

***I TYPE OF WORKS, TECHNICAL CHARACTERISTICS (SPECIFICATION), QUALITY, QUANTITY, GUARANTEE AND WORK DESCRIPTIONS***

**1. Subject of the procedure is carrying out the works on the repair of Serbian military cemetery on Zeitenlik in Thessaloniki, Ampelokipoi 561 23, Thessaloniki, Greece**

Serbian military cemetery on the Zeitenlik hill in Thessaloniki was built as a memorial complex – ceremonially and monumentally organised space – which pays respect to the fallen soldiers in a most becoming way with a promise that they would never be forgotten. It is certainly one of the most beautiful WWI memorial cemeteries among all others in almost every European and Mediterranean country.

It consists of a mausoleum with a crypt, and alleys of individual graves. The cemetery is located on the Zeitenlik hill and around it are the cemeteries of allied soldiers – French to the north, Russian and British to the west, and Italian to the south. This complex used to be on the outskirts of Thessaloniki, but now it is situated in a completely constructed surroundings.

In 1926 the Ministry of Construction in the Kingdom of Serbs, Croats and Slovenes opened a call for the design of the Serbian military cemetery near Thessaloniki. The author of the selected design for the mausoleum was Aleksandar Vasić, and the building of the main design was led by architect Nikolaj Krasnov. The works began in 1933 and lasted three years, and their organisation and management was in the hands of architect Budimir Hristodul.

The memorial chapel was built on the plateau under which lies the ossuary with the crypt along the longer axis of the rectangular parcel of land. The chapel is surrounded by cemetery lots and cypress trees planted according to plan the dark silhouettes of which accentuate the tragic and ceremonial nature of the space.

The crypt contains the remains of 5,508 soldiers, and the 10 parcels of land in the open contain 1,440 graves.

While the construction works were in progress, a special team visited all battle sites in FYR Macedonia, searched and dug out over 250 temporary cemeteries and transported the remains to Thessaloniki. The consecration of the cemetery was performed on 11<sup>th</sup> November 1936.

Following WWII, two burial chambers were built to the west of the mausoleum to hold the remains of 217 Serbian captive soldiers and 78 soldiers of the Salonika front, which were transported from Istanbul. Additionally, here lie the remains of 250 Yugoslav captive soldiers who were killed in the torpedoing of a ship, as well as Yugoslav internees from German concentration camps. The total number of soldiers buried in the Serbian military cemetery is 7,610.

**2. REQUIREMENTS REGARDING THE QUALITY:** The main repair project.

**3. DATA ON THE PLACE AND DEADLINE FOR BIDS SUBMISSION**

**Deadline for bids submission is from 19.07.2018. year to 15:00 hours.**

The bids shall be submitted directly or by mail to the Contracting Authority's address in Thessaloniki, Komnion 4.

**4. REQUIREMENTS REGARDING THE GUARANTEE PERIOD:** For the works executed and material installed at least 5 years from the day of works delivery/taking over.

## **TECHNICAL DESCRIPTION BOOK II**

Based on the results of geotechnical research, geodetic and architectural documents, and descriptions of previous condition appraisals, as well as the additional recordings done in December 2016, the 2005 Design for Repair of the Serbian Military Cemetery Zeitinlik was amended.

The repair design includes the cemetery as a whole, and it would be ideal to perform all specified works continuously, that is during a single course of action.

### **Memorial chapel**

The reconstruction of wreath hooks is required in the memorial chapel, since east side hooks were removed and there placed a table for liturgy performance. The hooks should be located, if they are preserved, and if not, the same hooks should be cast using the existing model. The chapel must retain its original, specified function, which entails the existence of wreath hooks.

Candles are lit in the memorial chapel which leads to damage of painted walls. Apart from soot, the smoke composition and damp environment create an acid which corrodes the painted layer. The candles may be lit only outside the chapel; therefore, the candlesticks should be taken out when the candles are being lit.

### **Upper plateau – roof of the crypt**

Owing to the manner in which the plateau over the crypt was built, the type of pavement used, and the finish on the underside of the plates covering the sand base, we must use the most efficient method for the repair of the plateau and protection from water ingress. This entails the disassembly of the previously marked plates, removal of the sand base, thorough cleaning of the layer above the bearing structure, and placement of a layer of hydro insulation over the entire surface of the plateau.

The work on hydro insulation must be trusted to a qualified contractor. The works on the plateau must be constantly supervised. After the insulation is in place, the sand base and the granite plates need to be replaced according to the original arrangement. This part of the work must be performed with care so as not to damage the insulation layer.

The pavement joints need to be filled with mortar containing an additive for elasticity.

The joints on the underpinning plateau wall need to be stripped, cleaned, thoroughly rinsed and refilled using mortar made out of clean sand and an additive for increased elasticity.

### **Crypt**

For the inside of the crypt, it is specified to remove the plaster from walls, ceiling and arches. All surfaces must be cleared of any plaster remains, and the cracks need to be cleaned to the extent of their depth. The cracks should be filled with the appropriate mortar containing an additive for elasticity. The cracks which are the joints of the structure will be closed using elastic putty. When the new electrical installation is fitted in, the plastering of walls and ceiling will be done in two layers using lime plaster made out of washed sand and rested slaked lime. The top layer will be floated. The plastered surfaces will be coloured with a water-based paint.

The colours and ornaments inside the chapel will be reconstructed according to the images and data gathered at the start of the works. The reconstruction work of ornamented surfaces will be performed by painters-conservators exclusively.

