

# **TECHNICAL SPECIFICATION VILLA IN ELOUNDA, CRETE**



## TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>3</b>
<b>ARTICLE A: DESCRIPTION OF THE PROPERTY</b>	<b>4</b>
<b>ARTICLE B: STRUCTURAL WORKS</b>	<b>5</b>
1. <u>EXCAVATIONS - GENERAL EARTHWORKS</u>	<b>5</b>
2. <u>CONCRETE WORKS</u>	ΣΦΑΛΜΑ! ΔΕΝ ΕΧΕΙ ΟΡΙΣΤΕΙ ΣΕΛΙΔΟΔΕΙΚΤΗΣ.
3. <u>INTERIOR WALLS</u>	<b>5</b>
4. <u>EXTERIOR FINISHES - THERMAL INSULATION</u>	<b>5</b>
5. <u>INSULATION &amp; WATERPROOFING</u>	<b>6</b>
6. <u>FLOOR FINISHES</u>	<b>6</b>
7. <u>WALL FINISHES</u>	<b>6</b>
8. <u>FALSE CEILINGS &amp; PERGOLAS</u>	<b>6</b>
9. <u>DOORS</u>	<b>7</b>
10. <u>WINDOWS AND BALCONY DOORS</u>	<b>7</b>
11. <u>GLASS PANES</u>	<b>7</b>
12. <u>JOINERY</u>	<b>7</b>
13. <u>KITCHEN (COUNTERTOPS, FITTINGS, AND EQUIPMENT)</u>	<b>8</b>
14. <u>BATHROOMS (COUNTERTOPS, FITTINGS, AND EQUIPMENT)</u>	<b>8</b>
15. <u>FIREPLACES</u>	<b>8</b>
16. <u>SERVICE AREAS</u>	<b>8</b>
17. <u>LANDSCAPING</u>	ΣΦΑΛΜΑ! ΔΕΝ ΕΧΕΙ ΟΡΙΣΤΕΙ ΣΕΛΙΔΟΔΕΙΚΤΗΣ.
<b>ARTICLE C: MECHANICAL &amp; ELECTRICAL WORKS</b>	<b>9</b>
18. <u>PLUMBING:</u>	<b>9</b>
19. <u>HEATING/VENTILATION</u>	<b>9</b>
20. <u>ELECTRICAL</u>	<b>10</b>
21. <u>ELECTRONICS</u>	<b>10</b>
<b>ARTICLE D: SWIMMING-POOL</b>	<b>11</b>
<b>ARTICLE E: AMENDMENTS - IMPROVEMENTS</b>	<b>11</b>

## INTRODUCTION

Elounda Real Estate (henceforth referred to as “the Developers”) are to develop six luxurious villas in the area of Pigadakia-Elounda, Crete, Greece inside a privately-owned complex of six similar residences.

This document is a simple technical description of the proposed works for a typical “model” villa, only intended to convey an overall feel of the project, without necessarily covering the full spectrum of possible contingencies.

**ARTICLE A: DESCRIPTION OF THE VILLA**

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

	Outdoor Areas	Indoor Common Areas	Indoor Private Areas	Indoor Service Areas	INDOOR TOTALS
Swimming Pool	> 55 m <sup>2</sup>	-	-	70 m <sup>2</sup>	70 m <sup>2</sup>
Basement	> 500 m <sup>2</sup> <sup>(1)</sup>	25 m <sup>2</sup>	50 m <sup>2</sup> <sup>(2)</sup>	10 m <sup>2</sup>	85 m <sup>2</sup>
Ground Floor	> 110 m <sup>2</sup> <sup>(3)</sup>	72 m <sup>2</sup>	20 m <sup>2</sup>	-	92 m <sup>2</sup>
First Floor	38 m <sup>2</sup>	-	33 m <sup>2</sup>	-	33 m <sup>2</sup>
<b>TOTALS</b>	<b>703 m<sup>2</sup></b>	<b>97 m<sup>2</sup></b>	<b>103 m<sup>2</sup></b>	<b>90 m<sup>2</sup></b>	<b>280 m<sup>2</sup></b>

- (1) Manicured gardens and courtyards
- (2) In the 3-bedroom arrangement for the basement
- (3) Outdoor verandas, poolside lounges, BBQ area

The design of the model villa features the following bedrooms:

- (a) One master bedroom with a large bathroom and dressing room on the first floor
- (b) Two children's bedrooms in the basement, sharing a bathroom, giving onto a common courtyard
- (c) A guest bedroom with its own bathroom in the basement level, giving onto its own courtyard
- (d) One staff bedroom on the ground floor near the kitchen, with a small bathroom. This room has a folding bed so as to allow for the parking of a car inside it.

