TRADITIONAL STONE HOUSE

PERAST - MONTENEGRO

MONTENEGRO ARCHITECTS

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ARCHITECTURE - SINGLE RESIDENCE

A - Design brief and considerations of the site

A1. Describe the design brief including client's main requirements including occupancy and facilities required.

The investors were restricted in their brief to comply with very strict planning laws governing the heritage town of Perast in Montenegro. These were influenced by the international heritage agency UNESCO. The property is listed as a grade I monument. Although the existing structure was little more than as storage shed, it was agreed there was a house, since demolished, built circa 1755.

Thus the planning criteria dictated the design brief to the extent of:

1. The structure is to be in keeping with the traditional buildings of the area to include both inside and outside including timber joists and mild steel reinforcement to stone supporting walls.

2. Reconstruct main façade front wall facing the sea with natural hand shaped stone of the area and with authentic design for Perast. For all planed works only local stone can be used.

3. Windows and door openings must be in keeping with traditional characteristics and proportions. (dimensions of single door is 80 x 210cm. double door 110 x 210cm and window 70 x 110cm) in flat stone surrounds. That means to look like the traditional Perast Architecture.

4. Design of the timber doors and windows to be traditional. Double window divided in panes with shutters that are solid or slatted.

5. Interior of the building should be traditional wooden ceilings, stone floor wall recesses etc. The other inside rooms to match the modern needs.

6. Not only building to be planed, also garden (whole plot of the land) and fence should be planed and like original solutions in Perast.

A2. Show concepts, sketches and any evolution in the design process; mention what may have influenced or inspired the direction of the design

The above planning design criteria did leave some scope for research into the various period design and structures in the town of Perast. Therefore, various sketches were forest presented to the investors and then, if acceptable, to the Heritage department.
The first attemptwas not acceptable to the heritage department.

DESIGN NOTES FOR STONE RUIN IN PERAST

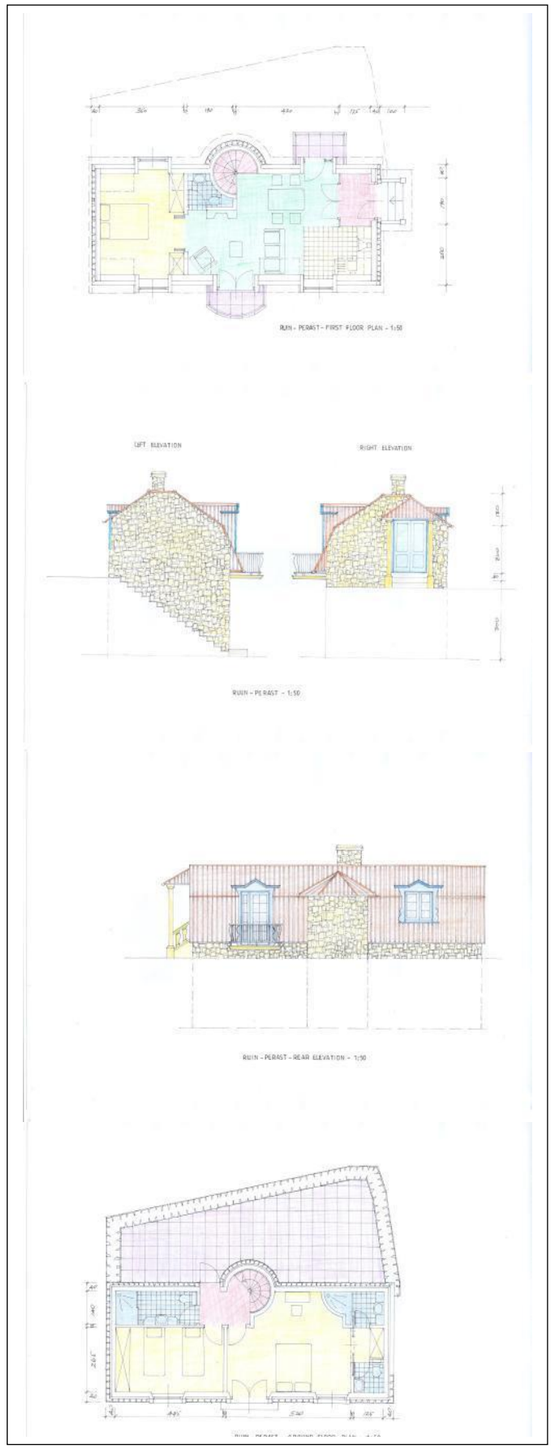
GENERAL

The new building will be constructed with a reinforced concrete frame with 15cm stone cladding on the outside and 20cm infill blocks internally. There can be internal stone cladding for those areas where a stone finish is required.
The external design of the house will be traditional for Perast except the Mansard roof proposal is not. This is one of the changes I hope to be considered by the heritage department although this might be a "long shot".

