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Penrith Stadium Redevelopment

- 2500D Structural Pipe

Case study



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Manufacturing a new section for Penrith Stadium

When the Penrith Stadium Redevelopment required a 2500D circular hollow section (CHS) for its East Bowl and West Roof structures, the size was not available from any Australian manufacturer. Rather than sourcing an imported product, Orrcon Steel Manufacturing worked with head contractor John Holland Group to develop and supply the section from its Unanderra mill in New South Wales, keeping the entire supply chain onshore.

62 tonnes

Australian-made structural pipe supplied

2500D × 9mm

New CHS size developed at Unanderra

Project background

The Penrith Stadium Redevelopment is a major NSW Government infrastructure investment in Western Sydney, delivering a new venue for the Penrith Panthers and the wider community. John Holland Group (JHG) was appointed as head contractor, responsible for construction and installation across the project.

The structural design for key elements of the build including the East Bowl structure and West Roof system, called for a 2500D CHS. The size sat outside Orrcon Steel Manufacturing's standard product range and was not in production at any Australian mill at the time.

The challenge

For a project of this scale and public visibility, the default response to a non-standard section requirement would ordinarily be to source an imported product. That approach carries real risks: longer and less predictable lead times, limited visibility over production and quality, and reduced certainty for the construction program.

JHG and Orrcon Steel Manufacturing (OM) explored whether the section could be produced locally and whether OM's could develop a new product to meet the structural specification within a timeframe that worked for the build.

Solution

Orrcon Steel Manufacturing's involvement began at the design stage, which was central to making a domestic solution viable. The team evaluated both 9mm and 10mm wall thickness options

using 350 grade structural feed material sourced from BlueScope Steel at Port Kembla. The final specification, 2500D × 9mm, was selected to meet the project's structural requirements.



Introducing a new diameter at the Unanderra mill required a controlled commissioning process, including custom tooling configuration and mill setup. Coil supply from BlueScope Steel was secured early to ensure material was available within the required lead times. The new section was validated against ACRS compliance and mechanical testing requirements before entering production.

Material moved through a fully domestic chain: coil from Port Kembla, tube production at Unanderra, and final installation by John Holland Group on site. Full traceability was maintained from coil through to installation.



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Orrcon Steel Manufacturing was honoured to collaborate with John Holland Group and our project partners to develop the 2500D section for the new Penrith Stadium. By working together from early in the design process, we developed an all-Australian solution that met the project's structural requirements, helped deliver greater supply chain certainty, and maintained end-to-end traceability from the steel coil through to final installation.

- David Haynes
Technical & Product Development Manager
at Orrcon Steel Manufacturing

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Using domestic manufacturing capability and local supply chains for the Penrith Stadium redevelopment has offered significant advantages in reducing project timelines. By shortening procurement and shipping lead times, the approach minimises exposure to global supply chain disruptions and ensures faster adaptation to design changes. Locally sourced materials can be produced and delivered more efficiently, enabling construction to progress with greater predictability. Local supply also improves coordination among designers, suppliers, and contractors enhancing responsiveness and quality control. Prioritising local industry also bolsters regional economic participation and workforce involvement, which is something the project team are proud of.

- Milan Males
Project Manager
at John Holland Group

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Outcomes

The project delivered approximately 62 tonnes of Australian-manufactured structural pipe into critical load-bearing elements of the stadium build. The 2500D × 9mm section has since been added to Orrcon Steel Manufacturing's validated product range, available for future infrastructure applications requiring large-diameter CHS.

Key outcomes included:

- Approximately 62 tonnes of structural pipe manufactured at Unanderra and supplied into the East Bowl and West Roof structures
- A new 2500D CHS size successfully developed, tested, and validated against ACRS compliance and mechanical testing requirements
- Full material traceability maintained from BlueScope coil through to installation
- All manufacturing carried out under ISO 9001-certified systems with NATA-accredited testing
- Reduced exposure to imported section supply risk, with no dependence on overseas shipping for a non-standard product

Key takeaways

The Penrith Stadium project demonstrates the value of engaging a manufacturer at the design stage rather than after a specification is finalised. Early involvement allowed the structural requirement to be aligned with what could realistically be manufactured within the project's timeframe, rather than working around a fixed spec that could only be met by an overseas supplier.

For engineers, contractors, and project teams working with non-standard structural requirements, the 2500D development shows that Australian manufacturing capability can extend to meet project-specific needs, provided the right conversations happen early in the design process.

Orrcon Steel Manufacturing's Unanderra mill is now a proven source for large-diameter structural CHS, with the 2500D section available as a repeatable product for future stadium, infrastructure, and civil applications.



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For more information
1300 650 303
www.orrconmanufacturing.com.au

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