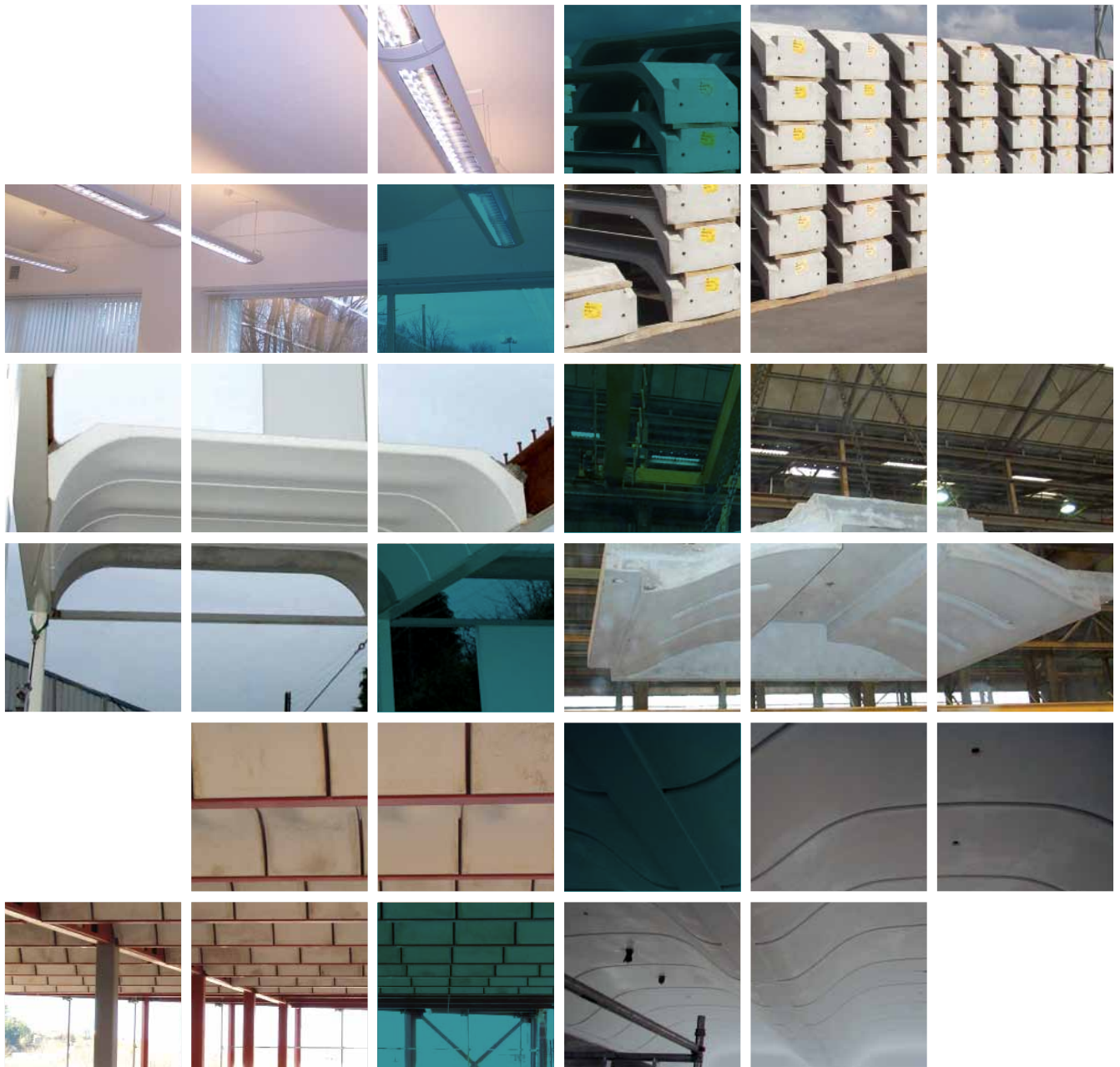


→ Delivering Precast Concrete

Precast Profiled Slabs





The Buchan promise

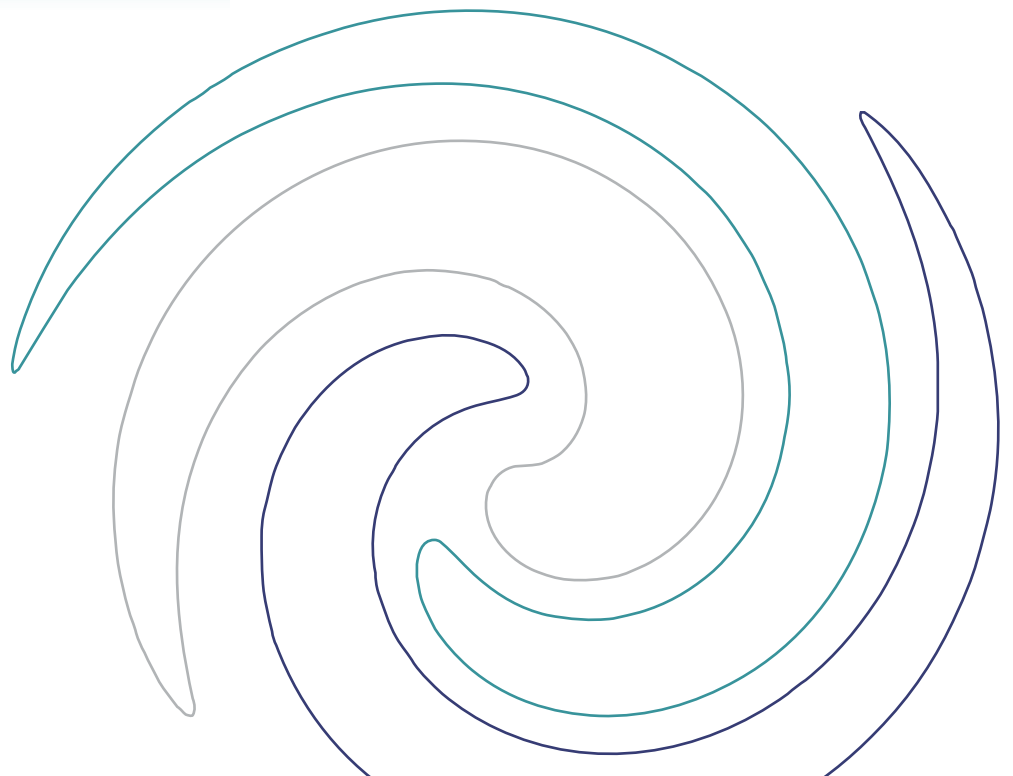
Changes in the way we live and work have created an increasing demand for more modern methods of construction.

At Buchan, we promise to deliver more efficient, cost effective and safety-focused sustainable solutions.

Our vision is to exceed our customers' expectations as the premier off-site concrete solutions provider.

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- 3 Why use Precast Profile Slabs?
- 4 Design / Advantages
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→ Why use Precast Profiled Slabs?

More and more Clients, Architects and Engineers are becoming aware of the benefits of exposed concrete structures with regard to the reduction of carbon dioxide (CO₂) emissions.

The benefits of Thermal Mass and Fabric Energy Storage

Increasing energy prices, changes to the building regulations and growing concerns over climate change are continuing to put pressure on designers, developers and building occupiers to reconsider the use of energy intensive air-conditioning. For many building types, a cost effective and more sustainable option is the combination of high thermal mass and night cooling, a solution that is especially effective when steps are taken to minimise heat gains. Both now, and more so in the future, this technology, also known as fabric energy storage (FES), has an important role to play in providing a passive, more sustainable alternative to air-conditioning.

Most FES systems centre on the building's thermal mass, provided by exposed concrete floor slabs. Described simply, the slab absorbs internal heat gains, helping to prevent overheating and ensuring a more stable internal temperature.