I have not included any development of the rear behind the existing stone wall but simply shown it as a courtyard terrace surrounded by a stone wall. I think development of this area as living space is a "step too far" for the moment. Once the principal of acceptance of 60m2 (10% more than the 55m2 given in the conditions) is accepted and building starts, or later on say after a year, you could apply to have this enclosed and then later as living space.

I have shown a small swimming pool at the front but as this area is lowered any way it could be used for a larger "hot tub" I have extended the carpark area over the lowered part of the land in front which would give space for storage and water reservoir and this could be enclosed with secure access door.

I have not shown it but there could be steps leading from the carpark to the front garden area but that would take some space from the carpark and front of the house.



INTERNAL

ENTRANCE AND LIVING AREA

Entrance from the parking area at first floor level and I have indicated a lobby area by the front door perhaps made from a glass and wood screen to give a feeling of light. This could be solid on the kitchen side thus giving space for coat cupboards either side of the entrance door.

The kitchen area is on the left and more units could be added to extend under the window. Along this wall (front wall) the roof is sloped except where the dormer windows are. To the right of the entrance lobby I show a door and rear balcony. Later if the walled area below is blocked in it would lead to a rear first floor terrace.

The living room has a fireplace adjacent to the door to a guest WC and from there I show a third bedroom. This could be accessed by 1.5m wide folding doors to give the area dual use, either a bedroom or study or enlarged living area.

GROUND FLOOR BEDROOMS

Access from stone spiral staircase leads to a lobby from which I show an external door leading to the rear courtyard. Use of the courtyard could be made into more bedrooms or summer kitchen with eating area.

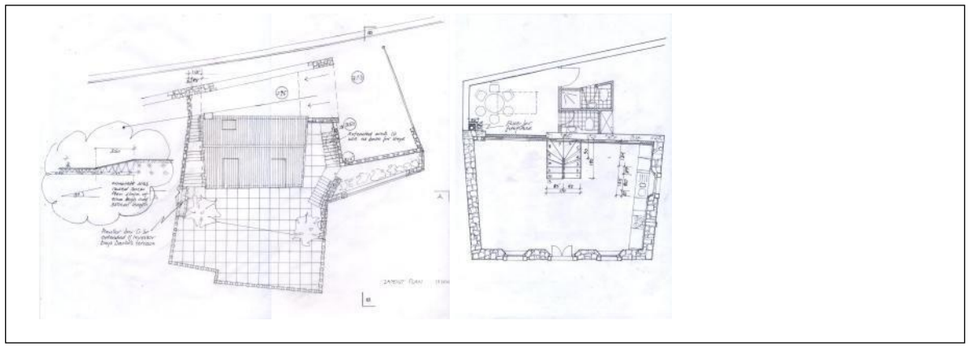
There is a family shower room off the lobby with a good size shower but the area is not big enough for a bath. Should you want one I will have to make this area bigger and bedroom smaller.

The master bed room is a good size and I have included a walk-in dressing area accessed with sliding doors, with shower on one side and WC on the other. I made the shower area curved so in the bedroom you get two reflective curves and a feel of similar identifying a makeup area. Double doors from the master bedroom give access to the front garden area.

Eventually we settled on a design acceptable to both investor and Heritage department

During the build process there were more changes to accommodate future development ideas such as making a ground floor dining area and extra bedroom. This meant it would not be necessary to have a ground floor cloakroom at this phase, giving more living area space.

Some discussion and claims and counter claims of land ownership of the upper parking area eventually became settled so the idea of an under area store room and reservoir space have been omitted.



