

## The Bernadette Centre Lourdes Hill College

In 2012 Lourdes Hill College started planning the largest construction project in their 98 year history to make way for a growing student population and the introduction of a full cohort of Year 7 students in 2015.

The school engaged Bertoldi Architects to design and manage the project. The team was led by Architects Lawrie Bertoldi and Jafrul Khandker.

The design features a five-storey state-of-the-art building housing eight Middle School general learning classrooms, a 470 seat auditorium, science centre (including seven laboratories), performing arts centre with specialist high-tech drama and music classrooms, a tuckshop, roof-top play area and administration facilities.

The site was in the middle of the school bound by multi-level buildings on two sides.



Bernadette Centre – Riverside Façade and Forecourt

## The Site

"It is a challenging site", said Architect Lawrie Bertoldi.

"We had to excavate tonnes of rock for the basement carpark and foundations and then build a five storey building in the middle of an operating school. The site faces a main road and the surrounding residential properties are among the most expensive in Brisbane."

## Roof-Top Play Area

One key aspect that needed to be replaced was a communal lunch and play area. Bertoldi contacted Spantech early in the conceptual design stage to see if Spantech's patented wide-span curved roofing system could be used to provide a very low profile curved roof to the top level of the building for shade and weather protection to the roof-top play area.

Keeping the roof low profile was important to the balance of the design and to comply with Council's requirements for the site.



Bernadette Centre – Spantech Shade Structure over the Roof-Top Play Area

## Design Influences

The open curved structure also informed the design of many other aspects of the building. The curved river side facade, balconies and foyer areas all feature sweeping curves that complement the Spantech roof.

Bertoldi Architects have used the Spantech System on a number of previous projects pushing the span of the self-supporting panels to the full limit of 40 metres wide. On the Bernadette Centre the span required was 26.5 metres, so it was clear that the panel could be used. However there were a number of factors that needed to be considered before the decision could be made to specify the Spantech product.



Bernadette Centre – Main Entrance and Lobby

## Access

Spantech panels are manufactured on site with a mobile rollforming machine. The 370 Series rollform machine is housed in a 12 metre shipping container. The panels are rolled first as straight panels and are then fed back into the machine to be curved to the required radius. This process is fast and efficient, but it does require space.

Spantech overlayed the Spantech rollform and panel layout drawings over the Archicad drawings supplied by Bertoldi. The only place where the rollformer would fit was the narrow alley between the new building and the existing multi-level classroom block. This would restrict access to the rear of the site during the week when the rollform machine was required on site. It would also affect the design of the scaffolding needed to erect the western facade. These conditions had to be included in the tender documents so the builder could allow for them in the program and quote.



## Erection

Another issue that needed to be resolved before the design could be finalised was the crane needed to erect the Spantech panels.

Before the design was finalised Spantech took the concept drawings to a number of leading crane suppliers to plan how to erect the Spantech roof. Two options were identified, a tower crane or a large mobile crane. Rather than dictate which option to use, Bertoldi included the load specifications in the tender documents so the builder could decide which option would suit them best. The small tower crane proved the most efficient and cost effective solution.

## Engineering

The curved Spantech panel is self-supporting, but removing conventional supports such as trusses, increases the load on columns and footings.

"We could have used curved beams to support a conventional Colorbond sheeted curved roof, but the beams would make the design bulky", said Lawie Bertoldi. "We were looking for a slim-line solution."



The wind loads for the Bernadette Centre roof-top shade structure are deceptively high. With the building situated on top of a hill on a bend of the Brisbane River, the apex of the Spantech roof peaks at over 56m above sea level. With its curved shape the roof structure acts like an aircraft wing on top of the building.

The enormous loads were transferred down through the buildings concrete columns and also dispersed through a series of large concrete beams that were incorporated into the ceiling of the two level, 470 seat auditorium located directly below the Spantech shade structure.



## Construction Disruption

To reduce the impact of the construction process on the school community Bertoldi recommended to the School Board to fast-track the redevelopment of the Stella Sports Centre.

The original netball courts were exposed to the elements and in need of repair. Undertaking the revamp while the design and tender of the

Bernadette Centre were being finalised would ensure the school had a covered communal area to use well away from the major construction works.



The Stella Sports Centre – Featuring an insulated Spantech 370 Series Curved Roof

## Sports Centre

The Stella Sports Centre is a modern outdoor facility, covered by a 1360sqm Spantech 370 Series curved steel roof. The centre houses two full size multi-purpose courts fitted out for competition netball, basketball, tennis, volleyball and futsal. The perforated CustomOrb ceiling provides thermal and acoustic insulation. The courts are a Pulastic sports floor supplied and installed by Aura Sports.

## Contractual Approach

For both buildings Bertoldi Architects listed Spantech in the tender documents as a nominated Subcontractor. This gave Bertoldi the freedom to fully design the buildings knowing that the system would be able to be included as they envisaged. It also gave Spantech the lead time to procure the specialised coil steel needed to manufacture the roof. Spantech provided Bertoldi and all tenderers a fixed price quotation for the engineering design and scope of works specified by the Architect.

## Delivery

All Spantech's scope of works were delivered on time and within budget.

Lourdes Hill College celebrated the official opening of the two projects on Friday 12 September, 2014.

College Principal Robyn Anderson said the opening marks the dawn of a new era for Lourdes Hill.

"Our new facilities will not only change the shape of our campus - they will be changing the shape of our girls' education," she said.

## Photography:

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## Construction Photography:

Simon Barker  
Spantech



Bernadette Centre – Riverside Façade and Main Staircase Façade