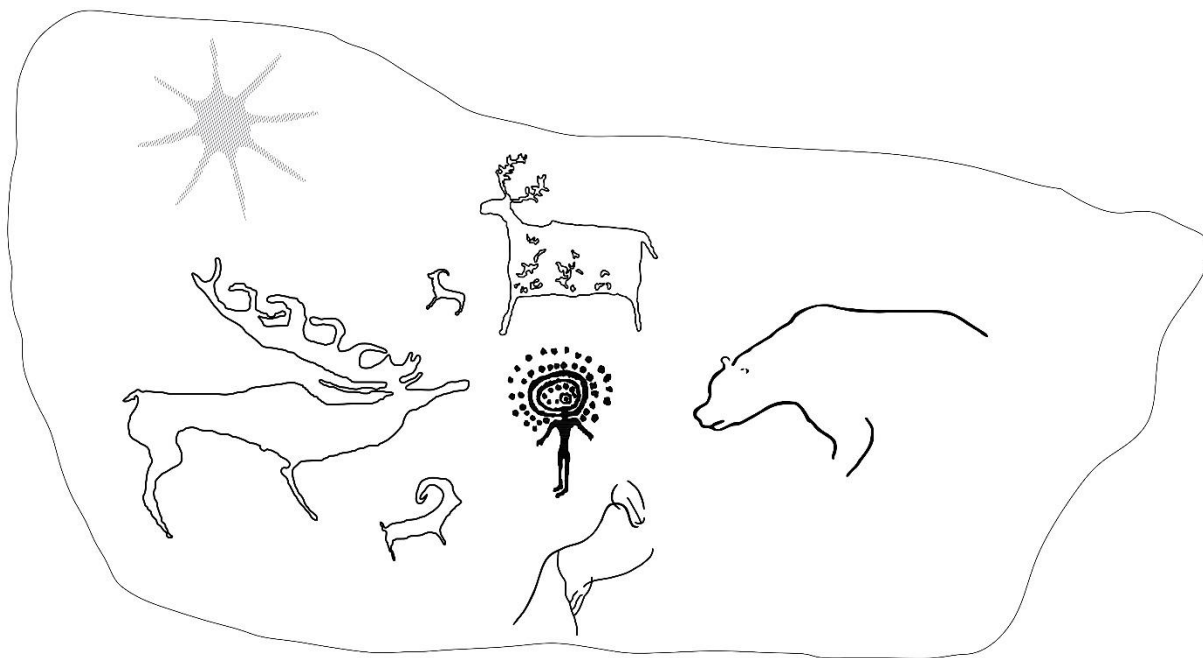




Montenegro  
Ministry of Ecology,  
spatial planning and urbanism

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COMPETITION FOR CONCEPTUAL URBAN - ARCHITECTURAL  
SOLUTION OF A  
ZOO WITH CITES CENTER AND ASSOCIATED CONTACT ZONE  
IN BERANE

Competition assignment

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## 1. INTRODUCTION

The establishment of a Center for taking care of confiscated and injured protected animals for the purpose of protecting rare and endangered species is one of the obligations that Montenegro has under the provisions of the **Convention on International Trade in Endangered Species of Plants and Animals (CITES)**, the Law on Nature Protection and regulations ("Regulations on closer to the conditions that must be met by a legal entity and a natural person for keeping temporarily confiscated protected wild species of plants, animals and mushrooms" ("Official Gazette of Montenegro", No. 46/10 of 06.08.2010), "Regulation on Conditions for Traffic and the way of handling protected wild species during transport" ("Official Gazette of Montenegro", No. 67/10 of 24.11.2010) and "Regulations on the closer conditions of keeping and breeding of protected wild species of animals" ("Official Gazette of Montenegro Gore", No. 51/08)). The center should ensure all conditions for the temporary reception of injured protected animals found in nature and the permanent keeping of confiscated protected animals from the group of reptiles (Reptila), amphibians (Amphibia), birds (Aves) and small mammals (Mammalia). All necessary veterinary care and protection is provided to the animals cared for at the Center. Protected animals of native species are returned to nature after recovery.

This competition assignment defines certain project criteria according to which it is necessary to create technical documentation.

## 2. SUBJECT AND OBJECTIVE OF THE COMPETITION

The main goal of the competition is the selection of the best conceptual urban-architectural solution for a zoo with a CITES center and associated contact zone in Berane, based on the parameters and recommendations specified in this competition assignment.

The competition assignment defined the following zones:

Zone 1 – zoo with CITES center

Zone 2 – access plateau

Zone 3 – coastal fort-promenade/quay

Zone 4 – artificial lake with its surroundings (on part of UP-01)

Zone 5 – the zone between the outer fence of the zoo and the planned road to the east, as well as the part along the fence to the south to the edge of the promenade bordering UP-07.

The participants in the competition are expected to propose solutions for a zoo with a CITES center and associated contact zone in accordance with the needs of future users of the space in a way that is functional, recognizable and unique, through its primary role of protection and providing shelter to endangered animals without neglecting educational and tourism potential for the city, the municipality of Berane and the whole of Montenegro.

The competition solution must be done on the basis of the competition assignment and other attachments that form an integral part of the competition material.

### 3. LOCATION - GENERAL CHARACTERISTICS OF THE SPACE

Location - geographical position/

Berane is located in the north of Montenegro, covers Gornje Polimlje and lies between the peaks of Bjelasica in the west, Cmiljevica in the east, Tifran gorge in the north and Sutjeska and Prevoja in the south. The mentioned mountains form the so-called Berane basin, which stretches in the NSE-SE direction, is 9 km long and 3-5 km wide. The river Lim flows through the middle of the basin, with a slight deviation in the direction of the north. The valley floor is between 650 and 750 meters above sea level.

Neighboring municipalities are: Kolašin, Mojkovac, Bijelo Polje, Petnjica, Rožaje, Plav and Andrijevica.

The average altitude is 670 meters.



Figure 01: wider area with the scope of the competition

Location - climatic conditions/

Berane basin is significantly different from the surrounding mountain area, which has a typical mountain climate at higher altitudes. In the basin itself, temperature conditions and winds correspond to the type of temperate-continental climate, and the influence of the Mediterranean climate can also be seen in the distribution of precipitation. Atmospheric deposits are fairly evenly distributed. Spring is quite wet, windy and cold, while autumn has milder climatic characteristics.



Winter starts later, but periodically extends until the end of April. Summer is pleasant, with cool nights. The most common winds are NW (9%), SW (8.7%) and S (6.1%). Large temperature ranges are recorded in both summer and winter. The temperature, during summer, can reach 37° Celsius, and in winter it can drop to minus 20° Celsius.

Location according to the planning document/

According to DUP "Desna obala Lima" as amended ("Official Gazette of Montenegro" - municipal regulations no. 18/17), the location of the project in question is planned on cadastral plots no. 744, 745, 746, 750, 751, 752, 753, 899, 900, 901, 1614/1, 1614/3 and 1614/4 CM Donje Luge registered in the Real Estate List no. 191 and 192, that is, on urban plots UP-01, UP-03, UP-05, UP-06 and UP-06a.

