

TECHNICAL SPECIFICATION VILLA IN ELOUNDA, CRETE



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INTRODUCTION

Elounda Real Estate develop a luxurious villa in the area of Pigadakia-Elounda for an Italian family on a 1,430m² plot of gently sloping land with a 21-meter frontage onto the old municipal road between Elounda and the town of Aghios Nikolaos.

This document is a simple technical description of the works, which is only intended to convey an overall feel of the project, without necessarily covering the full spectrum of possible contingencies.

ARTICLE A: DESCRIPTION OF THE PROPERTY

The property is set in a scrub-land area near the 5* resort of Porto Elounda and accessed by the old municipal road connecting Elounda to Aghios Nikolaos via a private driveway. The villa has three levels and contains the following areas, separated by level and by use:

	Outdoor Common Areas	Indoor Common Areas	Indoor Private Areas	Indoor Service Areas	TOTALS
Basement	-	41 m ²	41 m ²	76 m ² (*)	158 m ²
Ground Floor	70 m ² (**)	74 m ²	45 m ²	-	189 m ²
First Floor	-	-	38 m ² (***)	-	38 m ²
TOTALS	70 m ²	115 m ²	124 m ²	76 m ²	385 m ²

(*) Garage, Laundry, Storage & Engineering rooms

(**) Outdoor verandas & poolside lounge

(***) Master bedroom, bathroom and dressing room

The design features one master bedroom with a large bathroom and dressing room on the first floor, two bedrooms on the first flight of stairs from the ground floor, each with its own bathroom, a guest-or-staff bedroom on the first flight of stairs below the living room and - depending on usage - an area in the basement that could be used for a staff or children's bedroom.

In addition to the above areas, the property also includes a swimming-pool sized 14-by-5 meters, with infinity edge, a sun-lounging area with a shower next to the pool, and a BBQ area next to the kitchen. In front of the pool is an 80-m² garden with lawn, accessible from the poolside area, while the driveway to the house's underground garage passes underneath the poolside area.

ARTICLE B: STRUCTURAL WORKS

1. Excavations - General Earthworks

There is a single excavation site for the house with two main levels: one for the level of the garage and engineering room, and one for the level of the first flight of stairs. Approximately 650m³ of excavations materials is sorted into rocks and earth, later used in filling and landscaping. The main filling sites are on either side of the villa and in the garden in front of the pool, behind the various landscaping retaining walls with masonry staircases, all the way down to the front of the house.

2. Concrete works

The shell of the building is built with an Insulating Concrete Forms (I.C.F.) system, which consists of 20-cm concrete walls (grade 20/25) throughout, sandwiched between two 5-cm layers of expanded polystyrene of grade “EPS-30”. The reinforcement consists of $\Phi 10$ steel rods spaced at 20-cm intervals vertically, and connected with $\Phi 8$ rods horizontally, with the same spacing. The slabs are supported with DOCA I-beams and consist of a plasterboard-polystyrene bottom layer by KNAUF and 20-cm grade 20/25 concrete, reinforced with dense zones of $\Phi 8$ steel rods.

3. Interior Walls

All interior walls of the building are built out of a plasterboard system by KNAUF. The layer on the exterior concrete walls is screwed directly onto the polystyrene, as the ICF system provides special plastic drilling points for such works. All other interior separation walls are built with 5-cm wide steel studs and a double layer of boards either side, the first of which is OSB compressed chipboard and the second layer plasterboard, with an interior layer of rock-wool to augment acoustic resistance. In moist areas like bathrooms, the moisture-resistant green plasterboard is used.

4. Exterior Finishes - Thermal Insulation

The exterior façade of the building is completely covered by the ICF 5-cm polystyrene layer in order to ensure the thermal insulation of the building without any thermal bridging, reinforced with a 1-mm layer of plastic net and special acrylic glue. Wherever this insulating layer is not covered by masonry walls, it is finished in coloured acrylic plaster, in a shade of white approved by the Client.

