BILL OF QUANTITIES FOR CIVIL AND SPECIALIST'S WORKS
FOR REPAIR OF THE "KNjAZ MILOŠ" PAVILION IN THE PARK OF BUKOVIČKA SPA IN ARANĐELOVAC

Note: The Bidder shall price all items in the tender documentation excluding VAT.

1. PRELIMINARY WORKS

	Description of works	UoM	Quantity	Unit price	Total
1.1.	Fabrication and setting up the site board informing on the construction works and providing basic data about the project, investor, contractor, designer and start and end dates. Board size is 200/100 cm.				
	Calculation per piece	pcs	1		
1.2.	Assembly and disassembly of the site fence, 2m high, with gates for workers, vehicles and machinery. Gates shall be provided with locks with keys or padlocks. The fence shall be properly anchored and braced to avoid overturning. The fence shall be properly painted and shall be used for the duration of the works, regardless of whether it is disassembled and re-assembled in the course of work. Warning tables for passers-by shall be installed on the fence.				
	Calculation per m²	m²	74,00		
1.3.	During the works, the construction site shall be cleaned for several times to remove debris, load it into carts and transport it to the construction site landfill. One trip is paid regardless of the number of cleaning.				
	Lump sum calculation	LS	1		

1. TOTAL PRELIMINARY WORKS

2. DISMANTLING AND DEMOLITION

	Description of works	UoM	Quantity	Unit price	Total
2.1.	Careful dismantling of metal elements (ridge pole with the symbol of the sun, etc.). Metal elements shall be cleaned and stacked on the construction site landfill for further treatment.				
	Calculation per piece	pcs	1		

2.2.	Dismantling of roofing made of sheet metal. Sheet metal shall be carefully dismantled, lowered down, cleaned and stacked on the site landfill for reuse or loaded into a truck and transported to a landfill to 15 km away. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per m²	m²	160,00
2.3.	Removing roof boarding. Boards shall be carefully removed, loaded into a truck and transported to a landfill designated by the investor to 15 km away. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per m²	m²	160,00
2.4.	Dismantling of downpipes, with fasteners. Downpipes shall be dismantled, packed, loaded into a truck and transported to a landfill designated by the investor to 15 km away.		
	Calculation per m¹	m^1	32,00
2.5.	Dismantling of flashings of window sills, attic, roof cornices, etc. Flashing shall be dismantled, packed, loaded into a truck and transported to a landfill designated by the investor to 15 km away.		
	Calculation per m¹	m^1	83,94
2.6.	Dismantling of run-out parts of the wooden roof structure. The roof structure shall be carefully dismantled, cleaned and stacked for re-assembly or loaded into a truck and transported to a landfill designated by the investor to 15 km away. Debris shall be collected, loaded on a truck and transported to the city landfill. The designer provided by the Bill of quantities for dismantling of 70% of elements, given that the exact quantity will be known only after roof covering is removed. Once the roof structure is exposed, the Supervision and the Contractor shall determine in writing the elements that should be dismantled.		
	Calculation per m²	m²	112,00
2.7.	Stripping off plaster on the ceiling and boarding of "karatavan" (mud+straw). Usable material shall be cleaned, loaded onto a truck and transported to a landfill designated by the investor to 15 km away. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per m²	m²	100,00

2.8.	Dismantling of internal wall chipboard claddings. Chipboard panels shall be dismantled, cleaned and stacked on the site landfill. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per m²	m²	161,32
2.9.	Dismantling of kiosk - the counter inside the building. Kiosk size is 1.60x1.60x2.20 m. All kiosk elements shall be carefully dismantled, loaded into a truck and transported to a landfill designated by the investor to 15 km away. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per piece	pcs	1
2.10.	Careful dismantling of the fountain. Fountain shall be dismantled and removed to a place designated by the investor.		
	Calculation per piece	pcs	1
2.11.	Dismantling of the existing internal electrical installations. The price includes dismantling of existing lamps, sockets, direct connections and installations, as well as the dismantling of existing metering distribution cabinet with provided transport, loading to a truck and removal to a designated place.		
	Lump sum calculation	LS	1
2.12.	Dismantling of floor marble plates, laid in cement mortar, complete with peripheral stone plinth. The plates shall be removed and the base shall be stripped down to concrete structure. Debris shall be removed, loaded to a truck and transported to the city landfill.		
	Calculation per m² of floor	m²	100,00
2.13.	Demolition of concrete floor slab, thickness up to 8 cm. Debris shall be removed, loaded to a truck and transported to the city landfill.		
	Calculation per m²	m²	100,00
2.14.	Dismantling of stone pavement around the building, complete with a concrete base. Stone shall be carefully dismantled, cleaned and stacked on the site landfill. Debris shall be collected, loaded on a truck and transported to the city landfill.		
	Calculation per m²	m²	57,86