A zoo with a CITES center is planned on a green area of approx. 4.3 ha, in the coastal part of the Plan. The location in question makes it isolated from city noise, highways, industry, etc.



Figure 02: a narrower zone within the scope of the competition

#### 4. EXISTING CONDITION

The location (of the listed parts of the cadastral parcels) is located on the stretch between the right bank of the river Lim on the west side and the planned local road on the east side, where there are no built-up facilities except for a temporary prefabricated facility with the purpose of catering on UP-01. The site is undeveloped, and the project needs to foresee work on the development of the terrain: construction of the planned coastal fortification and embankment of the terrain with special attention to surface water. There is no prepared infrastructure (traffic and utility) at the location.

## 5. BASES FOR PROJECT DEVELOPMENT / NATURAL CONDITIONS:

1. The design of the facility in question must be done with a previous analysis of the terrain, given that the location is located next to the river.
2. For calculations, use data from the Hydrometeorological Institute on climatic and hydrological characteristics in the zone of the subject location.
3. In the area of Berane, the strongest winds blow from the south, southwest and northwest
4. Bearing capacity of the terrain: 1.5-4.0 kp/cm<sup>2</sup>
5. The level of underground water is at an altitude of 668.5 m, which is in relation to the terrain at a depth of 2.35 cm
6. Seismic parameters: According to the data for the area within the limits of the Amendments and Supplements of the DUP, the seismic design parameters are as follows:
  - Degree of seismic intensity VIII (eighth)
  - coefficient of seismic intensity  $K_s$  0.079 – 0.090
  - dynamic coefficient  $K_d$   $1.0K_d 0.7 / T 0.047$
  - ground acceleration  $Q_{max}(q)$  0.283

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## 6. CONDITIONS FOR CONSTRUCTION

The project envisages phased construction of the complex.

In the first phase, it is mandatory to envisage an administrative facility with a CITES center, and in the second phase, a zoo.

Total area of animal cages: ~ 4,000 m<sup>2</sup> (of which about 300 m<sup>2</sup> are closed spaces). The approximate number of animals in the zoo and CITES center is a maximum of 200 individuals, about 40 different species.

It is possible to increase the number of birds of prey in the Center, while reducing the capacity provided for some mammals.

Total number of employees is 16 of which: director, business secretary, economic affairs officer, legal affairs officer, marketing officer, 4 employees for hygiene maintenance and animal feeding, 3 trained animal guards, a veterinarian and 3 researchers/guides and assistants/ volunteers.

The maximum gross floor area of all buildings is approx. 10,000 m<sup>2</sup>.

The permitted number of floors is GF(ground floor)+1(floor). The height of the buildings depends on the purpose.

UP	Area UP (m <sup>2</sup> )	Max area under buildings (m <sup>2</sup> )	Max gross floor area GFA (m <sup>2</sup> )	Occupation index	Max floor area ratio (FAR)	Storeys
1	9187,00	500,00	500,00	0.05	0.05	GF
3	16.285,00	4.885,53	4.885,53	0.3	0.3	GF+1
5	4.698,80	1.409,64	1.409,64	0.3	0.3	GF+1
6	10.792,50	3.237,75	3.237,75	0.3	0.3	GF+1
6a	2.146,20	643,86	643,86	0.3	0.3	GF+1
<b>TOTAL</b>	<b>43.109,50</b>	<b>10.646,78</b>	<b>10.646,78</b>			

## 7. DATA FOR DESIGN

Through the competition assignment, it is necessary to propose a conceptual solution that comprehensively treats five zones:

Zone 1 – zoo with CITES center

Zone 2 – access plateau

Zone 3 – coastal fort-promenade/quay

Zone 4 – artificial lake with its surroundings (on part of UP-01)

Zone 5 – the zone between the outer fence of the zoo and the planned road to the east, as well as the part along the fence to the south to the edge of the promenade bordering UP-07.