Night cooling purges the accumulated heat from the slab, preparing it for the next day.

In the building where mechanical air-conditioning cannot be avoided, FES can still provide a means of significantly reducing both the energy required to operate the plant and associated CO₂ emissions. Profiled slabs (eg coffered, troughed, wave form etc.) provide an increased surface area which enhances convective heat transfer thereby improving FES performance.

Precast Profiled Slabs

The manufacture of profiled slabs is best produced as one-way spanning precast units.

The sometimes complicated soffit profile chosen by architects would require large areas of expensive moulding if produced in-situ. In addition, due to the fact that the soffit finish produced has to be exposed in order to provide FES, the superior quality from a precast slab is a distinct advantage.

The profiled units can be produced in coloured or standard concrete, which, with minimal finishing can allow for straight paint application.

Buchan's expertise in concrete mould technology – as used in their methods of tunnel segment manufacture – lends itself to the production of super quality profiled slabs.





Design / Advantages

Buchan produce a range of distinctive formed soffits which, apart from utilising FES, enhance interior spaces. The precast profiled slab units are structurally very efficient and provide for robustness, quality, speed of construction and early access. In addition, they can be installed within precast, in-situ or steel framed structures.

Design:

- Structural design is in line with the latest Eurocodes
- Imposed loads of up to 10 kN/m² can be carried (dependant on span and end details (eg half joints, support capacity etc.)
- An allowance for a 75mm screed is made although the units are suitable for screeded and unscreeded floor applications
- Modifications to the standard shape, as well as connection details and holes can be formed but advice should be sought regarding any specific requirement
- Unit dimensional tolerance is in accordance with BS8110 and EC2
- All units are manufactured to BS EN150 9001: 200 quality assurance procedures.

Advantages:

- Site operations simplified and 'wet trades' reduced
- Reduction in site formwork and propping
- Standardisation of design details
- Manufactured under factory controlled conditions from high quality moulds
- The concrete's thermal mass can be utilised to improve the energy efficiency of the building
- Excellent sound attenuation and inherent fire resistance
- Low maintenance, high quality finish and precision of construction
- Long term durability.

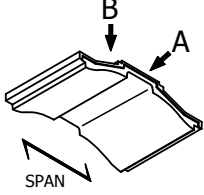
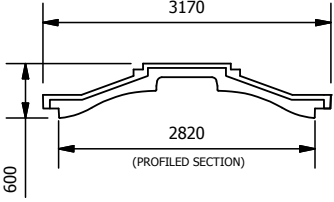
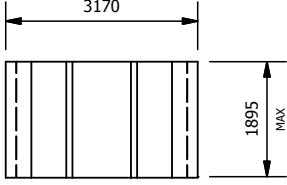
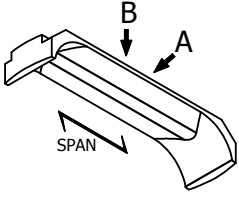
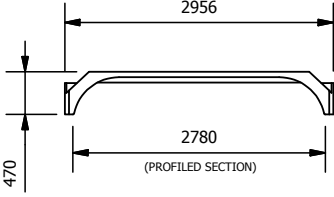
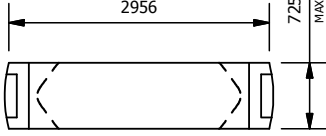
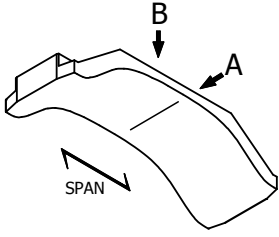
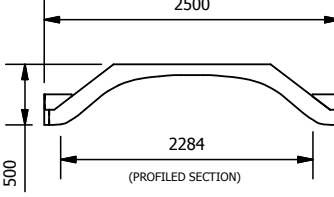
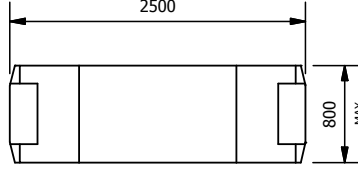
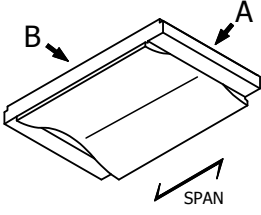
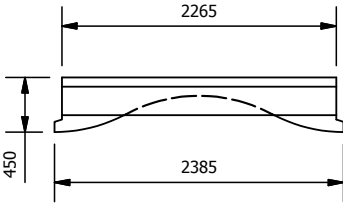
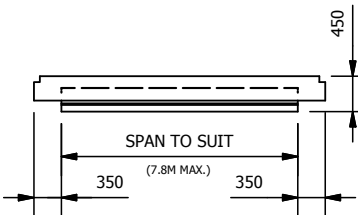
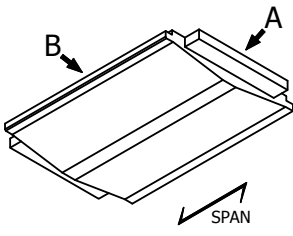
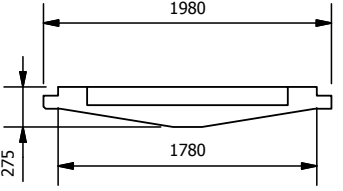
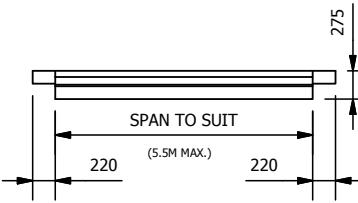