The marble plates in the crypt and the terrazzo floor will be covered for protection before the start of plaster removal and cleaned and washed after the painting of walls and ceiling.

### **Lower plateau**

The removal of parts of the pavement is foreseen at the points above which are gutters of the upper plateau. Concrete grating covered gullies will be built there for the reception of water.

Pipes will conduct water from these gullies to new open canals at the edge of the plateau, which will be placed at a lower level than the present ones. The canals will also be deeper which will allow faster drainage of water off plateau surfaces by increasing the incline, but also a safe conveyance of the water coming from the upper plateau. The new pipes will replace the present system of grates and canals.

It is required to disassemble and remove all open concrete canal surrounding the lower plateau, and as per plan, move them away from the cypress line. The new canals should be made out of uninterrupted concrete. The vertical alignment of the canals and the ground levelling must be determined following the geodetic design, and the levels need to be controlled during work.

During the consolidation of the surfaces on the lower plateau, new layer of crushed stone should be placed and compacted using a roller or vibrating plate.

### **Cemetery lots**

After the layer of existing gravel and water-accumulated earth is removed from the pathways, the pathways will be covered with crushed stone, approximately 8 cm thick. The damaged concrete bases of marble crosses should be replaced with new ones, which will be the same in appearance and dimensions as the old ones.

## **I - BILL OF QUANTITIES AND PRICED BILL OF QUANTITIES ON REPAIR** **OF SERBIAN MILITARY CEMETERY ZEITENLIK**

pos.no	Description of works	Unit of measur e	Quantit y	Price EUR	Total
	<b>BILL OF QUANTITIES AND PRICED BILL OF QUANTITIES ON REPAIR</b>				
	<b>OF SERBIAN MILITARY CEMETERY ZEITENLIK</b>				

	<p>The offered unit price includes the following: the value of material, manpower, mechanisation, scaffolds, formworks, equipment, internal and external transport, preservation and maintenance of works, securing of overall works, material, construction mechanisation, guarantee, insurance, night work, work during weekends and holidays, all temporary works required for execution of permanent works, all taxes, benefits, as well as all construction site mobilisation and demobilisation costs, construction site organisation, conducting security measures and occupational health and safety measures, constructions sites connections, preparatory works, construction site fence and construction site notice board, access roads and plateaus for communication and building organisation, overhead expenses and all other costs arising from execution of works that are necessary for execution and finalisation of works in accordance with Employer's requirements. Contracted unit prices for material, installations and overall equipment imply franco construction site and/or structure, dislodged and executed according to technical documentation.</p>				
	<p>Prior to lifting up the panels from the upper plateau, the Constructor has to agree with the construction supervision or the Designer on the area to be lifted up, the manner of lifting and on the technology of placing gutters and panels back in the same arrangement with the same width of joints. Material to be used for jointing, repairing and caulking of cracks and damages has to be tested prior to obtaining Designer's approval.</p>				
	<p>All the places to be filled or backfilled, cannot be filled or backfilled before the approval from a supervisory body.</p>				
<b>01-00</b>	<b>PREPARATORY AND FINAL WORKS</b>				

01-01	Procurement and placement of plastic floor protection sheets. All the areas of marble panels and floors in the crypt should be protected with sheets. The Contractor shall be responsible if the floors in the rooms where the work is supposed to be done are made dirty or damaged. Calculation is to be done per m2 of the sheets being placed.	m2	500		
01-02	Procurement and placement of plastic sheets over the openings on the facade, doors, windows, etc for the sake of protection. Sheets should be fastened with laths, taking care not to damage the existing carpentry or concrete frames. The Contractor shall be responsible for any damages. Calculation is to be done per m2 of the sheets.	m2	50		
01-03	During the work performance it is necessary to clean the construction site from the waste and to dispose it to the construction site landfill. It is paid once a week regardless of the number of cleaning. Calculation per m2 of the construction site area.	m2	2790		
01-04	When all the works are finalised the construction site should be cleaned and washed. The entire construction site should be thoroughly cleaned and the interior rooms and exterior paved surfaces should be nicely cleaned and washed too. Calculation per m2 of cleaned area.	m2	6072		
01-05	Gathering and removal of the waste. To gather the waste, the excess of earth and other waste material, load the truck and dispose it to the city dump/landfill. Calculation per m3 of the removed waste.	m3	100		
	TOTAL PREPARATORY AND FINAL WORKS				
<b>02-00</b>	<b>EARTHWORKS</b>				
02-01	Gathering river sand and gravel from the paths and the lower plateau prior to levelling the large plateau; to gather all the sand and gravel from the plateau and paths and put it away to the place decided by supervisory body. This material can be	m2	3350		