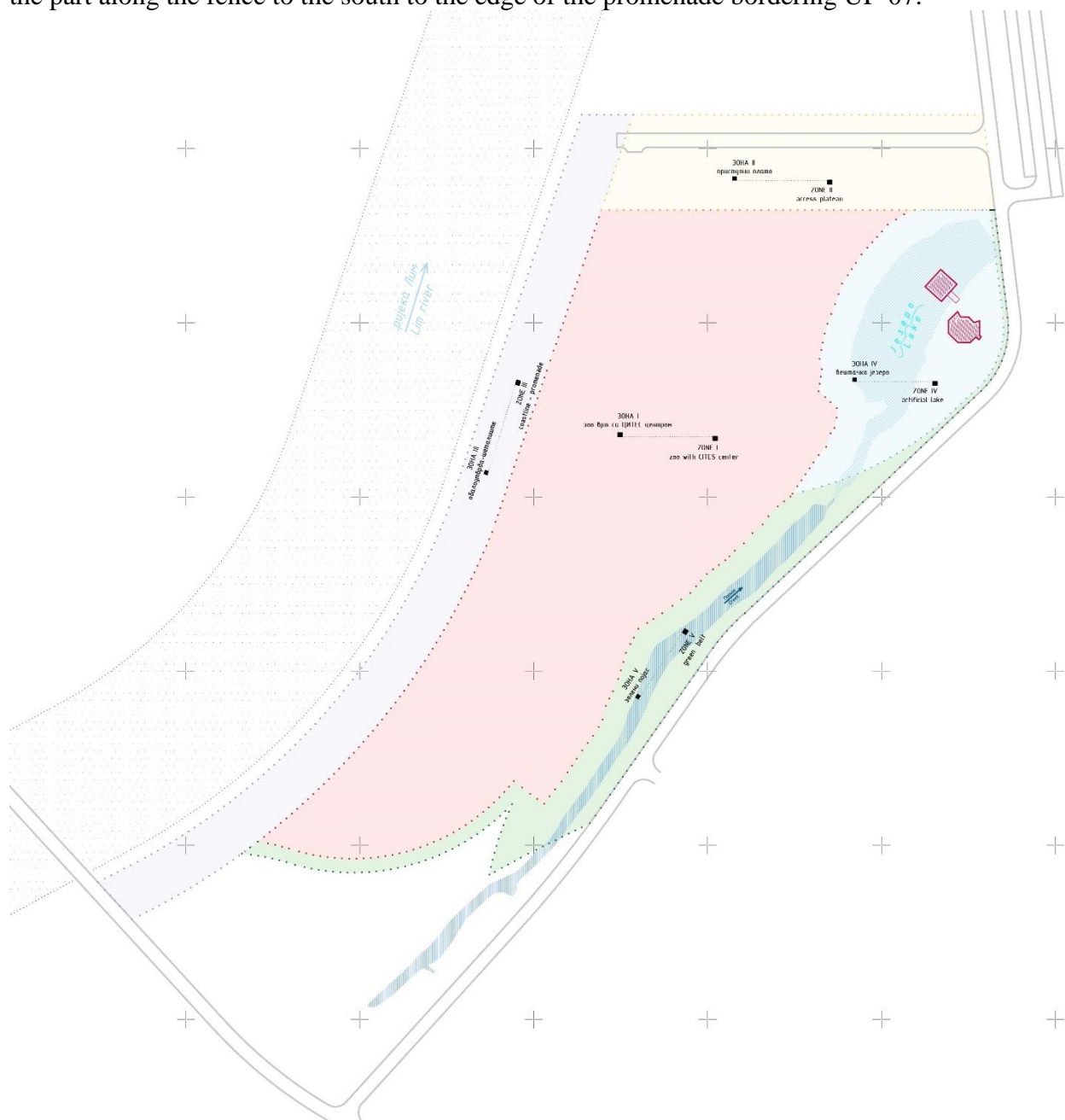


Figure 03, geodetic base with division by zones of the competition

According to Article 121 of the *Rulebook on the closer composition and form of the planning document* ("Official Gazette of Montenegro", no. 24/10 and 33/14), complexes of specialized parks - zoos are located in the city zone isolated from noise sources, from main roads, industry, etc. In the zoo complex, the exhibition area should cover 50-60% of the park, and the rest area for visitors 30-40% of the park area. The main footpaths should be maximally adapted to the relief, with a width of at least 3 m. Secondary footpaths can be 0.75-3.0 m wide.

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The DUP "Desna obala Lima" (right bank of river Lim) amendments and additions (IID) within the zone includes, according to the detailed purpose, the areas for landscape design (PU), namely the areas for special purposes (PUS) - the coast of Lim and the areas of limited use (PUO) and i.e. UP-01 (part), UP-03, UP-05, UP-06, UP-06a (UP-07 is not included in the tender) and public purpose areas (PUJ) i.e. UP66' (UP67 is not included in the tender) and inland water surface VK-surface water (VPŠ), namely part of UP01 and pedestrian area (DS).

Pedestrian areas within the scope are not binding in the part between the UP planned for the zoo and the CITES center, but it is up to the participants of the competition to propose potential pedestrian connections of the eastern road with the coastal fort through elaboration. Zoo-garden is a specific program that assumes a fenced zone within which the distribution of space according to content is carried out through elaboration. Pedestrian surfaces outside the zoo should be proposed around the perimeter.

### Requirements by zone

#### Zone 01 – zoo with CITES center

The zone within which the positioning of the buildings and the fence is planned is marked on the geodetic base with the regulation line (RL). The fence around the zoo can be positioned differently, but it must not go outside the RL.

The capacity of the newly designed zoo-garden facility with a CITES center should be designed based on the currently available data on the number of wild animals in captivity in Montenegro, which is approximately 40 different species, in total according to the table:

Native name of the animal	Latin name of the animal	Number of animals
<b>Sutomore</b>		
Bengal tiger	<i>Panthera tigris tigris</i>	1
<b>Tološi</b>		
European wolf	<i>Canis lupus</i>	8
<b>Plavnica</b>		
Hippopotamus	<i>Hippotamus amphibius</i>	1
<b>Vranići</b>		
Red squirrel	<i>Sciurus vulgaris</i>	2
Buzzard eagle	<i>Buteo buteo</i>	1
Eurasian sparrowhawk	<i>Accipiter nisus</i>	1
Red deer	<i>Cervus elaphus</i>	1
Asiatic peacock	<i>Pavo cristatus</i>	4



Japanese quail	<i>Coturnix japonica</i>	10
Guinea pig	<i>Cavia porcellus</i>	4
Weasel	<i>Mustela nivalis</i>	1
Parrots	-	-
<b>Berane</b>		
European fallow deer	<i>Dama dama</i>	3
Mouflon	<i>Ovis musimon</i>	2
White eared pheasant	<i>Crossoptilon crossoptilon</i>	4
Golden pheasant	<i>Chrysolophus pictus</i>	5
Silver pheasant	<i>Lophura nycthemera</i>	8
Grebe	<i>Podiceps cristatus</i>	2
Ruddy Shelduck	<i>Tadorna feruginea</i>	3
Carolina duck	<i>Aix sponsa</i>	10
Redhead duck	<i>Aythya ferina</i>	2
Araucana	<i>Anas querquedula</i>	2
Tufted duck	<i>Aythya fuligula</i>	2
Mandarin duck	<i>Aix galericulata</i>	3
Mallard duck	<i>Anas acuta</i>	2
Wild duck	<i>Anas platyrhynchos</i>	7
White swan	<i>Cygnus olor</i>	2
Black Swan	<i>Cygnus atratus</i>	1
Green peafowl	<i>Pavo muticus</i>	8
Indian peafowl	<i>Pavo cristatus</i>	17
Greater white-fronted goose	<i>Anser albifrons</i>	2
African goose	<i>Alopochen aegyptiaca</i>	2
Barnacle Goose	<i>Branta leucopsis</i>	2
Cape Barren goose	<i>Cereopsis novaehollandiae</i>	2
Wild turkey	<i>Meleagris gallopavo</i>	1
European wolf	<i>Canis lupus</i>	1
European wolf	<i>Ursus arctos</i>	1

Within the zoo-garden complex with the CITES center, it is necessary to foresee 3 units:

**1/economic yard**

**2/zoo-garden space for housing animals and public areas for visitors**

**3/rehabilitation center**

**1/economic yard**

The zone of the economic yard inside the fence of the zoo-garden should be separately fenced off and positioned next to the economic/official entrance. Provide the following facilities in the yard:

- Parking for employees within the complex, in the part of the economic yard next to the administrative building (maximum of 5 parking spaces)
- Space for disposal of municipal and other waste 150 m<sup>2</sup>
- Boiler room 30 m<sup>2</sup> (depending on the type of central heating)
- Veterinary clinic 35 m<sup>2</sup>

Room for veterinary examination of animals.

- Food storage - silo and buildings with cold storage 200 m<sup>2</sup>
  - a/ warehouses in the form of grain silos with blinds,
  - b/ storage for green food,
  - c/ storage for frozen food (meat).
- Hangars for food preparation 250 m<sup>2</sup>
  - a shed or hangar for storing and preparing food
- Store room for equipment 150 m<sup>2</sup>
  - storage area for animal handling equipment and complex maintenance

## 2/zoo-garden space for housing animals and public areas for visitors

All the other contents of the zoo are provided in this space.

Position permanent and temporary objects within this unit.

### Permanent facilities

No.	Facility	Area m <sup>2</sup>
1	Administrative facility	200
2	Research and educational center with a media library, a hall for lectures, workshops and presentations, a mini zoo museum	400
3	Souvenir shop-bookstore	100
4	Catering facility-with a terrace (40 + 40 places)	250 + 150 (terrace)
5	Catering facility-with a terrace (40 + 40 places)	250 + 150 (terrace)
TOTAL		1200 + 300 (terrace)

#### - Administrative facility

Position the administrative building directly next to the main entrance and the economic yard so that it can be accessed from the visitor area and the economic yard. The following contents should be provided in the facility:

- a/ Director's office
- b/ Pre-cabinet - position of business secretary
- c/ Meeting room for up to 10 people
- d/ Office for Economic Affairs
- e/ Office for Legal Affairs
- f/ Office for Marketing Affairs
- g/ Archive room
- h/ Staff room with kitchenette
- i/ Sanitary facilities (separately for men and women)
- j/ Pantry

#### - Research and educational center

Position the RE center in the immediate vicinity of the first building and the main entrance. The IE center is planned for group visits, lectures, workshops and presentations. Expected contents of the IE Center:

- a/ hall for lectures/workshops for up to 30 visitors

- b/ mini zoo museum
- c/ three offices for researchers with assistants/volunteers
- d/ sanitary facilities (separate for men and women)
- e/ storeroom for furniture

- Souvenir shop - bookstore

Position this facility next to the entrance to the zoo.

