BILL OF QUANTITIES
for rehabilitation of road bridge over the Tamis river
in regional road R-110 Section Perlez – Kovacica
ID 25009 Farkaždin-Kovačica

No.	Item description	unit	quantity	price/unit	amount
1	2	3	4	5	6
	1. DISMANTLING AND DEMOLITION WORKS				
1.1	Forming a construction site security service, transportation of machinery and workers, landscaping and reinstating the same to a previous state.				
	Calculation lump sum	lump	1		
1.2	Dismantling and removal of the existing railings on the bridge made of steel box profiles. Item includes removal of material and transportation of removed material to the landfill.				
	Calculation per meter of the railings removed:				
	2 x 144,30 = 288,60	m	289.00		
1.3	Removal of existing asphalt pavement and waterproofing from RC slab of overall average thickness of d = 7.0 cm. Item includes the removal of material and transportation of removed material to the landfill.				
	Calculation per m2 of pavement structure:				
	5,95 x 145,0=	m2	863.00		
1.4	Controlled demolition of elements of footpaths on the reinforced concrete cantilevers. Items includes the removal of material and transportation of removed material to the landfill.				
	Calculation per m3 of concrete:				
	2x0,22x2x20,51+2x0,24x103,50=	m3	68.00		
1.5	Dismantling and removal of existing expansion joints from the bridge structure. Item includes the removal of material and transportation of removed material to the landfill.				
	Calculation lump sum:	lump	1		
	_____				
	TOTAL:				

	2. PRELIMINARY WORKS				
2.1	2.1. Cleaning the surface from the existing RC deck and coating the surface of concrete using coat for the connection of old and new concrete of deck slab. Item includes the provision of all necessary materials for the work.				
	Calculation per m2 of pavement structure:				
	5,95 x 145,0=	**m2**	**863**		
2.2	2.2. Drilling holes Ø12, depth 12cm in the existing RC deck, installation and sealing anchors RO10 using epoxy for connection of old and new concrete according to detail specified in the the design. Item includes the provision of all necessary materials for the work.				
	Calculation per piece of embedded anchors:	pcs	4530		
	_____				
	TOTAL:				
	3. CONCRETE WORKS				
3.1	3.1. Procurement of materials, fabrication and installation of concrete C30 / 37 made of three-fraction aggregate for new deck slab d = 7cm all in accordance with the design documentation.				
	Calculation per m3 of concrete installed:				
	2x7,59x20,51x0,07+7,98x103,5x0,07=	m3	80		
3.2	3.2. Procurement of materials, fabrication and installation of new concrete C30 / 37 on bridge structure cantilever in smooth formwork fully according to the design of the new one.				
	Calculation per m3 of concrete installed:				
	(0,225+0,241)x20,5x2+(0,187+0,222)x103,5=	m3	61.5		
3.3	3.3. Procurement of materials, fabrication and installation of prefabricated masks made of reinforced concrete on bridge structure cantilevers fully in accordance with the design documentation.				
	Calculation per m3 of concrete mask installed:	m3	11.5		
	_____				
	TOTAL:				

	4. REINFORCEMENT WORKS				
4.1	Supply, transportation, production and installation of reinforcement of new pavement RC slab and new bridge structure cantilevers. Reinforcing steel B500.				
	Calculation per kg of reinforcement placed:				
	RA 400/500.	kg	1384		
	Mesh wire Q188.	kg	4272		
	_____				
	TOTAL:				
	5. WATERPROOFING AND ASPHALT WORKS				
5.1	Supply of material and construction of waterproofing over the new RC slab. Waterproofing is based on polymer-bitumen membranes with the previously applied primer.				
	Calculation per m2 of installed waterproofing:				
	(2x20,51+103,5)x6,65=	m2	961.1		
5.2	Procurement of materials and execution of wearing asphalt surfacing AB11s thickness of d = 6.0 cm on the pavement deck.				
	Calculation per m2 of asphalt:				
	(2x20,51+103,5)x5,95=	m2	860		
5.3	Protective coating on the lower visible sides of the concrete surfaces of the main span structure, including cleaning and plastering of joints on the underside of RC carriageway mounting slabs (planned length of the joints 316,16m). In places where damaged protective layer of reinforcement, reinforcement is cleaned and concrete damages plastered (provided surfaces for plastering 60m2). Item includes the provision of all necessary materials and scaffolding for construction works.				
	Calculation per m2 of surface.				
	6,08 x 103,5=	m2	630		

5.4	Cleaning and removal of damaged parts of concrete and plastering of the total visible surface of abutments of the main span structure using repair mortar. In places where the reinforcement is visible, before plastering, reinforcement shall be cleaned and protected using anti-corrosion coating. Item includes the provision of all necessary materials and scaffolding for construction works.				
	Calculation per m2 of surface.				
	2((1,82x1,8+2x0,6)x2 +2x1,8+1,0)x8,5+2x1,0x1,8+(8,5+0,5)x2x2,6)=	m2	214		
5.5	Cleaning and removal of damaged parts of the concrete, partially plastering of piers of main span structure with repair mortar. In places where the reinforcement is visible, before plastering, reinforcement shall be cleaned and protected using anti-corrosion coating. Item includes the provision of all necessary materials and scaffolding for construction works.				
	Calculation per m2 of surface.	m2	20		
5.6	Protective coating on the lower visible sides of the concrete surfaces of access structure. Item includes the provision of all necessary materials and scaffolding for construction works.				
	Calculation per m2 of surface.				
	2x16,0(2x(0,22+0,35)+(0,78+0,6+0,78)x4+0,70x3)==	m2	380		
5.7	Protective coating over the concrete of footpaths. Item includes the procurement of all necessary materials.				
	Calculation per m2 of surface.				
	(2x20,51+103,5)x1,06x2=	m2	306.4		
5.8	Execution of and sealing joints on asphalt along the expansion means and along the curbs. Item includes the procurement of all necessary materials.				
	Calculation per meter of joints.				
	(2x20,51+103,5+17,08)x2 =	m	323.2		
	_____				
	TOTAL:				

