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About Telling

Telling Architectural have established a modern facility at their plant in Four Ashes, Wolverhampton to manufacture glass fibre reinforced concrete (GRC)

Established in 2002 Telling have a reputation for the design and supply of innovative forms of façade cladding.

Our 60,000 sq ft modern facilities, handling equipment and methods enable us to offer off site manufactured GRC panel including pre-fabrication where required.

Our skilled operatives are capable of producing GRC ranging from the most basic flat panel formats, to complex 3D and curved forms, pre-fabricated and pre-finished with ceramic or brick.

Our production is undertaken under license to Byggimpuls Fiberbeton whose systems have been proven in use over 25 years in the harsh climates of Scandinavia.

Telling Architectural manufacture all grades of GRC recognised by GRCIA International, the industry’s governing body, hold ISO9001 & ISO14001 accreditation and are working towards ISO18001 in early 2018.
The company undertakes specialised projects such as the 'chevron' shaped roof panels of GRC in which the Cumella ceramic tiles from Barcelona were both adhesively bonded and mechanically attached to GRC in turn mounted on prefabricated aluminium frames. 180 panels each with a different tile configuration were produced.

Existing customers of Telling know that we do not stand still and our moving to a bigger facility means demands upon us to take an increased market share with continuing diversification can be met.

Telling Architectural welcome visits by clients, contractors and architects who wish to see the production of the GRC panels and brick facing process.

Our extensive storage facilities enable panels to be manufactured in advance and stored in readiness for delivery to site.

The majority of our façade projects require the specialised grade 18 GRC, which is the highest technical performing of the GRC grades. This allows Telling to manufacture large format panel systems as standard or bespoke façade total solutions.

Telling have developed pre-fabricated brick columns and spandrel panels which at 100 kgs per m2 will offer optimum savings to clients in weight, speed and installation.

Brick slips are profiled on the rear face to receive mechanical anchors embedded in the GRC panels providing pull out values in excess of 2 kN per anchor.

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Design of our GRC facades is undertaken by our in-house team of draughtsmen and engineers. Our laboratory carries out daily analysis to ensure that our GRC meets the design performance for the selected project in terms of MOR and LOP.

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Byggimpuls AS has its headquarters in Oslo, Norway, with regional offices in Sweden and the UK supporting their operations in Europe. They manufacture exceptionally high quality vertical and horizontal linings for the exterior and interior building envelope in GRC (Glass Fibre Reinforced Concrete) and have a reputation for delivering premium quality profiles in short timelines, to exacting standards all within budget.

They have delivered complete solutions where it was believed one did not exist. The national Opera House in Oslo, The Kilden Centre for Performing Arts in Kristiansand and the Scandic Vulcan Hotel are examples of their expertise.

By the transfer of production process, engineering technology and management, Telling Architectural licensed the manufacturing of the Byggimpuls Fibrebeton processes in the UK, developing and testing them where necessary to meet the requirements of British Standards and the GRCIA.

What is GRC?

GRC is a fibre reinforced pre-cast concrete with a 50:50 sand cement matrix in a typical wall thickness of 12 to 15mm thick. Reinforced rib profiles created around the perimeter and across the rear face at designed centres provide the structural integrity of the components. These ribs are between 50 and 100mm in depth and are not visible once the façade is assembled.

GRC is made in thin concrete sections created by a proprietary process of machine spraying an enriched OPC cement and silica sand mix within which alkali resistant glass fibres and polymers combine to provide the engineered performance. Unlike steel, glass fibres will never rust and are consistent throughout the thickness of the profiles. GRC is approximately 80% lighter than pre-cast reinforced concrete cladding and 70% percent than traditional brick. It offers greater accuracy in manufacturing and installation with excellent flexural strength. It is environmentally preferred with a lower carbon footprint by reducing the CO2 emissions created during manufacture and upon associated elements of the structure. It is lightweight, imposing less load on the building frame and thereby producing economies in structural sections for the frame and foundation.

The GRC panels, range from basic storey height units, to more complex 3D and curved designs, in natural aggregate finishes, polished or faced with brick/ceramics. They are proving to be suitable for new construction and the refurbishment of existing buildings.

Telling Architectural supports its range of cladding systems with in-house design and engineering services providing technical support to the client from the outset in an effort to maximise these advantages. Our modern facilities, handling equipment and methods enable us to offer off site manufactured GRC panels including pre-fabrication where required.
Telling has developed the technology for brick faced GRC panels, columns and spandrels panels which at 100 kgs per m² offer savings to clients in weight, speed and installation. Hand made, extruded or standard brick slips, 16-24mm thick, are mechanically fixed to the grade 18 concrete with threaded stainless steel rods embedded in the rear face of the brick.

Pull out values in excess of 2 kN per anchor are achieved. Special lime mortars ensure penetrating moisture is evacuated through the pointing joints. A recently completed scheme on 160 Aldersgate in London (pictured) is testimony to the quality and benefits of lightweight offsite manufactured brickwork.

Manufactured in rubber moulds, brick faced GRC can use any brick of an appropriate quality in stack, running and Flemish bond with depth/style of pointing created from the in house manufactured mould design.

The development of offsite manufactured brick panels offers advantages in
• weight to promote savings in the ground and the structural frame
• speed of installation removing the need for multiple trade contractors
• quality by obviating the skills shortages upon high rise structures
• logistics in material distribution and access strategy
• programme whereby the façade is wholly removed from the critical path and is supplied to site on a just in time basis
• tower cranes – the reliance upon these for the external façade is removed with installation by mono rail or spider crane

The weight of brick faced GRC is 40% of hand laid brick and 25% of precast.