2. TOTAL DISMANTLING AND DEMOLITION

3. EARTHWORKS

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR EARTHWORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Earthworks will be executed according to the design and the applicable standards and regulations. The prices include all work activities, material consumption, auxiliary tools and scaffolding prescribed by "Norms and standards of work in the construction industry - structural engineering, GN 200," as well as other costs and profits of the company. Redigging is not allowed. If the Contractor digs deeper than it is planned, or incorrectly levels the trench bottom, the Contractor shall, at own expense and with own material and labor, fill the dug part of the excavation with compacted concrete, scale 100 kg of cement to 1 m3 of gravel, up to the designed level. The excavated soil shall be used primarily for backfilling around and above the foundations, walls and floors, as well as for backfilling - spreading of the yard, if needed, and the rest shall be transported from the site to a landfill designated by the competent authority, that will decide where soil should be spread evenly and roughly levelled.				
3.1.	Excavation of soil, III category, around the facility, mechanically or manually, with direct loading into a truck, leveling of excavation bottom until reaching the designed level and transport to the site landfill for later use.				
	Calculation per m³	m³	33,30		
3.2.	Removal of surplus soil to the landfill up to 10 km away, including loading into a vehicle, transport, unloading and tipping, and rough spreading and levelling at the landfill.				
	Calculation per m³ of loose soil	m³	25,00		

3.3.	Supply and spreading of base layer of sandy gravel material, thickness d=10 cm, beneath the floor of the building and below the sidewalk. The material shall not contain organic materials, excessive amount of muddy ingredients or other harmful materials. Base layer is compacted by mechanical vibrators, until reaching designed thickness and profile with accuracy of ± 1 cm.				
	Calculation per m³	m³	22,06		

3. TOTAL EARTHWORKS

4. CONCRETE AND REINFORCED-CONCRETE WORKS

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR CONCRETE AND REINFORCED-CONCRETE WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: All concrete works must be carried out fully in accordance with applicable regulations. Before concreting, scaffolding, formwork and props shall be inspected in terms of their shape and stability, while thy shall be controlled during concreting. During the work, reinforcement shall not move - it will stay in the set position and covered with concrete from each side. Fabrication and pouring of concrete is done mechanically as a rule.				
4.1.	Supply of materials and concreting of floor slab by reinforced concrete MB30, d=10 cm, reinforced with mesh reinforcement Q131.				
	Calculation per m², reinforcement included	m²	100,00		
4.2.	Supply of materials and concreting of pavement around the building with reinforced concrete MB 30, width 100 cm, thickness d=10 cm, inclined onward from the building, the path shall be divided by joints at 200 cm, the surface shall be floated.				
	Calculation per m²	m²	111,21		
4.3.	Supply of materials and concreting of RC channels for water drainage with MB 30 concrete in the formworks, according to design and reinforcement details.				
	Calculation per m³, formwork and reinforcement included	m³	1,48		

4.4.	Supply and installation of concrete channels for water drainage laid in concrete MB 15. Channel size 16x25x6 cm.				
	Calculation per m^1	m^1	7,50		
4.	**TOTAL CONCRETE AND REINFORCED-CONCRETE WORKS**				

5. THERMAL INSULATION

	Description of works	UoM	Quantity	Unit price	Total
5.1.	Supply of materials and construction of thermal insulation for the attic, made of mineral wool PTP, thickness d = 10 cm. Mineral wool shall be protected by one layer of flat roofing paper, covered by the price of the item.				
	Calculation per m^2	m^2	100,00		
5.	**TOTAL THERMAL INSULATION**				

6. WATERPROOFING AND DAMP REMOVAL WORKS

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR INSULATION WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Waterproofing works will be carried out according to the design and applicable standards, prices include all work activities, materials used and auxiliary tools and scaffolding prescribed by "Norms and standards of works in building construction - structural engineering GN 561," as well as other costs and profits of the company.				
6.1.	Once the level or line is determined where capilary water should be cut, on both sides of the wall (inside and out) in width of 30cm, degraded flexible mortar shall be stripped off, joints 1-2cm will be cleaned-deepened, debris collected and removed to the city landfill.				
	Calculation per m^2	m^2	20,00		
6.2.	Filling of deepened joints in brick walls by "repair mortar-plus".				
	Calculation per m^2	m^2	20,00		

