



# Design & Display GRP Structures

## case study: Barton Square Rotunda



## DESIGN & DISPLAY STRUCTURES TOPS CLASSICAL VISION

Market leading GRP expert Design & Display Structures has exhibited its classical design prowess with a stunningly elaborate rotunda – 15m in diameter with turret and 19m wide simulated stone entablature – that perfectly rounds off Manchester's landmark £70 million Barton Square retail project.

### Brief

The latest instalment in a string of contracts at Barton Square required a comprehensive design, manufacture and installation solution to realise the architect's neo-classical bold vision.

Calling on influences from Italian classical architecture, the Rotunda's size and complex detail meant success relied heavily on Design & Display Structures' off-site construction methods, efficient project management skills and dedication to partnering.

Its completion follows Design & Display Structures' design, manufacture and installation of the project's award winning Campanile Belfry last year. Altogether, the company's collective contract value on the development has now exceeded £1.2 million.

### Solution

In a highly recognisable classical style, the dome features beautiful and ornate aesthetics inside as well as out. Internally, a shallower GRP liner with central boss and decorative cornice encases the supporting steelwork. Design & Display Structures also provided the huge GRP entablature immediately below, manufactured to match perfectly with the low level stone cladding.

From the exterior, the archetypal blue-green rotunda, crowned by a detailed turret elevating from its centre, cannot be missed. Together with the Campanile Tower, located at the opposite end of the building, it provides a striking landmark that is visible to shoppers, far and wide. Night time illumination via strings of light bulbs applied to the GRP surface add a further marketing dimension.

### Benefits

The finished products were delivered to site in modular pieces and assembled at ground level into much larger sections, complete with waterproofing seals between panels. These were then lowered by crane onto the steelwork structure, which reduced the time working at height and, therefore, the scaffolding and access costs.

Using traditional materials it would have been impossible to construct a design as vast as this in the same time and budget. However, with Design & Display Structures' expertise, it was able to utilise GRP's lightweight nature and strength to produce the desired structure with maximum efficiency, on time and within the tender sum.

### Client:

Bovis Lend Lease

### Architects:

Leach Rhodes Walker

### Project:

Barton Square Rotunda  
Trafford Centre, Manchester

### Products:

Design, manufacture and installation of 15m diameter rotunda with turret and 19m wide simulated stone entablature

### Project Duration:

9 Months

*"Design & Display met our full brief and the team were very helpful in finding the most cost-effective approach to the designs we had. Their expertise in the design/fabrications and solution of complex GRP structures was an enormous benefit to us."*

*Adrian Davidson, Bovis Lend Lease.*



# Design & Display GRP Structures

## case study: Campanile Tower, Barton Square



## A towering success for Design & Display Structures

The crowning glory to the Barton Square Development in Manchester has been craned into place by UK experts in GRP, Design & Display Structures. The award winning Campanile was completed for October's official topping out ceremony for the multi-million pound retail project due to open in 2008.

### Brief

Design & Display Structures was tasked with producing bespoke, stone appearance cladding for the belfry and a striking lead coloured finial feature. It also had to be easily manoeuvrable by crane, allowing the belfry to be dropped into place atop the 67m high development (a £70 million extension of the £1.6 billion Trafford Centre).

### Solution

Under a six month £250,000 contract with main contractor Bovis Lend Lease, Design & Display Structures crafted the breathtaking cladding for the 14m tall belfry. Design & Display Structures also installed fibre optic lights throughout the finial and LEDs in the pediments for night time illumination. In addition they designed an innovative maintenance solution for changing the long life bulb in the hard-to-reach aircraft warning beacon.

### Benefits

Working in partnership with steel frame creator William Hare, the masterpiece of GRP design was built at ground level so there was no need for high level scaffolding. This brought significant time and cost savings for the client. Design & Display's work also offered significant environmental benefits for the client, as the lightweight finished product is easily handled, requires minimal mechanical lifting and delivery payloads are reduced. This cuts the carbon costs of delivery, making GRP a very sustainable solution over heavier, more cumbersome construction alternatives. The Campanile, built using innovative modular off site production techniques, has since scooped Bovis' Project Innovation Award 2007. Design & Display Structures offers a one stop shop for GRP design, manufacture and installation and will be completing £1 million worth of projects at Barton Square.

