

thermal mass

Buildings constructed of concrete and masonry have a unique energy-saving advantage because of their inherent thermal mass. These materials absorb energy slowly and hold it for much longer periods of time than do less massive materials. This delays and reduces heat transfer through a thermal mass building component, leading to three important results.

There are fewer spikes in the heating and cooling requirements, since mass slows the response time and moderates indoor temperature fluctuations.

A massive building uses less energy than a similar low mass building due to reduced heat transfer through the massive elements.

Thermal mass can shift energy demand to off-peak time periods when utility rates are lower.

Bridgewater Place



Bridgewater Place, Leeds

Architect: Aedas
Contractor: Bovis Lend Lease

When completed this 32 storey building will be the tallest building in Leeds. The façade boasts a large-scale mullion and spandrel system of off-white reconstructed stone precast panels. The staircase cores project beyond the main façade and are clad with complex three-sided panels, which are cast in two stages.



Discovery Dock



Discovery Dock, London

Architect: Shepherd Design
Contractor: Shepherd Construction

This building comprising a corner tower of 23 storeys and two wings of 15 and 17 storeys is clad with reconstructed stone precast panels weighing up to 9 tonnes and typically measuring 6x3m. Windows, integral thermal insulation, horizontal fire stops and cut-outs to accommodate steel cantilever support beams to balconies were incorporated into the panels at Techrete's factory before delivery to site.




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high-rise residential buildings

by **techrete**

In the last few years our clients have developed the concept of quality high-rise residential building in the inner city and the public has been quick to appreciate its advantages. For many designers and contractors precast concrete is the obvious choice of cladding; it has solidity and strength, factors which recall traditional residential enclosure, yet it has all the advantages of a modern prefabricated product. Precast cladding panels can be shaped to form mullions and spandrels or storey height panels and windows or other components can be pre-fitted at the precast factory. Precast is uniquely versatile. It can be cast from a mix which will produce the appearance and texture of natural stone. Such mixes make the material acceptable in environmentally sensitive areas where new residential projects are required to blend in with traditional stone buildings. Precast cladding panels can also be faced with brick, natural stone slabs or terracotta tiles.

But what gives precast the edge over other cladding materials for high-rise buildings is its buildability. Here are some of its advantages:

- **Quality achieved by prefabricated manufacture in a controlled environment, minimising delays on site**
- **Prefabrication accelerates the construction programme and provides an early weather tight enclosure**
- **On-site 'wet trades' virtually eliminated**
- **Site installation by single team of skilled work-ers. No scaffolding required**
- **Glazing, fixings, thermal insulation and vapour control incorporated in the factory**
- **Fabric energy storage potential of precast helps to control building temperatures**

Charlotte Quay



Charlotte Quay, (Millennium Tower) Dublin

**Architect: O'Mahony Pike
Contractor: Danninger Ltd.**

White honed precast concrete panels were specified for this 15 storey residential building, the first high-rise apartment block to be built in Dublin. It took only fourteen weeks to clad the tower block, working at an average rate of a floor per week.

1 Millharbour



1 Millharbour, Isle of Dogs, London

**Architect: SOM
Contractor: Ballymore Properties**

This Docklands development consists of two towers, one of 50 storeys and one of 40 storeys; the former, when complete, will be the tallest residential building in the UK. The towers will be clad with over 2,500 solid double-storey height panels of reconstructed stone precast panels with an acid-etched finish.

