

# ROUNDEL

## About Roundel

The Roundel name is synonymous with its STILCOR™ range of corrugated steel products which were introduced into Hong Kong in 1981 with the production of steel permanent liners for the Bored Piling Industry. Since then, Roundel has successfully developed a diverse range of products to service the Civil Construction Industry with markets in Singapore, Malaysia, Papua New Guinea, Australia and New Zealand.

In 1998 the company was awarded its first Australian contract to supply galvanized corrugated steel culverts (C.S.P.) for the "Marble Bar to Woodie Woodie via Rippon Hills" Main Roads WA project. This project required the "on site" production of over 15,000 metres of C.S.P. for the 132 km road construction. Roundel has since established itself as an Australian manufacturer of Galvanized STILCOR™ and Aluminium ALUCOR™ corrugated pipe. Roundel continues to provide its well-engineered products and services throughout the Asian and Australian Civil Construction Industry.

Our product range is used in Road, Rail, Storm-Water, Drainage, Irrigation, Forestry, and Mining applications. We provide superior service with engineered quality products resulting in cost effective solutions.

To determine the true "Best Value Engineering" solution, compare our design and price with traditional systems. Join our fast growing list of satisfied customers and put Roundel to the test on your next project

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## Products

**Roundel Civil Products Pty Ltd** design, manufacture and supply a complete range of products that include:

- **STILCOR™** : Galvanized Lock-Seamed Corrugated Pipe (300mm to 3600mm dia)
- **ALUCOR™** : Aluminium Lock-Seamed Corrugated Pipe (300mm to 2400mm dia)
- **Manufacture** Corrugated Steel Pipe (CSP)
- **Transport and Logistics** We have the experience to deliver
- **Underground Stormwater Systems:** Recharge and Detention Systems
- **Permanent Steel Liners:** CSP Liners For Bored Piling
- **Corrugated Plate Structures:** Versatile Structural Solutions for Tunnels, Bridges, Underpasses etc..
- **Guardrail Barriers:** Safety Barriers for Highways, Roads, Bridges, Ramps and Car Parks
- **Fencing** Industrial and Security Applications
- **Noise Barriers:** Advanced Absorptive and Reflective Sound Barrier Systems
- **Rockfall Barriers:** Reliable Defence Against Rock Fall Events
- **Geosynthetics:** For all Civil Construction Applications

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**STILCOR™** and **ALUCOR™** corrugated pipe can be manufactured on site to contract requirements or alternatively manufactured at our factories and nested for transportation.

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Our product range is used in Road, Rail, Storm-water Drainage, Irrigation, Forestry and Mining applications. We provide superior service with engineered quality products resulting in cost effective solutions.

To determine the true "**Best Value Engineering**" solution, compare our design and price with traditional systems. Join our growing list of clients and put Roundel to the test on your next project.

## **STILCOR™**

Utilizing the renowned strength of sinusoidal corrugations and using a double offset "lock seam", Galvanized coil is roll formed into a continuous helical barrel to produce an extremely robust yet economical piping solution. Galvanized **STILCOR™** pipe is manufactured from Z600-G250 steel conforming to AS1397, and complies with AS 1761-1985 Helical Lock-Seam Corrugated Steel Pipes. The Z600 Coating is the heaviest Galvanised coating commercially available for coiled steel and is specified in the Australian Standard for it's high level of protective durability.

Available diameters range from 300mm to 3600mm for **STILCOR™** CSP and whilst the Australian Standard nominates a preferred set of internal diameters, it should be noted that Roundel is prepared to manufacture intermediate diameters within this range to meet our client's required internal or external diameters.

**STILCOR™** pipe is manufactured to customers specified lengths. Maximum lengths of 21.0m are available on request for larger diameters. Standard lengths of 12.0m are typical for road freight in Australia, although under special transport arrangements lengths up to the maximum can be manufactured and delivered to our clients requirements. Minimum lengths are based on stock availability.

