

CORNISH CONCRETE PRODUCTS

ARCHITECTURAL PRECAST



/ CLADDING
/ THERMOWALL PANELS
/ BESPOKE WORKS



PROJECT: O2 Arena
PLACE: London

Architectural Precast Concrete has a myriad of different possibilities in terms of its appearance and its form.

Concrete can be shaped, coloured and textured with a wide range of finishes like no other construction material. Cornish Concrete Products wealth of experience is able to bring these possibilities to fruition.

All architectural precast concrete is manufactured under factory controlled conditions. This ensures quality of finish as well as all of the advantages with off-site construction such as speed of construction, elimination of the effects of all but the most severe weather, reduction in waste and the elimination of additional wet trades on site.

Early co-ordination with designers is recommended to ensure that construction tolerances and fixings can be factored in so that the client gets the building they desire. This enables the contractor to ensure smooth erection of the cladding and contract programme.

CCP supply elements formed with "ecocrete" environmentally friendly concrete which has a minimum of 80% locally sourced secondary materials as well as wider ranges of materials for visual effect.



Formwork and Moulds

The choice of mould is fundamental to achieving the quality of the finished product. Moulds are fabricated from wood, steel, fibre glass or synthetic rubber depending on the number of uses, the shape and profile of elements and the particular finish to be achieved.

Moulds need to be uniform and sealed to prevent unsightly grout loss as well as free from deformation. Flat elements are fabricated in CCP's state of the art carousel plant, set out by a robotic plotter with side shutters held in place magnetically.

Technical

Architectural precast concrete is comparable to natural stone as a building material in both appearance and performance, yet it is readily available and provides a cost effective alternative on projects. From simple domestic housing to complicated schemes such as commercial buildings;

CCP's architectural precast can be as versatile as the designer wishes. The technical capabilities of this product can equal or even surpass that of natural stone in terms of strength, moisture penetration and colouring.

CCP's aim is to produce a material, which resembles the quarried product as closely as possible. The colour and texture of most stones can now be matched using crushed rock fines and/or carefully selected and graded natural sands, usually mixed with white cement. The range of shades can be extended by the use of grey cement and pigments.

Correct curing of all types of cast stone is essential both for the resistance to damage during transportation and construction as well as durability and appearance over time.



A sample library is available at www.cornishconcrete.co.uk/architectural-precast-concrete/finishes

Choice of Aesthetics

Architectural precast concrete can be produced with a variety of finishes, including acid etched, retarded, sand blasted and polished. The virtually unlimited choice of aggregates and/or pigments guarantees the aesthetic versatility of the concrete. It is also possible to place other materials such as natural stone or bricks onto the facade with the precast concrete as structural backing.

Acid Etching

The required surfaces of the element are treated with a diluted acid solution. This is regulated mechanically with the water feed and then rinsed off with water. This method gives a level of consistency that is not easily achievable with hand applied solutions. The effect of acid etching is to remove the outer surface laitance to reveal a fine sandy textured surface finish below. Additionally, by removing the laitance from the outer surface, the potential for discolouration from a variety of sources is reduced.

Chemical Retarder

A chemical retarder is applied to the face of the mould. The strength of this retarder

will determine the depth to which the concrete matrix will be prevented from properly setting. After demoulding, this 'unset' matrix is removed by pressure washing, thus exposing the coarse aggregate in the mix and providing the required aesthetic effect.

Sand Blasting

Following a strict curing regime, the required surfaces of the element are blasted, under high pressure with sand or grit particles in order to expose the aggregate. The choice of blast media together with the blasting pressure will affect the depth of exposure.

Polishing

A polished concrete surface is achieved by grinding off the surface of the concrete. This is carried out with a series of polishing wheels. The first coarse wheel grinds off approximately 3mm of the concrete surface to expose and cut through the coarse aggregates. The actual polishing process is then carried out in several stages using different grades of diamond tipped abrasive discs. At each stage a finer hone is achieved and an increasingly higher gloss is obtained. The final level of polishing will be determined at the outset by the client's requirements.

