

17 An Overview of GRC in New Zealand

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INTRODUCTION.

The following paper provides an overview of the development of the GRC industry in New Zealand from its very humble beginnings through to the mature industry that exists today. Whilst this generally takes the form of a chronological history, this paper also explores the influences that make the GRC industry in New Zealand unique in its own right.

A BRIEF HISTORY.

The GRC industry originated in 1971 with a small manufacturer established making GRC spa pools. The rest of the 1970's were relatively stagnant with very little GRC produced and no notable projects. This quickly changed as the building boom of the 1980's in NZ provided a large impetus to the use of GRC. A number of companies, especially existing precast concrete manufacturers, entered the market along with a few small independent operators. By the peak of this period there were around 6-8 GRC manufacturers operating. Most projects of this era were either spandrel type panels [Fig. 1] or complete wall cladding panels. However a few individual and interesting projects were also realised. [Fig. 2]

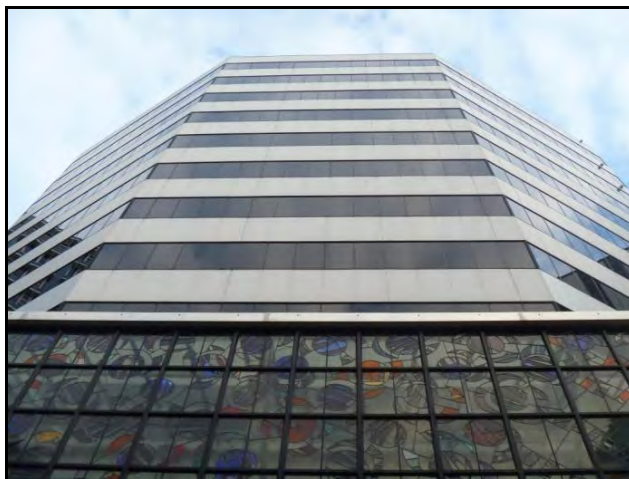


Figure 1: Unisys House, Wellington, NZ



Figure 2: Norwich Union Building (1984), Christchurch, NZ

The stock market crash of 1987 had a tremendous effect on the building and construction industry in NZ. This was not immediately felt as projects already under construction and mature projects ready to commence continued to buoy the industry through the late 1980's. Again most examples of this period were simple cladding panels, but in 1989 an interesting project was realised using GRC as permanent formwork in order to achieve a high level of detail and quality of finish. [Fig. 3, 4] Precast concrete was not an option as the building was located on a steep hill site and transport and crange was severely restricted.

The difficult financial times, and severely depressed construction market led to many manufacturers either closing down or exiting the GRC industry. Eventually, by 2010 these had reduced to only two major suppliers. Although the 1990's were a very difficult time for the building industry, some GRC projects continued to be built, but nowhere near as many as prior to 1987.



FERGUSON CONCRETE PRODUCTS



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Figure 3: Barbier Block, Sacred Heart College, Napier, NZ

Figure 4: Barbier Block, Sacred Heart College, Napier, NZ

Despite having had a Pilkington License since 1982 (License #604) Unicast Concrete Ltd (later to become Unicast Cladding Systems after the retirement of its founder Harry Romanes) was not actively engaged in the manufacture of GRC until 1994 due to the overwhelming precast concrete workload of the 1980's building boom. The first major project for Unicast came in 1996 with the construction of a 14 storey apartment building featuring bay window panels, ribbed textured panels and 4 large arches. [Figs 5, 6, 7]



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Figure 6: Connaught Apartments, Auckland, NZ



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Figure 5: Connaught Apartments, Auckland, NZ

Figure 7: Connaught Apartments, Auckland, NZ

The following two years saw a number of significant projects which created a real impetus for the increase in GRC uptake by the architectural fraternity. These predominantly utilised the lightweight nature of GRC and on the whole were generally flat panel projects with some decorative features rather than true 3-dimensional work GRC is capable of.

The period following the turn of the 21st century has seen the GRC industry cement its position within the construction industry, although it remains a very small market in dollar or percentage terms. Project numbers and types of projects have increased, as has the complexity.

SPECIFIC INFLUENCES ON THE GRC INDUSTRY IN NEW ZEALAND.

Architects and Design Industry.

It is the author's opinion that the architectural fraternity is inherently conservative despite its assertions to the contrary. Few architects are willing to use a new product on their buildings until it has been successfully used elsewhere by others. This is very true of the industry in NZ, whereby the use of GRC did not grow significantly till a few daring architects started winning major design awards for buildings incorporating GRC. This then prompted a "jump onto the bandwagon" with many architects trying to use GRC on inappropriate designs.

New Zealand, having been settled by Europeans for little more than 200 years does not have a "built environment" or architectural "vernacular" upon which to draw, with the exception of the indigenous Maori patterns and motifs. Therefore architects in New Zealand are free to draw on almost any international trends or influences, although a unique NZ architecture is starting to develop.

Since there is no typical NZ architecture, there is a large variety in the scope and type of projects. Architects are not influenced by previous work, but tend to explore their own ideas and concepts. The typical question posed to the GRC manufacturer is "can you do *this*?"

