glued together so that the grain of alternate layers is at right angles.

stud: a vertical structural member in a framed wall or partition

•on the internet

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