Accelerated weather testing has been undertaken to determine the mechanical bond strength and the performance of the brick, mortar and concrete in accordance with ETAG 034. Impact and pull off testing were also undertaken with further detailed evaluation underway for review for a soffit application as well as general service as a cladding medium by the NHBC.
Characteristic Mechanical Properties of Byggimpuls Grade 18 GRC at 28 days

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MOR - Modulus of Rupture (flexural), the ultimate bending stress obtained from the four point bend test.
LOP - Limit of Proportionality (flexural) ie the point at which the stress/strain curve deviates from a straight line.
UTS - Ultimate Tensile Strength - Stress at which GRC fails in pure tension.
BOP - Bend over point (tensile), namely, the stress at which the stress/strain curve deviates from a straight line variation when a sample of GRC is tested in direct tension.

In broad terms Telling GRC envelope solutions will fall into four categories:
- Bespoke GRC façade solutions including brick/ceramic facings
- NORSKREEN M4™ unitised GRC façade system
- NORSKREEN M2™ GRC rainscreen façade system
- Unitised T frame columns and panels

All GRC components are manufactured at a purpose built factory in Four Ashes, Nr Wolverhampton in England.

The GRC components are manufactured in all cases to the current guidelines laid down by the GRCIA International specification for the manufacturing and curing of GRC components.

ISO 9001 internal quality control systems are rigorously applied at all times, with support from external and independent quality assurance bodies.

Components are designed using first principles: under the guidance of the GRCIA International Limit State design guide and the application of Finite Element Analysis techniques again used in line with the limit state design guide. Some of the standard systems such as the NORSKREEN M2 & M4 systems are designed and tested in line with CWCT guidelines and the recommendations of the BS codes or relevant bodies.

Testing and Fire Performance

Generally the performance of Grade 18 GRC (as with pre-cast concrete) is determined by engineered calculations although CWCT weather performance and impact testing has been undertaken upon a variety of schemes/applications.

Whilst GRC Grade 18P has a generic fire test evaluation indicating it to be Class O surface spread of flame, providing four hours integrity and A1 performance; our systems are currently undergoing firetesting across the range of GRC panels including the brick facings.

Accelerated weather testing has been undertaken on polished aggregate, brick faced and standard GRC panels.

Technical

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The thickness and weight of the systems will vary according to the system design:

For bespoke and unitised solutions the weight per m² will be project specific.

NORSKREEN M4™ claddings weigh approx 50-70kg per m²  
NORSKREEN M2™ panels weigh approx 10-50kg per m²  

GRC is a versatile pre-cast concrete material creating façade elements from as small as 450x450mm up to storey height panels. Manufacturing seamless cast corners, returns to windows, integral window cill, coping and soffit details, all promote a widescale reduction in unsightly panel joints on the elevations.

The surface of our GRC is closed and extremely dense ensuring the units are fully waterproof and easily maintained.

Since the Telling GRC is manufactured from natural materials with colours and textures produced using UV stable natural pigments and ochres and aggregates there is a subtle mineral variation in each unit providing a natural warmth and softer aesthetic than can be achieved with man made synthetics and metals.

Performance data

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Telling have an in house testing facility which in addition to the daily calibration and quality control measures enables them to test in isolation panels produced on any given day. A bar code scanning system creates total traceability through the production process with unique panel reference labels attached to the delivered units.

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Telling Architectural offer a range of façades ranging from spanning storey height units in their NORSKREEN M™ range to thin section panels using the NORSKREEN M2™ system. GRC cladding can be used in traditional construction, within unitised curtain walling or as a ventilated cavity rainscreen.

Byggimpuls AS are a leading European manufacturer of GRC and their transfer of technology, management and manufacturing expertise has enabled us to be creative in the design of our modern day façades. Whether a pigmented colour or natural in grey or white, textured or smooth faced, pre-mixed GRC can be cast in moulds made from GRP, rubber or timber to produce the most consistent detail and quality available.

These formers allow GRC to closely replicate smooth natural stone or travertine, split face and ‘hammered’ effects. For refurbishment cornices, columns, parapet features and other mouldings can be replaced with excellent accuracy and consistency of profile. Decorative columns or other classical features can be added to existing or new buildings.

Off Site and Unitised Construction
Telling Architectural manufacture their GRC in large format panels which are lightweight and can be mounted on aluminium or steel frames. They welcome NDA exclusive partnerships with specialised unitising fabricators. GRC can also be used in modular construction with brackets mounted prior to stacking of the pods.
Support Systems

Telling Architectural has in house engineering facilities to design support systems varying from the most simple and economical to bespoke solutions, each designed to withstand loadings applicable to the individual structure.

Support systems vary from lightweight rail and clips systems to suit the weathering profile of the NôRSKREEN™ panels which are available in a range of natural colours in a maximum height of 1.0 metre and length of 4.0 metres.

Weathering and Life Expectancy

GRC will perform equally as well as pre-cast concrete and there is guaranteed to be no maintenance or degradation associated with rusting or spalling of steel reinforcement.

Telling Architectural have adopted the most advanced techniques developed by GRG companies since the introduction of the process in the 1980s. Developments in the fibre sizing, mix proportions and applications expertise have been ongoing in this much-studied industry. Supported by accelerated aging analysis the performance of GRC is now widely acknowledged enabling designers to engineer with confidence for 50+ years life expectancy.

The weathering of the panels will greatly be dictated by local environmental conditions. Based on the performance of GRC over the last 25 years weathering is assessed to be little different from that of natural materials of equivalent porosity such as stone.