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# VOLUME 3

# TECHNICAL SPECIFICATIONS

**“SMALL SCALE CONSTRUCTIONS FOR THE NEEDS OF MUNICIPALITY OF BOTEVGRAD UNDER PROJECT CB007.2.11.224”,**

**LOT 1: EXHIBITION AND SOCIALIZATION OF THE CLOCK TOWER IN BOTEVGRAD UNDER PROJECT CB007.2.11.224**

**The clock tower** located in quarter 49 of the central part of Botevgrad is representing an architectural and constructional intangible cultural asset with category "national significance ". This project is a methodical continuation of the works carried out in the period 2010-2014, including works on "Restoration, conservation and restoration of the clock tower in Botevgrad".

1. **History and present status**

The tower consists of three proportional sections with the total height of 30 m, which makes it the tallest clock tower in Bulgaria. Distinctive features are its baroque elements and frescoes decorating the corrugated cornices. A pointed cube reminiscent of the forms of Islamic architecture. It is decorated with blue frescoes. The building materials included stones and timber.

The lower section of the tower is square, reaching a height of 11 m. It has stone masonry with a door, which leads inside for servicing and winding the clock mechanism. The middle section is narrowed and its edges are outlined by half-columns, ending with cornices, and the walls are slightly wave-shaped, which adds elegance to the building. The upper section rises over the cornice and the cornice narrows even further. It has a hexagonal shape and houses the clock and the bell. In 1870 a weather-cock was placed on its very top. From the entrance of the tower to its last section, there are spiral-shaped wooden stairs, which lead to the clock mechanism.

The clock tower in Botevgrad, Sofia region was announced with a Protocol dated 24.10.2006. from a meeting of the National Council for the Protection of Immovable Cultural Monuments, approved by the Minister of Culture as an immovable architectural monument of culture with category "national significance" and according to § 10, para 1 of the Transitional and Final Provisions of the LCA has the status of architectural and construction immovable cultural property with category "national significance".

The clock tower in Botevgrad is one of the 100 national tourist sites in Bulgaria.

At the present moment it is impossible for visitors to access the interior of the site as there are electrical panels serving the central part of Botevgrad, accumulated luggage over the years, obsolete, depreciated systems, electrical installations, furniture. There are defects in the existing flooring and no normal approach to the interior of the tower, as well as no appropriate lighting for visitors.

1. **Aim and means of the project**

The aim of the project is to create conditions for exposure and socialization of the site to increase its tourist attractiveness by providing access for visitors to the interior of the site.

**2.1. Architectural part**

To achieve this goal, it is necessary to perform two types of work:

**A. Inside the tower**

1. To free the interior of the tower from the electrical panels serving the central part of Botevgrad - square lighting, electric propulsion and lighting system for the city fountain. The release is achieved by taking the two boards out of the tower and creating a new main switchboard, intended for installation in a newly built covered niche at a distance of 2.50 from the walls of the tower in the volume of an existing flower garden. To create the niche, it is planned to build a new retaining wall with a height of up to 1.1 ohms across the volume of the flower bed. Visually, the niche is invisible, from any point of the square space, the existing flower garden remains visible.

2. To free the interior of the tower from accumulated luggage over the years, as well as from obsolete, depreciated systems, electrical installations, furniture. All types of items and installations subject to removal and dismantling are described in detail in the attached bill of quantities.

3. To perform a new electrical installation - power, low current and lighting in the tower, meeting the standards for fire safety and artistic lighting inside the tower. An electrical project has been prepared, providing the planning basis and representing an integral part of the present documentation.

4. To replace the existing flooring in the reception area due to defects.

5. To make long-term protection of all wooden elements in the tower against fire, insects and weathering.

6. Secure access inside and ensure access for people with disabilities. To achieve accessible and safe conditions in the tower, installation of:

a/ platform for disabled people - finished product, without railings and armrests, podium type, on an air cushion, with flooring on its floor surface identical to the flooring of the reception area, corresponding to the normative base for lifting devices for people with disabilities. For the product we enclose a photo.

b/ new entrance steps, imposed by the dismantling of the sheet metal threshold, performing the role of steps and coverage of the electric cables pierced under it for the outdoor, built-in lighting in the square and for the pool pumps. The platform requires non-stationary steps - to be able to retract in the rare cases in which it will be used. For this reason, the solution is for telescopically retractable steps below the new threshold, which is reflected in the graphic part of the project. The installation of such steps is possible without interfering with the masonry of the tower, as between the stone threshold and the existing level of the metal coating there is a height of not less than 30 cm.

c/ security system on the inclination of the stairs at the height of the parapet, representing metal braided ropes stretched on the inclination of the steps with the height of the parapet, which are fixed in the trusses.

There are 3 attachment points on each wall - 1 on each santrach. The ropes are unobtrusive as a vision, but anyone who decides to climb to the top hangs on them with carabiners. It is necessary that nothing on the road distracts people on the move, except the thought of moving up the ladder, because of its nature - it is made as a ladder (very steep to overcome the displacement and with openings that are dangerous to people especially when descending). When a foot slips or falls into a hole in the ladder, the height is calculated so that a person grabs the armpits from the vest and simply stays hanging in place without falling or hitting. The technique is taken from the safety of climbers. We coordinated the decision with climbers who climbed 8,000.