6.3.	Repair - cutting of capilary water in brick walls with silicate-based liquid "Mautrol Liquid sealant" self-dosing waterproofing system against rising capillary damp with filters (capillary) in order to achieve a balanced spread of liquids and eliminate its loss. Dz = 25cm		
	Calculation per m^1	m^1	58,97
6.4.	Construction of small covings at the junction between the floor and the wall with polymer modified waterproofing material "Repair mortar-plus".		
	Calculation per m^1	m^1	58,97
6.5.	Construction of waterproofing for reinforced-concrete floor slab and walls (the surface of the walls where plaster was stripped off and which are prepared - flat pointing) by penetration coating "NB-1 Grey" (1+2). It is produced by German manufacturer "Koster," based on the cement binder with elasticity improved. The base is pre-coated by deep penetrating crystallization primer "Polysil TG-500", then by two layers of mineral waterproofing system "NB-1".		
	Calculation per m^2		
6.5.1.	floor	m^2	100,00
6.5.2.	wall	m^2	21,60

TOTAL WATERPROOFING AND DAMP REMOVAL WORKS **6.**

7. CARPENTRY WORKS

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR CARPENTRY WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Carpentry works will be carried out according to the design, structural analysis and the relevant standards, the prices include all work activities, material used and auxiliary tools and scaffolding prescribed by "Norms and standards of work in the construction industry - structural engineering GN 601," as well as other costs and profits of the company.				

7.1.	Supply of materials and replacement of dilapidated roof structure (rafters, columns, chairs, purlins, eaves plates, struts, etc.). The elements of the roof structure shall be made as the existing ones (type of wood, dimensions, treatment, method of installation, etc.). Unit price shall cover the protection of all wooden parts by appropriate wood preservative (fungicide and insecticide agents), and then their FRP coating, in accordance with the manufacturer's instructions. The designer provided by the bill of quantities for the replacement of 70% of the elements, given that the exact quantity will be known only after the roof covering is removed. Once the roof structure is exposed, the Supervision and the Contractor shall determine in writing the elements that should be replaced. Calculation per m² of horizontal roof projection	m²	112,00
7.2.	Repair of element of the roof structure (rafters, columns, chairs, purlins, eaves plates, struts, gable structure, etc.). Wooden elements shall be thoroughly examined, cleaned and impregnated and painted by clear paint with the addition of lacquer, three times in a shade chosen by experts from the Institute approved after trial painting. Metal connection elements (nails, clamps, etc.) shall be inspected, cleaned, and replace worn-out elements (in agreement with the supervision). Calculation per m²	m²	50,00
7.3.	Supply of materials and installation roof boarding made of boards d=2.5 cm, over wooden rafters, placed adjacently. Selection of boards based on the existing ones. Unit price shall cover the protection by appropriate wood preservative (fungicide and insecticide agents), and then FRP coating, in accordance with the manufacturer's instructions. The boarding shall be covered by one layer of flat roofing paper, which is included by the price. Calculation per m²	m²	98,95

7.4.	Supply of materials and installation of boarding or plating of the dome (the central part of the pavilion) made of machined board d=2.5 cm, via centering, boards connected adjacently. Selection of boards based on existing ones. Unit price shall cover the protection by appropriate wood preservative (fungicide and insecticide agents), and then FRP coating, in accordance with the manufacturer's instructions. The boarding shall be covered by one layer of flat roofing paper, which is included by the price.				
	Calculation per m²	m²	62,10		
7.5.	Supply of materials and installation of boards in the attic. Selection of boards, as well as assembly based on existing ones. Unit price shall cover the protection by appropriate wood preservative (fungicide and insecticide agents), and then FRP coating, in accordance with the manufacturer's instructions.				
	Calculation per m²	m²	100,00		
7.	**TOTAL CARPENTRY WORKS**				
8.	**METAL WORK**				

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR METAL WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Metal work will be done according to the design, drawings and relevant standards, prices shall include all work activities, material used and auxiliary tools and scaffolding prescribed by "Norms and standards of work in construction industry - structural engineering GN 701," as well as other costs and profits of the company.				

8.1.	Restoration of metal elements. Parts that are missing or worn-out shall be manufactured and set up modeled on the existing ones, according to the details and the designer's instructions. Joints and welds shall be perfectly constructed, cleaned and sanded. Prior to painting, remove old paint, by chemical and physical means, san and clean it. The elements shall be impregnated and primed, and then painted two times with paint for metal. Calculation per piece MK1 - Ridge pole with the symbol of the sun, the height of the element 1.85 cm.	pcs	1		

8.	**TOTAL METAL WORK**				

9.	**SHEET METAL WORKS**				

	Description of works	**UoM**	**Quantity**	**Unit price**	**Total**
	COMMON AND GENERAL REQUIREMENTS FOR SHEET METAL WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Sheet metal works will be done according to the design, details and relevant standards, prices shall include all work activities, material used and auxiliary tools and scaffolding prescribed by "Norms and standards of work in construction industry - structural engineering GN 771," as well as other costs and profits of the company.				
9.1.	Supply of materials and covering of roofs with copper sheeting, thickness 0.60 mm. Sheet is installed with a double-standing cross-fold in the direction of the roof inclination, according to the on existing ones. Layer of "Izolim" tape manufactured by "Grmeč" Belgrade shall be placed beneath the sheet, which is included by the price. Calculation per m²	m²	160,00		
9.2.	Supply of materials and manufacture of gutters made of copper sheet d=0.60 mm, size 14/14 cm, the slope shall be regulated by carriers of galvanized hoop iron, the gutter shall lie on the sloped roof, and on the upstream side it should be felted to the roofing sheet. Gutters shall be performed in accordance with existing gutters (shape, dimensions, etc.). Calculation per m¹	m^1	36,40		