### Client:

Bovis Lend Lease

### Architects:

Leach Rhodes Walker

### Project

Campanile, Barton Square

### Products:

Bespoke stone finish cladding for the Campanile and a striking lead coloured finial feature

### Project Duration:

6 months

*"The finished Campanile is truly stunning and the tower provides a real focal point for the Barton Square Development. We are thrilled to have been able to help the vision of architect Leach Rhodes Walker come to life."*

*Managing Director Allan Curtis*



# Design & Display GRP Structures

## case study: Gurdwara domes and decorative features



## Sikh temples put faith in Design & Display Structures

Design & Display Structures has sympathetically replicated highly ornate traditional architectural symbols of the Sikh faith for two new temples located in the Midlands.

The importance of these temples, known as Gurdwaras to the Sikh community, required an approach that would produce an authentic finish, yet remain cost effective. The GRP experts' stunning white mouldings have done just that.

### Brief

Gurdwaras are instantly recognisable to the Sikh community by their unique and historical architectural features. This meant a solution that remained true to traditional forms, yet offered outstanding durability and light weight.

### Solution

Design & Display Structures delivered the perfect fast-track solution, with each element expertly crafted in GRP. The most striking of these are the distinctive onion-shaped domes, known as Gumuts, which span 4.75m across and stand 11m high. These were designed with historical assistance from the Gurdwara Committee.

Arriving on site on a just in time basis, they were assembled at ground level before being craned into place. In addition, Design & Display Structures produced 33 mini domes, each measuring 0.9m in diameter and manufactured in one piece, plus three oriel windows.

### Benefits

Each dome was produced in 12 orange-like

segments, plus a finial and the stainless steel Khanda – the Sikh emblem. This kept tooling and origination costs down. With both sites using the same moulds, the costs to the committee were effectively halved.

Until recently, these structures would be formed in reinforced concrete – a much heavier and more expensive option compared to GRP.

The segment size and shape also meant they could be nestled during shipping and easily manhandled on site. This reduced the haulage necessary and, therefore, made the project more environmentally friendly.

Combined with fast erection times, Design & Display Structures' turnkey solution took just 10 weeks from start to finish.

This level of efficiency and cost saving simply isn't possible using heavier alternatives and demonstrates why the versatile material is now the specifiers' preferred choice for projects such as these.

### Client:

Surinder Buray

### Commissioned by:

Reade Buray Associates

### Project:

Gurdwara decorative architectural features

### Products:

Onion-shaped domes, mini domes and oriel windows

### Project Duration:

10 weeks

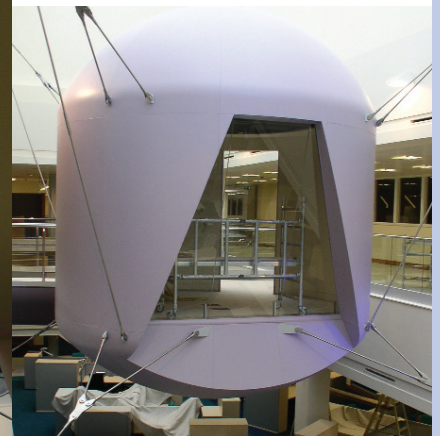
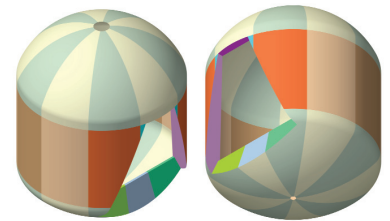
*"The challenge of accurately replicating such significant symbols was an exciting one, both in terms of tooling and turning the products around in a short timeframe. It is a perfect demonstration of GRP's versatility, particularly for fast-track construction programmes."*

*Managing Director, Allan Curtis*



# Design & Display GRP Structures

## case study: Granta Park, Cambridge



### DESIGN & DISPLAY STRUCTURES THE POD OF DESIGN

Design & Display Structures continues to break the boundaries of design. It provided Cambridge Antibody Technology (CAT) – a body dedicated to developing pioneering medicines – with three individually suspended GRP conference pods at its new facilities in Granta Park, Cambridge, solving the centre's space shortage in a unique, stunning manner.