A3. Highlight the client approved design and give reasons why this design was selected

The design was selected out of necessity. There was so much control via the Montenegrin heritage department and UNESCO the client had little option other than to abandon the project. The planning process took 3 years, which in part, was due to the UNESCO assessment of the whole town of Perast which, in effect, stopped the Montenegrin heritage department issuing any planning conditions at all for any development

B – Location

B1. Provide details of the location and the position of the project within the site

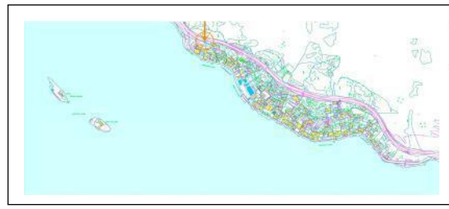
Perast is a famous monument town of historical as well as Baroque and Venetian architectural interest.

The Gulf of Kotor (Boka Kotorska) cuts deeply into the coastline of the southern part of the Yugoslav Adriatic, creating four spectacular bays ringed in mountains, the “fjords” of the Mediterranean. The little town of Perast is situated at the foot of St. Elijah Hill (873 m), opposite the narrow Verige strait, where the innermost bays of Risan and Kotor converge. This easternmost shore was the earliest inhabited area in the Boka. The remains of a Neolithic culture (3500 BC) have been discovered in the caves of Spila above Perast and various archeological finds provide evidence of civilization dating from Illyrian, Roman and early Christian periods.

Preceded by two jewel-like islands, Perast is focused on the sea. From the interaction between mainland and bay, the inherent contrast of stone and water, the dialogue of island and wave, sometimes in harmony but often in conflict, this sea-faring town has derived its unity, strength and sense of purpose. Despite its size, a sophisticated urban structure has arisen, demonstrated by the proportion, scale, massing and rhythm of the great number of public buildings, especially along the waterfront.

The subject property settles just off the upper bypass road and has foot access to the main town and water front

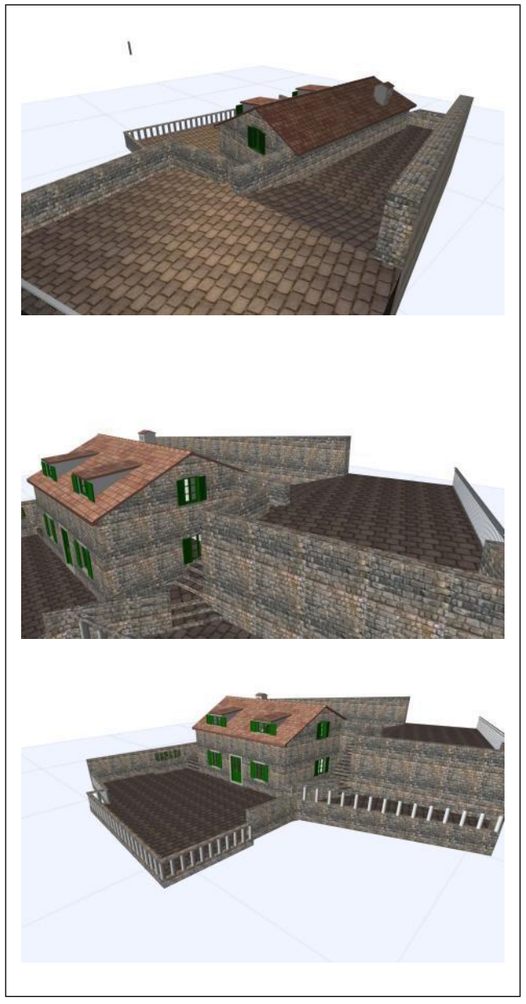
Location of the site is within the bounds of Perast and the land area is set out in the geometers drawing.



B2. Provide outline details of any surrounding buildings and if your design had to follow any local vernacular building styles.

1. The structure has to be in keeping with the traditional buildings of the area to include both inside and outside including timber joists and mild steel reinforcement to stone supporting walls.
2. The main façade wallsto be natural hand shaped stone of the area and with authentic design for Perast. For all planed works only local stone can be used.
3. Windows and door openings must be in keeping with traditional characteristics and proportions in flat stone surrounds. That means to look like the traditional Perast Architecture.
4. Design of the timber doors and windows to be traditional. Double window divided in panes with shutters that are solid or slatted.
5. Interior of the building should be traditional wooden ceilings, stone floor wall recesses etc. The other inside rooms to match the modern needs.
6. Not only the building to original design but also garden and fence should be like original solutions in Perast.