9.3.	Supply of materials, fabrication and installation of copper sheet gutters, developed width up to 33 cm, ø10 cm, thickness 0.60 mm. Parts of gutters must enter into each other minimum 50 mm and soldered by tin 60%. Copper clamp with holders shall be placed at a distance of 200 cm. Copper trim strip shall be placed over clamp. Gutters shall be placed at least 20 mm from the wall. Gutter finish according to details.		
	Calculation per m¹	m^1	32,00
9.4.	Supply of materials and flashing of roof ends at the eaves by copper sheet d=0.60, over the board forms, developed width of sheet 25 cm. Flashing shall be performed according to the existing one. Flashing shall be felted to roof covering.		
	Calculation per m¹	m^1	67,81
9.5.	Supply of materials and production of sheet cap, diameter of 12 cm on the chimney. Cap shall be made of sheet copper 0.6 cm.		
	Calculation per piece	pcs	1

9. TOTAL SHEET METAL WORKS

10. FACADE AND FIGURATIVE SCULPTURE WORKS

	Description of works	UoM	Quantity	Unit price	Total
	COMMON AND GENERAL REQUIREMENTS FOR FACADE AND FIGURATIVE SCULPTURE WORKS: Besides the description of the individual items of works, the Contractor's prices include the following common requirements: Facade works will be done according to the design and rulebooks, prices shall include all work activities, material used and auxiliary tools and scaffolding prescribed by "Norms and standards of work in construction industry - structural engineering GN 421," as well as other costs and profits of the company.				

10.1.	Restoration of sculptural elements in the facade and the interior. Check the connection with the base and, if necessary, re-anchor the elements. Clean the existing elements from paint and all deposits by figurative sculpture tools. After cleaning, restore and upgrade the damaged or missing parts and provide surface finish of the elements. The material for the restoration of sculptural elements must be of the same or corresponding composition, granulation and colour, modelled after the existing one and of identical treatment method. The edges must be sharp, straight, well-rounded, and surfaces finished.		
	Calculation per piece		
10.1.1.	VE2 - Amphora on the roof. Rough size 0.6x0.6x0.85 m	pcs	4
10.1.2.	VE3 - Ornament on top of the gable. Rough size 0.5x0.5 m	pcs	1

10. TOTAL FACADE AND FIGURATIVE SCULPTURE WORKS

SUMMARY OF CIVIL AND SPECIALIST'S WORKS

1. TOTAL PRELIMINARY WORKS
2. TOTAL DISMANTLING AND DEMOLITION
3. TOTAL EARTHWORKS
4. TOTAL CONCRETE AND REINFORCED-CONCRETE WORKS
5. TOTAL THERMAL INSULATION
6. TOTAL WATERPROOFING AND DAMP REMOVAL WORKS
7. TOTAL CARPENTRY WORKS
8. TOTAL METAL WORK
9. TOTAL SHEET METAL WORKS
10. TOTAL FACADE AND FIGURATIVE SCULPTURE WORKS

TOTAL:

BILL OF QUANTITIES FOR WATER SUPPLY AND SEWAGE INSTALLATIONS
FOR REPAIR OF THE "KNjAZ MILOŠ" PAVILION IN THE PARK OF BUKOVIČKA SPA IN ARANĐELOVAC

Note: The Bidder shall price all items in the tender documentation excluding VAT.

1. CIVIL WORKS

	Description of works	UoM	Quantity	Unit price	Total
1.1.	Excavation of trenches for laying pipelines and manholes (water supply and sewerage). Trench excavation in soil, III category with the proper cutting of the trench sides and bottom, according to the design. Disposal of excavated material at least 1.0m from the edge of the trench, on one side, while the other side shall be used for transport of pipes and materials. Trench bottom shall be excavated and levelled according to elevations from the design. It is necessary to strictly perform the slope between the given points. Along the route perform extensions for manholes and water measuring shafts. In the case of excess excavation, it must be backfilled with gravel at the expense of the Contractor. During trench excavation for water pipes, take into account the depth of 1 m and width of 0.5m. For sewage, average depth is 0.8m. Calculation per m³ of excavated autochthon soil				
1.1.1.	Water supply: 25 x 0,5 x 1=12,5	m³	12,50		
1.1.2.	Sewage 5 x 0.5 x 0.8=2,5	m³	2,50		
1.1.3.	Manholes	m³	2,00		
1.2.	Levelling of the trench bottom. Once trench is excavated, its bottom shall be levelled. Any place excavated in excess shall be backfilled with gravel at the expense of the contractor. Calculation per m² of levelled trench bottom	m²	15,00		
1.3.	Backfilling of fine sand. Supply and laying of sand on the trench bottom, above and around pipes in a layer min. 10 cm thick. Sand should not be obtained from weathered rocks or have large chunks of stone nor soil. Sand must be clean, of uniform granulation, free from organic matter. Calculation per m³ of sand in compacted state, according to general requirements and this description	m³	2,50		

