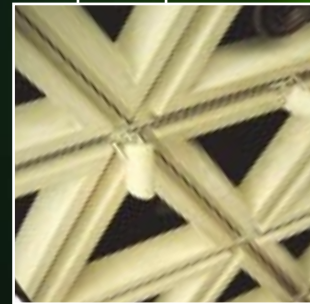
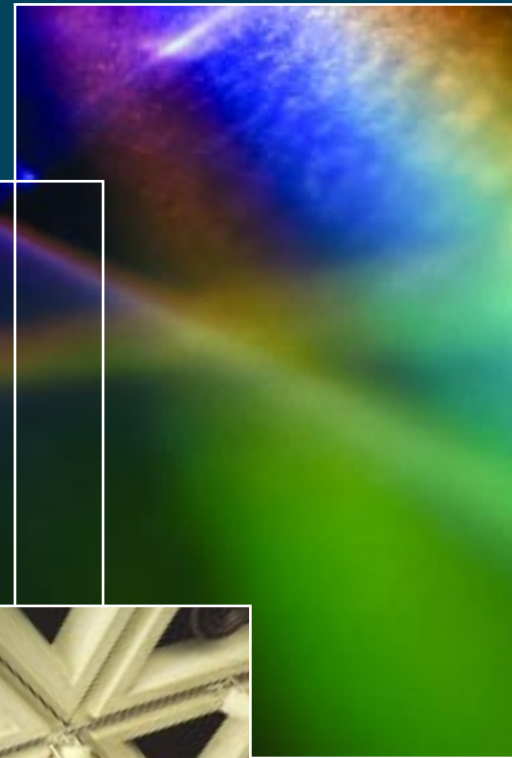


Glass Reinforced Concrete



The building material which continues to make a significant contribution to the technology and aesthetics of the construction industry worldwide.

What is GRC?

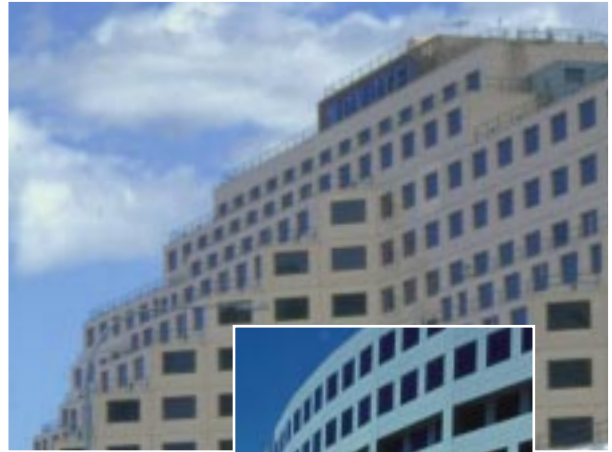
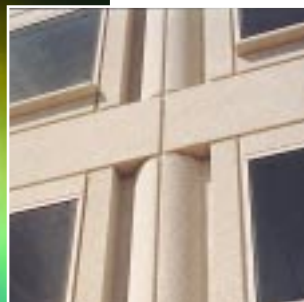
GRC is a cement based composite material with alkali resistant fibres that are randomly dispersed throughout the product.

Because the glass fibres add flexural, tensile and impact strength, the resulting material allows the production of strong, yet lightweight architectural materials.

Advantages of GRC

Choosing GRC at the design stage can lead to savings in both structural and foundation costs, and can yield the following advantages:

- High strength to weight ratio
- Reduced weight leads to lower transport and erection cost
- Maintenance free (no steel to corrode)
- High impact strength
- Freedom of design with the ability to form complex shapes.
- Non-combustibility
- Improved surface detail and quality of finish



GRC in Architecture

Applications include cladding panels for building facades, mullions, fascias, spandrels and sunhoods.

GRC is also suitable for 'overcladding' of existing structures as part of building rehabilitation, and for interior details and feature panels.

GRC panels can be produced with a range of textures and colours, even to the point of replicating and harmonising with existing and even historic structures.

Complementary to GRC cladding panels are the many artefacts to finish off a detailed design or replicate an old feature for a refurbishment or renovation project.

The innate properties of GRC make it an ideal material for such items as capitals, cornices, corbels, balustrades, column casings and porticos.

Other reasons for an architect choosing GRC:

- Panels can be shaped in any form and in any surface texture in thicknesses as small as 10mm.
- Panels can be of larger size because they are lighter and easier to handle than standard precast elements.
- Steel stud frames enable fast and accurate installation.
- Panels are highly resistant to weather conditions, including exposure to fire, abrasion, thermal and humidity variations, and marine environments.
- The surface nature of the product allows for easy application of applied finishes.

architecture

advantages

civil engineering

GRC in **Civil Engineering**

Noise Barriers

- GRC acoustic barriers are an efficient method of reducing noise intensity from urban traffic, offering a variety of profiles and surface textures to varying engineering and aesthetic needs.
- The reduced weight of GRC can also offer savings on elevated structures.