	used for pipe bedding. It is paid per m2 of the cleaned area of paths and plateaus.				
02-02	Excavation of the III earth category, done manually or by mechanical means, for gutters at the edge of lower plateau. Excavation is to be done by the design and given levels. The sides should be properly cut and the bottom levelled. The excavated earth should be removed from the ditch. The excess of earth should be transported by trolley, cover the ground and level it or load the truck and dispose it to the city dump. Calculation per m3 of the earth, by measuring actually performed digging in autochthonous state, including transportation of earth excess.	m3	181,5		
02-03	Levelling the lower plateau and the main access; To plan the large plateau by the design, with the width of 6 to 16 cm, with fall towards new drain channels. It is paid per m2 of processed and levelled area, including transportation of earth excess.	m2	3378		
02-04	Excavation of the III earth category, done manually or by mechanical means, for rainwater drainage pipes and water collectors, from crypt to edge gutters. Excavation is to be done by the design and given levels. The sides should be properly cut and the bottom levelled. The excavated earth should be removed from the ditch. When the pipes are placed on the sand layer and the channel covered with sand and fine crushed stone, the earth excess should be removed from the construction site, following the instructions from the supervising designer. It is to paid per m3 of the earth, by measuring actually performed digging in autochthonous state, including transportation of the excess.	m3	20		
02-05	Procurement, transport, spreading in layers, compressing and fine planning of crushed stone. To procure crushed stone of 0-31 mm and place it with width of 10 - 15 cm over the newly planned areas of lower plateau, according to the slopes from the design, marked by surveyor and over the paths between parcels in the required width	m2	5652		

	and compress it to the required compaction by vibrating roller. It is envisaged to transport the crushed stone from the distance of 40 km. Calculated per m2 of processed areas.				
02-06	Earth excavation for sewer. By the plan and designed depth excavate the III earth category for sewer. Vertical sides must be straight, and the bottom levelled. It is paid per m3 by measuring actually performed digging in autochthonous state, including transportation of earth excess.	m3	14		
02-07	Excavation of ditch for air insulation with adequate stretching. Earth excavation should be done around the ossuary walls and foundation according to designed levels, up to the depth of around 2.20 m (depth is to be decided by Designer based on the crypt wall condition). The width of excavation is 1.00 m. The bottom of the channel should be flat, according to the fall from the design, the sides vertical. During the excavation works, joints and foundation walls should be carefully cleaned. It is to be paid per m3 of excavated earth..	m3	170		
02-08	Ditch backfilling for air insulation. Following the vertical insulation, the free area outside the insulation wall should be carefully backfilled. The earth should be carefully compressed into the channel in layers by 20 cm. The remaining earth should be transported from the construction site. It is to be paid per m3 of backfilled ditch.	m3	130		
02-09	Earth excavation with stretching, for air insulation drainage pipes. Excavate according to the designed levels, up to the depth of 2.5 m, width of the ditch 80 cm. The bottom of the channel should be flat, according to the fall from the design, sides vertical. It is paid per m3 of excavated earth, by measuring actually performed digging in autochthonous state.	m3	140		

02-10	Ditch backfilling for air insulation drainage pipes. When the water drainage pipes are placed, channels and the area around the sewer cover should be backfilled. Earth should be carefully compressed into the channel in layers by 20 cm. The remaining earth should be transported from the construction site. It is to be paid per m3 of backfilled ditch, including transportation of earth excess.	m3	130		
	<b>EARTHWORKS</b>				
<b>03-00</b>	<b>MASONRY WORKS</b>				
	<b>CRYPT</b>				
03-01	Removing plaster from interior crypt walls. Remove plaster from crypt walls and clean the cracks with cramp iron up to the depth of 2cm. Use the brushes to clean the walls. Gather the waste, and dispose it to construction landfill. Calculated per m2 of stripped area. Note: by the Designer's decision or professional supervision, the areas under plaster that are stable and have not been exposed to humidity should not be removed.	m2	390		
03-02	Removing plaster from the ceiling. The areas after the removal should be cleaned from the remaining plaster. Gather the waste, and dispose it to construction landfill. Calculated per m2 of stripped ceiling. Note: by the Designer's decision or professional supervision, the areas under plaster that have not been exposed to humidity should not be removed.	m2	120		
03-03	Removing plaster from the arches. It should be removed carefully, taking care not to damage the arch area. When the plaster is removed, clean the cracks with cramp iron to the depth of 2 cm and brush the arch area. Gather the waste, and dispose it to construction landfill. Calculated per m2 of stripped area. Note: by the Designer's decision or professional supervision, the areas under plaster that have not been exposed to humidity should not be removed, and that should be confirmed with written order.	m2	60		



03-04	Cracks cleaning. When plaster is removed from the areas of ceiling, arches and crypt construction, carefully hollow and clean all the cracks and damages. The dust is to be removed with industrial vacuum cleaner or blown out with compressor. It is paid per m1 of processed cracks.	m	50		
03-05	Rendering and setting crypt walls with lime mortar, prepared with slaked lime. Prior to plastering process, it is necessary to clean the areas and spray with diluted plaster. The first layer, priming coat, is to be done with lime mortar proportion 1:3 width of layer up to 2 cm from sand and slaked lime, maturing for at least 30 days. Sand is grounded stone of 0-3 mm. Dilute lime in water and percolate through thick sieve, to avoid "popping" and add sand. Stir plaster continuously to avoid separation of lime wash. Place the plaster over the base and cut it to enable better fixing of the second layer. The second layer, proportion 1:3, should be made with fine, washed sand, free of mud and organic material. Float it along with wetting and polishing with small floats. Plastered areas must be flat, without ruptures and ripples, and edges sharp and straight. Plaster has to be wetted with spray gun, to avoid fast drying and cracking. Calculation per m2 of plastered area.	m2	390		
03-06	Rendering and setting crypt arches with lime mortar. Arches areas should be cleaned, if needed washed and sprayed with diluted plaster. Plaster should be prepared with screened and washed sand, place the first layer and cut it. The second layer should be made with fine clean sand, free of mud and organic materia and placed over the first layer. Float it along with wetting and polishing with small floats. Plastered areas must be flat, without ruptures and ripples, and edges sharp and straight. Plaster has to be wetted with spray gun, to avoid fast drying and cracking. The price includes auxiliary scaffolding. Calculation per m2 of plastered area.	m2	60		