1.4.	Trench backfilling. After pipes are installed, tested and surveyed, trenches shall be backfilled with excavated material with compaction in layers of 30 cm thickness, until reaching the compactness of autochthon soil. During backfilling, take into account that the first layer is made of fine soil with no large pieces that could damage the pipe.		
	Calculation per m³ of compacted soil	m³	12,00
1.5.	Transport of remaining soil. Transport the remaining soil from the excavation, after trenches are backfilled, to the designated landfill. The price includes: loading, transport, unloading and rough leveling of the landfill. The distance for transport up to 5 km.		
	Calculation per m³ of transported soil	m³	2,50
1.6.	Concreting rectangular inspection manholes. Concrete one rectangular inspection manhole within the building, the size is provided in the design, with MB-20, 15cm thick walls in the double-sided formwork. Install step irons before plastering. All the interior surfaces shall be rendered with cement mortar 1:3. Adequate replacement is a manhole made of prefabricated concrete elements of Ø1000. Bottom area is covered with the price, thicknesses of 10 cm.		
	Calculation per m¹	m^1	2,00
1.7.	Supply and installation of manhole cover. The cover is cast iron, weighing 60 kg, 60 cm diameter.		
	Calculation per piece	pcs	2
1.8.	Pumping of permanent groundwater. If permanent groundwater appears during the work, it must be pumped by motor pumps. The supervision shall keep accurate records on the effective operation of the pump.		
	Calculation per effective hour of pumping	hour	5,00

1. TOTAL CIVIL WORKS

2. SEWAGE

	Description of works	UoM	Quantity	Unit price	Total
2.1.	Plastic sewer pipes made of hard PVC. Supply and installation of plastic sewer pipes that correspond to JUS G.C6.502. Adequate fittings and revision fixtures shall be installed at all places as designed. Before backfilling, the entire sewage shall be tested for water permeability in the presence of the supervision. Calculation per m^1 of installed and tested sewage, measured at the axis of the pipes and fittings				
2.1.1.	Ø 160	m^1	5,00		
2.1.2.	Ø 110	m^1	2,00		

2. TOTAL SEWAGE

3. WATER SUPPLY

	Description of works	UoM	Quantity	Unit price	Total
3.1.	Polyethylene water pipes. Supply and installation of polyethylene water pipes, including all the appropriate fittings. Pipe shall be buried in front of water metering shelter as a link with the street inlet pipe. Calculation per m^1 of installed water supply pipe				
	Polyethylene pipes PE Ø 25	m^1	25,00		
3.2.	Polypropylene pipes. Supply and installation of vertical water pipes made of PP for stacks leading from basement to the highest outlets. The calculation includes the supply and installation of pipes in the installation channels before the creation of channels or mounting through installation side openings after channels are created. The item Includes any subsequent punching and rework of concrete and masonry structures as well as welding and fixing of pipes in the channels. Calculation per m^1, covered length up to reaching the level -2.90m to +6.7 with an increase of 10% from the actual length due to the recognition of material waste				
	Polypropylene pipes PP Ø 25	m^1	4,00		

3.3.	Plumbing works for toilets in buildings. Supply and installation of complete pipes. The calculation includes the complete supply and installation of pipes, including valves and preparations for setting up sanitary taps. The price includes any punching and chiselling of walls. The pipes are buried under the wall tiles. The average consumption of pipe material is 15 m^1 per set of constructed toilet.		
	Calculation per set	set	1
3.4.	Flat gate valves. Supply and installation of flat brass gate valves Ø 20 with a wheel for closing at the meter, taps and at other designated points. The valve must match JUS.M.C5.260 or adequate standard.		
	Calculation per piece of installed valve	pcs	1
3.5.	Flat gate valves with discharge branch. Supply and installation of flat brass gate valves Ø 20 with discharge branch at designed points.		
	Calculation per piece of installed valve	pcs	1
3.6.	Non-return valve. Non-return valve Ø 20 shall be installed at cold water inlet in boilers.		
	Calculation per piece of installed valve	pcs	1
3.7.	Testing water impermeability. Testing of mounted water supply network for watertightness according to the instructions. The required amount of water for testing is provided by the contractor.		
	Lump sum calculation	LS	1
3.8.	Disinfection of water supply network. Disinfect the mounted and tested water supply network in the building according to applicable regulations.		
	Lump sum calculation	LS	1
3.9.	Testing water quality. After disinfection, water samples from the newly-mounted water supply network shall be tested in the hygiene institute - for correctness of drinking water.		
	Lump sum calculation	LS	1