7. To provide information about the clock tower and to allow a view of the city from the highest point in it. We provide the information by installing a display in the reception area of the tower, which will broadcast pre-created video information about the clock tower, other clock towers and events related to it. The view of the city will be made through a "periscope", which will be installed on the last possible site for access by visitors - the site with the clockwork. The tube of the periscope will come out on the platform under the bell, from where the information will be transmitted through a camera to the point of perception, which is next to the clockwork. The periscope tube will be clamped to the tower columns. For its installation, additional documentation will be submitted for coordination with NIICH, when clarity is achieved for the technical characteristics of the product, which will be assembled as a periscope. All elements are mobile, light (camera, mini-display as much as a tablet, table top, chair, tube), do not increase the loads and do not require reinforcement to the tower.

**B. Outside the tower in its security zone.**

8. To provide a suitable location for the electrical panels removed from the tower. They, already reconfigured in one main switchboard, are installed in a dedicated covered niche, hidden in the volume of the existing flower garden. This niche has a reinforced concrete roof lined on top with marble slabs, of which are now the hats on board the flower garden. There are two huge boxwoods in front of the niche now, so no one sees it except the people who serve the boards. The flower garden is glued to the tower, and the niche is in its volume, at a distance of 2.50 m from the foundations and walls of the tower. To build the niche, do not dig next to the tower, but only destroy part of one retaining wall of the flower garden and build a new retaining wall with a height of 1.1 Ohm inside between the old retaining walls of the flower garden.

9. To ensure a normal approach to the interior of the tower from the town square, as until now the entrance is by the pool, skipping the floodlights mounted on it. Normal access for people is provided by a bridge with a width of 1.60 m and a height aligned with the low board of the city fountain and the threshold of the tower. The bridge is laid in the volume of the pool of the fountain and does not go above the adjacent ground level - the exposure of the monument is not disturbed by its installation. The bridge is a metal supporting structure (lying box has edges without walls), on which is mounted decking is the type of wooden flooring in the tower.

10. To renew the facade artistic lighting. We have applied all existing lighting fixtures from the outside in the graphic part of the project documentation. They, as well as the internal electrical installations, are also installed in different years - some of them are rotten and do not work, but stand on the tower. We have planned a complete dismantling of both bodies and cables for them. The project offers new artistic lighting. The cables are only pulled through the existing openings. The bodies have been described as electric power, lighting and more. characteristics in the electrical part of the documentation. Their installation on the metal cladding will be accompanied by additional protection from the installation of sealing accessories around the ducts coming out on the roofs of the metal cladding.

Works affecting the construction of the building or structural elements are not provided.

Works related to the violation of the adjacent pavement around the tower for the removal of the electrical panels are envisaged as repair - restoration of the damaged stamped concrete.

Works in the square space, security zone of the monument, outside the described bridge, are not provided. All types of works, subject of the project “Heterotopias. Botevgrad - Leskovac" are outside the central square of Botevgrad. They are located in the area of Saransk Square - around the building of the Historical Museum and behind the municipal administration building.

**2.2. Constructive part**

The Constructive part is for element outside the building of the tower and is an integral part from the complete construction documentation of the site. The design in part constructive is developed on the basis of an architectural design and treats the displacement of a wall from an existing flower garden.

The new wall is 20 cm thick, 345 cm long and 110 cm high above the ground. It is planned to dig a minimum of 80 cm into the terrain. The new wall should be anchored in the existing reinforced concrete wall through connection iron and concrete contact for connection of old-new construction. To accept the earthly foundation and the fulfillment of the foundations. Also accept the formwork and reinforcement before concreting.

**2.3. Electrical part**

In the clock tower there is a main switchboard, powered by TP "BKP" for the tower itself, for the external lighting of the square and the green areas around, as well as a board for the city fountain. These panels are to be dismantled; it is planned to take them out of the tower in one main switchboard mounted behind the tower / west /.

The tower envisages dismantling of all cables and electrical equipment, followed by installation of new ones in accordance with the provisions of the current design.

A new board for the tower is planned - only for the electrical consumers in the tower, mounted in a suitable place on the stone wall under the first staircase.

The required power for the clock tower is 9kW.

The power supply of the board for the tower will be done with cable SVT 5x10mm2 from the newly provided outside the tower main switchboard.

The above-mentioned main switchboard will supply, in addition to the board for the tower, the electrical elements for the city fountain, and the existing outdoor lighting on the square and green areas.

The measurement of the consumed electric energy is done with the existing electricity meter and clock installed in the new main switchboard.

The existing electrical power cable for the main switchboard is to be pulled from the tower through the existing hole in the masonry and connected to the new main switchboard. The cables for the city fountain are also pulled from the tower and connected in the main switchboard, and then laid in a new trench around the tower next to the city fountain, where couplings are made to the existing cables. The cables for the outdoor square lighting are also to be pulled from the tower and connected in the new main switchboard. In front of the main switchboard, in the newly built covered niche, a single electrical shaft is built for the correct distribution of the cables. The ground panel is a set of three earthing switches. The transient resistance of the earthing switch must not exceed 10 ohms.