The design of the model villa includes the following outdoor areas and facilities:

- (a) A swimming-pool with infinity edge and hot-tub
- (b) A sun-lounging area with shower next to the pool, partly covered by wooden pergolas
- (c) A BBQ and dining area next to the kitchen
- (d) A lawn garden of at least 110m<sup>2</sup> in front of the swimming pool
- (e) A parking area covered with a pergola

## **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 house and the pool, and one for the level of the staff bedroom and garage. It is calculated that they will require approximately 650m<sup>3</sup> of excavations, and the resulting materials will be sorted into rocks and earth in order to be 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. Building Shell*

The shell of the building is to be built with grade C20/25 reinforced concrete throughout. The reinforcements consist of grade S500 steel rods and connectors. All structural elements adhere to the strictest seismic codes.

Exterior walls are first built with a single layer of KNAUF Aquapanel® cement-board supported by 50-mm galvanized steel studs, then by a single layer of 20-cm thick YTONG® cement bricks, and then the entire exterior surface of the building is thermally insulated with grade EPS-20 expanded polystyrene slabs, further protected by a tanking membrane by DRYVIT® and finished in either acrylic rough plaster by DRYVIT® or local masonry.

### *3. Interior Walls*

All interior walls of the building are to be built out of a composite system of Oriented-Strandboard (OSB) slabs and moisture-resistant green plasterboards by KNAUF. For the exterior walls, the boards are screwed on the KNAUF Aquapanel® steel studs, and separation walls are similarly built with 5-cm wide steel studs and a double layer of boards either side. Sound insulation is ensured by an interior layer of rock-wool to augment acoustic resistance. In moist areas like bathrooms, the KNAUF Aquapanel® will be used on the internal side.

### *4. Roofs' Thermal Insulation*

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 to be "brown" roofs, i.e. filled with earth and allowed to develop natural vegetation.

## 5. Insulation & Waterproofing

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

## 6. Floor Finishes

Three following floor finishes are to be used throughout the property:

- Interior lounge areas and bedrooms will be 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 to be finished in large slabs of beige stone, with a tumbled finish for slip-resistance and imperceptible joints without any grouting.
- Exterior circulation areas like pathways and stairways are to be finished in slabs of local stone with cement joints.
- The driveway to the garage is to be 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, to be used in bedrooms and living rooms.
- Large slabs of marble, 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 to be 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 will be designed to conceal lighting fixtures and enhance the plasticity of the surfaces.

Exterior pergolas are to be solid-timber beams arranged in a staggered parallel formation along main ceiling dimensions. Just the outdoor sitting area will also have a cover, made of Neowood planks and waterproofed with a white polyurethane membrane coating and a decorative underside of moisture-proof vinyl straw.

Ceiling features could 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 entrance door to the villa is to be 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 to be finished in solid Iroko timber screwed into its plywood-aluminium sandwiched factory face.

All other interior doors, approx.17pcs, will be solid-section timber with wood tones matching the flooring. Hinges will be heavy-duty, 3 per frame, while casings will also be solid timber with wide architraves and frames.

10. Windows and Balcony Doors

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

All such openings are to be 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 to be thermal- and sound- insulating double window panes with a 10-mm vacuum between two 3+3mm laminated window panes. The exterior laminated pane will feature a solar-heat reflecting membrane ("Heat-mirror"), while the interior laminated pane will feature a UV-absorbing membrane.

12. Joinery

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

*13. Kitchen (countertops, fittings, and equipment)*

The kitchen design will be 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 to be approved by the client prior to costing.