#### Brief

CAT's 92,000 m<sup>2</sup> Aaron Klug building underwent an extensive overhaul to transform its dull state into vibrant laboratory and office premises. As part of this, the project designer, Chapman Carvill Design, wanted to put the centre's three atriums to their full potential with a suspended pod concept that provided both meeting space and a unique focal feature.

With the concept created, Design & Display Structures' highly skilled personnel were needed to work closely with designers, Chapman Carvill Design, to turn the idea into a reality, using an advanced 3D modelling program, VectorWorks.

The model was to incorporate two pods situated in the building's central atrium to create a sense of centralisation. A separate pod was positioned in the third atrium, giving each atrium an individual character.

#### Solution

The pods, 4.6m in diameter, comprised a cylindrical shape with a domed top and bottom. Shaped glazing was installed into each pod at a sloping angle, allowing a spectacular view from within it. Each pod was shell wrapped around a metal frame cable suspended from the existing building structure, with

a bridge connecting the two central pods.

An impressive feature of the pod is the sliding door. Formed to the same radius as the pods themselves, Design & Display Structures perfected the vision with a GRP solution that slides along stainless steel runners to make the structures really stand out. This pioneering design feat allows up to six people to occupy the pod at a time.

Whilst not in use, the pods act as a major visual feature for the centre that compliments the innovative research taking place within it.

#### Benefits

Design & Display Structures' unique combination of heightened design skills and mastery of GRP manufacture meant that the designers saw their vision become reality, without compromising the image.

The lightweight, yet highly durable nature of GRP made it the ideal material for the pod's cladding. With the company's experience in creating practical and stunning designs, it was possible to deliver eye catching, yet highly functional features.

#### Client:

Godfrey & Hicks Builders Ltd

#### Architects:

Chapman Carvill Design

#### Project:

Granta Park

#### Products:

Design, manufacture and installation of three GRP conference pods, bridge and cladding

#### Project Duration:

7 months

*"The early input of the Design & Display team's 3D modelling expertise, combined with their willingness to evaluate different design options, enabled us to refine the shape of the cladding 'shells', and to engage with some unforeseen complexities emerging from an apparently simple geometrical concept.*

*The team provided further invaluable assistance by mapping the spatial relationship between the body of the pods and the suspension structure.*

*Their contribution and attention to detail over the course of the design process was fundamental to both the aesthetic and the technical success of the project. On site, working to a tight programme, the entire team made every effort to achieve the best possible finish."*

*Jim Chapman,  
Architect, Carvill Chapman Design*



# Design & Display GRP Structures

## case study: Hello Friends Sculpture, Artists House



## DESIGN & DISPLAY STRUCTURES GOES ON A SPACE ODYSSEY

A piece of modern art, built by GRP experts Design & Display Structures, has brought an intergalactic flavour to Leeds' tallest building, nicknamed 'The Dalek'.

Commissioned by Landmark Development Projects and St James Securities, artists Bryan and Laura Davies referenced a wide range of futuristic sources for their 'Hello Friends' sculpture. This included Stanley Kubrick's iconic film 2001 – A Space Odyssey.

Since its completion it has inspired and intrigued local residents through a series of brightly lit images displayed within each of its nine sections. The images, based on science fiction classics, 'communicate with passers by about where mankind might be heading'.

### Brief

At close to 18 metres high, the project required a specialist company to tackle the design and installation of such a tall feature within an enclosed atrium space, ensuring, at the same time, minimum disruption to the daily activities of the building's tenants.

Open for public viewing in a bustling environment, the end product demanded a high quality yet extremely durable finish.

### Solution

Design & Display Structures worked closely with artists Bryan and Laura Davies to deliver a comprehensive design solution that would accurately translate their creative vision to reality.