Masshouse

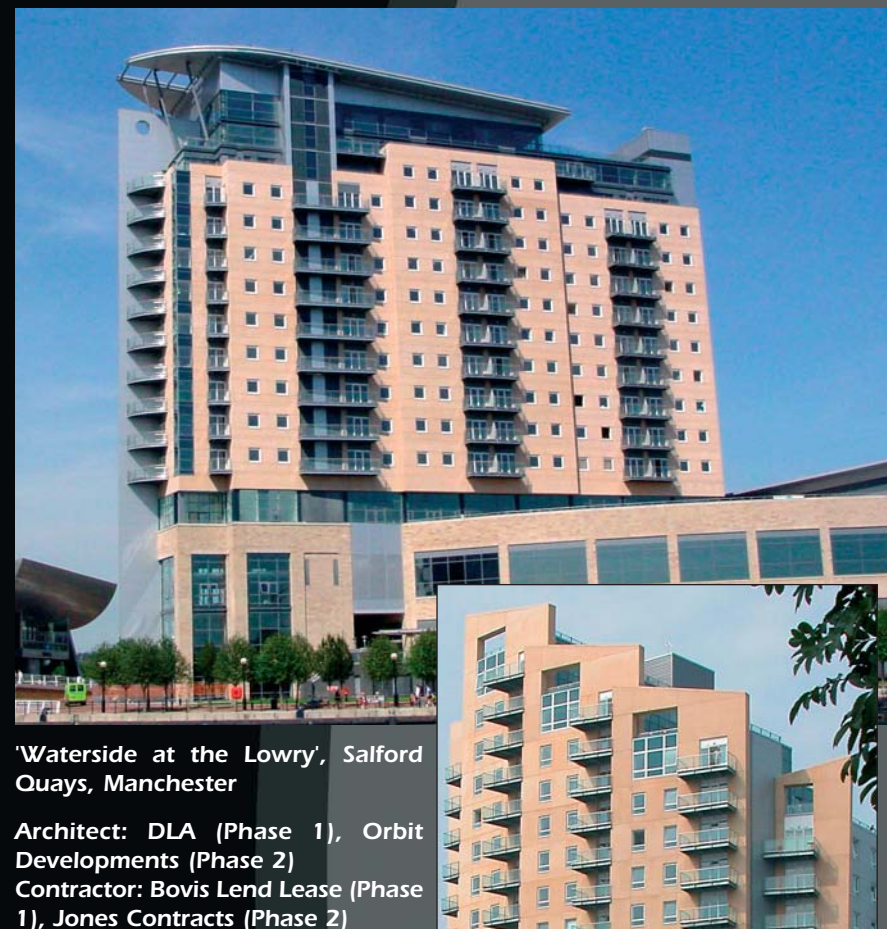


Masshouse, Birmingham

**Architect: David McLean Design
Contractor: David McLean Contractors**

This 15 storey apartment building is clad in a complex mixture of finishes with lower level panels containing black polished bands bounded by a white concrete finished to two different levels of exposure. The top floor penthouse apartments are clad with grey polished precast panels. Many of the main cladding panels are either concave or convex with pointed ends.

Waterside at the Lowry



'Waterside at the Lowry', Salford Quays, Manchester

**Architect: DLA (Phase 1), Orbit Developments (Phase 2)
Contractor: Bovis Lend Lease (Phase 1), Jones Contracts (Phase 2)**

This development consists of a 17 storey block and a 18 storey block clad with reconstructed stone precast panels in a light buff colour with an acid etched finish. On the 18 storey block, the precast panels at each side of the front facade include a vertical fin, which tapers outwards as it rises. To accommodate the complex sloping returns, these panels have three finishes and were cast in two stages.

Spencer Dock



Spencer Dock, Dublin

**Architect: O'Mahony Pike
Contractor: John Sisk & Son**

This Docklands development includes 12 apartment blocks, varying in size from four to ten storeys, with a precast concrete structure including a loadbearing outer skin of Techrete's precast concrete sandwich panels. The panels have an acid etched recon Portland stone finish.

Clarence Dock



Clarence Dock, Leeds

**Architect: Carey Jones
Contractor: Shepherd Construction**

This 17 storey residential building on the Clarence Dock comprises of approximately 320 white reconstructed stone panels weighing up to 10 tonnes. Techrete's panels were supplied complete with windows and due to overhanging formwork at roof level it was necessary to use a "C-hook" to circumnavigate this obstruction.

Old Hall Street



Old Hall Street, Liverpool

**Architect: Abbey Holford Rowe
Contractor: Carillion Building**

Storey-height window panels between 6-7 metres wide were cast in an off-white coloured reconstructed stone for this 28 storey residential tower and 8 storey office block. The top floors of the tower are set back and contrast with the lower acid etched precast panels by having a more robust sandblasted finish.