03-07	Rendering and setting crypt ceiling with lime mortar. Ceiling areas should be cleaned, if needed washed and sprayed with diluted plaster. Plaster should be prepared with screened and washed sand, place the first layer and cut it. The second layer should be made with fine clean sand, free of mud and organic materia and placed over the first layer. Float it along with wetting and polishing with small floats. Plastered areas must be flat, without ruptures and ripples, and edges sharp and straight. Plaster has to be wetted with spray gun, to avoid fast drying and cracking. The price includes auxiliary scaffolding. Calculation per m2 of plastered area.	m2	112		
03-08	Filling cracks and damages of roof ceiling and crypt walls. All cleaned and washed cracks and damages fill with cement mortar with additive. Place prepared mixture with floater or spatula over the clean, hard and wet concrete base. Cement plaster is used with addition of Isomat Adiplast for increase of plaster elasticity. Composition of dry mixture cement:sand is 1:2,5, and liquid part of Adiplast:water is 1:3. Dry mixture and liquid part are mixed in proportion 4:1. Crack area, in width of around 2 cm, process as dilatation and fill it with elastic mass Isomat Flex-PU 40 (or Flex-PU2K). Calculation per m2 of processed area.	m2	20		
	UPPER PLATEAU				
03-09	Stripping off the joints on the fence and crypt facade. All the joints on fence and crypt plateau subwall should be carefully removed up to the depth of 2.5-3 cm. Carefully clean the cracks on the fence and the stairs. Plaster powder is to be cleaned by blowing out compressor, without the use of water. it is to bepaid per m2 of cleaned joints and cracks.	m2	450		
03-10	Dismantling gutters. Carefully dismantle previously marked gutters on the drawing on the plateau-terrace above the crypt, clean it and arrange it on the designated places in a way suitable for the transport during the return to the upper plateau. The way of lifting and returning should be	m	80		

	agreed with supervision or Designer. Gather the waste from old joints, separate it from sand - base. Calculation per m1 of the gutter, including waste transportation.				
03-11	Dismantling concrete panels from the plateau over the crypt. Carefully dismantle previously marked panels on the drawing from the plateau and arrange it for returning. The way of lifting and returning should be agreed with supervision or Designer. Gather the waste from old joints, separate it from sand - base. It is paid per m2 of dismantled and transported panels, including waste transportation.	m2	460		
03-12	Preparing panels and gutters for the installation. Completely remove the remainings of the old joints and traces of bitumen, plaster and joints from the panels that are lifted up and the gutters from the upper plateau. Calculation per m2 of the panels.	m2	460		
03-13	Repairing the cracks on the plateau fence, subwall and stairs. The cracks, previously cleaned and blown out with compressor, close with elastic mass Isomat Flex-PU 40 (or Flex-PU2K). The cracks width is up to 2-4 cm. It is paid per the length of repaired cracks, entire scope of works and material.	m	45		
03-14	Pointing of joints. All removed joints from the ossuary, previously thoroughly cleaned from powder and plaster remainings with brushes and compressor, wash out with water and, while still wet, point with cement plaster adding Isomat Adiplast to increase plaster elasticity. Composition of dry mixture cement:sand is 1:2,5, and liquid part of Adiplast:water is 1:3. Dry mixture and liquid part should be mixed in proportion 4:1. If there are bigger caves, fill it with the stone pieces. it is paid per m2 of processed ossuary wall, entire scope of works and material.	m2	450		

03-15	Excavation of panels base and filling the cracks from the upper side. On the places of the cracks on the crypt ceiling, from the upper part, smash the concrete panels base and excavate the earth, the probe is to be opened on the area decided by supervision or Designer. Take out the ground and free the upper area of the ceiling over the crypt. The cracks, previously thoroughly cleaned and blown out with compressor, should be filled with elastic mass Isomat Flex-PU 40 (or Flex-PU2K). When the ground is dried, put it back by compressing it in layers by 15 cm and reconstruct concrete base of the pavement. It is paid per m3 of excavated base, entire scope of works and material, including returning it to the previous condition.	m3	12		
03-16	Gutters installation. By the drawings, carefully place the gutters' stone parts, to avoid damaging of hydro insulation, on the layer of partially dried mixrure of sand and cement in proportion of 1:2 and level it. Put the elastic elastic joint sealant Isomat Flex-PU 40 between some gutters blocks. When gutters blocks are assembled, pour water on the mixture of sand and cement. Calculation per m1 of gutter, with all material, including joint sealant, sand and sand pouring.	m	80		
03-17	Installation of concrete panels on the upper plateau. Carefully place all concrete panels on the previous height, by the drawings. panels are to be assembled on the layer of sand and joints are sealed with plaster and additive for elasticity. It is paid per m2 of assembled and pointed panels, with sand.	m2	460		
03-18	Gutters joints and concrete panels pointing. When a part of panels and gutters area is assembled, point all the joints, make them wet and point with cement plaster adding Isomat Adiplast to increase plaster elasticity. Composition of dry mass cement:sand is 1:2,5, and liquid part of Adiplast:water is 1:3. Dry mass and liquid part are mixed in proportion 4:1. It is paid per m2 of pointed areas, entire scope of wors and material.	m2	460		
	LOWER PLATEAU				