In total, nine red GRP pods were expertly crafted and assembled around a steel core to create the bold totem-like structure. To each pod, Design & Display Structures carefully installed light boxes and image posters.

### Benefits

The company's design abilities made it the perfect choice for this landmark piece. Modular off site manufacturing techniques and strategic erection methods meant minimal disruption to the building's inhabitants.

As well as being ultra efficient, the company's state of the art, eco-friendly manufacturing methods offered a sustainable solution that looks out for future generations.

### Client:

Artists Bryan and Laura Davies

### Commissioned by:

Landmark Development Projects and St James Securities

### Project:

Hello Friends Sculpture

### Products:

17.5 metre high sculpture, comprising nine GRP pods

### Project Duration:

9 months

*"Design & Display Structures translated our drawings into fibreglass with expertise and great knowledge of the material. We enjoyed working with the company for its care and attention to detail, from helping us find the right colour and finish to the high quality installation work."*

*Artist, Laura Davis*



# Design & Display GRP Structures

## case study: Newcastle City Campus East Development



## Design & Display Structures scores top marks on campus

Tailor made GRP columns crafted by Design & Display Structures helped a major educational project scoop the prestigious North East Landmark of the Year.

When the Newcastle City Campus East won the accolade in October, judges heaped praise on the modern and sustainable design.

### Brief

Industry experts Design & Display Structures were commissioned to create around 130 prefabricated, totally bespoke columns for the striking, multi-million Newcastle City Campus East development at Northumbria University. All of these were volume produced using the company's offsite system, bringing massive labour and material savings for the client.

### Solution

Under its almost £200,000 contract, Design & Display Structures delivered a six month design, supply and install package for Main Contractor Sir Robert McAlpine – utilising the latest ultra eco friendly GRP manufacturing techniques.

Providing both a decorative and durable finish (perfect for busy student buildings), Design & Display Structures' nearly 2.7m tall and 2.5m girth columns add an extra touch of quality throughout the two building, five storey campus.

The shaped columns were made to encase exposed structural steel columns, located in

the corridors and open spaces between the new Design, Law & Business classrooms.

### Benefits

The company's modular offsite manufacturing offered a number of key benefits to the creators of Newcastle City Campus East.

As well as being cost effective, each column was pre-finished to the client's exact BS/RAL colour and texture, and boasts a tough wear resistant finish that is ideal for high traffic areas.

Furthermore, the GRP moulding process meant recesses could easily be formed at the top and bottom of each column in the campus.

Attractive metal skirting was then added at the base, followed by Design & Display Structures' adjustable GRP 'collars' at the top. These ensure that any ceiling level variations likely to occur on large expanses are overcome and the columns will fit completely flush for a perfect finish.

Thermal and acoustic insulation was also installed for the columns, helping prevent excess noise traveling between both the corridors and the classrooms.



### Client/Main Contractor:

Sir Robert McAlpine

### Architect:

Atkins

### Project:

Newcastle City Campus East development

### Products:

Bespoke shaped GRP columns

### Project Duration:

6 months

*"By using our acclaimed one-stop-shop design, supply and install solution, Sir Robert McAlpine and Northumbria University saved a lot of time and money. Our GRP columns are a high quality product, ensuring this campus will look stunning for decades to come."*

*Managing Director Allan Curtis*



# Design & Display GRP Structures

## case study: Eyes Wide sHut



## Prize winning beach hut is pretty as a picture

A one of a kind beach hut, featuring ornate floor to ceiling picture frames that reflect stunning vistas of the sea and the local town, has been crafted by Design & Display Structures.

Named Eyes Wide sHut, the striking building was created by architects Feix&Merlin and won the international Bathing Beauties competition. The contest, devised by artist Michael Trainor, was set up to 'Re-imagine the beach hut for the 21st century'.

Winning concepts become part of a gallery of dramatic new seaside architecture for the regeneration of a 10-mile stretch of Lincolnshire coast, near Skegness.

### Brief

With a timeframe of just four weeks, Design & Display Structures was asked to provide a fast track GRP design and build solution to bring Eyes Wide sHut – a revolutionary beach hut design – to life.