- Catering facility-with a terrace

As part of the zoo, envisage two catering facilities spatially positioned so that they are at the optimal distance from each other. One UC should be provided with the Research-Educational Center, the administrative building, the bookstore so that it forms a harmonious ambient unit in the entrance part of the zoo. Position the second catering facility next to a suitable open space (suggestion: a children's playground with playground furniture, hills, etc. adapted for different ages) positioned so that its use does not disturb and endanger animals.

### Temporary facilities

No.	Facility	Area m <sup>2</sup>
1	Newsstand	10
2	The place for selling ice cream	5
3	Place for selling popcorn/chestnuts	5

Temporary facilities should be positioned next to open spaces intended for longer stays of visitors.

### Open spaces for visitors

Position the open spaces-areas for visitors so that they physically separate different groupings of animals by related species.

No.	Space	Area m <sup>2</sup>
1	Mini botanical garden - space intended for children's outdoor activities	2000
2	Children's Square (Animal Kingdom Square) - a space designed to introduce children to the animal world through content adapted to their age (outdoor exhibitions, children's games...)	1000
3	Children's playground with playground furniture, hills, etc. adapted for different ages	2000
TOTAL		5000

### Areas for accommodation of animals by species

Group the spaces for animals by related species. When designing spaces for housing animals, aim for all of them to be free-standing - accessible to visitors in their entirety, to the extent that it is possible to achieve this in relation to the total area provided for the zoo.

The largest examples of units should be planned near the zone of the economic yard for easy accessibility and transportation.

**Capacities individually for different species are given for the maximum number of individuals. Individuals in pairs (male and female) are intended for display, while the remaining capacities are for temporary stay until the final solution (return to the natural habitat or transfer to another institution of the same purpose).**

### **Mammals:**

a) Big cats (for a maximum of 3 individuals)

Outdoor space: surface area 50 m<sup>2</sup>, height 3 m.

Interior space: surface area 30 m<sup>2</sup>, height 3 m (temperature 15°C).

b) Bears (for a maximum of 5 individuals)

Outdoor area: 200 m<sup>2</sup>, partly covered.

c) Wolves (for a maximum of 10 individuals)

Outdoor area: 180 m<sup>2</sup>, partly covered.

d) Medium-sized carnivorous species (for a maximum of 6 individuals)

- Space for badger-type species - external space: surface area 20 m<sup>2</sup>, internal space: surface area 10 m<sup>2</sup>, soil as a substrate (for a maximum of 2 individuals).

- Space for marten-type species - external space: surface area 10 m<sup>2</sup>, height 2.5 m, internal space: surface area 8 m<sup>2</sup>, height 2.5 m, trunk with branches (for a maximum of 2 individuals).

- Space for weasel-type species - outdoor space: surface area 6 m<sup>2</sup>, height 2 m, partially covered, earthen base and branches (for a maximum of 2 individuals).

e) Medium and larger individuals from the rodent group (for a maximum of 13 individuals)

- Space for medium species such as rabbits, marmots, prairie dogs - outdoor space: 52 m<sup>2</sup>, earthen surface, partly covered, (for a maximum of 10 individuals).

- Space for larger species of the porcupine type - outdoor space: surface area 14 m<sup>2</sup>, height 3 m, earthen base, partly covered. (for a maximum of 3 individuals).

f) Medium-sized monkeys (for a maximum of 5 individuals)

Outdoor space: surface area 15 m<sup>2</sup>, height 3 m, indoor space: surface area 12 m<sup>2</sup>, height 2 m, temperature 18-21°C.

g) Ungulates (for a maximum of 15 animals)

- Space for ungulates such as zebra, wild horse (for a maximum of 5 animals) - outdoor space: 500 m<sup>2</sup>, indoor space: 8 m<sup>2</sup> per animal, i.e. 40 m<sup>2</sup> for 5 individuals, temperature 8°C.

- Space for species such as deer, mouflon (for a maximum of 6 individuals) - external space: 300 m<sup>2</sup>, internal space: 4 m<sup>2</sup> per individual, i.e. 24 m<sup>2</sup>.

h) Hippopotamus (for a maximum of 2 individuals)

Outdoor area: 250 m<sup>2</sup>, indoor area: 40 m<sup>2</sup>, temperature 18°C.

Pool: surface area 30 m<sup>2</sup>, depth 1.5 m, volume 45 m<sup>3</sup>, temperature 18-20°C.



## **Birds:**

a) Birds of prey (for a maximum of 6 individuals)

- Larger raptors of the eagle type - outdoor space: surface area 34 m<sup>2</sup>, width 4 m, height 3 m, indoor space: surface area 4 m<sup>2</sup>, width 2 m, height 2 m, heating depending on the species, dry trunk (for a maximum of 2 individuals).

- Medium raptors such as hawks and falcons - outdoor area: 18 m<sup>2</sup>, 3 m wide and 2 m high, indoor area: 4 m<sup>2</sup>, 2 m wide and 2 m high, heating depending on the species, dry trunk (for a maximum of 2 individuals), add 6 m<sup>2</sup> per individual.

It is necessary to make at least 3 cages for a maximum of 10 individuals, with a total area of 82 m<sup>2</sup>, of which the external area is 60 m<sup>2</sup>.

- Smaller raptors such as lesser falcons, kestrels, buzzards - outdoor area: 10 m<sup>2</sup>, width 2.5 m, height 2.5 m, indoor area: area 2 m<sup>2</sup>, width 1 m, height 2 m, heating depending on the species, dry trunk (for a maximum of 2 individuals), add 3 m<sup>2</sup> per individual.

It is necessary to make at least 2 cages for a maximum of 6 individuals with a total area of 30 m<sup>2</sup>, of which the outside area is 22 m<sup>2</sup>.

b) Anas, pheasants, peacocks (for a maximum of 57 individuals)

- For ducks, geese and swans - area 1800 m<sup>2</sup> with a pool of approx. 200 m<sup>2</sup>, depth up to 1 m, reed houses for nesting, grass, partially covered where there is shelter (for a maximum of 35 individuals).

- Pheasants - outdoor area: surface area 120 m<sup>2</sup>, height 2 m, protective area: surface area 40 m<sup>2</sup>, height 2 m, earthen base (for a maximum of 10 individuals).

