



## GENERAL BUILDING SPECIFICATIONS

### STRUCTURAL FRAME

Formed using reinforced concrete beams and columns founded on individual concrete pad foundations; designed to support normal loads and to resist additional seismic loads. Outer walls supported by a reinforced concrete ground beam or concrete sub-wall with 30mm EPS external insulation to prevent below-ground heat losses and gains.

### FLOORS

Formed using either a 100mm mesh-reinforced concrete slab, or a concrete beam and block floor with a structural concrete topping suspended over a sub-floor void, both with a screed topping. The floors and walls of the sub-floor void, and the ground slab where necessary incorporate damp proofing. Floors are finished in ceramic tiles to a value of 12.5 euros/m<sup>2</sup> excluding IVA. Galleries and other upper levels may be finished with a floating laminated timber floor to a value of 12.5 euros/m<sup>2</sup> excluding IVA.

### OUTER WALLS

Formed using an inner leaf of 115mm high-density adobe blocks and an outer leaf of 100mm hollow terracotta blocks. The outer leaf is constructed to allow vapour to transpire outwards. Outer walls are externally insulated with 60mm of EPS insulation and finished with a 5mm fibre-reinforced vapour-permeable thin coat render system. Internal surfaces are finished with 15mm of special clay render and painted with white matt vapour-permeable paint.

### INNER WALLS

Formed using single leaf 115mm or full width 240mm adobe block for thermal mass and finished with 15mm of special clay render and white matt vapour-permeable paint. Inner walls around bathrooms and shower rooms are formed using 100mm hollow terracotta blocks and finished with sand and cement render and acrylic matt paint or with ceramic wall tiles to door height to a value of 12.5 euros/m<sup>2</sup> excluding IVA.

### ROOF AREAS

Pitched roofs are formed using EPS-insulated timber sandwich panels supported by timber rafters. A traditional style Portuguese barrel system tile is installed on battens over an impermeable waterproof breathing membrane, ensuring good ventilation below the tiles and preventing rainwater penetration. The underside of the sandwich panels forms pitched wooden ceilings. Sandwich panels are finished to complement the natural wood finish of the external doors and windows. Timber rafters are finished with clear varnish, giving a lighter tone than the roof panels.

Roof terraces and other flat areas use well-insulated concrete deck inverted roof construction. Roof terraces are tiled with concrete promenade tiles.

## **WINDOWS, DOORS, SHUTTERS, GALLERY ACCESS STAIRS AND BALUSTRADES**

Doors and windows are of durable, treated timber. In addition to being thermally resistant, the double-glazed windows incorporate trickle vents for ventilation, and solar control glass to the south and west elevations to inhibit solar gains. Main front doors are in solid durable timber. All glass windows and doors incorporate low-emissivity glass and are laminated for additional security.

External shutters of durable, treated timber are fitted as per plans to solar exposed south and/or west facing windows and/or doors.

Internal doors are faced in natural timber. Matching timber architraves are fitted to the surrounds of all frames.

Gallery access stairs and balustrades are constructed in solid, durable timber. All timber is from sustainable sources.

All windows open inwards unless otherwise indicated on the plans.

## **FITTED BEDROOM FURNITURE**

Wardrobes are fitted in bedrooms as per plans and are finished with full-length timber-faced doors. Each unit typically includes provision for hanging rails and drawers. One of the bedrooms includes a fitted dressing table with mirror and lighting over.

## **KITCHENS**

Floor and wall cabinet doors are poly laminate with 30mm granite worktops and granite splashbacks. The stainless steel sink incorporates a monobloc tap with shower spray head.

## **KITCHEN APPLIANCES**

Appliances are manufactured by Whirlpool and comprise a built-in 600mm electric oven unit with grill and gas hob, an externally vented extractor hood, a tall fridge/ freezer or separate built-under fridge and freezer, a washer/dryer and an integrated dishwasher. Appliance finishes are in stainless steel, except for the washer/dryer, which is in white.

## **BATHROOMS, SHOWER ROOMS, CLOAKROOMS**

Wash hand-basins are porcelain, either inset into a vanity unit with cupboards under, or mounted on a pedestal, and in all cases with a mirror and lighting over. A bidet is included in the master bathroom. All bathrooms have heated towel rails and low energy electric under-floor heating mats. Baths are of pressed steel with tiled surround. All baths and showers have thermostatic mixer units. Shower rooms have shower trays with matching tile surround, shower screens and other fittings as per bathrooms. Cloakrooms have toilet, pedestal washbasin and towel rail. Bathroom layouts are as per detailed construction drawings.