Selected for its strong relationship with architect Tarek Merlin, the company's bespoke 'one stop shop' service was perfectly matched to the prestigious seaside development project.

### Solution

Design & Display Structures initially constructed the main body of the hut, as well as the front and rear frames, using eight identical mouldings.

The frames hold large mirrored polycarbonate panels, giving reflections of the beach view and Mablethorpe town the appearance of vast, framed photographs.

These one-way mirrors create a perfectly transparent and unobstructed view out from the inside, while passers-by enjoy the reflected landscapes.

### Benefits

By choosing GRP, Feix&Merlin's beach-side development benefits from an ultra durable, low maintenance and colourfast material that is extremely resistant to the elements.

The front frame can also slide out, completely opening up the hut and acting as a wind break for the neighbouring garden, situated on an empty plot.

As with all clients, Design & Display Structures offered Feix&Merlin a one stop, ultra efficient design and build GRP solution.

### Client:

Feix&Merlin

### Architects:

Feix&Merlin

### Project:

Eyes Wide sHut

### Products:

Bespoke beach hut, featuring floor to ceiling picture frames

### Project Duration:

4 weeks

*"Having worked with the Design & Display Structures team previously, Tarek Merlin knew we would easily be able to handle such a complex and unique fast track project. The finished property is a masterpiece of contemporary seaside design and we were thrilled to be part of this ambitious seaside regeneration scheme."*

*Managing Director, Allan Curtis*



# Design & Display GRP Structures

## case study: Chill Factor e



### No chill out time for creators of UK's first ever elevated ice luge

To build the UK's only permanently iced elevated toboggan run, cutting edge GRP design techniques were tested to their limits by Design & Display Structures.

The company broke the mould of innovative design to complete the ambitious project, taking its collection of unique installations to a whole new level.

Completed in time for the grand opening in November 2007, the lightning paced toboggan ride was an instant success with thrill seekers of all ages. The Luge is now a key attraction at Chill Factor e in Manchester – the UK's longest and world's widest indoor ski slope.

#### Brief

The company was challenged by architects FaulknerBrowns to produce a permanently iced, elevated toboggan run for Manchester's new Chill Factor e winter sports centre.

After carrying out a thorough risk assessment on the concept viability, Design & Display Structures was employed by main contractor Sir Robert McAlpine. Appointed at a very late stage, all the company's concepts and plans had to twist around existing building work – such as immovable primary steel support pillars and a sloping traveller.

#### Solution

MD Allan Curtis jetted off to Ski Dubai to study the dynamics of various sledges on ice paths carved into the rock. From this, he was able to work out the physics needed to design an exciting but operationally safe toboggan ride.

Steel supports and sturdy, yet lightweight, modular GRP sections were manufactured to create the dramatic twists, turns and drops needed to give riders a true white knuckle experience.

To the base structure were fitted innovative, modified freezer pipes to ensure the run would remain frozen and ready for action at all times. Countless man hours were then spent packing ice particles tightly between the pipes.

#### Benefits

Installation of the toboggan run – now named The Luge – took place in the summer. A quick turnaround on site gave the owners of Chill Factor e plenty of time to drop the temperature and produce the 10,000 square metres of snow (totalling 2,000 tonnes) needed for the opening and busy winter months ahead.

As with all clients, Design & Display Structures offered architect FaulknerBrowns and main contractor Sir Robert McAlpine a one stop, ultra efficient design and build GRP solution.

The company's bespoke system, now fully tried and tested, is configured to give flexibility in layout. This means The Luge can be adapted to fit into future client sites.



#### Client/Main Contractor:

Sir Robert McAlpine

#### Architect:

FaulknerBrowns

#### Project:

Chill Factor e, Manchester

#### Products:

Bespoke permanently iced, elevated toboggan run

#### Project Duration:

11 months

*"While the whole project required huge leaps of faith, the operators were thrilled with the finished result. For Design & Display Structures, this was a risk that was well worth taking and I'm glad all the visitors to Chill Factor e are clamouring for one more go on our ride."*

*Managing Director, Allan Curtis*