Bridge Deck Formwork

- GRC is an ideal material for use as permanent parapet units and bridge deck formwork, enabling rapid construction, and offering a high quality architectural finish to the structural concrete

Underground Structures

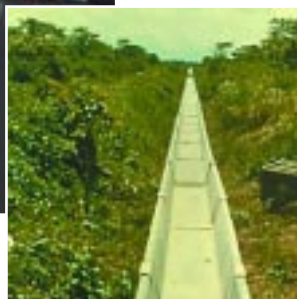
- Suitable for stormwater drainage, sewer inspection pits or electrical or cable jointing pits.
- Lightweight GRC pits can be installed without using cranes or heavy handling equipment, and are faster to install than insitu concrete.
- GRC is highly resistant to water penetration, and resists chemical attack and erosion.



GRC in **Landscaping**

- Lightweight GRC is used for simulated rocks and waterscapes, creating visually satisfying structures for parks, shopping malls, and garden features around buildings.
- Seating, planters, litter bins, kiosks, bollards, signs and statues all benefit from being made in GRC with its ability to tailor shape, form and finish to be aesthetically pleasing in the chosen environment.

landscaping



Designing in GRC

A comprehensive manual covering design, manufacturing and installation aspects relevant to the Australian GRC industry , entitled :

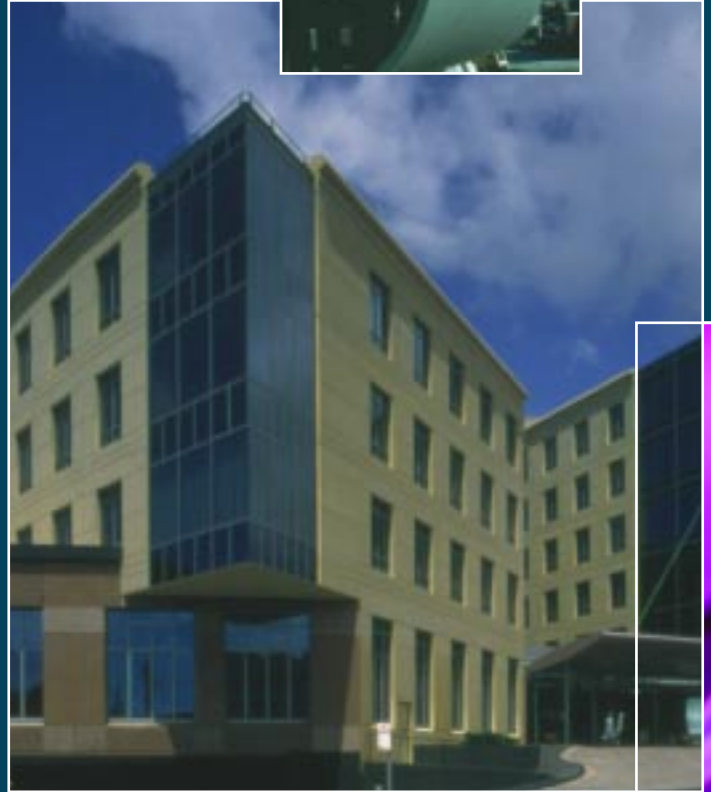
“A Recommended Practice – Design, Manufacture and Installation of Glass Reinforced Concrete (GRC)”

is available from the National Precast Concrete Association Australia.

Manufacturing Processes

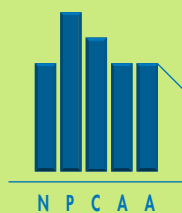
There are a variety of manufacturing methods, determined by the required production volume or the complexity of the product . The following are used:

- Manual spraying – a very versatile technique for the production of high-strength components in an open mould.
- Automatic traverse spraying – for volume production of standard components. The degree of automation depends on final output requirements.
- Vibration casting – for the low-cost production of utility components, and products of intricate detail or those requiring closed moulds.



The GRC industry is represented by the Glass Reinforced Concrete Industry Group of the National Precast Concrete Association Australia , whose members are:

- Asurco Contracting Pty Ltd
- Precast Concrete Pty Ltd
- Cem-FIL International Limited
- Nippon Electric Glass Pty Ltd
- Huntsman Composites Pty Ltd
- Saint-Gobain RF Pty Ltd



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