roundel CIVIL PRODUCTS PTY.LTD.

SPIRAL TUBES

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Company Capability Statement

Revised August 2015

Deep-corrugated plate arch – Rio Tinto, Yandi Mine site, WA

Roundel Stilcor Mobile CSP Pipe Mill

Overview:

Roundel designs, manufactures and supplies corrugated metal pipes and bolted, corrugated steel structures principally used for drainage culverts, underpasses, stockpile and personnel tunnels.

Design:

Design for the structures is either carried out in-house or by local, independent, civil engineers; both structural and hydraulic designs can be accommodated. Designs utilize the following standards:

- AS / NZS 2041.1:2011 – 'Buried corrugated metal structures – Design methods';
- AS / NZS 2041.2:2011 – 'Buried corrugated metal structures – Installation';
- AS / NZS 2041.4:2010 – 'Buried corrugated metal structures – Helically formed sinusoidal pipes';
- AS / NZS 2041.6:2010 – 'Buried corrugated metal structures – Bolted plate structures'; and,
- AS 5100.2 – 2004 – 'Bridge design – Design loads'.

For larger span structures 2D / 3D FEA modelling is also employed where required.

Stilcor CMP culverts:

Our fixed culvert pipe mills have the following manufacturing capabilities:

Corrugation profiles:	68 x 13mm, 75 x 25mm, 125 x 25mm.
Materials:	Hot-dip galvanized, aluminium, PE-coated, alloyed steels (POSMAC, ZAM, SuperDyma, Galfan).
Material thicknesses:	1.6mm to 3.5mm
Diameters:	300mm to 3,650mm (continuous increments)
Production capacity:	20 tonnes per day per mill - average

Manufacturing bases:

Roundel has fixed manufacturing bases in the following regions:

- Perth metropolitan area, located in Neerabup, WA.
- The Pilbara, located in Tom Price, WA.
- The Bowen Basin, located in Capella, QLD.

Mobile culvert mills:

Corrugation profiles:	68 x 13mm, 75 x 25mm, 114 x 25mm, 125 x 25mm and 151 x 51mm
Materials:	Hot-dip galvanized, aluminium, PE-coated, alloyed steels (POSMAC, ZAM, SuperDyma, Galfan).
Material thicknesses:	1.6mm to 4.2mm
Diameters:	300mm to 7,400mm (continuous increments)
Production capacity:	30 tonnes per day - average

The mills, currently two in total, as shown on the front cover, have been built specifically to meet the stringent safety standards required on mining projects with the main operations being carried out at ground level. They have been inspected and approved by independent, reputable, consultants and meet

all of the relevant Australian standards. The mills, and all secondary plant and equipment, has been risk- assessed together with our operating procedures and are deemed to meet the requirements of the Mines Safety and Inspection Regulations 1995, as well as those requirements established independently by project owners. All manufacturing and supervisory personnel are regularly inducted and medically certified to site requirements.

Culvert lay-down area at Lang Hancock Railway, Rio Tinto

On-site manufacturing & culvert lay-down area at Chichester Deviation, BHP Billiton, the Pilbara, WA

Completed On-Site Projects:

Projects successfully completed on-site in recent years, with **zero safety incidents**, include:

- Roy Hill Rail – 4,100 tonnes (Oct 2013 – April 2014);
- FMGs' Solomon Mine, Firetail & Rail Spur (Nov 2011 – Apr 2012) – 4,600 tonnes;
- The Lang Hancock Railway and Mesa A for Rio Tinto (2009) – 1,450 tonnes;
- The Chichester Deviation project for BHP Billiton (WA); and the Great Northern Highway, Kimberley project for Team Savannah/Main Roads WA.

Roundel is Australia's market leader in the on-site manufacture of CSP culverts with considerable experience and an exceptional track record of delivering these challenging projects on time.

Bolted, corrugated plate structures:

We offer the full range of bolted, corrugated plate arches in all shapes including pipe arches, elliptical, underpasses, and high / low-profile arches. Corrugation profiles include:

- 152mm x 51mm;
- 200mm x 55mm; and,
- 381mm x 140mm, the strongest profile accepted in AS / NZS 2041.6:2010.

Material thickness ranges from 2.5mm to 8.0mm in steel grades of G230, G250, G300 and G400.

For larger spans with very high loads we offer the deep-corrugated steel section with external double ribs, which can be injection grouted when required.

Corrugated-Plate Structures, Wambo Rail Spur, NSW

On-site support services:

Roundel provides comprehensive site-support for the installation of the corrugated plate structures, including pre-start meetings for material layout and the review of assembly methods with installation crews. We offer assistance with the establishment of assembly QA procedures and provide off-site monitoring during the backfilling works. Final on-site inspections can also be provided where required.

410E Stockpile Tunnels – BHP Worsley Efficiency & Growth project, Marradong, WA.

Corrugated-plate arches - Rio Tinto – RCE 333 Expansion Project, WA.