03-19	Dismantling pavement around the crypt. Carefully dismantle concrete panels of the existing pavement around the crypt plateau. Clean the panels and arrange it to the place decided by supervisory body, the distance up to 50 m. Dismantle the base under the panels, gather and dispose it to the construction landfill. It is paid per m2 of dismantled pavement.	m2	40		
03-20	Demolition of concrete gutters. Demolish concrete gutters from the lower plateau, gather the waste and dispose it to the construction landfill. The channel length disposed per m1 is paid, including waste transportation.	m	260		
03-21	Demolition of sewers. When pipes are dismantled, demolish the existing concrete sewers and water collectors. Material remaining after demolition will be disposed from the construction site. It is paid per piece of demolished sewers, including waste transportation.	piece	10		
03-22	Building sewers. Make the sewers from standard concrete pipes of 1000 mm or make the sewers from concrete blocks of 80x80 cm for the system of draining water from air insulation. Sewers are up to 2.50 m deep. They are built with cement mortar, with simultaneous flush mortar jointing. Base plate of 14cm width is on the bottom, and sewer is covered with cast cover, for the purpose of the low traffic. Calculation per piece of completely made sewer, with cover.	piece	7		
03-23	Outlet structure. At the end of air insulation outlet pipe, it is necessary to make outlet structure to protect the end of the pipe, in line with instructions provided by Designer. It is made of concrete of 0.25 m3 and cast grille of 30x20 cm that can be removed to be cleaned. Calculation per piece.	piece	1		
03-24	Lifting up the existing grilles. Dismantle and remove the grilles and their frames from lower plateau and place it to the place decided by supervising conservator. It is paid by lump sum.	lump sum	1		

03-25	<p>New pavements around the crypt. By the design, place the concrete panels 5cm thick of dimensions 70/50, 50/50 and 50/40 (by the drawing) on the layer of 12 cm fresh concrete over blinding concrete. Pavement width is 140 cm. Panels are sunk until the half of their thickness. Panels are of the concrete similar to the concrete used for the ossuary construction and of the same bush hammering processing. Concrete sample is to be approved by Designer. Concrete is reinforced with square steel fabric of 10x10 cm, with reinforcing bars of 6 mm. Concrete brand is MB30. Joints width is 1.5 cm and they are filled with cement mortar adding Isomat Adiplast to increase mortar elasticity. Composition of dry mass cement:sand is 1:2,5, and liquid part of Adiplast:water is 1:3. Dry mass and liquid part are mixed in proportion 4:1. When producing joints, be careful not to make them dirty with plaster, wash them immediately. The joint beside the crypt walls fill with elastic adhesive Isomat Flex-PU 40. It is paid per m2 of the pavement, entire scope of works and material.</p>	m2	105		
03-26	<p>Pavement ahead of the stairs from both sides of the ossuary. By the design, place the existing concrete panels lifted up from the pavement on the layer of 12 cm fresh concrete over blinding concrete. Panels are sunk until the half of their thickness. Concrete is reinforced with square steel fabric of 10x10 cm, with reinforcing bars of 6 mm. Concrete brand is MB30. Joints width is 1.5 cm and they are filled with cement mortar adding Isomat Adiplast to increase mortar elasticity. Composition of dry mass cement:sand is 1:2,5, and liquid part of Adiplast:water is 1:3. Dry mass and liquid part are mixed in proportion 4:1. When producing joints, be careful not to make them dirty with plaster. The joint beside the crypt walls fill with elastic adhesive Isomat Flex-PU 40. It is paid per m2 of the pavement, entire scope of works and material.</p>	m2	40		

03-27	Procurement and installation of drainage PVC pipes of air insulation, diameter of 100-110 mm. Pipes are from the sewers at the corner of the crypt (sewer-1 and sewer-2) until sewer at the beginning of the path (sewer-3). Procure and install pipes and place them in designed slope over previously levelled sand layer. Cover the pipes with sand. Calculation per m1 of pipes with all the material and sand.	m	37		
03-28	Procurement and installation of drainage PVC pipes, diameter of 200 mm. Pipes are to be placed on sand layer and covered with sand. The pipes are from the sewer-3 to sewer-4 and then sewer-5. Calculation per m1 of pipes with all the material and sand.	m	83		
	AIR INSULATION				
03-29	Cleaning foundation joints. Thoroughly clean crypt foundation parts, revealed after excavation of the channel for vertical insulation, from the ground and joints from mortar. Carefully remove the waste, resulted from this work, from the excavation in order not to destroy slopes. It is to be paid per m2 of cleaned foundation area.	m2	154		
03-30	Constructing concrete foundation and gutters at the bottom of air insulation. At the bottom of crypt foundation, at the depth determined by supervising body, construct concrete foundation for the air insulation wall. Place 5 cm thin concrete at the bottom of excavation, then the concrete panel width 30 cm and thickness of 14 cm reinforced with square steel fabric of 10x10 cm, with bars of 6 mm. Channel - gutter is formed in the concrete for water drainage. Brand of concrete is MB 30. Calculation of thin concrete, concrete panel with channel and reinforcement is per m3 of concrete gutter. Thin concrete is included, and position is calculated per m3 of concrete gutter.	m3	3,2		

