# CONSTRUCTION REPORT

**Object: MULTIFUNCTIONAL CENTRE FOR PEOPLE IN NEED**

**Location: Bilisht, Devoll OCTOBER 2020**

## 1. Scope of the project:

### 1.1 - Introduction

The square, where the multifunctional centre will be constructed, is located in the city of Bilisht, Municipality of Devoll, about 500 m away from the city centre..

During the construction phases, the surrounding areas shall undergo several transformations in their shape and content, from an urban, aesthetical and environmental point of view, therefore providing an obvious environmental impact in the area where this facility will be constructed.

## 2. Layout of the facility's location

The new facility shall maintain all necessary distances with the surrounding properties. Its footprint occupies a surface area of 400 m2 and it is located on the central part of the property in order to create a recreational and relaxing territory in the surrounding areas

## 3. Description of construction processes

### a- Construction - Structure:

The facility has been conceived and designed using space trusses, by giving priority to both directions of the building in order to ensure displacements within the acceptable limits, caused by external loads and mainly by seismic loads.
The facility is supported on plinths with dimensions 150x150x150, with concrete of class C25/30 with a safety coefficient ofγc=1.5) and S-500 steel reinforcement. (Yield limit 5000 kg/cm2, safety coefficientγs=1.15 and relative tensile≥12-18%).
According to the respective geological assessment, the earth resistance is 1.8 kg/cm2.
The plinths are connected using foundation beams with dimensions 50X25
The structure columns mainly have dimensions 25x50 and 75x25, and a height of up to 3 m. The have been positioned taking into account the architectural requirements, but also to enable the structure the best possible seismic reaction during earthquakes.
Height beams have dimensions of 25x50 and comply with the facility's architecture, in order not to affect the space between the ceiling and the floor.
The covering shall be constructed using local roof materials.

### b- Design strengths

Design strengths of concrete and steel are determined by dividing the characteristic strengths as per the class of concrete (or steel) with the respective safety factor, as follows:

*fcd = fck / γc (EC22.3.3.2)*

- *fcd - Design cylindrical compressive strength*
- *fck- Characteristic cylindrical compressive strength of concrete after 28 days.*
- *γc = partial safety factor of concrete = 1.5 (EC22.3.3.2)*

*fctm = fctk / γc (EC22.3.3.2)*

- *Average value of axial tensile strength of concrete*
- *Characteristic axial tensile strength of concrete*
- *γc = partial safety factor of concrete = 1.5 (EC22.3.3.2)*

*fyd = fyk / γs (EC22.3.3.2)*
 *fyd Design yield strength of ordinary reinforcement*
 *fyk Characteristic yield strength of ordinary reinforcement*
 *γs = partial safety factor of steel = 1.15 (EC22.3.3.2)*
*fywd = fywk / γs EC22.3.3.2)*
 *fywd Design yield strength of stirrups*
 *fywk Characteristic design yield strength of ordinary reinforcement*
 *γs = partial safety factor of steel = 1.15,* (EC22.3.3.2)

## c- Data on the use of raw material

### 1-Concrete and steel

Class of concrete C50/25 and beams as provided in the project. Based on EC8, in medium ductility structures (DCM), for primary seismic elements, it shall not be used a class of concrete lower than C16/20.
The steel used in the facility is imported S500 steel with a yield limit of σrrj = 500 MPa and Rak = 5000 kg/cm2. The class of steel is provided to be used in all types of reinforcements and metallic elements used in the facility. The used steel shall have good resistance and ductility attributes. With regards to primary seismic elements, the steel used for the steel reinforcement must be in compliance with Table C1 of Normative Annex C of Eurocode 2, EN 1992. Referring to the Eurocodes, it is necessary to use smooth round bars (periodic steel).

### 2-Mortar

Mortar for walls: 1 m³ of mortar is prepared using the following elements:
Bastard mortar with natural river sand (moist, 20% additional volume and 40% porosity) formed by cement:lime:sand at the ratio of 1: 0,8: 8. Slaked lime in 110 litres, 150 kg of cement 300, 1.29 m3 of sand.
Bastard mortar (type 25) with natural river sand (moist, 20% additional volume) formed by cement:
lime: sand at the ratio of 1: 0.5: 5.5. Slaked lime in 92 litres,
212 kg of cement 300, 1.22 m3 of sand.
Bastard mortar (type 15) with washed sand (35% porosity), formed by

cement, lime, sand at the ratio of 1: 0.8: 8. Slaked lime in 105 litres,

144 kg of cement 300, 1.03 m3 of sand.
Bastard mortar of type 25 with washed sand (35% porosity), formed with cement, lime, sand at the ratio of 1: 0.5:5.5. Slaked lime in 87 litres,
206 kg of cement 300, 1.01 m3 of sand.
Cement mortar (type 1:2) with washed sand, formed with cement, sand at the ratio of 1:2,
527 g of cement 400, 0.89 m3 of sand.

## 7-3-Bricks

As a construction element, bricks shall fulfil the following conditions for anti-seismic constructions:
Compressive strength should be 75 kg/cm² for solid bricks; 80 kg/cm² for perforated bricks; 150 kg/cm² for panel bricks.
Shear strength should be 20 kg/cm² for all perforated (hole) bricks. The percentage of holes space should be 0-25% for solid bricks and 25-45% for all perforated bricks
The perimeter thickness and inner thickness of solid bricks should not be less than 20 mm, and for all perforated bricks, the perimeter thickness should not be less than 15 mm while the inner thickness should not be less than 9 mm.
The water-absorption percentage must be 15 – 20%.

## 7-4-Paints

Prior to commencing the painting works, the Contractor must submit for approval to the Supervisor, the brand, quality and the colour shade catalogue that it intends to use.
All the paints that will be used should be selected by an experienced manufacturer in this area. It is not allowed to mix two different types of paint brands during the work process. The dilution of the paint shall only be done according to the instructions of the manufacturer and upon the approval of the Supervisor. Prior to commencing the painting works, all the equipment, furniture or other objects in the facility must be covered in order to keep them clean. It is necessary to remove equipment or furniture supported or hanged on walls in order to enable the painting of the entire area of facility. The stain removal material should have a low content of toxic materials. The cleaning and painting processes should be coordinated in order to prevent the formation of dust or dirt during cleaning, which would fall on the recently painted surface.
Brushes, buckets and other painting equipment should be clean. They should be well cleaned before each use, especially when they will be used for another colour paint. Also, the equipment should be cleaned every day at the end of the painting.

## 7-5-Other

All other precast materials at the work site or other equipment that require only to be installed should be accompanied by the respective quality certificate and should be previously approved by the supervisor of the facility.

## c-Conclusions on the calculations for the facility

Upon studying the above data on the construction project, referring to the Technical Report, we have concluded that:

The facility shall be reconstructed using a supporting structure with plinths, beams and architraves, while walls shall have regular patterns and heights.

All permanent, temporary and special (seismic) loads have been accounted for in compliance with KTP-N2-89 and Eurocode 8.

The combinations of loads have been made in compliance with EC2 and EC8.

Deformations are within the norms defined in the respective Eurocodes. The displacement schemes are translational (first 2 modes).

All structures have been constructed in compliance with KTP-N2-89 and Eurocodes 2 and 8.

The reinforcement ratio of construction elements is within the norms defined by EC2 and EC8,

even for areas with considerable seismic activity.

Drafted by: Engineer Tatjana SPAHO