## **STEEL GAUGE**

**STILCOR™** can be supplied in various steel thickness:

1.2mm, 1.6mm, 2.0mm, 2.5mm, 3.0mm and 3.5mm.

Please consult your Roundel Representative to discuss the most appropriate gauge for your application.

## **CORRUGATIONS**

Available corrugations :

68 mm x 13 mm  
75 mm x 25 mm  
125 mm x 25 mm

Please consult your Roundel Representative to discuss the most appropriate corrugation for your application.

See **Dimensions and Height of cover limits**

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## PIPE JOINERS

Coupling Bands to join pipe are manufactured to comply with AS1761-1985. Flanged pipe ends and other Joining systems to your specification are available on request.

## PIPE END TREATMENT

Standard pipe ends are "square cut" to suit adjoining pipe or headwalls. Where conformance with road or rail embankments is required, "bevel", "skew" or "bevel & skew" end cuts are used. Where additional pipe end stability is required, hook bolts can be used to key into concrete headwalls or other embankment protection. Please consult your Roundel Representative to discuss the most appropriate solution for your application.

## THE STILCOR™ ADVANTAGE

- Light and Strong (approx 10% the weight of RCP)
- Long Lengths Available (up to 21m)
- Easy to Join
- Nestable Loads
- Economical Freight
- Fast & Economical Installation
- Lowest Installed Cost
- Durable Solutions

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## ALUCOR™

Utilizing the renowned strength of sinusoidal corrugations and using a staked, double offset "lock seam", Aluminium coil is roll formed into a continuous helical barrel to produce an extremely robust yet economical piping solution. **ALUCOR™** is manufactured from "Alclad 3004-H34" in accordance with AASHTO M197-82 (1986) - Clad Aluminium Alloy Sheets for Culverts and Underdrains. Roll forming of the product otherwise conforms with AS 1761-1985 Helical Lock-Seam Corrugated Steel Pipes. The Alclad 3004-H34 provides a high level of durability and is suitable in coastal and tidal areas.

Available diameters range from 300mm to 2400mm and whilst the Australian Standard nominates a preferred set of internal diameters, it should be noted that Roundel is prepared to manufacture intermediate diameters within this range to meet it's clients required internal or external diameters.

**ALUCOR™** pipe is manufactured to customer's specified lengths. Maximum lengths of 21.0m are available on request for larger diameters. Standard lengths of 12.0m are typical for road freight in Australia, although under special transport arrangements lengths up to the maximum can be manufactured and delivered to your requirements. Minimum lengths of each diameter are based on availability of stock.

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## **ALUMINIUM GAUGE**

ALUCOR™ can be supplied in various wall thickness:

1.5mm, 2.0mm, 2.5mm, and 3.0mm.

Please consult your Roundel Representative to discuss the most appropriate gauge for your application.

## **CORRUGATIONS**

Available corrugations :

68 mm x 13 mm  
75 mm x 25 mm  
125 mm x 25 mm

Please consult your Roundel Representative to discuss the most appropriate corrugation for your application.

See **Dimensions** and **Height of cover limits**

## **PIPE JOINERS**

Coupling Bands to join pipe are manufactured to comply with AS1761-1985. Flanged pipe ends and other Joining systems to your specification are available on request.

## **PIPE END TREATMENT**

Standard pipe ends are "square cut" to suit adjoining pipe or headwalls. Where conformance with road or rail embankments is required, "bevel", "skew" or "bevel & skew" end cuts are used. Where additional pipe end stability is required, hook bolts can be used to key into concrete headwalls or other embankment protection. Please consult your Roundel Representative to discuss the most appropriate solution for your application.

## **THE ALUCOR™ ADVANTAGE**

- Ultra Light and Strong (approx 30% the weight of Galv CSP)
- Long Lengths Available (up to 21m)
- Easy to Join
- Nestable Loads
- Economical Freight
- Fast & Economical Installation
- Lowest Installed Cost
- Highly Durable Solutions

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## Corrugated Pipe Manufacture

Corrugated pipes are manufactured from either Pre-galvanized steel, Mild Steel or Aluminium. Material is delivered to our factories in the form of large coils. The flat coil material is fed into the corrugation rolling mill which progressively produces sinusoidal corrugations in the material before curving into the required pipe diameter. The opposite edges of the coil material are folded over, one up and one down, then rolled over to form a "lock-seam" along the continuous spiral helix.

