

TECHNICAL REPORT

Construction of a Single-Family Villa – Calle León, San Miguel de Salinas

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1. General Introduction

This technical report describes the construction methods, materials, and execution procedures used for the development of a single-family villa located at Calle León No. 24, Ciudad de las Comunicaciones, San Miguel de Salinas (Alicante Province). The document presents, in a clear and structured manner, the different trades and technical stages involved in the project, in compliance with current construction standards and quality requirements. All works are executed according to the Technical Building Code (CTE) and relevant European standards.

2. Earthworks and Foundations

Works begin with the clearing and cleaning of the plot, including vegetation removal and preparation of the natural soil. Excavation is performed in open trench down to the foundation level, following the structural design depths. Surplus soil is transported to an authorised landfill, and a precise levelling is carried out before pouring the blinding concrete. The foundations consist of reinforced concrete footings HA-25/B/20 with B-500-SD steel reinforcements, laid over a 10 cm blinding layer. A peripheral drainage system ensures stability and moisture protection.

3. Reinforced Concrete Structure

The structural framework is composed of reinforced concrete columns, beams, and slabs. The slabs are of unidirectional type with prestressed beams and concrete infill blocks, reinforced with welded mesh 20×20×5 mm. Retaining walls and the sanitary void are built with H-60 concrete blocks and reinforced crown beams. Interior and exterior stairs are also made of reinforced concrete for maximum strength and homogeneity. All concreting phases are controlled according to the Quality Control Plan, including strength and curing checks.

4. Masonry and Partition Walls

The exterior walls consist of a multilayer system ensuring excellent thermal and acoustic performance: 12×20×33 cm ceramic block, 8 cm expanded polystyrene insulation, 9×20×33 cm inner brick, and cement render on the external surface. Interior partitions are built with 9 cm ceramic bricks using cement mortar. Roof upstands and parapets are constructed with 14 cm blocks, protected with bituminous waterproofing. Interior plaster is smooth gypsum, and exterior coatings are waterproof monocapa mortars with a scraped finish.

5. Roofs and Waterproofing

Walkable flat roofs include slope-forming mortar, 4 kg/m² bituminous membrane, 8 cm expanded polystyrene insulation, and a finishing screed ready for tiling. Non-walkable roofs include 12 cm insulation and gravel protection. Parapets are protected with limestone copings including drip edges.

6. Carpentry and Metalwork

Exterior joinery is made of powder-coated aluminium RAL 7016 matte with Climalit double glazing. Roller shutters are integrated within joinery boxes, with selected motorised units. Interior doors are made of moisture-resistant MDF, lacquered in white satin, with brushed steel handles. Glass railings are made of 5+5 mm laminated glass with stainless steel posts, and exterior access gates are metallic, powder-coated, and motorised.

7. Finishes and Interior Design

Interior floors are covered with top-quality porcelain stoneware tiles, laid with flexible adhesive and colour-matched joints. Stairs are finished with marble or national granite. Bathroom and kitchen walls are tiled with high-quality ceramic tiles. Interior painting is done with matte washable plastic paint, solvent-free, applied in two coats.

8. Technical Installations

Plumbing: PPR piping for hot and cold water, PVC drainage network, sanitary ware by Roca or equivalent, and a 150 L athermic water heater. Electricity: compliant with REBT standard, installed power 9.2 kW, video intercom, RJ45 and TV sockets in each room, LED lighting throughout. Air conditioning and solar energy: ducted preinstallation on the ground floor and split units on the first floor, 7 photovoltaic panels of 510 W with a 3.5 kW inverter.

9. Swimming Pool and Outdoor Areas

A 3.50 m × 7.00 m rectangular pool built in shotcrete with full reinforcement and finished with anti-slip gresite tiles. Includes skimmers, return inlets, bottom drain, technical cabinet, level regulator, and LED underwater lighting. The coping is made of white reconstituted stone. Outdoor areas include printed concrete paving, monocoated boundary walls, and artificial lawn zones.

10. Quality Control and Safety

A comprehensive Quality Control Plan covers all stages: material verification, concrete testing, steel compliance, and waterproofing inspection. All materials bear the CE mark and meet current standards. The safety and health plan is prepared by an authorised coordinator, ensuring compliance with legislation and on-site safety. Construction waste is collected and disposed of at authorised facilities.

11. Conclusion

All construction works are carried out with a focus on quality, durability, and energy efficiency. The described methods and materials ensure strength, comfort, and longevity. This report reflects the commitment to deliver a modern, functional, and sustainable home meeting today's residential standards in Spain.