All roofs are also thermally insulated with EPS-30 polystyrene, water-proofed and then covered in gravel stone. Some of the roofs, especially the ones at the back of the house that are in close proximity to the natural environment, are “brown” roofs, i.e. filled with earth and allowed to develop a natural vegetation.

5. Insulation & Waterproofing

All retaining walls and concrete tanks, as well as all roof-tops and terraces are insulated with polyurethane membrane coatings and further protected by EPDM drainage membranes wherever there is fillings. Interior wet surfaces such as bathrooms and kitchens also be insulated with polyurethane membrane coatings.

6. Floor Finishes

Three following floor finishes are used throughout the property:

- Interior lounge areas and bedrooms is finished in either solid-timber adhered to screed with elastic bonding glues (expensive option), or moisture-resistant floating laminate flooring (less expensive option).
- Interior and exterior circulation areas, as well as bathrooms are finished in large slabs of beige composite stone, with a tumbled finish for slip-resistance and imperceptible joints without any grouting.
- Exterior circulation areas like pathways and stairways are finished in slabs of local stone with cement joints.
- The driveway to the garage is finished in flamed-granite cobble-stones.

7. Wall Finishes

Four different wall finishes be used throughout the property:

- Painted matte smooth finishes on dry wall surfaces, using water-based and solvent-free ecological acrylic paints.
- Veneered wooden panels in the same tone as the timber flooring, used in bedrooms and living rooms.
- Large slabs of beige composite stone, with a tumbled finish, in bathrooms.
- Decorative masonry wall with solid timber architraves on large surfaces neighbouring exterior windows, libraries and in the sitting area, next to the fireplace.

8. False Ceilings & Pergolas

Interior ceilings are plasterboard, fixed or hung, finished in a matte smooth colour using water-based and solvent-free ecological acrylic paints. Various ceiling features, such as coves and recesses is designed to conceal lighting fixtures and enhance the plasticity of the surfaces.

Exterior pergolas are aluminium beams painted in wood colours and arranged in a staggered parallel formation along main ceiling dimensions. The outdoor sitting area has a cover, made of top-grade plywood and waterproofed with a white polyurethane membrane coating and a decorative underside of moisture-proof vinyl straw.

Ceiling features include decorative drapes, panels, chandeliers and other items, whose positions and weights must be anticipated in order to ensure proper suspension.

9. Doors

The main driveway gate to the property is sliding into the perimeter masonry wall, and built of a heavy-weight aluminium frame with inset jolts, and panelled with Neowood planks in order to ensure longevity and harmonisation with the surrounding environment. The opening mechanism is a heavy-duty sliding mechanism with, controlled by a turn-key protected lock and tele-commander.

The main entrance door to the villa is a top-quality SCHUCO aluminium frame with heavy-duty (150-kg each) recessed hinges, and a fingerprint auto-lock mechanism. Hinges are spring-powered to ensure the door always closes behind a user exiting the premises. It is finished in solid Iroko timber screwed into its plywood-aluminium sandwiched factory face.

All other interior doors, approx.17pcs, are solid-section timber with wood tones matching the flooring. Hinges is heavy-duty, 4 per frame, while casings also be solid timber with wide architraves and frames.

10. Windows and Balcony Doors

All windows, whether fixed-frame, pivoting, sliding or opening, is built out of high-quality aluminium with thermal gaps between interior and exterior frames, and is electrostatically painted in wood colour matching the flooring. The living room and two dining room balcony doors are by German maker SCHUCO, while all others are by ELVIAL with mechanisms by GU.

All such openings are equipped with an electric roller aluminium shutter in wood colour, and all are to come equipped with retractable mosquito netting in the same colour finish of the frame as all others.

11. Glass Panes

All glass panes used in the project are thermal- and sound- insulating double window panes with a 10-mm vacuum between two 3+3mm laminated window panes. The exterior laminated pane features a solar-heat reflecting membrane (“Heat-mirror”), while the interior laminated pane feature a UV-absorbing membrane.