03-31	<p>Constructing vertical air insulation. Following the details from the design and by the instructions from supervising conservator, build the walls of vertical air insulation with well fired, full brick in good condition. The wall with thickness of 12 cm, at the bottom is standing against concrete gutter and it is on the distance from the foundation and crypt wall by half of the brick. Transversely built bricks lean against the foundation and crypt wall with free front. Free part of the brick is sunk into diluted bitumen prior to installation. Transverse bricks are built in every fourth row at the distance of 1.0 m and sheared by 0.5 m in each row. The wall follows the gutter slope. From the upper side, under the pavement base, air area is closed with covers from transversely built bricks. Secure that mortar does not fall into the channel. All vertical joints must be filled with mortar. It is paid per m2 of the air insulation wall.</p>	m2	154		
03-32	<p>Procurement and installation, testing and backfilling of PVC drainage pipes, diameter of 100-110 mm. Pipes are to be placed from the external side of air insulation wall, at the level of air insulation channel and water until the sewer-3, to which they are going to. They are to be placed on sand layer, coated with geotextile, to prevent the entering of sand into the pipes. Cover the pipes with gravel. Calculated per m1 of the pipes with all material and sand.</p>	m	78		
03-33	<p>Construction of channels for ventilation of air insulation. Cut with grinding machine a concrete groove, 10 cm wide, 10 cm deep and 20 cm high in the concrete of crypt plinth. Under the level of pavement, a channel 10/cm and height 40 cm, is drilled in the crypt wall. Bottom part of the channel is closed above the pavement with concrete tile, and the top is covered with cast rosette according to the drawing given by Designer. Calculation channel per piece, including all the labour and material, including rosette.</p>	com	14		
	MASONRY WORKS				



<b>04-00</b>	<b>PAINTING WORKS</b>				
04-01	Walls painting. When mortar in crypt is dried, paint all the walls and ceilings, which were white prior to mortar removal with white colour, which is soluble and vapor transmitting, does not absorb humidity from the air and by choice of Designer. It is coated several times until saturated white colour is obtained. Only when painting is done, protection sheets can be removed from marble panels. It is paid per m2 of painted areas of walls and ceiling.	m2	510		
04-02	Painting the existing doors. Clean the existing windows from the old paint and corrosion and paint them with the basic colour. After drying, paint them in dark grey mat colour twice. It is paid per piece of painted windows.	piece	22		
04-03	Cleaning and painting crypt entrance door. Clean the crypt door from the old colour and paint it in colour chosen by designer. The door will be in one colour (brown), and metal grille in black. Install new lock with three keys.	piece	1		
	<b>PAINTING WORKS</b>				
<b>05-00</b>	<b>INSULATION WORKS</b>				
05-01	Horisontal hydro insulation under the upper plateau panels. Insulation needs to be done over completely dry and clean surface. Coat the entire area with Isomat Primer-PU 100. When primer is dried, coat with brush or roller a layer of Isomat Isoflex-PU 500 and while still fresh imprint Isomat Poliester textile 60 g. When the first layer is dried, the second layer will be coated Isoflex-PU 500. Colours of the first and the second layer must be different (red-brown and grey). It is paid per m2 of processed areas, entire scope of works and material.	m2	489		

05-02	Hydro insulation in the channel for concrete gutter on the upper plateau. Insulation needs to be done over completely dry and clean surface. Make coverings from Isomat Durocret or cement mortar with addition of Isomat Adiplast in the channel corners. Coat the entire channel area with Isomat Primer-PU 100, and when the primer is dried, put with brush or roller a layer Isomat Isoflex-PU 500 and while fresh imprint Isomat Poliester textile 60 g. When the first layer is dried, the second layer Isoflex-PU 500 will be coated. Colours of the first and the second layer must be different (red-brown and grey). Additional insulation layer with textile is done upon placement of gutters and prior to placement of panels in the part where panels and gutters are connected, in the width of 1m. It is paid per m2 of processed developed channel areas, including entire scope of works and material.	m2	120		
	INSULATION WORKS				
<b>06-00</b>	<b>CONCRETE WORKS</b>				
06-01	Construction of new open concrete gutters. According to the plan, in precisely made excavation, construct reinforced concrete gutters for drainage of atmospheric waters from the large plateau. Formwork should be made of processed boards and strips of suitable transversal section, by precisely marked measures. Prepare concrete MB 30 for construction of channel with additive Isomat Adiplast. Channel should be lightly reinforced with steel fabric 7,5x7,5 cm, with reinforcement 3-4 mm. Pay attention to the connection of pipes and gutters. It is paid per m1 of the channel.	m	200		
06-02	New pipes from crypt to gutters. According to the plan, in precisely made excavation, place steel pipes, diameter 100 mm, on sand layer for drainage of atmospheric waters from water collector to gutter. Pipes are protected with basic colour. Carefully process connection of water collector and	m	60		

	gutter. it is paid per m1 of pipes. Note: these channels can be made from another material, with consent of Designer.				
06-03	Construction of cross pedestal from concrete. Construct it from concrete in the same manner according to the existing pedestals. Concrete brand is MB30 with addition of Isomat Adiplast. All damaged pedestals will be replaced and formwork will be done according to the existing pedestals and crosses will be made in the same manner as it was before. When dismantling pedestals it is needed to make a picture, including two surrounding crosses from both sides. Dismantling of cross is paid, careful cleaning of installed part from the old concrete, removal of old pedestal, construction of new pedestal with cross installation. It is estimated that around 400 new pedestals will be made. The exact number and selection will be decided by supervisory body or Designer. It is paid per piece.	piece	100		
06-04	Water collector. Create collectors for atmospheric water running through gutters from upper to lower plateau on exactly marked places, from concrete MB 30 with additive, reinforced with light steel fabric. Additive is Isomat Adiplast and it used following the producer instructions. Pay special attention to the contact zone with crypt wall and connection of new drainage pipe with collector concrete. Install the frame for cast grille that closes the collector. It is paid per collector piece, all - labour, ground digging, concrete, construction of formwork, insulation like on plateau, installation of pipes.	piece	8		
	CONCRETE WORKS				
<b>07-00</b>	<b>LOCKSMITHS WORKS</b>				

