

# Examples of GRC and architectural finishings



Top left: Mulgrave Street Apartments, Wellington. Curved precast concrete wall panels.

Top right: Mowbray Street Development, Wellington. Curved precast concrete spandrel panels.

Bottom left: New Plymouth Civic Centre. G.R.C., spandrel and column casings.

Bottom right: Michael Fowler Centre, Wellington. Precast exposed aggregate panels and fairfaced columns.

# glass reinforced concrete

Glass fibre reinforced concrete (GRC) is the generic term for a composite material which consists of a matrix of cement and fine aggregate reinforced with alkali resistant glass fibres.

GRC has already found many applications in the construction and allied industries, where it has been used as an alternative material to precast concrete, sheet metal, cast iron, timber and plastics. Many existing products make use of the inherent advantages and manufacturing flexibility which, combined with the fact that GRC is non-combustible, rot, corrosion and fire resistant, make it an ideal material for many engineering applications.

The properties of GRC are influenced by factors such as fibre content and distribution, type of matrix and method of manufacture, the properties can therefore be tailored to meet the design requirements of particular components.

## **GRC IN ACTION**

On a tiny site in downtown Wellington, an 18-storey apartment building was erected in just 16 weeks. This includes everything from piling to finish painting and cladding. And all it took was just six men on site. The use of GRC panels for the cladding played a major part in the achievement.

The size of the site and its narrow frontage onto a busy inner city street dictated the form of construction. A small crane had to be used to avoid

any illegal intrusion into the airspace of the adjacent building. Hence the need for lightweight panels which could be lifted by a small crane.

Modular design and construction processes were developed that simplified panel production and standardised frames. Key to reducing the on-site time was the careful planning, which took longer than the actual construction.

The building consists of a steel frame clad in GRC panels with precast concrete floor slabs and steel fibre reinforced concrete topping. The floor area is 240m<sup>2</sup> per level. Glazed windows were installed and sealed at the precaster's yard, and panels received an undercoat and first coat of paint before arriving on site. Spanners and wrenches were then used to bolt and fix the panels into position on the building.

Unnecessary scaffolding and craneage charges were eliminated, and the requirements of other trades did not have to be accommodated, resulting in significant advantages in cost and time, as well as quality.

The mould may have intricate patterns and shapes, to give a wide range of options for architects. Stresscrete incorporated deep reveals and chases within the GRC panels to create shade lines to break up the smooth expansive surface. The finish quality far exceeded code requirements, and minimal preparation was needed prior to final painting.



18 storey apartment building erected in 16 weeks using glass reinforced concrete panels.