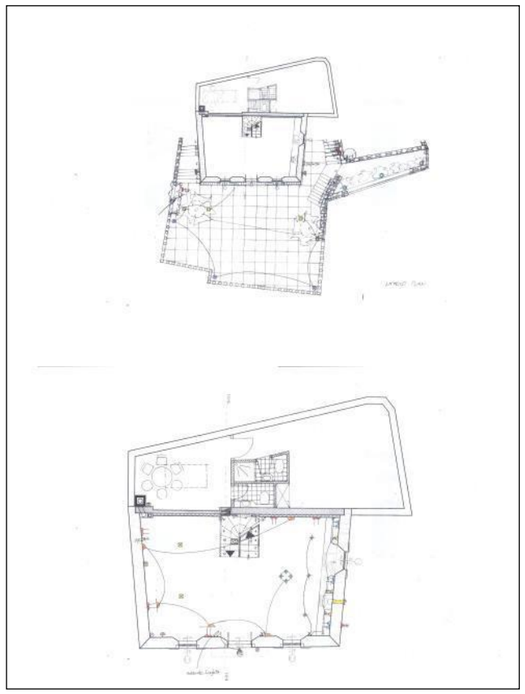
B3. Show the finished concept in relation to its surroundings using one or more of the following: photography, maps, site layout or computer generated images (CGI).

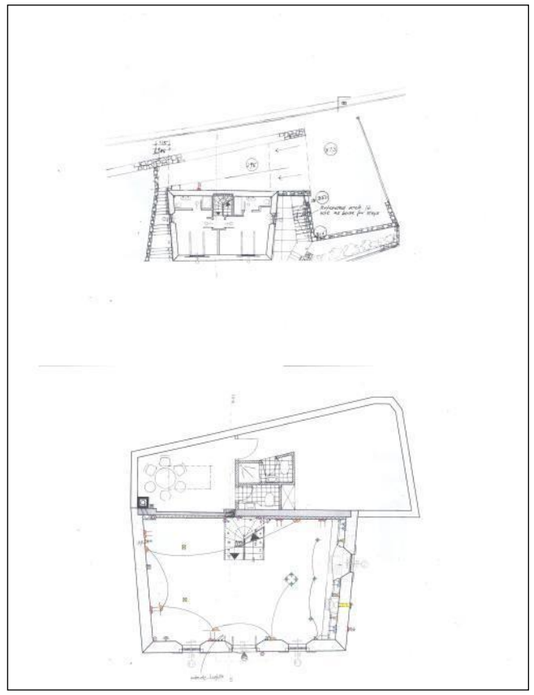


C - Architecture and use of space

C1. Provide floor plans of a single unit and a plan of the development if applicable

Electrical layout





C2. Show the key areas of the overall design including renderings of the facilities, including exterior and interior