3. TOTAL WATER SUPPLY

4. SANITARY FACILITIES AND ACCESSORIES

	Description of works	UoM	Quantity	Unit price	Total
	GENERAL DESCRIPTION: The Contractor shall provide all sanitary facilities only on the basis of exemplary samples approved by the supervision. Facilities must be professionally installed and connected to water and sewage network, without damage. The Contractor shall disassemble any possibly damaged facilities and equipment at his own expense, and install new one. The price of the item includes any necessary chiselling and embedding of plastic plugs with the necessary patching and plastering. All bolts used for connection of sanitary facilities shall be brass, and nickel plated for toilet ware. All bathroom fixtures and fittings are produced by domestic manufacturers.				
4.1.	Faucet. Supply and installation of faucet for outlet point ¾''.				
	Calculation per piece of installed faucet	pcs	1		
4.2.	Floor drain. Supply and installation of floor drains with integral trap and grate made of brass sheet metal with a chrome surface. Below and around the drain perform waterproofing and connect it with waterproofing of the floor.				
	Calculation per piece of installed drain Ø100	pcs	2		
4.	**TOTAL SANITARY FACILITIES AND ACCESSORIES**				

SUMMARY OF WATER SUPPLY AND SEWAGE INSTALLATIONS

1.	**TOTAL CIVIL WORKS**
2.	**TOTAL SEWAGE**
3.	**TOTAL WATER SUPPLY**
4.	**TOTAL SANITARY FACILITIES AND ACCESSORIES**
	TOTAL:

BILL OF QUANTITIES FOR ELECTRICAL INSTALLATIONS
FOR REPAIR OF THE "KNjAZ MILOŠ" PAVILION IN THE PARK OF BUKOVIČKA SPA IN ARANĐELOVAC

Note: The Bidder shall price all items in the tender documentation excluding VAT.

1. BUILDING UTILITY

	Description of works	UoM	Quantity	Unit price	Total
1.1.	Delivery of polyester type cable terminal box CTB B1m complete with NV00/III fuse base, and its installation in the wall, at the point shown in the drawings.				
	Calculation per piece	pcs	1		
1.2.	Preparation of the route, supply and delivery of cable PP00 4x6mm², stringing and laying along already prepared route of internal connection of the building from CTB to MDC, complete with passing through pipes in places through the wall.				
	Calculation per m¹ of placed cable	m^1	6,00		
1.3.	Delivery of the necessary material and marking of both ends of the laid cables.				
	Calculation per piece	pcs	4		
1.4.	Delivery of knife-type fuse of high-performance NV00 63/32A gG and insertion into existing bases in CTB on the facade of the building.				
	Calculation per piece	pcs	3		
1.5.	Voltage test of insulation of laid cables, issuing certificates of compliance and connection to voltage.				
	Calculation per piece	pcs	1		

1. TOTAL BUILDING UTILITY

2. DISTRIBUTION CABINETS

	Description of works	UoM	Quantity	Unit price	Total
2.1.	Delivery and installation of a new main distribution cabinet MDC, of required dimensions, made of twice pickled sheet, thickness 2 mm, with support and binding structure, IP43 protection, with elzett locks and keys, pertinax plate, busbars, terminals, signboard and other materials necessary for completion, anti-corrosion paint and painted with paint chosen by the investor. The cabinet is wall mounted, designed for three-phase connection, all in accordance with single pole diagram and applicable technical regulations. Cabinet consists of three parts: the supply part housing limiters and FID switch, the second part is the metering part that will keep the existing three-phase two-tariff meter 10-40, and distribution part of the cabinet that will house busbars for distribution and fuse-disconnectors. DC should house copper busbars of appropriate cross-section on support insulators and other equipment, all according to the enclosed single-pole diagrams. Appropriate nameplate should be placed under each element with an indication of consumers to which they belong. Cabinet interior should be wired using copper conductors with PVC insulation. All connection cables are provided with adequate inlets. Single-pole diagram shall be placed on the door of the distribution cabinet, on the inside, while the warning table "Danger of death" with the high voltage sign will be placed on the outside. **supply part:** 3 pcs. – limitators 25A (as per requirements of distribution company in Aranđelovac) 1 pcs. – Residual Current Devices 40/0.5A, GFCI **metering part:** 1 pcs. – existing three-phase two-tariff meter 10-40. **distribution part:** 1 pcs.- three-pole circuit breaker AO 3x16A/B 7 pcs.- circuit breaker AO 16A/B 10 pcs.- circuit breaker AO 10A/B 1 pcs.- circuit breaker AO 6A/B 1 pcs.- contactor LC1 230V,20A 4 pcs.- cum switch 16A, 3p with two positions 0-1 1 pcs.- Relay photo sensors Fully assembled, inspected, wired, with the delivery of other small materials	pcs	1		