Bridgewater



Chippenham

Standard profiles

<p>BRIDGEWATER</p> 	 <p>VIEW A</p>	 <p>VIEW B</p>
<p>WESSEX</p> 	 <p>VIEW A</p>	 <p>VIEW B</p>
<p>CHIPPENHAM</p> 	 <p>VIEW A</p>	 <p>VIEW B</p>
<p>CRANAGE</p> 	 <p>VIEW A</p>	 <p>VIEW B</p>
<p>LEEDS</p> 	 <p>VIEW A</p>	 <p>VIEW B</p>



Precast Profiled Slabs

Profiled slabs were initially used as primary beams to span between structural steel UNIVERSAL BEAMS. The ends of the slabs sat on the top faces of the UNIVERSAL BEAM lower flanges.

Prior to placing the screed / topping, permanent shuttering may be utilised and voids created to accommodate services and ducting, designed to circulate hot /cold air providing internal climate control.

Bespoke Profiled Slabs

If the architect requires a bespoke profiled soffit slab, a typical scenario to describe the technology is as follows:

- Buchan's design team will work with the architect to create a concept profiled slab design, using the latest 3D CAD technology
- Following receipt of order, Buchan's Mould Department – comprising experienced pattern makers – will produce a timber former to the profiled shape. A concrete unit produced off this former allows the architect to inspect his shaped finish and to approve or amend the profile
- On receipt of approval, Buchan then produce from the former, a concrete master mould
- From the one master mould Buchan then clone the required number of concrete production moulds. The number of moulds produced is determined by the size of the contract and the agreed rate of delivery to site.

The advantage of this method of producing moulds is that every unit produced – as regards exposed soffit appearance - is identical.



Wessex



Bridgewater



Chippenham



Photographs of storage and installation of profiled slabs supplied to the new Welsh Assembly Building at Aberystwyth.

Our sectors



Taking the initiative

With the combined expertise of Roger Bullivant Limited and Buchan Concrete Solutions Limited we can offer the 'total solution', from substructure including piling, ground beams, SystemFirst foundations and geothermal, through to the superstructure consisting of precast sandwich or cladding panels in a variety of finishes, internal walls, portal frames, columns, beams and various flooring options.

Whether it be whole school provision, classroom extension, sports hall, nursery, doctors surgery/health centres, surestart centres or sport changing facilities, we are confident we have the right cost effective solution for you.

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