For the clock tower, the project provides a new solution for interior lighting with LED lighting fixtures and facade lighting of the tower cornices with LED spotlights, giving a light character at night to the external silhouette of the tower.

The planned interior lighting for the elevations of +0.00 and +14.65 m, on which the clock mechanism is located - provides directional lighting to photos and texts with historical information about the tower. For lighting of the stairs it is planned to descend from different elevations of lighting fixtures at different heights. The control of the interior lighting is carried out with switches on site - ordinary, serial and deviator. The control of the external searchlights and the lighting fixture at the top of the tower is carried out with a clock in the board for the tower.

Shuko type contacts are provided at elevations of +0.00 and +14.65 m for general use. Defective current protection is provided for the contact outputs. This protection provides a high level of service safety and increases the level of fire safety. At the elevation with the clock mechanism there is a contact for a sound system.

The installation for lighting and sockets is performed openly with cables drawn in corrugated pipes with black steel strip. The cable for lighting is SVT Zh1,5mm2, and for the contacts SVT Zh2,5mm2. The pipes are attached to the tower with PKOM brackets or other fixing brackets.

The sizing of the power cables is done according to the load, taking into account the probability of simultaneous operation of the different consumers according to the existing Design Standards. The cable cross-sections are checked for permissible voltage loss.

All power cables have three and five wires, and the third and fifth wires are for grounding. The board for the tower is earthed with the fifth wire of the power cable from the main switchboard.

Everything is connected to the grounding installation - electrical switchboards, electrical consumers, metal pipes, etc. The transient resistance of the earthing conductors must not exceed 10 ohms.

At an elevation of + 14.65 m there is an RJ45 socket, powered by an HDMF or FTP cat.6 cable, providing the possibility to turn on a projector.

Around the tower in the pavement there are existing floodlights which are preserved together with their power supply. Only four floodlights in front of the tower entrance are dismantled due to a defective condition of their plasterboard cladding, installed in new places along the fountain with new insulation boxes, and their power supply is maintained by existing cables.

It is planned to dismantle the existing lightning conductor rope with a control connector for lightning protection and a new installation on the west wall of the tower.

**2.4. Other instalments**

**A. Electric Ladder**

L90 cm, B64 cm, H51 cm. /unfolded position / L90 cm, B15 cm, H69 cm. /stowed position/

mobile module with electric drive with steps for access to the tower, rail movement, cantilever, with dimensions according to the architect's scheme and control measure from the place

load-bearing structure steps - carbon or low-alloy steel, L profile, powder coated,

fasteners - galvanized, powder coated metal parts processing - gray granular coating with light wavy surface for increased scratch

resistance flooring - oak board L90 cm, B30 cm, H3cm with a tooth to cover the metal structure / from the material of the flooring in the tower /, deep impregnation for 30 years of protection from weathering, insecticides and fire.

**B. Platform for people with disabilities**

Delivery and installation of a vertical platform type "Liftboy" for people with disabilities - 750x900 mm / maximum load capacity 180 kg, lifting height maximum 595 mm, lifting height minimum 100 mm/,

manual and automated control, platform floor covering - metal parts processing - gray grain coating with light wavy surface for increased scratch resistance

wooden oak cladding for wooden floors / protection from weathering, insecticides and fire.

**C. Bridge**

L725 cm, B160 cm, H40 cm, Delivery and installation of a bridge

metal supporting structure, for the wooden surface - stainless steel, closed profile 30x30mm, welding installation, powder coated,

fasteners for mounting on wood on steel and on wood on wood - stainless steel, powder coated, mounting with hidden screw heads - from mounting system decking

timber first category according to BDS427, FSC / PEFC certified, maximum humidity 12%

whips - 3 pieces, longitudinally in 40 cm

L725cm, B4.5cm, H9cm, mounting on a metal structure

Siberian larch flooring type decking wholesale corrugated, density 700 kg / cubic meter, plank size

L150 cm, B14 cm, H3 cm, installation of a plank on a bar - at a distance - to absorb deformations /swelling and drying/, for ventilation and fast drying, deep impregnation for 30 years of protection from weathering, insecticides and fire.

Mandatory!

control measures from gauge space

**D. Periscope**

Periscope system - complex facility in two modules

Module 1 for assembly and installation at an altitude of elevation 14.65 to elevation 21.50 / camera - under the bell, metal piping powder-polymer coating, display, integrated network module, thermostated system /

Associated with Module 2 for assembly and installation of monitor system at elevation 0.00 / display - 43 "multi-touch, integrated control computer, integrated network module, protective impact-resistant coating, housing - metal with powder-polymer coating, thermostated with built-in air conditioning system, providing operation at temperatures of -10 \* C to + 45 \* C, IP 65 /, incl. system testing

A working design project is an integral part of the technical specification and should be fully considered. Wherever the technical specification and the working design include brands and types the tenderers should consider that they can offer any equivalent material/item.