2. TOTAL DISTRIBUTION CABINETS

3. POWER SUPPLY INSTALLATIONS

	Description of works	UoM	Quantity	Unit price	Total
	NOTE: Prices shall include all necessary cutting of grooves, chiselling and burying into walls as defined by the design, as well as subsequent plastering of grooves, channels, penetrations, according to the design, the instructions of the supervision and regulations for this type of works.				
3.1.	Delivery and installation of PVC flexible light pipes Ø16mm in concrete structural elements where cables pass through them, before concrete pouring. Calculation per m^1	m^1	10,00		
3.2.	Delivery and installation of PVC conduit boxes 60mm or appropriate ones, depending on the selected connection/switching equipment, complete with the necessary material for fixing (gypsum, plasterboard screws). Calculation per piece	pcs	60		
3.3.	Delivery and installation of PVC conduit boxes 78 mm with cover at positions of cabling / installation conductor duplication. Calculation per piece	pcs	40		
3.4.	Delivery and laying of the installation conductors type PP-Y 3x1.5mm^2 on the wall, before plastering, or through previously laid pipes, for lighting purposes. Calculation per m^1	m^1	200,00		
3.5.	Delivery and laying of the installation conductors type PP-Y 3x2.5mm^2 on the wall, before plastering, or through previously laid pipes, for single-phase outlets. Calculation per m^1	m^1	130,00		
3.6.	Routing and excavation of cable trench 0.4x0.8m, with construction of screed, backfilling in layers of 20 cm, compacting of soil and transport of surplus soil after the route settles, to a place specified by the investor. Calculation per m^1	m^1	55,00		
3.7.	Delivery, installation of underground cable type PP00 3x2.5 mm^2in cable trench, including route marking, making cable ends, labeling and connecting. Calculation per m^1	m^1	55,00		

3.8.	Material delivery and making of complete panic lighting in the building, with conductor type PP00-Y 3x1.5 mm², placed below the mortar, and with making of all connections. The average length is 8 m.		
	Calculation per piece	pcs	4
3.9.	Delivery, installation and connection of complete installation switch/ terminal equipment according to specification. The item includes switch/ terminal connections, mounting plates and decorative and protective masks. Before supply, the color shall be agreed with the architect.		
	Calculation per piece		
3.9.1.	VE2 - Schuko 16A 230V with patent cover	pcs	16
3.9.2.	Installation single-gang switch 10A, wall-mounted	pcs	2
3.9.3.	Installation two-gang switch 10A, wall-mounted	pcs	4

3. TOTAL POWER SUPPLY INSTALLATIONS

4. LIGHTING EQUIPMENT

	Description of works	UoM	Quantity	Unit price	Total
	Supply, transport and delivery of the specified or similar lighting equipment, of equivalent characteristics, with control gear and light sources as well as necessary accessories for installation.				
	Unless otherwise specified in separate items, the items do not include the installation of lighting, or connection of previously installed cables.				
	Calculation per piece				
4.1.	Lamp 1Ek.n: built in fluo-lamp 1x49W IP42, Slim Line "Buck", or equivalent. Type 1	pcs	6		
4.2.	Lamp 2Ek.n: Suspended fluo-Lamp 1x49W IP42, Slim Line S "Buck", or equivalent. Type 2	pcs	5		
4.3.	Lamp 3Ek.n: surface-mounted fluo-Lamp 1x58W IP42, or equivalent. Type 3	pcs	8		
4.4.	Lamp 4Ek.n: Reflector Lamp outdoor IP65 ALO50W. Lamp is similar to Type 1537 Koala - Buck (Disano), or equivalent. The item includes supply, transport and installation of lamps and their connection to pre-mounted cables. Type 4	pcs	12		