The manufacturing process enables Roundel to offer a complete range of diameters which meet with all International Standards including Australian Standard AS 1761-1985 Helical Lock-Seam Corrugated Steel Pipes. Our manufacturing plants have the capability of producing any diameter ranging from 300mm up to 3600mm. It should be noted that Roundel is prepared to manufacture intermediate diameters within this range to meet required internal or external diameters.

**STILCOR™** and **ALUCOR™** corrugated pipe can be manufactured "on site" to contract requirements or alternatively, manufactured in our factories and "nested" for economical transport to site.

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## Transport and Logistics

Transportation of finished CSP to site can be an expensive and time consuming activity, particularly if unexpected difficulties arise as a result of inexperienced transport operators. Careful planning at an early stage in any project is the key to achieving the desired result, in transporting pipe to remote sites or across town it is no different.

Roundel offers a total package including delivery to site with unloading by others. Our experienced operators and staff will ensure your products are packed, loaded and delivered to your site without the headaches.

Our experienced staff will be pleased to plan the most economic packing configuration and present competitive transport options at quotation to enable you to budget or tender successfully

## Underground Stormwater Management Systems

Stormwater Management continues to evolve to meet the requirements of increased urban development. Increased stormwater run-off, a shortage of open space and other social pressures have forced stormwater treatment underground, DETENTION and RECHARGE systems provide convenient, reliable and economical solutions.

### Detention Systems

Detention Systems are used to temporarily hold peak flow stormwater runoff until it can be released into the downstream drainage system. They provide an economical solution in augmenting existing drainage systems overloaded by increased run-off.

### Recharge Systems

Similar in concept to the Detention System, the Recharge System utilizes a series of holes or perforations to allow stormwater to flow out of the tank and into coarse granular bedding, recharging the groundwater table. These systems are generally located at the downstream end of stormwater

systems however, longer, smaller diameter, perforated pipes, installed above coarse granular bedding are equally effective when located "in line" to alleviate and discharge excessive peak flows prior to reaching points further downstream.

For answers to questions relating to Hydraulic Design, Water Quality, Structural Design, Assembly & Installation or Durability of these systems, simply email Roundel or call to request a comprehensive design manual and design program.

### Benefits

- Eliminates peak flow to reduce flooding
- Reclaims land for attractive purposes or useable space, car parks, play areas etc...
- Improved ground water quality
- Reduce the risk of mosquito breeding grounds
- Compact Design
- Low initial and ongoing cost
- Durable materials

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### Features

- Wide range of diameters, lengths and layouts to suit site restrictions (750mm to 3600mm dia. and greater)
- Choice of Material, Aluminium, Galvanized Steel
- Fabricated Manifolds, Pollutant traps, Silt Traps
- Access Risers - Entry, Ladders
- Available with or without perforations
- Pre-Engineered, ready to install with little or no on site assembly
- Light and Strong, easy to handle

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### Detention and Recharge Systems

**Pipe:** The main body of the buried structure is comprised of corrugated metal pipe manufactured typically from either Aluminium or Galvanized CSP. Pipe is manufactured in conformance with Australian Standard AS1761-1985 Helical Lock-Seam Corrugated Steel Pipes, and should be installed in conformance with AS1762-1984 Helical lock-seam corrugated steel pipes-Design and installation. Minimum height of cover in accordance with the Australian Standard is 600mm in trafficable locations or as little as 300mm where traffic loading can be excluded.

**Fittings:** Fabricated Elbows, Tee Pieces, Sumps, Risers, Access Entries, etc... are manufactured from the corrugated metal pipe to suit the required tank configuration which best suits the selected site. This design flexibility enables obstacles such as mature trees or services to remain undisturbed.

