

Glass Fibre Reinforced Polymer Cupola



Design & Display Structures

Location	Barton Square transformation, The Trafford Centre, Manchester
Description	Cupola 7m tall, incorporating 5m diameter profiled skirt base with louvre arched panels and access hatch.
Partners	Design & Display Structures (D&D - Supplier), Corstorphine + Wright (Architects), Vinci Construction (Client).
The challenge	<p>To design and develop a large-scale lightweight cupola feature to encompass a lightning protection system, topping out the 34m diameter dome soaring above the retail outlet in an architecturally attractive fashion.</p> <p>Being centrally positioned above a huge retail building the access to the dome peak would be very difficult so the feature needed to be capable of being built at car park level for hoisting as a preassembled structure, landed on top of the dome and final connections made in the quickest possible time.</p>
The solution	<p>D&D presented a cupola design that broke it down to a kit of repeating modular sections that functioned as necessary to clad around a primary steelwork frame whilst meeting the aesthetic requirements of the Architect.</p> <p>The body was created in 1/6th segments and the skirting in 1/12th segments so the joint lines complemented each other. This enabled repeating manufacturing of panels save for one into which D&D incorporated the access hatch necessary for final installation and future access for maintaining the lightning protection system.</p> <p>Site assembly and inspection could then all take place at ground level utilising mobile towers rather than high level scaffolding therefore substantially lower construction H&S risks for all parties concerned in that phase of works.</p>
Material used	Glass fibre reinforced polymer
Specific design details	D&D used a combination of Vectorworks and Rhino to produce the necessary 3D/2D fabrication and installation drawings.
Benefits	<p>The savings afforded by the D&D GRP construction approach were many. By being a low weight, low maintenance prefinished RAL colour ref material it avoided high level assembly and post decoration in what is clearly a very tricky location to access both during construction phase and in the future. To client benefit the cupola in its aged copper colour will stand proud as a highly visible retail customer beacon for years to come.</p> <p>Through offsite modular manufacture GRP panel construction delivered curved and louvred profiled surfaces at a much more economical cost than alternative materials which would have involved fabricating each panel individually from scratch.</p>
Further details	www.design-and-display.co.uk