Details of finishes

Type of roof structure

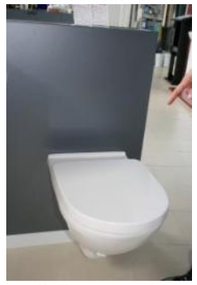
Concealed WC unit

Chosen bath

Example of tile

Chosen window of typical Perast design

Oak furniture designed and made for client



Wall/floor standing WC pan

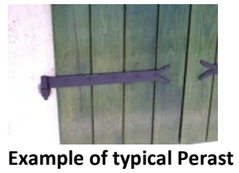
Shower hardware

Example of bathroom tiles

Oak doors designed and made for building

Vanity unit and basin

Design of planters



Example of typical Perast shutters

Type of concealed WC suite

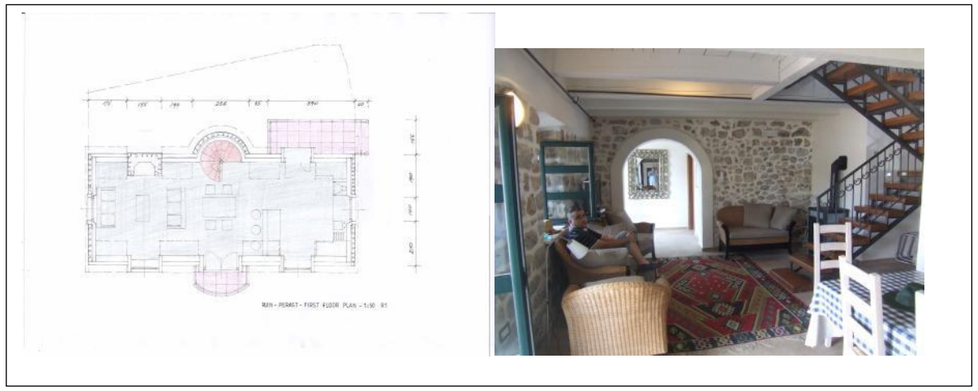
Handmade oak bed

Shower unit

Example of taps

Design of printed concrete for upper parking area

C3. Show a typical room layout demonstrating the use of space



D - Appearance & Finish

What are the main materials used in the appearance and finish of the structure?
In addition to listing the materials, show renderings, CGI or photography to give animpression to demonstrate the final appearance of the design.
Reinforced concrete foundations and floor slab, natural double skin stone walls with 5cm insulation in cavity, timber rafters and natural channel tiles with 10cm insulation, traditional dimension windows with metal outside protection and oak inside finish.

E - Sustainability, Energy Conservation, Environmental, Use of Renewable Energy, Innovation

E1. What materials and design elements are used to reduce the buildings energy consumption?

1. Insulation in cavity stone walls,
2. double glazed windows,
3. 10cm thick insulation to roof space,
4. natural ventilation with exhaust air heating and cooling the incoming air,
5. Low energy under floor heating.

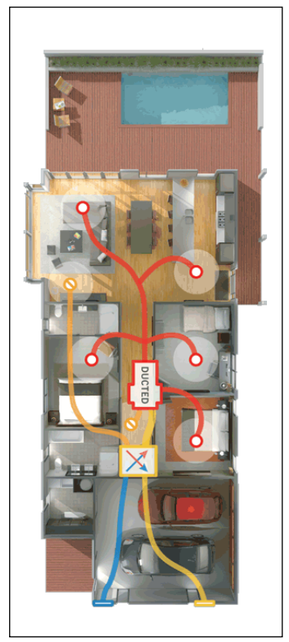
E2. What methods or materials are incorporated into the design to use renewable energy?

Heat pump exchange to heat and cool incoming ventilation

Extracts air - Extracts stale air removing toxins and reducing humidity

Supplies fresh heated air - Supplies fresh heated air via the ducted heat pump increasing the oxygen levels in the home and preventing the build up of moisture.

Lossnay energy recovery unit - Recovers the heat from the outgoing air to preheat the incoming air, saving you money.



E3. List any environmentally friendly and / or sustainable construction materials used.

Windows - effective glass within the window is a double glazed argon filled unit with planitherm glass, giving a U-Value of 1.2 W/m²K.

Floors - compacted hardcore and sand blinding to correct depths and height. DPM over sand blinding and level concrete to specified depth including any required steel reinforcement.
A 30mm insulation upstand around the perimeter of the floor and continued up the wall where required. Using this method reduces the Ψ value achieved at this junction.
Lay 5cm insulation on top of the concrete slab with all joints taped and sealed, finished with a layer of screed on a VCL.
First floor of hollow pot and joist construction, 5cm insulation, 4cm screed and wood strip oak flooring

Walls – natural stone double skin overall 60cm thick with 5cm insulation in cavity. Giving a U-Value of 1.0 W/m²K.

Roof - Rafters filled with 10cm Knauf Rafter Roll insulation and then underdrawn with 40/12.5mm thermal laminate sheets which prohibit cold bridging.

Breathable roofing membrane used over the rafters with a minimum 25mm gap between the membrane and the insulation allowing a void above the insulation to breathe.

E4. Describe any innovative technology used in the construction.

Sewage - is recycled via a biological unit and then distributed by underground pipe to planters

Water – I collected via a storm drain and used for watering and taken to a reservoir, filtered and reused for property activities except drinking.

F - Safety & Security

F1. List all features included in the property which improve the safety and security of occupants and highlight any of these measures which go beyond the minimum required by building code/law.

Fire doors – solid 3cm thick with smoke seals to give 30 minute protection for means of escape from within the property.

Emergency lights – provides in all habitable rooms and staircase

Joinery items – made of either solid fire protected coatings or melamine for cupboards. There is very little joinery that can catch fire

F2. Describe the fire prevention and suppression systems

Local access for fire protection service which is located 100 metres away. Ready access to hydrant on the main road adjacent to the property