**Joiners:** Pipe and Fittings Connections are made using a Dimpled Coupling Bands, either with or without the use of a PE Corrugated Gasket seal. The gasket is used more frequently in Detention Systems while the standard joiner is generally installed with geo-textile cloth on Recharge systems.

**Baffle Walls:** Walls are fabricated within the structure to perform various filtering functions. A range of mesh walls filter gross pollutants and strain incoming debris such as bottles and cans down to sediment sized particles.

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## Permanent Steel Liners

Mild Steel **STILCOR™** Corrugated Steel Pipe (C.S.P.) has been used as permanent liners in the bored piling industry for decades. C.S.Ps. are far more cost effective than solid steel pipe for this purpose and many other buried applications. The function of a CSP liner is to support the surrounding silt and clay soils between surface construction work down to bedrock and act as formwork during the construction of reinforced concrete piles. The depth of installation can vary between 20m and 120m. Permanent liners remain buried for the life of a reinforced concrete pile.

Typical applications include Bridge Supports, Via Duct Supports, Building Foundations, Wharf Supports etc.

Mild Steel **STILCOR™** pipe is generally manufactured from JIS G3131 SPHC steel conforming to International Standards. Utilizing the renowned strength of sinusoidal corrugations and using an offset lock seam, Mild steel coil is roll formed into a continuous helical barrel to produce an extremely robust yet economical pipe.

Roundel can assist in selection of the most appropriate diameter and gauge for your piling needs.

## Corrugated Steel Plate Structures

Buried Corrugated Steel Plate Structures were developed early last century based on the proven performance of corrugated steel. Corrugated Plate Structures are curved, corrugated steel sections, bolted together to form one of many standard shapes. These shapes include round pipe, pipe-arch, single radius arch, ellipse, pear, low or high profile arch, box culvert and many others.

Structures of increased "Depth" and "Pitch" in corrugation have been refined in more recent years to achieve even greater spans of up to 20m.

As with Corrugated Steel Pipe, Corrugated Plate Structures work as a complex composite of soil and steel to achieve a flexible load supporting structure. These structures are very cost effective and have been accepted throughout Australia, Canada, USA and many European Countries for tunnel, underpass, overpass road and highway applications. They are commonly used as conveyor and escape tunnels, in mining and rail applications, as stream and river crossings and other civil applications.

Installation is simple and fast, Corrugated plate structures are ready to use once installation and backfill compaction is complete.

Contact Roundel to discuss the best solution for your application.

## Guardrail Barriers

Universally accepted and regarded as the standard by which all other barrier systems are compared, "Armco Railing" plays a vital role in making our modern highways and roads a safer environment.

- Safety Barrier Railing and Accessories
- Crash Attenuation Systems

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For all your safety barrier requirements, please contact our nearest sales office in your area.

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## Fencing

Roundel provides a range of fencing, security and wire products.

Products include:

- Galvanized Chainlink Fence
- P.V.C. Coated G.I. Chainlink Fence
- Barbed Wire
- Fence Posts
- Gabion Baskets and Mattresses
- Fencing Accessories
- Turnbuckles
- Cleats
- Fasteners

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## Noise Barriers

Noise in our modern cities from road, rail and air traffic has escalated to become a serious environmental problem. Fortunately, advances in materials in recent years have enabled the engineering of stylish, durable and highly effective solutions which either shield us from or reduce the cumulative effects of environmental noise.

Roundel offers a comprehensive acoustic and structural design service and drafting facility. Acoustic designs are based on the initial Environmental Impact Assessment (EIA) report and employ established assessment methods such as the calculation of Road Traffic Noise (CRTN) adopted by Hong Kong Environmental Protection Department (EPD).

Once the essential acoustic and structural needs are accounted for designs are then developed further to ensure that aesthetic and landscaping considerations are fully considered. Roundel also offer full assistance with presentations to government bodies by producing 3-D graphic presentations of barrier or enclosure designs.