- Peacocks - outdoor space: area 40 m<sup>2</sup>, height 2 m, earthen base, partly covered (for a maximum of 12 individuals).

c) pigeons - area 60 m<sup>2</sup>, height 2 m, provide a covered protective space and bars for standing (for a maximum of 10 individuals).

d) parrots (for a maximum of 14 individuals) cages at a height of at least 80 cm, necessary nesting houses, screens for sitting, soil substrate sprinkled with sand and sawdust that are cleaned once a day.

- For larger parrots up to 40 cm - outdoor space: surface area 3 m<sup>2</sup>, width 2 m, height 1.5 m indoor space: surface area 1.5 m<sup>2</sup>, height 1.5 m, indoor temperature at least 10-15°C (for maximum 4 individuals).

- For smaller parrots up to 25 cm - outdoor space: surface area 2 m<sup>2</sup>, width 1.5 m, height 0.5 m, indoor space: surface area 1.5 m<sup>2</sup>, height 0.5 m, indoor temperature of 10-15°C ( for a maximum of 10 individuals).

## **Reptiles:**

a) Snakes

- Small non-poisonous snakes (for a maximum of 5 individuals), terrarium dimensions: length 1 m, width 1.5 m, height 0.75 m. Specially arranged terrarium, temperature 25-30°C (the heater must not exceed 1/3 of the terrarium).

- Larger non-poisonous snakes (for a maximum of 2 individuals), terrarium dimensions: length 1 m, width 2 m, height 1.5 m. Specially arranged terrarium, temperature 25-30°C (the heater must not exceed 1/3 of the terrarium)

#### b) Lizards

- Larger Varan type lizards up to 1 m long (for a maximum of 2 individuals)

Terrarium dimensions: length 4 m, width 3 m, height 3.5 m, special conditions for the substrate, heater, water, temperature 28-35°C (the heater must not exceed 1/3 of the terrarium).

- Chameleons - (for a maximum of 5 individuals)

Terrarium dimensions: length 4 m, width 8 m, height 1.35 m, special conditions regarding the substrate and heating, temperature of 20-30°C for most species.

#### c) Land turtles (for a maximum of 10 individuals)

Terrarium or fenced in nature. Fenced area 5 m long, 4 m wide, protective and heated area needed especially for young turtles. Soil base, protect from digging.

#### g) Water turtles (for a maximum of 10 individuals)

Terrarium or space in nature with a pool. One part of the space is a swimming pool, the other is a dry part where you can climb and sunbathe. A thicker layer of sand should be placed at the bottom of the pool. Space: length 5 m, width 4 m. The water in the pool or terrarium should be 22-26°C, especially for young turtles.

### 3/Rehabilitation center

Recently, we have witnessed a large number of cases of injury to wild animals in their natural habitat.

This area is intended for the recovery and care of individuals who have been injured, injured (by an accident involving the human factor) or diseased in their natural habitats until the moment when they can return to their natural environment.

The rehabilitation center should be planned inside the zoo as a fenced zone with a special regime of use (occasionally open to visitors). Within the rehabilitation zone, provide space for organized groups of up to 30 visitors.

Space intended for animals:

- 2 x free-standing cage with an area of 30 m<sup>2</sup> and a height of 3 m;
- 2 x free-standing aviary 3 m wide, 3 m high.

### Other facilities of the zoo:

- Gate/ticket office with entrance control and constant monitoring of the complex. Building with a maximum area of 25 m<sup>2</sup>, with a space for a security guard, a sanitary unit and a storage room for surveillance equipment, a space for selling tickets. The gate/ticket office should be provided next to the main entrance to the CITES center with the zoo.

- Public toilet with trokader with a maximum area of 30 m<sup>2</sup>

-toilet for persons with disabilities (PWD);

-toilet for men;

- toilet for women;
- room for babies (changing table and feeding area);
- a room with a trokader for hygienic dressing of the toilet.

As part of the men's and women's toilets, provide two cubicles each for children's age with appropriate sanitary facilities ergonomically suitable for children (sink and toilet bowl).

- Solid fence around the entire complex with entrance gates (controlled entrance)

The fence around the zoo is a safety protective belt structurally made of an outer full fence made of solid material, 3 m high with a counter slope at the top of 60 degrees inward, which is provided with spikes and live wire at a distance of 50 cm inward to deter animals ; a 2 m wide buffer zone to maintain greenery (between the outer and inner fence) on the ground of the buffer zone without tall vegetation and bushes with the exception of the entrance for visitors and the economic/official entrance that intersect the buffer zone; internal fence at a height of 3 m, a light transparent fence to prevent visitors from accessing the buffer zone.

## Zone 2 – access plateau

Access plateau - visitors - stationary traffic

In the area of the access road in the north, it includes in the section UP 03 and UP 01 and UP 66' an entrance plateau with accompanying facilities for visitors, an area for maneuvering and stopping buses for boarding and disembarking visitors-passengers.

It is necessary to provide vehicular access for emergency vehicles, employees and the approach and maneuvering of buses with a space provided for temporary stopping in order to board and disembark passengers-visitors. Provide 2 places for the bus to stop at the same time and a suitable area on the ground floor for a passenger stop.

Two independent entrances should be provided in the area in question:

- 1/ Main entrance - for visitors
- 2/ Secondary entrance – economic entrance/official entrance

Parking space for users-visitors is provided at the public parking lot **UP 02**. At **UP 02**, a public parking lot with a capacity of approx. 130 PM measuring 2.5 x 5 m and **is not the subject of this competition**.

On the access road, it is necessary to provide the following areas intended for stationary traffic for cars and bus stops:

Parking lot	Area m <sup>2</sup>	Parking places
Cars (2.5 x 5 m administrative parking with a space of 150 cm) for people with disabilities (PWD)	165	13
Cars (2.5 x 5 m administrative parking for families with small children-prams)	125	10
Buses (2.5 x 10 m parallel stop)	50	2

The predicted number of parking spaces for persons with disabilities (PWD) in the part of the plateau in front of the main entrance to the zoo created the conditions for the entire parking lot on UP 2 to be planned exclusively for standard parking spaces.

### **Zone 3 – coastal fort-promenade/quay**

The coastal fortification zone, in addition to providing appropriate hydrotechnical conditions for protection from high water and regulation of the flow of the Lim River, is intended for a public area—a linear park that will be realized along both coasts in continuity within the urban core of Beran in the future. In the scope of the competition, the width of the zone is approximately 20 meters. Provide a traffic connection for intervention vehicles in the northern part of the tender (future access road for the zoo). Provide paths of appropriate profile and finishes for cyclists, pedestrians and appropriate furniture (lighting, trash cans, benches, bicycle parking). Provide appropriate landscaping of the zone taking into account weather conditions and the fact that the space will be used throughout the year.