12. Joinery

All joinery, whether shelving, closets, or walk-in closets is bespoke and built locally with high-quality medium-density fibreboard with factory-varnished veneers throughout, matching the shades of the flooring. All hinges is heavy-duty with softly closing mechanisms. All hanger rails is illuminated, while those in the higher closets is pull-down, so as to allow for easy access. The design includes a variety of compartments for different clothing types, shoes, accessories, etc.

13. Kitchen (countertops, fittings, and equipment)

The kitchen design is contemporary, with a wall-mounted unit on one side and an “island” unit between the kitchen and dining room. The island also serves as a bar on one side. The colours of the cabinets and countertops are approved by the client prior to costing.

All countertops are by composite stone, etched and molded to fit exactly with the stainless-steel wash basins and other equipment. All hinges is heavy-duty with softly closing mechanisms. The kitchen stoves and ancillary electrical inset equipment are provided by the Client.

14. Bathrooms (countertops, fittings, and equipment)

The bathroom design is contemporary, with all surfaces finished in tumbled composite stone. All bathroom equipment is by German firm HANSE. All fittings are stainless-steel, and include towel heaters, towel hangers, make-up mirrors, paper holders, tissue holders, bathrobe hangers, trash bins, etc.

15. Fireplaces

The fireplaces is two types:

- One traditional stone fireplace is built in the living room, with a traditional chimney on the terrace of the main living room.
- Glass-enclosed fireplaces with closed air circulation, particularly energy-efficient and with minimal flue requirements of just a 200-mm diameter insulated pipe are installed in the two main bedrooms. Burning materials can either be dried wood or coal, while the front face of the fireplace is clad in grey flamed granite.

16. Service Areas

The large basement of the villa offers copious amounts of space for service areas. It includes the garage and engineering room, as well as a laundry and linen room, all three rooms finished in anti-slip ceramic tiles. At the first flight of stairs is a food & wine storage rooms, while a storage area for garden furniture and umbrellas also be created for the period when the villa not be in use.

17. Landscaping

The landscaped areas of the villa extend over the front porch (roughly 220m²), with a lawn in front of the swimming pool and decorative planting around the pathways and stairways. The back of the house is suggested planted with high trees and dense bushes, but few decorative flowers, so as to minimise the irrigation requirements and emphasize the “rough” character of those areas.

ARTICLE C: MECHANICAL & ELECTRICAL WORKS

18. Plumbing:

- Fresh water supply: The villa is supplied with fresh water from the municipal mains. The consumption is measured by a volumetric appropriate device in the purpose-built water tank.
- Hot water supply: Hot water is produced locally with a dual energy water heater. First option is the hot water from the villa's solar panels and the back-up option is an electric heating coil. All hot water is recirculated. This way, hot water reaches the faucet within very few seconds.
- Water-supply network: The network is constructed by multilayer flexible pipes of the latest technology. Specifically the pipes are flexible CU (copper) with a PE-AL-PE (polyethylene-aluminium-polyethylene) shield. Both the hot-water and recirculation pipes is insulated with tubes of elastomeric foam based on synthetic rubber.
- Sewage piping network: The sewage network is constructed of PPR (polypropylene) pipes with elastic rings.
- Rainwater piping network: The rainwater pipes is of standard 6-atm PVC (polyvinylchloride), and is concealed from view and sound-insulated, guiding the water outside the building envelope.

19. Heating/Ventilation

As the ICF building system provides 70% energy saving for heating and cooling due to superior heat insulation without thermal bridging, very little heating and ventilation is required in the house. The most important outcome of this is that the house no longer requires a hot-water boiler, while small local air-conditioning units are more than enough to provide the cooling effect required on the hottest summer days.