Bush Hammering and Needle Gunning

Either a bush hammer or needle gun is worked on the finish of the concrete removing the laitance to expose the aggregate. The processes "bruise" the aggregate with the main aesthetic difference

between them being that needle gunning will provide a relatively sharper arris than can be achieved by bush hammering.

The occurrence of hand arm vibration in these processes effectively means that these finishes should only be considered for small areas. Sand blasting can provide a similar and more cost effective appearance.

Patterns

Patterns can be created in the face of the concrete by using rubber formliners. These offer a vast range of shapes and patterns. Alternatively, if required to mirror an existing profile, this can be done by pouring fresh compound over the profile and leaving it to set. Thus a "negative" will be created onto which the concrete can be poured. Images and patterns are also created using graphic retarder paper to produce stunning effects.



PROJECT: Highways School
PLACE: Orpington

Brick Faced Cladding

Brick faced cladding panels offer a ready solution with speed and accuracy for both traditional and modern structures alike.

By choosing the precast option, the brickwork cladding can be removed from the critical path, a dry building envelope can be established earlier allowing follow on trades to commence sooner, removing wet trades from site as well as addressing the skill shortage on site.

Precast brick faced cladding panels are made face down in moulds using a liner to ensure correct brick placement and consistent joint size. Joints between bricks are sealed to ensure that grout does not creep onto the surface. Bricks are also pre-soaked to ensure that they do not take moisture from the fresh concrete. The back face of the brick is removed so that the bricks can form a mechanical key with the concrete. Care should be taken in the choice of bricks, in particular uniformity of colour, thereby reducing the risks of

variations between panels. Only bricks with a water absorption rate of 12% or less should be considered. Brick faced panels can be pointed on site to match in with insitu brickwork if required or can be pointed at the factory prior to delivery to site and thus avoiding scaffold and follow-on trades.

Ceramic tiles can also be used as a facing material. They are placed in the mould and cast into the backing concrete. Bonding is achieved by providing a roughened or profiled back to the tiles.

Stone Faced Cladding

Natural stone finishes are achieved by placing thin natural stone veneers into the mould. The stone slabs are placed and cast into the concrete backing component. The stone is always anchored to ensure permanent attachment and a de-bonding membrane is introduced between the stone and the backing concrete.



PROJECT: Fal-Lynher Project
PLACE: Truro

Thermowall Insulated Sandwich Panels

All architectural finishes are available with Thermowall Insulated Sandwich Panels which offer the following:

- / High thermal mass
- / Fast track construction
- / Stable monolithic construction
- / No interstitial condensation
- / Excellent air tightness
- / Exceptionally low 'U' values, no external scaffold
- / BREEAM excellence

When coupled with good passive design, they can help create the high performance, low carbon buildings of the future.



PROJECT: Torquay Community College

Acoustic Insulation

Acoustic insulation is becoming increasingly important and ever greater demands are being made in this field. Concrete is an excellent insulator against unwanted or unacceptable levels of noise.

Environment and Quality

CCP takes its environmental responsibilities very seriously and is accredited with the Environmental Management System ISO14001. The company is also a founder signatory of the British Precast Sustainability Charter, and one of the first companies in the UK to be accredited with BES6001, the Code for Responsible Sourcing, achieving a "Very Good" status across its entire product range.

Furthermore, by choosing a precast concrete solution, the proliferation of waste and the risk of contamination are greatly reduced. Customers can take advantage of

the material's inherent thermal mass which when used within the internal fabric of a building acts as a dampening mechanism for the external temperature and hence reduces energy demand from heating and cooling.

CCP is also accredited with the Quality Management System ISO9001.



Cornish Concrete Products Ltd

Point Mills, Bissoe, Truro, Cornwall TR4 8QZ

Tel: 01872 864808

Email: info@cornishconcrete.co.uk

www.cornishconcrete.co.uk

www.ecocreteproducts.co.uk