Roundel maintains an on-going R&D program, testing new acoustic materials and designs. The program enhances the acoustic design facility whereby project specific designs can be fully tested prior to the commencement of production, thus ensuring that theoretical barrier designs fully achieve the mitigation levels required.

The underlying philosophy of our approach is to provide fully engineered and tested solutions, tailored for each specific noise mitigation project to ensure that barrier and enclosure design are optimized in terms of:

- Acoustic performance
- Aesthetic appeal
- Ease of installation
- Low maintenance requirements
- Overall cost effectiveness

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Roundel invites you to discuss your noise mitigation projects with us and we look forward to showing you the best in contemporary solutions.

Noise barriers are classified into two distinctive groups, either absorptive or reflective.

### **Absorptive Systems:**

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Absorptive systems rely on the physical characteristics of the barrier material to absorb sound energy.

### **SoundSorb®**

Is a cementitious open cellular free draining non-structural acoustical material produced by patented mixing methods using Portland cement and specific propriety ingredients. SoundSorb® exceeds the acoustical requirements specified by transportation authorities and provides a realistic state-of-the-art solution to environmental noise.

**Retro-Fit SoundSorb®** Cladding panels to existing reflective surfaces where a noise problem exists. Panels are designed to be handled by one person and are available in attractive colours and textures.

**SoundSorb®** can be wet cast during the precast production phase and is integrated with the structural portion of the panel to become an AASHTO compliant barrier with excellent sound absorptive qualities.

### **Roundel Noise Protection Elements**

Made of durable aluminium, Roundel Noise Protection Elements are especially suited to bridge and supported structures due to their light self weight. Depending on requirements, the Noise Protection Elements can be constructed as a reflecting, single sided or two sided highly absorptive design.

Durable polyester powder stoved enamel finish panels are available in a variety of attractive colours. Horizontal, vertical or angled panel alignment provides aesthetically pleasing appearance. Lightweight panels are quick and easy to install due to the modular assembly construction.

### **Octagonal Reducers**

Octagonal Noise Reducers are installed on top of absorptive or reflective noise barriers, their purpose is to provide additional absorptive performance (2 - 4dB), which then allows the barrier height to be reduced. This is of particular value in urban residential areas where traffic noise levels are excessive and building heights tend to be high-rise. Noise mitigation in such areas often results in barriers of excessive height, which can have a negative visual impact on the surrounding streetscape.

### **Reflective Systems:**

Perspex Clearview PMMA Reflective Panels are manufactured by ICI Acrylics using either the extrusion or casting processes using a pure non-recycled monomer (PMMA) to which coloured dyes can be added if required. Panels can be curved using either cold bending on site or by thermo-forming methods where tighter radii are required.

AGT Glass Reflective Panels, made of tempered glass are designed to provide high soundproofing performance with minimal visual impact due to it's superior clarity. The AGT sheet is a laminated glass panel with a milled finish to allow the use of a special seal between the sheets. Each sheet is independent of one another and reacts to the sound pressures individually.

### **Rockfall Barriers**

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Weathering, root activity, water pressure and erosion on natural and artificial slopes combined with the effect of gravity can ultimately have a devastating effect over a large area. The potential of a "rock fall event" occasionally presents a threat to man and his environment. Where the potential exists and relocation away from the threat is unavoidable, rockfall barriers are the best form of passive defence.

Rock in motion under the force of gravity is a combination of activities such as impacts, rolling and projection which must be analysed according to the slope, volume of rock, height of detachment etc....

The selection of the most appropriate system of defence from rock fall events results from a careful study of the rock features and their motion.

Roundel invites you to discuss your rock-fall defence requirements with us and we look forward to showing you the most advanced engineering solutions available.

## Geosynthetics

Roundel provides a broad range of geosynthetic products to perform the basic civil engineering functions of separation, stabilization and filtration.

Applications include:

### Road and Runway Construction

- Drainage
- Erosion Control
- Channel and Pond Shoreline Protection
- Forestry and Mining applications
- Road and Runway Construction

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## Contact Roundel

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