Heating in all areas is accomplished with local electrical heating units of contemporary design, while the option also exists of using infrared heating panel such as Redwell. Especially in bathrooms, heating apparatus also serve as towel warmers, built out of stainless steel in contemporary designs. All such heaters is thermostat-controlled, in order not to waste energy on unnecessary heating.

Air-conditioning in all public and private areas (living room, dining room, bedrooms) is achieved by highly-efficient units by DAIKIN (or equivalent, approved by Eurovent) with a very low noise level (22dB at the lowest operating setting). Units is either floor-standing (such as in the living room) or concealed within false ceilings (such as in the bedrooms). Each unit is autonomous, and controlled by an automatic thermostat, which allows selection of temperature as well as fan speed.

Where air diffusers are required for the concealed units, this is achieved with a arrangement of rectangular and flexible ducts. The ducts arrive at plenums and thence supply aesthetic slot diffusers of two or three slots, depending on room size and architectural limitations. All ducts are insulated with polyethylene foam, 0.5cm thick. All flexible ducts are self insulated with glass-mineral wool.

20. Electrical

- Power supply: The villa is supplied with standard European 400V/50Hz electricity mains, locally distributed to 230V/50Hz power circuits throughout the premises, except where high-power rated machinery is operated (such as kitchen stoves or water pumps).
- Lighting: All lighting is by low-power LED and Fluorescent fixtures. Every room has its own power lines. All lighting cables is single-phase 3x1.5mm² protected with 1x10Amp fuses. Cables to the external areas, bathrooms, or in general to areas of moist environments is protected with 2x10Amp fuses, therefore isolating the neutral pole as well as the phase. Dimmers are used throughout in order to achieve the optimal lighting effect according to the users' preferences.
- Power sockets: The power sockets are distributed according to operational standards. Typical examples are: at each side of the beds, multiple sockets in the kitchen working surfaces and TV & home-cinema areas. No power line supplies more than one room. Special 220/220V self-switching transformers is placed at the bathroom power sockets.
- Electric curtains (whether rolling or sliding) is installed according to the Client's requirements.

21. Electronics

- Fire detection: Fire detectors are positioned according to Greek regulations and automatic alarm connections with the local fire department can also be installed.
- Telephony: Telephone lines connect to the villa's own telephone relay terminal and thence to an ISDN outside line. Telephone lines are distributed throughout the building and are terminated at standard RJ11 sockets.
- Internet: Wireless internet and local area network is distributed throughout the villa and its garden and is encrypted to prevent external intrusions.
- Television: All bedrooms and living rooms have television outlets. The SKY satellite network (or another network, at the client's choice) shall also be installed. A 7+1 home cinema also be installed at the main television area.
- Alarm: All electric roller blinds and all doors to the exterior are connected to an integrated alarm system that both closes down the house automatically and arms when ready.
- Lighting control: Exterior lighting is connected to light-sensors and timers, so that no energy is wasted on unnecessary lighting but with the option of changing the lighting effects if the client so requires (e.g. During a party).
- If the client so requires, some chosen systems in the home (eg. Alarm, Heating, swimming pool condition, exterior lighting etc.) can be connected to a system that provide SMS notifications to the mobile telephones, and could even receive commands through SMS.

ARTICLE D: SWIMMING-POOL

The swimming pool is built in front of the house, with a size of 14-by-5 meters and ranging in depth between 1.2m and 1.5m, with comfortable steps positioned at the south end of the pool. The pool has an infinity edge at its far end, where water overflows into a lined concrete gutter below and then piped to the overflow tank for treatment. The swimming pool's interior surfaces are finished in polyurethane paint.

Swimming pool water treatment consists of a sand-filter and an ozonation device, which reduce the amount of synthetic chemicals required to treat the water but not eliminate them entirely. A pH-lowering acid-injection dosing pump is needed for keeping the water clear. Additional treatment chlorine dosing is done in the form of a solid-chlorine tablet (cyanuric base) whenever required.