

# **ANNEX 5-B**

## **Case study**

### **MODULAR LIVING FOR ASHORNE HILL**

Terrapin and Corus Living Solutions team up to manufacture and construct a new wing of the Ashorne Hill Management College using the *Prospex* modular system and Corus' *Celestia* metallic cladding.

## MODULAR LIVING FOR ASHORNE HILL



The Ashorne Hall Management College near Leamington Spa required high quality accommodation for its residential courses, and turned to Terrapin for the design and construction to meet the tight 'window' available for construction. The building also had to be designed to complement the existing Grade II listed Mansion House, and a recently finished extension to the main building.

The Terrapin *Prospex* system has been widely used in hotels and sheltered housing, and this project gave the opportunity to work with Corus Living Solutions who manufactured, fitted out and supplied the 27 modular bedrooms and single plant room for this two storey residential building. The modules are 3.8 m × 6.3 m external plan dimensions, which included a generous bathroom with bath, shower and toilet. The modules are arranged either side of a 1.2 m wide central corridor with a large staircase module at one end. Service connections were made in a vertical riser between pairs of modules.

Large steel cassette panels were manufactured in a metallic grey colour from Corus Colors *Celestia* range. These 'rain screen' panels were pre-fabricated in sizes to match the

window pattern and are supported on vertical rails attached to the modules. The client wished to use this metallic finish to blend in with the traditional grey slate of the main building. The windows were recessed from the outer face of the cladding to create a bold vertical shadow-line.

The roof comprises a V shape with internal guttering using down-pipes located in the service zone between pairs of modules. It is clad with composite panels manufactured by Kingspan, which were installed rapidly to create a water-tight envelope.

The construction period took only 5 months from start of site and importantly, the 28 modules were installed in only 3 days to create a weather-tight enclosure. The building was designed to high standards of energy efficiency and comfort and to higher standard acoustic insulation to meet the 2003 UK Building Regulations.

**Application Benefits:**

- Speed of installation
- Good acoustic performance
- Cassette cladding installed as lightweight panels
- Light weight reduces foundations costs
- Ease of servicing between the modules

**Project Team:**

- Client:** Ashorne Hall Management College
- Architects:** Osborn Bennett Practice
- Contractor:** Terrapin by Design
- Modular Supplier:** Corus Living Solutions
- Cladding Supplier:** Superclad



*Modules ready for transport to site*



*Large colour-coated steel cladding panels*

**Construction Details:**

The room-sized modules is based on the Terrapin *Prospex* system and uses 100 mm × 1.6 mm C sections for the walls and 150 mm × 1.6 mm C sections for the floor joists. The walls comprise fire resistant plasterboard and large *Fermacell* panels internally. On the external walls, closed cell insulation is directly fixed to moisture resistant plasterboard, and the modules are protected to provide resistance to rain penetration during transport and temporarily on-site.

The floors comprise 19 mm plasterboard panels below 22 mm chipboard with polystyrene blocks on mineral wool placed between the floor joists for acoustic insulation. OSB board provides the top covering which supports installation loads. The total depth of the floor and the ceiling is 450 mm.

The construction process first involved accurately levelling the concrete strip foundations, and then the corridor cassette floor was placed on cast-in brackets. The ground floor modules were then supported by the cassette floor. The modules were guided into place by a chamfered pin attached to the brackets. The process was repeated by attaching the first floor corridor cassette to the

lower modules. This also provided water-proofing in the temporary condition. The whole process of installation of a module took less than an hour.

The 3.83 m wide × 10 m long stair modules were supplied as open-topped and the flight of stairs was supported by a cross-beam constructed as part of the top of the module. The floor of the upper module formed the stair landing.

The modules were later clad by attaching vertical steel rails in Corus' Colorcoat *Merlin Grey* through the external insulation fixed to the modules. The steel cassette panels of up to 2.3 m length and 1 m width were manufactured by Supaclad in the *Celestia* colour, Orion. The panels were attached by nylon pins to the rails to form a 'rain screen' with hidden fixings.