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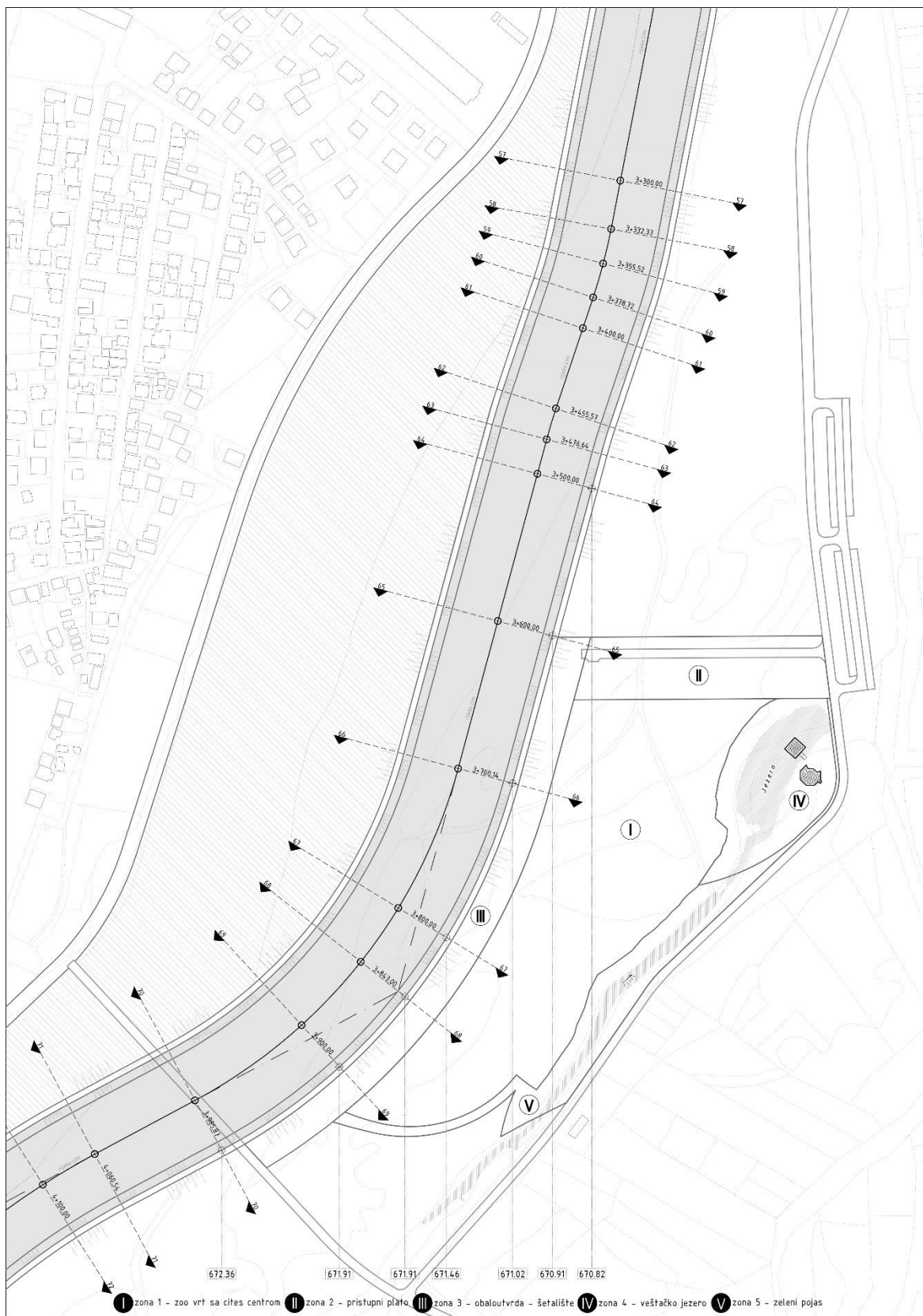
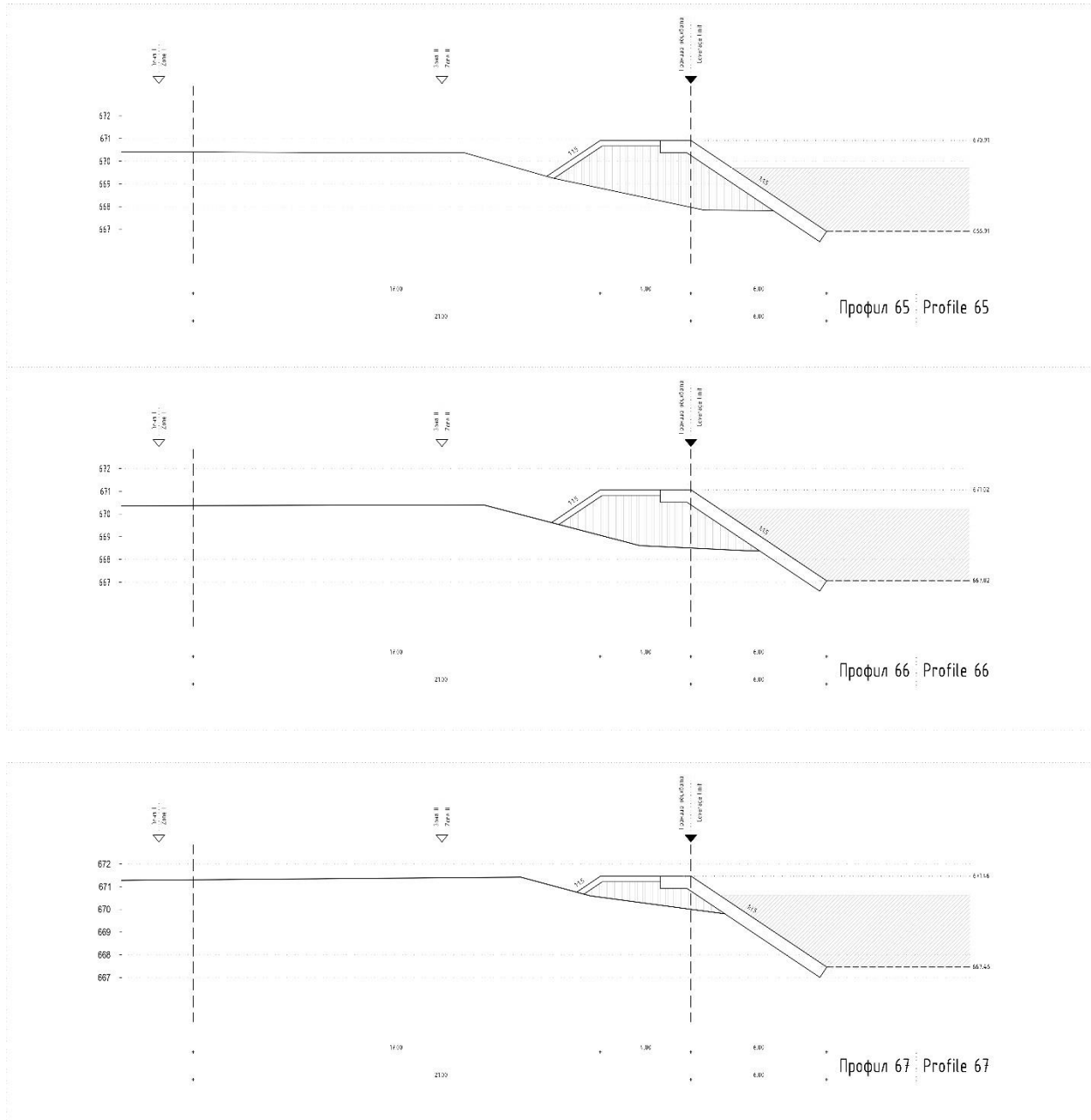


