

# Steel spire tops Riparian Plaza

The addition of the 69 metre spire on the Harry Seidler and Associates designed, Bloomberg developed, Riparian Plaza in Brisbane takes the building to just over 250 metres high, making it the city's tallest building. At this height, specific approvals were required from the Federal Department of Transport and Regional Services, in accordance with Civil Aviation Safety Authority (CASA) specifications.

Constructed of high strength tubular steel, the communication spire rises from level 50 of the Riparian Plaza. Construction presented its own difficulties. Safety at the extreme height, coupled with high winds, time constraints and the size of the structure were the major challenges. With over 70 metres, 50 tonnes of steel tubing, erected at level 50 and extending 50 metres past the roof level, the most efficient method of installing the nine spire units was to pre-fix individual mast sections off site before erection and installation on site.

The South Australian company, Ahrens, won the contract for the design, fabrication and erection of the spire under the stewardship of General Manager SA, Mark Smeaton. Aztec Analysis (a division of Wallbridge and Gilbert) worked with Ahrens Construction to carry out the design on this most challenging project. Director of Wallbridge and Gilbert / Aztec Analysis, Peter McBean worked on the design of the mast including the hanging chain damper, while fellow Director Mark Gilbert was the specialist on the installation methodology and project delivery.

Largely fabricated in South Australia by Ahrens, the sections were transported to Brisbane and further assembled prior to their progressive pre-dawn arrival on site as nine massive steel units. Each section was installed to a series



Nine units were installed to a series of meticulously planned lifts using the builder's tower crane.

of meticulously planned "engineered lift" procedures using the builder's tower crane, specially set up for the operation over a three week period and fixed in place by specialist builders, engineers and riggers.

The majority of the lifts were undertaken in the early morning hours when weather, particularly wind, was most favourable. The spire and supporting structure have been designed for 260 kilometre winds, and incorporate hanging chain dampers, proportioned using a method developed by NASA in the 1960s to steady rockets on launch pads.

The final structure was painted with International Paints high performance three coat system in the preassembly area prior to final delivery to site. The coating system, applied by Allied Protective Coatings, is an epoxy zinc rich primer, a high build epoxy intermediate coat finished with a polyurethane metallic coating (Interthane 990).

Ahrens undertook trial assembly in Adelaide before the structure was transported to Brisbane. The end flanges of each piece were machined to ensure straightness and alignment. As a result of this close control throughout design, fabrication, assembly and construction, the top of the spire is within 10mm of vertical.

The spire is an extraordinary crowning of the Riparian Plaza and represents a significant engineering achievement. It will carry extensive communications infrastructure, accommodating wireless alternative to landline telecommunications pathways. For the companies and residents in the Riparian Tower these communication facilities provide redundancy should other communications services fail.



Individual mast units were prefixed off site before erection and installation.



A lift in progress in the early morning Brisbane Light.



Close up of the stiffening rings.

## Project Team

**Architect:** Harry Seidler & Associates

**Structural Engineer:** Aztec Analysis  
(a division of Wallbridge and Gilbert)

**Steelwork Contractor:** Ahrens Group

**Protective Coating:** Allied Protective Coatings



Prefabrication steel detailing inside the communications spire.