In general, too, it can be said that few architects are technically proficient GRC designers and really understand the material. This results in the GRC manufacturer often having to operate as a pseudo-architect and provide detailed design input, often for little or no reward.

Market Forces.

New Zealand has a population of just over 4 million people, which is typically smaller than many major international cities. Correspondingly the economy is very much smaller than most other countries.

The construction industry in NZ, apart from government or infrastructure works, is largely dominated by private developers. Most of these developers do not retain their building stock as a long term investment but are more inclined to sell the completed project shortly after completion. The major driving force is therefore to maximise profit, and this is usually achieved by utilising low cost materials and claddings. This works against the use of GRC as it is typically a high quality, high value cladding. The author has experienced multiple projects where the GRC cladding has been removed from a project because of cost, in spite of the fact that it was specified by the architect and the project was bid extremely competitively.

New Zealand is also prone to international influences as evidenced by the 1987 world stock market collapse and the current international financial crisis. These can lead to long lasting economic recessions with an attendant effect on the construction industry. The recent international financial crisis has led to the collapse of many of the "investment" companies which were the source of most

of the developer's source of finance in NZ. This has of course rippled down to a large decline in the number of current building projects.

Project Type and Size.

Projects in New Zealand tend to be of a smaller nature, with large cladding projects in excess of 2000m² being an exception. The largest single project to date was around 5200m² but generally "large" NZ projects tend to be in the 2000 - 2500m² range. These probably average about 2-3 significant projects per annum, although this was increasing up till the recent worldwide recession. Typically, large cladding projects tend to be for the high-rise or apartment market, although sometimes these can be large architectural features. [Fig 8-14].

There have been a few projects in NZ executed by overseas manufacturers but in each case these have typically been a one-off project and the overseas manufacturer has not ventured back into the NZ market again.



Figure 8: Princes Wharf, Auckland, NZ

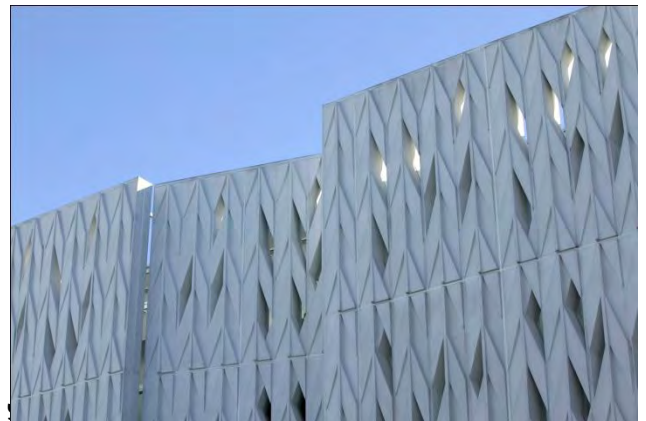


Figure 9: Cumulus, Auckland, NZ



Figure 10: Ironbank, Auckland, NZ



Figure 11: Internal Feature Wall, AUDI Terminal, Auckland, NZ

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Figure 12: Novotel Hotel, Auckland, NZ

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Figure 13: Britomart Easts, Auckland, NZ

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Figure 14: Decorative Columns, Auckland, NZ

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Since the volume market is not prevalent in New Zealand, manufacturers do not have the opportunity to specialise or to only service part of the market, but must extend their product range to cater for almost all conceivable GRC uses (and sometimes objects you would never normally consider). Many of these projects are small one off commissions involving special features, artworks, public sculptures or urban furniture. [Figs 15-20]



Figure 15: ATM Machine, Putaruru, NZ

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Figure 16: Combined Seating Units/Planters, Auckland, NZ

GRC NZ



Figure 17: Feature Screen, Auckland, NZ

GRC NZ



Figure 18: Fountain,
Havelock North, NZ

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Figure 19: Artworks Panels, Auckland, NZ

GRC NZ



Figure 20: Decorative
Columns, Auckland, NZ

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From the preceding examples (which are only a small fraction of the myriad of different projects executed) it is obvious that the type, size and nature of projects vary considerably in New Zealand. Not only do the physical projects vary but the finishes also vary. These cover almost the complete range of possible finishes e.g. off-form fair-face natural finish, painted, sandblasted, coloured using oxides, textured finishes from custom moulds or PUR formliners and finishes incorporating coloured aggregates.

FUTURE DEVELOPMENTS.

The author believes that the future of GRC in New Zealand, whilst currently depressed due to world economic influences, has a bright future. The recent major earthquake in Christchurch has provided an opportunity for the use of GRC to replicate the historic buildings that were lost, or to provide a sound, well-engineered solution to modern cladding in a highly seismic region. This awareness of the importance of good seismic design also applies to the whole of New Zealand and it is incumbent upon the GRC industry to actively spread its message amongst the design fraternity.

SUMMARY.

The GRC industry in New Zealand has matured from very humble beginnings to stand as an equal amongst the international GRC community. Whilst project sizes may not be as large as those internationally, the variety and complexity of many projects would rival those of most manufacturers. This complexity and scope is primarily due to the unique forces that influence the GRC industry in New Zealand.