4.5.	Lamp 5Ek.n: surface-mounted Lamp IP20, HALOSPOT 111 35W, with the appropriate accessories for connection to the rail system. Lamp is similar to type Atos 1C – Buck, or equivalent. Type 5	pcs	26		
4.6.	Lamp 6Ek.n: wall-mounted lamp outdoor IP 65 JM-TS 70W, with direct and indirect light. Lamp is similar to type 1635 Emisfero 1 dir/ind light - Buck (Disano), or equivalent. The item includes supply, transport and installation of lamps and their connection to pre-mounted cables. Type 6	pcs	4		
4.7.	Lamp 7Ek.n: Built-in projector in ground IP67, IK10, metal-halogen 70W. Lamp is similar to type 1782 Tera Midi - "Minel-Schréder", or equivalent. The item includes supply, transport and installation of lamps and their connection to pre-mounted cables. Type 7	pcs	7		
4.8.	Lamp 8Ek.n: PANIK Lamp, 1x18W, 230V with NiCd batteries, 1h autonomy, intended to be mounted on the ceiling in IP65 protection, similar to type FSN 948-118 1x18W Elektrokovina, or equivalent. Inscription EXIT is placed on the lamp.	pcs	4		
4.9.	Ceiling rail system which consists of: two fixed rails 3m long that are fixed to the ceiling, two movable rails that slide along fixed rails 3m long, 4 pantographs that stretch from 40-200cm, and other parts - wheels, rope pulleys, etc. This system provides easy and precise directing of the light, to any point. Each pantograph (bearing part of the lighting - stretchable) carries 15kg, and extends from 40cm to 2m. Lighting equipment (eg. flash head) can be rotated 360 degrees.	pcs	10		
4.	**TOTAL LIGHTING EQUIPMENT**				

5.	**LIGHTNING AND EARTHING ROD**				
	Description of works	**UoM**	**Quantity**	**Unit price**	**Total**
5.1.	Excavation of the trench, supply, transport and laying of galvanized strip FeZn 25x4mm SRPS.N.B4.901-Č in the excavated trench and laying in the ring ground electrode one meter from the facility. The item includes subsequent backfilling of trench with excavated soil. Calculation per m^1	m^1	80,00		

5.2.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: contact element KON01, crossing piece 2 strip conductors made of stainless steel.		
	Calculation per piece	pcs	30
5.3.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: contact element KON 06 for connection between gutters and round conductors.		
	Calculation per piece	pcs	8
5.4.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: contact element KON 03, crossing piece of the strip and round conductor.		
	Calculation per piece	pcs	6
5.5.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: gutter clip KON 10A for fastening strip conductors.		
	Calculation per piece	pcs	4
5.6.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: measuring joint MŠ.		
	Calculation per piece	pcs	6
5.7.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: roof girder of round conductor for sheet metal roof and roof ridge SON 14.		
	Calculation per piece	pcs	60
5.8.	Supply, transport, installation and connection of elements of lightning, equipment of company HERMI or equivalent: girder of round conductor for gutter KON11A.		
	Calculation per piece	pcs	20

5.9.	Supply, transport and installation of crossing pieces at the foundation of the building to create outlet for lightning rods lowered, grounding of gutters, doors and closets according to the drawing.				
	Calculation per piece	pcs	11		
5.10.	Supply, transport and installation of CH1 copper conductor Cu Ø8mm.				
	Calculation per m^1	m^1	120,00		
5.11.	Inspection and testing of earthing rod, measurement of resistance and the issuance of attesting documents.				
	Lump sum calculation	LS	1		
5.	**TOTAL LIGHTNING AND EARTHING ROD**				

6. OTHER WORKS, TESTING AND CERTIFICATES

	Description of works	UoM	Quantity	Unit price	Total
	NOTE: Submit certificates for complete built-in electrical equipment as well as cables. Develop as-built design by entering all the changes that have occurred during the execution of works in a copy of the Final Design. Cabinets shall be cleaned of plaster and the remains of wire and insulation. Distribution cabinets shall have single-line diagrams visibly placed on the door. Distribution cabinets shall be marked by plate on the front door, while circuits, fuses, other elements and cable ends in the cabinet shall be labeled as in single pole diagram. This item will not be charged separately.				
6.1.	- Report on testing earthing resistance - Report on testing the protective conductor continuity - Report on testing the resistance of electrical installations insulation - Report on testing protective and control devices functionality -Report on testing of lightning rod installation				
	Lump sum calculation	LS	1		
6.2.	Inspection of complete electrical installations, perform commissioning and handover to the investor. All observed defects, problems and failures shall be remedied, and installations shall be made operational.				
	Lump sum calculation	LS	1		
6.	**TOTAL OTHER WORKS, TESTING AND CERTIFICATES**				

SUMMARY OF ELECTRICAL INSTALLATIONS

1. **TOTAL BUILDING UTILITY**
2. **TOTAL DISTRIBUTION CABINETS**
3. **TOTAL POWER SUPPLY INSTALLATIONS**
4. **TOTAL LIGHTING EQUIPMENT**
5. **TOTAL LIGHTNING AND EARTHING ROD**
6. **TOTAL OTHER WORKS, TESTING AND CERTIFICATES**

TOTAL:

SUMMARY

CIVIL AND SPECIALIST'S WORKS
WATER SUPPLY AND SEWAGE
ELECTRICAL INSTALLATIONS

TOTAL ALL WORKS
TOTAL excluding VAT