07-01	Grilles from collectors of water from plateau. Make grilles to cover water collectors according to the existing sample of old grilles, used as a model. From lower side of cast grille an additional fine grille is installed to keep leaves and concrete aggregates. Grilles dimensions for one water collector are 120/50 cm. Grilles are paid with installation, per piece of collector.	piece	8		
	LOCKSMITHS WORKS				
<b>08-00</b>	<b>MISCELLANEOUS WORKS</b>				
08-01	Removing glass from windows in crypt. Carefully remove round glass and put them wrapped in paper to a safe place until the time to be installed again. Paid in lump sum.	lump sum	1		
08-02	Windows glazing. When whitewashing and cleaning crypt area is finalised, install round glass in crypt windows again, but the upper pane is to be covered with rustproof fabric thick enough to keep flies and mosquitoes outside. It is paid per piece of glassed window with fabric.	piece	22		
08-03	Painting-conserving works. Taking existing ornament calques and colour samples, reconstruction of drawings and colours on the arches and the walls of the crypt entrance and central part of the crypt. Cleaning the walls and arches in the crypt chapel where the drawings are well preserved.	lump sum	1		
08-04	Sanitary objects. The following works should be performed – reconstruct waterworks and sewage system installation, replace sanitary equipment (toilet seats, sinks, urinals, place new tiles on the walls and floor, place new mirrors, toilet paper and paper towels holders, all white and chrome, furniture and tiles chosen by Designer. All the works will be specified by Designer according to the condition of sanitary knot. Paid in lump sum.	lump sum	1		

08-05	Procurement and placement of concrete benches. Procure and on the edges of lower plateau place benches from concrete panels, with concrete supports. The length of benches is 160 cm and width 40 cm. It is paid per piece.	piece	16		
	MISCELLANEOUS WORKS				
<b>09-00</b>	<b>UNFORESEEN WORKS</b>				
09-01	Unforeseen work might appear during opening of upper plateau pavement or excavation for air insulation or on other places. Extra works are paid from this position. Calculated as 15% of total sum of construction works.				
	UNFORESEEN WORKS				
	<b>RECAPITULATION OF ARCHITECTURAL AND CONSTRUCTION WORKS</b>				
<b>01-00</b>	<b>PREPARATORY AND FINAL WORKS</b>				
<b>02-00</b>	<b>EARTHWORKS</b>				
<b>03-00</b>	<b>MASONRY WORKS</b>				
<b>04-00</b>	<b>PAINTING WORKS</b>				
<b>05-00</b>	<b>INSULATION WORKS</b>				
<b>06-00</b>	<b>CONCRETE WORKS</b>				
<b>07-00</b>	<b>LOCKSMITHS WORKS</b>				
<b>08-00</b>	<b>MISCELLANEOUS WORKS</b>				
<b>09-00</b>	<b>НЕПРЕДВИЂЕНИ РАДОВИ</b>				
	<b>TOTAL ARCHITECTURAL AND CONSTRUCTION WORKS</b>				

**II - BILL OF QUANTITIES AND PRICED BILL OF QUANTITIES ON REPAIR OF SERBIAN MILITARY CEMETERY ZEITENLIK - RECONSTRUCTION OF ELECTRICAL INSTALLATIONS**

		The bill of quantities and the priced bill include the procurement of all required materials, equipment, and tools for the work on installations, assembly and setting up of delivered equipment and tools, and all electrical wiring for the installations, equipment and electrical panel.						
		The specified equipment and tools need to have the prescribed quality for each product.						
		The works must be performed by qualified work force, and in line with existing technical regulation in the area of installations.						
pos · No.	DESCRIPTION OF POSITION				measurement unit	quantity	price per unit	total
<b>A</b>	<b>PREPARATORY WORKS</b>							
A1	Disconnection of the existing electrical panel from the power supply and installations, removal from the building and delivery to the building's user				work h	1		
A2	Disconnection of the existing ceiling lamps, removal from the building and delivery to the building's user				work h	8		
A3	Disassembly of existing installations and installation equipment; performed simultaneously with construction work – removal of plaster from ceiling and walls				work h	8		
<b>A</b>	<b>TOTAL</b>							
<b>B</b>	<b>POWER SUPPLY AND DISTRIBUTION</b>							
B1	The production, delivery and placement of the distribution panel in a niche built in the wall, and its connection to the power supply and installations. The panel is inside a typical steel sheet closet, approx. dimensions 350x500x160 mm, single wing door, corrosion protection and paint – plastification, colour beige							

