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Australian slip joint engineering helps prepare structures to meet the challenges posed by rising traffic and climatic changes

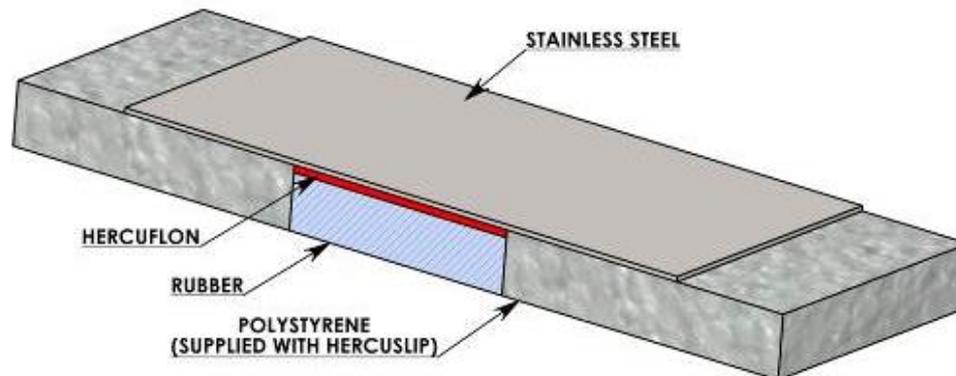


Royal North Shore Hospital's new P2 building, centre, with pedestrian bridges to the Douglas and Acute buildings.

Australian designed and manufactured composite slip joints and sliding structural bearings are increasingly being used to prolong the service life of major public and private structures, cost-efficiently enhancing their overall safety and functionality even under changing climatic and traffic load conditions.

One major public facility application of Hercules Engineering's composite slipjoints was in the construction of the new seven-level, 567-space No 2 car park building constructed as part of the \$1 billion-plus redevelopment of the Royal North Shore Hospital by Thiess.

"These cost-efficient Australian-engineered products have been coping with the extremes of the Australian and Asia-Pacific climate and traffic loads for more than 40 years, so outstanding thermal and load performance is built in to help cope with climate change and traffic load issues," said Hercules Engineering Manager Mr David Booty.



HLD structural bearings in bridge structures before grouting, top left, and after grouting and installation of the supported structure, top right. The design of Hercules Engineering's HSC slip joint is shown, bottom

Hercules Engineering supplied contractor Wideform Construction Pty Ltd with 265 metres of its Hercuslip Composite Slipjoints for the No 2 carpark project. "This reliable, easily applied slip joint material is ideal for post-tensioned and cast in-situ slabs and load-bearing brickwork. It is specifically designed to centralise loads and accommodate initial shrinkage and subsequent thermal movement," says Mr Booty.

Strips of the composite structure – sealed for long-life protection against dust and debris – are installed to provide the flexibility to ensure:

- Even weight distribution of the concrete slab
- The ability to absorb slight rotation of slabs as structures settle following construction (typically absorbing up to 0.33 radians, or about 1.9 degrees, of accepted tolerances of such movement. The built-in margins of absorption avoid slab damage and stresses created by movement and friction)

- Flexibility to absorb heavy traffic shock and vibration, which over time can create severe structural damage and shorten building lifespans
- Flexibility to absorb heat and cooling expansion and contraction with weather and climatic variations, also avoiding the build-up of structural stresses and damage.

“The use of HSC slip joint technology will in many ways contribute to prolonging the service life of the structural components at Royal North Shore No 2 Parking Building, increasing the overall safety and reliability of the structure in increasingly heavy traffic conditions as demand grows,” says Mr Booty.

Pedestrian bridges from Royal North Shore’s new No 2 carpark are also protected by Hercules Engineering’s Australian-made technology, this time in the form of Type D Herculon Structural Bearings (HLD/SG), designed to accept a lateral load of 30 per cent of the vertical rated load. Loads can be up to 600 kN per bearing in stock sizes, with higher capacity available custom-engineered for particular applications.

“HLD/SG structural bearings at Royal North Shore accommodate the expansion and contraction of the RNSH Douglas Link Bridge and the RNSH Acute Bridge, connecting the new carpark with the Douglas and Acute Services Building. Such movements can result from ambient temperature fluctuations impacting structural steel members of the bridges,” says Mr Booty.



Pedestrian bridge to the RNSH Acute facility, one of two pedestrian bridges protected by Herculon bearings

“Hercules Engineering focuses on well-designed solutions that are simple, highly cost-competitive and permanent, featuring proven durability based on our 40 years of experience in the market, including many landmark Australian buildings that have stood the test of time,” says Mr Booty.

Buildings in which Hercules engineering technologies have demonstrated longevity and high efficiency include landmarks such as the Australian National Gallery, Centrepont Tower, Sydney, David Jones properties, Hang Seng Bank Hong Kong, Martin Place

Station, National Athletics Stadium, the Sydney Opera House, Northpoint Office Tower North Sydney, Parliament House, Canberra, Park Lane Hotel, Sydney, Post Office Tower, Black Mountain, Canberra, Qantas House, Sydney, Tooheys expansion, Sydney, Westmead Hospital, Woden Plaza, World Square Project Sydney. Hercules Engineering technologies are also extensively involved in new medical, retail, university and schools, office and industrial buildings including in the cement, mining and energy industries and infrastructure including bridges.

Hercules Engineering is an Australian-owned leading supplier of Structural Bearings & Slip Joints. Founded in 1972, Hercules Engineering makes and supplies two major product lines.

- **Hercules™ composite slip joints and Shearstrip products**
- **The Herculon™ range of structural bearings.**

Our plant is completely up to date. We offer a broad range of structural products to an extensive range of clients, including Government and Commercial clients in Australia and overseas. Our clients also represent major industry sectors, including the Construction, Engineering, Infrastructure, Mining and Energy and other Industries.

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