

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	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. 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.
The solution	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. 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. 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.
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	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. 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.
Further details	www.design-and-display.co.uk