

# Seismolock GRC

Restrengthening System



## WHAT IS THE..... SEISMOLOCK GRC Strengthening System

Many Unreinforced Masonry (URM) buildings have insufficient capacity to endure even a moderate earthquake but the concerns of heritage preservation makes demolition of these historic URM buildings undesirable, which results in seismic retrofit being necessary.

In turn, older URM brick and masonry buildings now must be structurally upgraded or face an early retirement at the hands of the demolition contractors. Other buildings, such as those damaged by earthquakes need to be strengthened as part of their reinstatement to safe habitable buildings.

The **SEISMOLOCK GRC** Strengthening System offers a simple and economical alternative to traditional strengthening methods.

The **SEISMOLOCK GRC** System utilises a proprietary polypropylene fibre reinforced highly modified and engineered plaster, combined with a high-tensile strength fibreglass mesh to provide a thin section plaster that will strengthen existing URM brick and masonry walls to resist earthquake loads.

The **SEISMOLOCK GRC** Plaster is formulated to provide an excellent bond to the surface of a prepared masonry wall while the embedded layers of fibreglass mesh provide the tensile strength to resist in-plane shear loads and face loads.

## Proven Technology

- GRC – Seismolock's Glass Reinforced Cement, a key proprietary ingredient that provides elasticity while still having high yield stress under seismic loads.
- Seismolock improves ductility to structural members, lessening the chance of the building collapsing, a key factor in reducing fatalities from falling debris.
- The mesh is manufactured with a special alkali-resistant fibreglass which has an additional protective coating. This is to limit the effects of embrittlement therefore retains its initial mechanical properties over the longterm.

## System Features

- Cost effective alternative to traditional strengthening techniques.
- Easily applied by a professional plasterer.
- Variety of finishes available.
- Reduced construction times and disruption to the building.
- Foundation construction often avoided.
- High strength coating with minimal intrusion on floor space.

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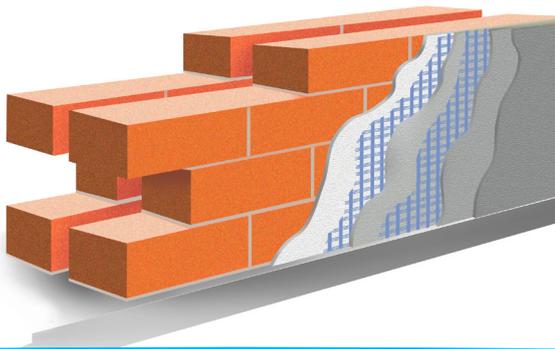
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### Ductility

The concept of ductility is a key principle in seismic-resistant design. In general terms, ductility is the ability to a structural member to continue to resist loads even after initial failure (or yield) and thus avoid collapse. The table below shows ductility factors for the Seismolock system for various forms of structure.

The values for the Seismolock system are based on the characteristics of the glass fibre reinforcement which, while having reasonable elasticity, has a very high yield stress, and thus is able to remain in the elastic range with only moderate displacements for high earthquake loads, and thus remains compatible with the masonry substrate.



Seismolock preparation



Fibreglass reinforcement application



Hand applied smooth finish over Seismolock

Action	Wall Type	Seismolock	Ductility Factor $\mu$	
In-Plane Loads (Shear Wall)	All	Single face or both faces	1.5	Nominally Ductile
Face Loads	Solid	Both faces	2.0	Limited Ductile
		One face	1.25	Nominally Ductile
	Cavity	Both faces	1.5	Nominally Ductile
		One face	1.0	Elastic

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