

Bridges



Cardno is leading Australia and the world in the design of bridges.

What sets us apart is our commitment to your success, as an equal partner striving towards the same goal.

As an integrated professional services provider, Cardno has had considerable success in the competitive Australian market and against international competitors in Asia.

Our bridging expertise is unparalleled, with international experience gained over 40 years. With our company rapidly expanding, every day we increase and enhance our skills. Our comprehensive experience and knowledge inspires confidence.

Our aim is to work collaboratively to find the best solution and build capacity over the long term. We understand the challenges of building robust transport networks.

We know that bridges connect people and places. Cardno links communities through cost-effective, locally-delivered solutions:

- ▶ Cable-stayed bridges
- ▶ Suspension bridges
- ▶ Pre-stressed concrete girder bridges
- ▶ Standard steel bridging systems
- ▶ Steel composite girder bridges
- ▶ Railway bridges
- ▶ Pre-fabricated bridges.

Cardno plans, designs, develops and delivers bridge services tailored to suit your requirements.

Your need determines our level of involvement:

- ▶ Route and bridge site selection
- ▶ Feasibility studies
- ▶ Economic, social and environmental assessments
- ▶ Preliminary designs
- ▶ 2D and 3D static and dynamic analysis, including geometric non-linear analysis
- ▶ Advice on wind tunnel testing
- ▶ Catchment hydrology and bridge site hydraulic studies
- ▶ Detail design and documentation to international standards
- ▶ Independent proof checking
- ▶ Design review
- ▶ Construction engineering
- ▶ Temporary works design
- ▶ Assessment of existing structures
- ▶ Load capacity ratings
- ▶ Construction inspections
- ▶ Management of bridges subject to mining subsidence.

Optimum performance and partnership is our recipe for success.



Bolte Bridge

Melbourne, Victoria

Cardno worked closely with the design and construction contractor to reduce the cost of construction through innovative design.

The four river span section is 490m long with two main spans of 173m, built by the balanced cantilever method. Cardno was responsible for the:

- ▶ Concept development
- ▶ Detailed design and documentation, including the twin 140m high Gateway Towers
- ▶ Provision of construction stage services
- ▶ Temporary works design and proof checking for the contractor.

The Light Horse Interchange Westlink M7

Sydney, New South Wales

Specialist design teams from Cardno contributed to Australia's largest urban infrastructure project, the Westlink M7. The Light Horse Interchange is designed to improve the flow of traffic in Sydney's west. Cardno assisted in the development of:

- ▶ Concept design of five of the pre-cast segmental concrete box girder bridges, constructed using the balanced cantilever technique
- ▶ Subsequent detailed design and documentation of two bridges and a further balanced cantilever bridge over the M5 Motorway.

Phu My Bridge

Ho Chi Minh City, Vietnam

Cardno worked for Bilfinger Berger Baulderstone Hornibrook Consortium on this 380m main span concrete cable stay bridge across the Saigon River. Cardno was responsible for the:

- ▶ Detailed design of the approach structures
- ▶ Detailed design of major temporary works items such as the form traveller and pier table falsework
- ▶ Construction engineering for the stage by stage analysis of the bridge in conjunction with LAP from Germany
- ▶ Provision of a construction engineer on site during the construction phase.

Sydney Airport Elevated Roadway

Sydney, New South Wales

Working for the Federal Airports Corporation, Cardno designed the elevated roadway, providing access to upper level departures facilities and car parks to ease traffic congestion. As principal consultant, Cardno:

- ▶ Undertook all civil and structural design, both concept and final, and managed environmental, geotechnical, electrical, mechanical and lighting sub-consultants
- ▶ Designed the 985m U-shaped elevated roadway consisting of two 195m long cable stayed sections which maximise space at ground level
- ▶ Developed designs that ensured the airport remained operational through the construction period.

Gateway Bridge Duplication

Brisbane, Australia

Cardno worked with contractors Leighton-Abigroup during the tender and through detailed design and construction phases as specialist bridge consultants to help deliver the new balanced cantilever bridge crossing of the Brisbane River.

The new three river span section is 584m long with a centre span of 260m, and although wider and stronger than the original bridge, through innovative and novel solutions has been constructed in less than half the time.

The design incorporates:

- ▶ New pedestrian and cyclist access and six vehicle lanes, with an overall deck width of 27.5m
- ▶ Twin cell box 15.67m deep max x 15.0m wide
- ▶ 300 year durability design life.

Cardno was also responsible for the:

- ▶ Design of the temporary works for the river span closure segments
- ▶ Proof check of the launching truss for the approach spans.

Our expertise in bridges is unparalleled, with international experience gained over 40 years.

Cardno are leaders in the area of bridge design and we've found them to be one of the leading consultants. Certainly, for bridge design and construction, they would be one of our first choices. They are responsive and have a high level of client understanding... they've always delivered. When you're confronted with time pressures, responsiveness is a factor that is very highly regarded by me and certainly by Baulderstone as well.

*Hugh Bishop
Project Director - Major Projects
Baulderstone Pty Ltd*

About Cardno

Cardno is an integrated professional services provider, delivering specialist advice to create or improve the physical and social infrastructure that underpins communities around the world. Our team is comprised of leading advisors who plan, design, manage and deliver sustainable projects and programs.

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