	PC, mechanical protection IP44, including equipment					
	1 pc	main switch, rotary, three pole 25A, 500V, in closet / on mounting plate				
	4 pcs	rotary switch, one pole 10A, 500V, in closet / on mounting plate				
	2 pcs	automatic circuit breaker 2A, Ik 6kA				
	6 pcs	automatic circuit breaker 10A, Ik 6kA				
	6 pcs	automatic circuit breaker 16A, Ik 6kA				
	3 pcs	Indicator, fit in, LED light, colour red, on door of closet /indicates presence of voltage/				
	5 pcs	power clamp 6 mm <sup>2</sup>				
	20 pcs	power clamp 2.5 mm <sup>2</sup>				
	1 pc	three pole supply bus bar, rated current 25A, length 30cm, mounted on DIN rail				
	as needed	Instruments for mounting and connecting of equipment / DIN rail, wire wrap conduits, marking of equipment in closet and "RT" on closet door				
	<b>RT</b>			set	1	
B2	Delivery, mounting of the specified energy cable in the ceiling below plaster, in a previously built brick groove without bricklayer's repair of ceiling, and the cable's connection to the existing and new distribution panels creating connections at both ends					

		PP00-Y, 5x6mm <sup>2</sup>	m	45		
B3	Delivery and fitting in the wall of the sheet steel closet 150x 150x 100 mm with a lid and 5 power clamps 6 mm <sup>2</sup> over the existing distribution panel, and making the connection between existing and new cable		set	1		
<b>B</b>	<b>TOTAL</b>					
<b>C</b>	<b>INSTALLATIONS AND INSTALLATION EQUIP.</b>					
C1	Delivery of material and building of installation for electrical lighting using a conductor PP-Y, 3x1,5mm <sup>2</sup> placed in ceiling or wall below plaster, and creating a groove in ceiling or brick wall for the purpose, without bricklayer's repair		m	430		
C2	Delivery and installation of the conduit box on the ceiling or the wall					
		PVC FI 78 with lid	pc	15		
C3	Delivery of material and building of installation for single phase outlets PP-Y, 3x2,5mm <sup>2</sup> placed in ceiling or brick wall below plaster, and creating a groove in ceiling or brick wall for the purpose, without bricklayer's repair of ceiling		m	80		
C4	Delivery, fitting in wall and connection of installation equipment to installation					
		Installation switch, serial, 10A,250V, colour white, with box for incorporation	pc	1		
		Single phase outlet with earthing contact 16A, 250V, colour white, with box for incorporation	pc	4		



C5	Installation material and tools for fitting in of installations and installation equipment of lamps /screw anchors, screws, insulating tape, plaster, etc. /	estimate	1		
<b>C</b>	<b>TOTAL</b>				
<b>D</b>	<b>LIGHTNING EQUIPMENT</b>				
	Upon plastering and walls painting, the lights of the mentioned type are delivered, installed on the ceiling or the wall with light source according to the description and connected to the installation.				
D1	LED panel, 18W/ 840, luminous flux not less than 1600 lumen, surface mount, fi 250, white colour; installation on the ceiling, working height up to 3.5m.	piece	53		
D2	LED linear light, 21W/840, surface mount, AL profile box, length 1.2 m, with driver installed; installation on the ceiling above concrete portal of the entrance, working height up to 2.5m.	piece	1		
	Security lightning, surface mount, with the bulbs with LED diods, 4 W/840, with its own energy source, wok autonomy 120 minutes, installation on the ceiling or the wall, working height up to 3m.				
D3	with arrow symbol, doors and man in movement, ONESIDED	piece	8		
D4	with arrow symbol, doors and man in movement, TWOSIDED	piece	11		
D5	Delivery and installation of LED bulb in chandelier 4,5 W / 840, 230V, socket E14, shape mini classic, opal or mat diffuser	piece	20		
<b>D</b>	<b>TOTAL</b>				

<b>E</b>	<b>FINAL WORKS</b>						
E1	Reviewing and examining installations with necessary measuring and issuing reports on the examination	set	1				
<b>E</b>	<b>TOTAL</b>						
	<b>R E C A P I T U L A T I O N</b>						
<b>A</b>	<b>PREPARATORY WORKS</b>						
<b>B</b>	<b>POWER SUPPLY AND CONDUITS</b>						
<b>Π</b>	<b>INSTALLATIONS AND INSTALLATION EQUIPMENT</b>						
<b>Δ</b>	<b>LIGHTNING EQUIPMENT</b>						
<b>E</b>	<b>FINAL WORKS</b>						
	<b>TOTAL EUROS</b>						

**Requirements regarding the quality:**The main repair project.

**Executed works quality control:**The executed works quality control shall be made by the Contracting Authority. Surveillance over the works during works execution period shall be provided by the Contracting Authority.

**Reclamation:** In case if the executed works do not match the contracted quality, the Contracting Authority shall request for reclamation, in which case, the Contractor must remove the deficiencies, within a deadline set by Contracting Authority. The reclamation costs shall be borne by Contractor.

**Requirements regarding the guarantee period:** For the works executed and material installed at least 5 years from the day of works delivery/taking over.

**Deadline for completion of works:** The works must be completed by 10 September 2018 (no later than 10 September).

**Requirement regarding the method, deadline and conditions for payment**

By Interim situations and Finalised situation based on the final account.

The advance payment is allowed to be requested (the advance amount of 30% of the offered price including VAT, the rest of contracted price shall be paid by Interim situations and Finalised situation based on the final account.

**SUBJECT OF PROCEDURE:**

Subject of the procedure is carrying out the works on the repair of Serbian military cemetery on Zeitenlik in Thessaloniki, Ampelokipoi 561 23, Thessaloniki, Greece, described in details in the Book II and the Main Repair Project.

**NOTE:** For the proper preparation of the offer, interested persons can inspect the place of works and the main project. Insight into the place of works and insight into the main project can be done every working day

(Monday - Friday), at the client's working hours (9:30 - 13:30) with prior announcement. Contact person: Siniša Pavić, Consul General.