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

*14. Bathrooms (countertops, fittings, and equipment)*

The bathroom design will be contemporary, with all surfaces finished in tumbled composite stone. All bathroom fittings are to be by German firms Grohe or Hansa, or equivalent approved by the Client. All fittings are to be stainless-steel, as approved by the Client, and will include towel heaters, towel hangers, make-up mirrors, paper holders, tissue holders, bathrobe hangers, trash bins, etc.

*15. Fireplace*

The main fireplace is to be a contemporary styled glass-fronted fireplace by PIAZETTA® with closed air circulation, particularly energy-efficient and with minimal flue requirements of just a 200-mm diameter insulated pipe. Burning materials can either be dried wood or coal, while the front face of the fireplace is to be clad in grey flamed granite.

*16. Storage and Service Areas*

A storage area is provided in the basement of the house and is to be finished in anti-slip ceramic tiles. Further storage closets are provided along the basement corridor. A large engineering and storage area of 70m<sup>2</sup> is further provided below the swimming pool.

**ARTICLE C: MECHANICAL & ELECTRICAL WORKS**

*17. Plumbing:*

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

*18. Heating/Ventilation*

As the exterior and interior thermal insulation provides 70% energy saving for heating and cooling, very little energy is required for controlling the temperature of the house. The most important outcome of this is that the house no longer requires a fossil-fuel 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 will be 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 will be 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 to be 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 will be either floor-standing (such as in the living room) or concealed within false ceilings (such as in the bedrooms). Each unit will be autonomous, and controlled by an automatic thermostat, which will allow selection of temperature as well as fan speed.

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

## 19. 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 to be operated (such as kitchen stoves or water pumps).
- Lighting: All lighting will be by low-power LED and Fluorescent fixtures. Every room will have its own power lines. All lighting cables will be single-phase 3x1.5mm<sup>2</sup> protected with 1x10Amp fuses. Cables to the external areas, bathrooms, or in general to areas of moist environments will be protected with 2x10Amp fuses, therefore isolating the neutral pole as well as the phase. Dimmers will be used throughout in order to achieve the optimal lighting effect according to the users' preferences.
- Power sockets: The power sockets will be 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 will supply more than one room. Special 220/220V self-switching transformers will be placed at the bathroom power sockets.
- Electric curtains (whether rolling or sliding) will be installed according to the Client's requirements.

## 20. 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 will 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 will be 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 will also be installed at the main television area.
- Alarm: All electric roller blinds and all doors to the exterior will be connected to an integrated alarm system that both closes down the house automatically and arms when ready.
- Lighting control: Exterior lighting will be 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 will provide SMS notifications to the mobile telephones, and could even receive commands through SMS.

**ARTICLE D: SWIMMING-POOL**

The swimming pool is to be built in front of the house, with a size of 14.5-by-4.5 meters and ranging in depth between 1.2m and 2.5m, with comfortable steps positioned at the south end of the pool. The pool will have an infinity edge at its far end, where water will overflow into a lined concrete gutter below and then be piped to the overflow tank for treatment.

The swimming pool's interior surfaces are finished in a smooth naturally coloured cement materials by KOURASANIT®.

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

**ARTICLE E: AMENDMENTS - IMPROVEMENTS**

All finishing materials are to be presented prior to the commencement of works and will be subject to the client's approval. Materials that will be sourced and provided by the client must be on-site well in advance of their use by the technicians, so that any special needs can be anticipated. The Developers reserve the right to request a change in cost for the use of materials that fall outside the original specifications as far as the for their installation craftsmanship is concerned.

If the Client wishes to bring about alterations to the designs, whether these are in their opinion improvements to the space-planning or to the construction materials, it will remain their obligation to do so promptly and well in time to allow these alterations to be incorporated in to the project by the Developers without upsetting the progress of works.

Obviously, alterations that will affect the structural integrity of the building, or that potentially endanger and jeopardise the proper organization and function of the structures, will not be directly approved but will require approval by the building authorities.

**All approved alterations are to be estimated by the Developers and paid in full and in advance prior to the commencement of works.**