

# TECHNICAL SPECIFICATIONS

## BOREAL PLUS VILLAS

### SITE ORGANISATION

All temporary constructions for the organization of the site and the necessary materials during construction will be demolished and removed at the end of the works on the related plot of land.

The designed constructions fall into CATEGORY "D" OF IMPORTANCE (constructions with low importance category, financed from the state budget; according to HGR no. 766/1997) and to CLASS "IV" OF IMPORTANCE (according to Norm P100 / 2013).

### STRUCTURE

Strength structure - reinforced concrete frames, arranged in the two directions that ensure the stability and strength of the construction.

The frames are made of pillars with a section of 30x30cm and beams with a section of 30x45cm. The slab over the ground floor is made of 12cm thick concrete as a rigid washer in its plane.

The provided foundation system consists of continuous orthogonal reinforced concrete beams under the pillar lines (masonry walls). Reinforced concrete beams have the section of "T" turned 125x35cm-85x50cm poured, on leveling concrete 10cm thick.

The closing walls are made of brick masonry. The roof is of the wooden frame type on the chairs.

### EXTERIOR DESIGN

A fencing of the property is performed on 4 sides. The street fencing will be transparent, made of metal panels with metal poles, on a 60 cm reinforced concrete plinth. On the other sides it will be made of mesh panels with metal poles, on a 60 cm reinforced concrete base.



Green areas, terraces and sidewalks have been designed to guard the perimeter of the buildings, to remove rainwater, a place for car parking and a garbage platform.

The protection sidewalk of the house and the access alley will be made of reinforced concrete with a width of 1.50m and 2.00m, respectively, jointed, placed on a layer of gravel.

### EXTERIOR FINISHES

On the outside, the construction will be thermally insulated with 100mm expanded polystyrene protected with fiberglass reinforced plaster. Decorative plaster with beige travertine look on the ground floor and white decorative plaster on the floor.

The base will have a bituminous waterproofing applied, the thermal insulation will be made with 5 cm thick extruded polystyrene and the finish will be made of natural stone cladding.

The exterior carpentry will be made of PVC Gealan 8000 series, anthracite gray color with 24mm Low E thermal insulation glass.

The cover will be made of anthracite gray metal tile.

### ROOF AND COVER

The roof is waterproof, insulated and covered with anthracite gray corrugated metal tile roofing.

The constituent wood material of the frame is fireproof and treated against insects and fungi.

Rainwater collection and drainage will be done through a system of white metal gutters and downspouts.

The guard and the arrow will be made of squared softwood and are finished with wood paint for the exterior.

The balconies provided for the apartments will be made of reinforced concrete floor slabs in the console and will be waterproofed under the floor provided to be made of natural granite slabs laid with mortar on the slab. The side railings and the parapet pediment of the balconies are made of 8.2.8 safety laminated glass, embedded at the bottom in a satin-type stiffening profile, fixed with a metal anchor with ATE to the seism for fixing the load-bearing structure of concrete (Fisher), mine current at the top cylindrical satin aluminum.

### POWER SUPPLY

The power supply is made from the nearby measuring and protection block, according to the solution in the connection notice, which will be issued by the electricity supplier at the request of the beneficiary. Inside the house, in the access hall, a general electrical panel for the home will be installed. The panel will be supplied from the connection box by means of a copper cable type CYAbY-F 5x10 mm<sup>2</sup>. The distribution scheme is TN-C-S, the separation being made in the picture of each building.

#### Artificial lighting installations

The interior lighting installation within the building is made with lighting fixtures with fluorescent / incandescent / led sources, apparent installation. The luminaires were not specified because they will be chosen later by the beneficiary.

The lighting circuits have an installed power of maximum 800 W, in accordance with the provisions of normative NP-I7 / 2011.

Lighting controls are performed locally at the access doors to the rooms by means of switches or switches.

The mounting height of local switches and switches is 1 m from the level of the finished floor. The circuits are made with copper conductors type 3FYx1.5 mm<sup>2</sup> laid in IPY20 protection tubes. The lighting circuits have been set so that the distances of the routes are as small as possible and the voltage losses are within the allowed limits.

The arrangement of the lighting fixtures took into account the structure of the construction, thus achieving a high degree of visual uniformity. The luminaires are apparently mounted on the ceiling, where the electrical distribution is made in protection tube type IPY16.

The outdoor lighting installation will be made with outdoor luminaires with fluorescent / incandescent / led sources. Thus, an outdoor lighting circuit with an installed power of 600 W was proposed. The circuit will be made with copper cable type CYY-F 3x1.5 mm<sup>2</sup> laid in plasticized metal protection tubes. Its order will be made locally from the switch inside the building.

Plug-in installations -230V - 50 Hz and power.

The types of sockets as well as the electrical connections were established depending on the destination of the rooms, as well as on the possible electrical consumers. All sockets are provided with a protective contact and are protected with differential circuit breakers, so that any fault can cause them to be de-energized.

Their supply is made by means of copper electrical conductors of type 3FYx2.5 mm<sup>2</sup>, provided in the protection tube IPY20, taking into account in their sizing the voltage losses. Due to the chosen distribution scheme, these voltage losses are negligible.

Single or double sockets are provided on the socket circuits, all with protection contact, with an installed power of maximum 2000 W, in accordance with the provisions of NP-I7 / 2011. Separate power circuits have been provided for the thermal power plant, washing machine, air conditioners, etc.

### SANITARY FACILITIES

The cold water supply of the building is made from the public network.

The installation of cold and hot water supply, will be made with polypropylene pipes type PP-R, Pe - x or similar.

The hot water supply will be made through the boiler with built-in boiler.

Domestic sewage system

Domestic wastewater will be collected and discharged into the public domestic sewerage network.

The domestic sewerage installation ensures the collection and evacuation of domestic wastewater from sanitary objects.

Rainwater from the roof of the building will be collected through a system of gutters and downspouts provided in the architectural project and will drain to the ground; The installations are executed from:

- for indoor domestic sewerage installations: PP pipes and connecting parts (mounting slope according to STAS 1795);
- for cold and hot water connection pipes of sanitary objects: pipes and connection parts made of polypropylene PP-R or similar;
- for outdoor sewage systems: PVC-K pipes and connecting parts.

### THERMAL INSTALLATIONS

Indoor heating systems

The heat demand for heating was calculated according to STAS 1907 / 1,2-14.

The heating of the interior spaces in the apartments, at the temperature level specified in the standards (1907 / 2-14), will be done through the underfloor heating systems, low radiation. The heating system was dimensioned taking into account the temperature of the heating agent (50 / 30°C).

For the production of the thermal agent necessary for the heating and preparation of the domestic hot water, a condensing thermal power plant will be installed, with a thermal power of 26 kW with operation based on natural gas (supply from the local network). Each home will be connected to its own power plant.

The underfloor heating circuits will be made of PERT pipes mounted on the concrete slab, on a groove type clamping system and will be covered with cement screed.

Ensuring the pressure of the installation will be done with closed expansion vessel and safety valves, being included in the component of the thermal source (boiler). The circulation (circulation) of hot water in the indoor installation will be done with a circulation pump, contained in the boiler.

The water supply (filling) of the installation will be made from the connection provided to the house. To cool the spaces, split air conditioning systems with wall-mounted indoor units will be installed.

### UTILITIES

Upon completion of the works, the following utilities will be provided:

Road and mooring in final solution (the part of the road that ensures the connection with public roads)

Power supply at 220V with 31.3 kW installed power for the house.

Internal domestic sewerage connected to the sewerage network of the assembly. Water supply from the assembly network.

Natural gas supply.