Figure 04: Horizontal projection of the station (coastal fortification) 65-69



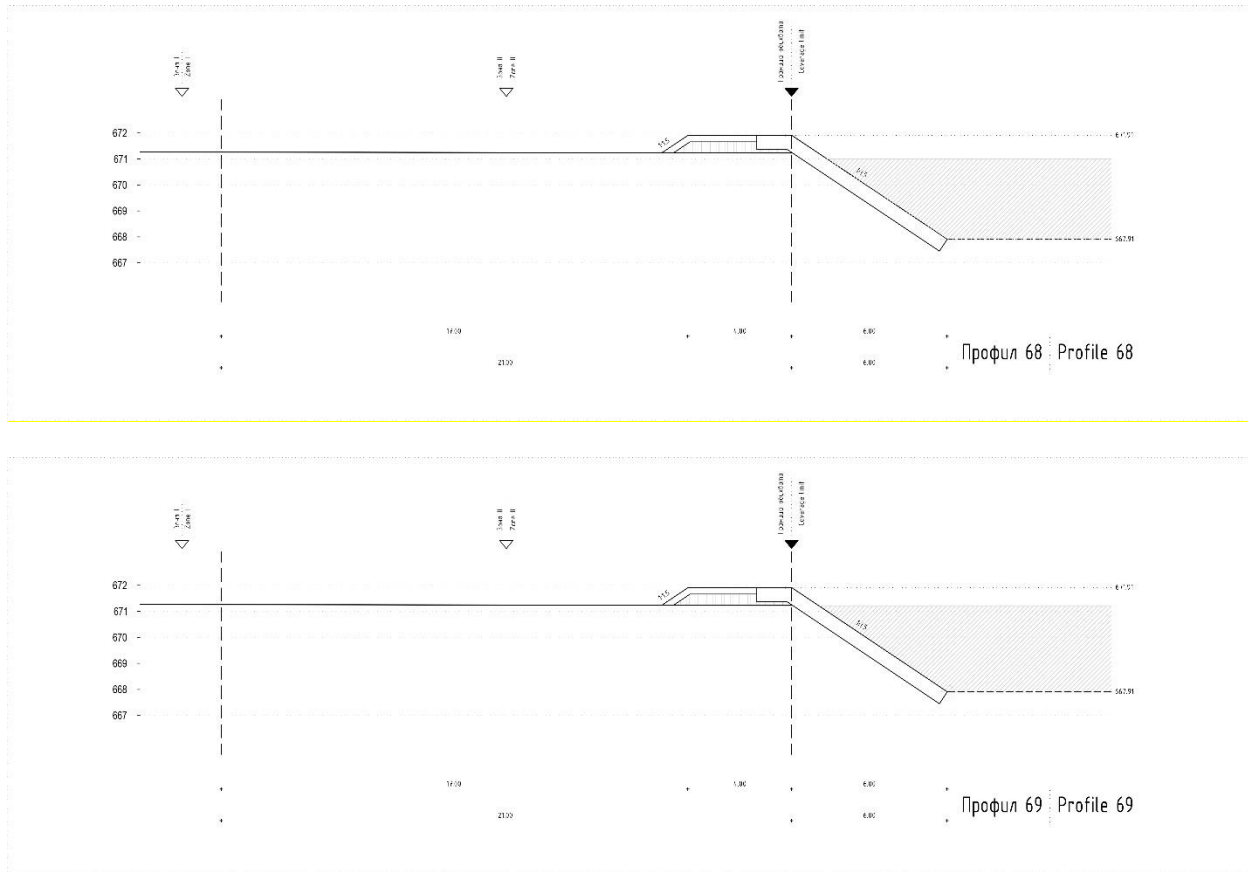


Figure 05: Cross-sections of stations (coastal fortifications) 65-69

#### **Zone 4 – artificial lake with its surroundings (on part of UP-01)**

There is a temporary catering facility with a terrace on the subject part of the scope. It is up to the participants of the competition to propose the arrangement of this zone and decide whether to keep the existing facility or propose a new solution.

It is possible to extend the existing facility "Eko Krčma", as well as to build a number of smaller facilities (cafés, restaurants, fishing club...) within the urban plot within the boundaries of the construction lines.

The lake can be used for the training of competitors and children in fishing.

#### **Zone 5 – the zone between the outer fence of the zoo and the planned road to the east, as well as the part along the fence to the south to the edge of the promenade bordering UP-07.**

This zone should be provided for public communication, treated as a buffer zone between the zoo and the surrounding area. Anticipate appropriate landscaping and horticultural solutions.

### **8. CONSTRUCTION AND MATERIALS**

The construction of the building should be done in accordance with the purpose and rules related to this type of building, taking into account the elements of rational and fast construction with the application of modern construction technology, using all materials with good physical characteristics as a prerequisite for protection against unfavorable climatic conditions. It is recommended to use indigenous materials (wood and stone). The facades of the buildings should

be made of natural materials and mutually harmonize with the surrounding buildings. Windows and doors should be made of wooden or aluminum profiles in accordance with ambient values. Fence the boxes with metal gratings, wooden and/or safety glass fences of adequate height, depending on the type of animal.

Pools for animals should be designed properly in accordance with the purpose and type of animals. Provision of food storage facilities according to the type of food.

For green food, due to fermentation, storerooms with hermetic lids should be provided. Warehouses made of wooden barrels soaked in coal tar, steel, masonry or reinforced concrete are suitable. Warehouses must be waterproof, hermetic and resistant to acetic and butyric acid. Except for wooden ones, all other types must be specially protected with coatings that will not harm the food.

Stores for grain food should be dry and well ventilated, protected from rats, mice, pests, grains and birds. It is also possible to design them as silos, for more rational use of space. Design them from wood or wooden wall coverings with blinds. If food is stored in a closed space, it is mandatory to provide for artificial ventilation of the space, i.e. drying.

For the storage of frozen food, provide appropriate equipment in a closed space. Hangars for hay storage and food preparation should be designed as ground-level, closed buildings, with slight roof slopes (12-18°) and pillars at a distance of 5; 7.5 or 10 m. If necessary, leave a passage for vehicles with a clear width of at least 3 m. External walls should be designed from wooden formwork or panel materials. Spaces intended for equipment and machines should be designed as assembly-disassembly facilities, with a distance of supports of at least 5 m, so that each field could serve as a garage.

## 9. REQUIREMENTS FOR ARRANGEMENT OF THE FIELD

Access to the building can be organized from the eastern side of the plot from a 5.5 m wide street with 2 m wide sidewalks on both sides. Connection of buildings to local roads should be done according to the conditions for connection. Within the complex, design pedestrian paths around and between the buildings and an internal road that will serve the buildings daily and in case of emergency interventions (fire). Provide parking for employees within the plot of a maximum of 5 parking spaces, and for visitors to the zoo and CITES center, parking is provided outside the scope of the competition, on public areas planned in the immediate vicinity, provide parking for PWDs and parents with small children-with strollers. By arranging the location on the ground floor, ensure a connection with the surrounding areas.