## **CENTRAL HEATING AND HOT WATER SYSTEM**

The availability of piped gas makes it possible to specify economic and convenient gas-fired central heating. The standard system comprises a very high-efficiency balanced-flue condensing boiler with programmable controls, and a radiant skirting system with 140mm high aluminium live sections in white finish in all living areas and bedrooms. The radiant skirting distributes heat evenly throughout the room, and efficiently warms the thermal mass of the walls without taking up wall space. The gas boiler also heats domestic hot water, which is stored in a 210 litre hot water cylinder.

## COOLHOUSE COOLING & VENTILATION WHERE SPECIFIED

The house incorporates the experimental Coolhouse energy-efficient cooling and ventilation system. This system employs underground PVC tubes of 160mm to deliver cooled fresh air into the house via a sub-floor plenum or void. Tubes are buried to a depth of between 1.5 and 2m. Total length of tube is in excess of 70 metres. Fresh air is delivered to the ground floor daytime living areas by means of a variable speed 170W air-handling unit housed in a chamber against an exterior wall. The air handling unit drives air through the underground tubes at the required rate, and is designed to achieve 2,500W of comfort cooling and anticipates reducing internal summer air temperatures by 3oC, whilst achieving peak reductions of up to 8oC in the daytime ground floor living areas. The air enters the daytime living areas at ground level, through vents situated above the radiant skirting. In the summer, the system provides cooled fresh air throughout the evening and night, thereby cooling the thermal mass of the structure. In the winter, the system enables fresh air to be brought into the house whilst raising its temperature rather than lowering it. This trickle of pre-warmed fresh air flows behind and over the radiant skirting, where its temperature is further raised. The system ensures that the internal air stays fresh even with the windows closed.

## OTHER SERVICES

Ample electric sockets are included. Wall lighting is generally used in preference to ceiling lighting. An external socket is provided near the pool area. Provision is made for two telephone lines. Ample telephone and television aerial sockets are also included. Villas are pre-wired for an intruder detection system.

## EXTERNAL ARRANGEMENTS

### TERRACES, PATHS, DRIVES

The area 1m wide all around the house is paved with calçadas - Portuguese hand-laid limestone setts - laid on a lean cement mix base. Terraces are paved with calçadas laid on a granular bed. Footpaths are paved in calçadas in the same manner. Driveways are formed using fully permeable gravel-filled honeycomb mesh laid on a granular bed. Driveways and other paved areas are as per construction drawings and are laid to falls to provide effective storm water drainage.

### POOLS

Constructed as per plan to a perimeter of 27 linear metres and an average depth of 1.5m using a single sprayed reinforced concrete skin over clay brick formwork, allowing total flexibility in design. The pool interior is finished in a proprietary non-slip natural pebble finish in a choice of colours, with a bull nose brick coping and steps. The standard specification includes one pair of lights, together with all pumps, filtration equipment and housing. Privacy around pool areas is achieved either by means of plantings or, when exposed to a road, by means of wooden screens to an overall height of 2.1m mounted on solid 0.6m walls and accommodating climbing shrubs.

## GARDENS

The garden is fully landscaped with open lawn areas, large planted borders and flower beds. Feature palms and trees are positioned in lawn areas, with trees and smaller palms planted within the flowerbeds for height, screen and feature.

The boundary to the front of the plot is marked with street trees planted 1m. from the boundary at regular intervals.

The boundaries to the side of the plot are planted with shrubs and hedging. Where necessary, natural rock is used for retaining walls.

The boundary to the rear may be planted with a shelter belt covering the first 2.5 m. of the plot with a mixture of primarily drought-tolerant locally occurring trees and shrubs. These belts of planting enhance privacy as well as providing a wind protection screen. Alternatively, where the boundary to the rear is with a footpath, it may be marked with a natural calcaric rock wall to a maximum height of 80 cm.

## IRRIGATION

Pop-up sprinklers for lawn areas, rockeries and flower beds, and drip tube for hedges and shelter belts; specimen trees and shrubs irrigated individually for accurate and waste-free application; automatic valves located in each irrigation zone, allowing multi-start time and zone duration control for efficient night watering.