*The coastal fort zone is part of **Special Purpose Landscaping Areas - PUS**. On **UP4** there is a protective green area along the river Lim, within which a promenade/quay along the river is planned. In the scope of the **DUP**, a large area is occupied by the area up to the river itself. Green areas along the banks of watercourses provide places for citizens' recreation: landscaped promenades, rivers connected to the water, bicycle paths. In certain locations, these areas are connected to organized sports fields or smaller parks with nearby objects of public importance.*

*The arrangement of the coast and river water courses is applied in all European cities and becomes the main economic resource. It is necessary to open views towards the banks of the rivers, and arrange watercourses for the purpose of tourism and recreation. At the same time, the regulation of watercourses regulates the reduction of erosion. Green protective belts are planned*



*along the river watercourses. Protective belts can be arranged for the purpose of recreation through the formation of promenades, bicycle paths and areas where it is possible to create contents for the purpose of tourism development. (DUP Desna obala Lima, text part p. 60)*



Figure 06: Example of arrangement of green areas along watercourses

## 10. GREENERY

The preparation of the main greening project is mandatory, which will determine the precise selection and quantity of dendrological material, its spatial arrangement, planting technique, care and protection measures, and preliminary measurements and estimates. Provide a green buffer zone in such a way as to ensure environmental protection in terms of the environment, but also sufficient ventilation of the site itself. It is recommended that the phases of the project be planned with mutual protective greenery that would fit into the ambient value of the environment and the need for walking lines within the scope of the site. Harmonize greening with underground and above-ground infrastructure, according to technical norms for designing green areas.

Plant trees and bushes at a certain distance from the installations and that:

Type of installation:	Trees	Shrubs
Plumbing	1.5 m	
Sewerage	1.5 m	
Electric cables	1.5 m	0.5 m
TT and KDS network	1.5 m	
Gas pipeline	1.5 m	

## 11. REQUIREMENTS FOR CONSTRUCTION OF INFRASTRUCTURE

### Water infrastructure

The supply of facilities within the complex of the zoo and the CITES center should be provided from the existing public water supply network in accordance with the conditions of the competent company. Design the water supply network to supply all consumers within the complex and satisfy all technical characteristics. Provide adequate pressure at all tap points.

At the location, provide an external and internal hydrant network for extinguishing possible fires in accordance with the *Rulebook on technical standards for hydrant network and fire extinguishing*. The hydrant network should be supplied with water from a special hydrant arm that is separated from the water supply network in the water meter shaft and has a special water meter for measuring consumption. The pressure at the point of connection should satisfy the technical characteristics.

On the plot, design a special fecal sewage network for objects used by people, and especially for objects where animals are housed and atmospheric sewage. Connect the fecal sewage system to the public sewage network in accordance with the conditions of the competent company or to a multi-chamber, watertight AB septic tank of appropriate volume. Atmospheric water from oily and dirty surfaces should be taken to the oil separator and precipitator before discharge into the recipient.

### Electric power infrastructure

When preparing the technical documentation of the electrical installation, it is mandatory to follow the Technical Recommendations of the EPCG and the conditions for connecting the facility to the electrical power grid. The power supply of buildings within the complex should be designed in accordance with the EPCG conditions.

The cabinet of the measuring point will be located next to the future facilities, and the type and number of OMM will be defined within the connection approval.

Design electrical installations according to the needs of Investors and future users and in accordance with valid technical regulations.

### Telecommunication infrastructure

To connect the object to the public telecommunications network, it is necessary to provide a connecting telecommunications, optical cable. The internal TT installation in buildings under construction should be placed in a suitable output TT cabinet for the internal network, which should be placed in an accessible place in the building.

### Thermal energy infrastructure

There is no thermal energy infrastructure built on the plot in question. The project envisages the most favorable way of heating and cooling spaces for housing people and animals in order to rationalize maintenance costs.

## 12. ADDITIONAL INFRASTRUCTURE REQUIREMENTS

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There are no special requirements for the center's infrastructure connections (electricity supply, wastewater treatment plant, drinking water treatment, etc.). All the necessary capacities of the mentioned infrastructure can be provided according to the general and usual consumption of a medium-sized agricultural and livestock farm. Provide living conditions for different animals according to the conditions of their natural habitat, as much as possible.

Plan the water supply network so that it supplies all consumers within the complex and meet all technical characteristics (ensure appropriate pressure in the network, primarily due to the hydrant network and PP protection), plan fecal and atmospheric sewerage for water removal. Housing areas must have drainage holes to remove excess water, with open manholes, except drinking water manholes, must be outside the area to which the animals have access.

As for the electric power infrastructure, first of all meet all the conditions and technical recommendations of EPCG, as well as the conditions for connecting the building to the electric power grid. All equipment and electrical appliances located in the accommodation area must be installed so that they do not pose a danger to the animal and in a way that prevents the animal from disrupting their work.

Given that there is no thermal energy infrastructure built on the plot in question, the most favorable way of heating and cooling the space for the accommodation of people and animals should be foreseen in order to rationalize maintenance costs. In the housing area, ambient conditions that are adapted to the needs of each individual animal species must be provided, namely:

- 1) appropriate temperature;
- 2) natural and artificial lighting of appropriate intensity, with periods of light and darkness corresponding to natural lighting;
- 3) appropriate natural and artificial ventilation;
- 4) appropriate air humidity, and for tropical animals appropriate microclimatic conditions adapted to their specific needs;
- 5) an appropriate system for aerating the aquarium and other water surfaces and maintaining appropriate oxygenation, temperature and salinity of the water.

Temperature ranges and lighting periods for certain categories of animals are defined by special regulations.

Some special conditions may arise in terms of quarantine, sanitary conditions, health care by veterinarians or the like that are not of particular importance in relation to infrastructure.

### 13. CONDITIONS FOR CONDUCTING THE COMPETITION

The competition is announced in accordance with the *Rulebook on the manner and procedure of announcing and conducting a public competition for conceptual architectural design* ("Official Gazette of the Republic of Montenegro", no. 19/18). By submitting the application, each participant accepts the proposals of the competition.

### 14. DESIGN REGULATIONS AND RECOMMENDATIONS

When designing, it is necessary to observe the provisions of the following regulations:

- Law on Spatial Planning and Building Construction ("Official Gazette of Montenegro", no. 64/17, 44/18, 63/18, 11/19, 82/20, 86/22 and 04/23);
- Rulebook on the detailed content and form of the planning document ("Official Gazette of Montenegro", no. 24/10 and 33/14);
- Rulebook on closer conditions and methods of adapting facilities for access and movement of persons with reduced mobility and persons with disabilities ("Official Gazette of Montenegro", no. 48/13, 44/15);
- as well as other regulations that regulate the construction of buildings.

In the design process, it is also recommended to use the *Manual for Planning Public Spaces in Montenegro* (Ministry of Ecology, Spatial Planning and Urbanism of Montenegro, Podgorica, Montenegro, 2015).