	6. OTHER WORKS				
6.1	Supply, transport and installation of expansion joints with a SPACE of ± 50mm.				
	Calculation per m' of built-in expansion joints:				
	8,54x2=	m	17.08		
6.2	Supply, transport and installation of asphalt expansion joints.				
	Calculation per m' of built-in expansion joints:				
	6,0 x2=	m	12		
6.3	Dismantling of existing, procurement, transport and installation of new typical gullies S-6 and S-7 in the existing holes in the pavement slab.				
	Calculation per piece of installed gully:				
	S-6:	pcs	4		
	S-7:	pcs	2		
6.4	Supply, transport and installation of granite stone curbs 13/20 all in accordance with the design documentation.				
	Calculation per meter of built-curb:				
	2 x 144,70 =	m	289.4		
6.5	Supply, transportation, installation and corrosion protection of steel guardrails on the cantilevers of the bridge structure fully in accordance with the design documentation.				
	Calculation per meter of the railings:				
	2 x 144,70 =	m	289.4		
6.6	Corrosion protection of steel bridge structure. The inner surface of the steel box is to be sand blasted before painting to SA21 / 2, and the outer surface degreased and grinded. Item includes the provision of all necessary materials and scaffolding for construction works.				
	Calculation per m2 of surface of the steel structure.				
	The inner surface:	m2	1576		
	The outer surface:	m2	1320		
6.7	As-built Design. The Contractor has to survey the vertical and horisontal position of the bridge and to produce the As-built Design in four hard copies.	ls	1		
			TOTAL:		

SUMMARY:

1	**Dismantling and demolition works**				
2	**Preliminary works**				
3	**Concrete works**				
4	**Reinforcement works**				
5	**Waterproofing and asphalt works**				
6	**Other works**				

OVERALL

ROAD OVERLAPPING BILL OF QUANTITIES

No.	Item description	Unit	Quantity	price/unit	Amount
1	2	3	4	5	6
	A. ROAD				
	I PRELIMINARY WORKS				
1	Setting out the alignment before starting work and maintenance during the works.	m	310.00		
2	Providing and protection of work area. The Contractor, in accordance with the regulations, provides decision by the competent authority on the regulation of traffic during the construction and ensures regulation of both motor and pedestrian traffic during the works. Calculation per m of the street alignment.	m	310.00		
3	Cutting asphalt on the pavement for the purpose of controlled overlapping in newly designed condition.	m	12.00		
4	Mechanical scraping of layer of asphalt - milling in variable thickness including loading of milled material and transportation to landfill up to 5km.	m2	85.00		
7,1	thickness 3cm	m2			
7,2	thickness 4cm	m2			
5	Preparation of construction joints for the continuation of paving at the beginning and at the end of the section	m2	12.00		
		TOTAL I:			
	II EARTHWORKS				
6	Attentive mechanical / manual excavation of material of the third and fourth categories from pavement structure including loading into the vehicle and transportation to the landfill up to 10km.	m3	4.39		
7	Execution of embankments from borrow pits and transportation. The work includes backfilling, spreading, coarse or fine planning, wetting and compaction of the fill material and according to the dimensions specified in the design.	m2	59.00		
8	Execution of earth shoulder with the procurement of soil from the nearest borrow pit to 8km.	m2	29.35		
		TOTAL II:			
	III SUPERSTRUCTURE				
9	Executing a leveling layer of asphalt AB 11 from volcanic stone aggregate d = 3/5 cm in rolled compacted state on the pavement	m2	19.32		
9	Executing a layer of asphalt AB 11 from volcanic stone aggregate d = 5 cm in rolled compacted state on the pavement	m2	29.80		
		TOTAL III:			

No.	Item description	Unit	Quantity	price/unit	Amount
1	2	3	4	5	6
19	Correction of circular and square manhole covers to withstand heavy traffic on the new level of vertical alignment of asphalt on the pavement. (Item includes: excavation with removal of excess material, production of reinforced concrete cornice, installation of the existing manhole cover).	pcs		9,156.00	
20	withstand light traffic on the new level of vertical alignment on the sidewalk. (Item includes: excavation with removal of excess material, production of reinforced concrete cornice, installation of the existing manhole cover).	pcs		9,156.00	
21	Supply and installation of concrete gutters MB30, width 0.75, fully in accordance with the graphic documentation	m		11,772.00	
22	Supply of material and construction of concrete channels below the pavement, as a link of concrete gutters and concrete pipes.	m			
22	Supply of material and construction of concrete slabs in places of concrete channels in the zone of intersection of channels and sidewalk.	m			
	IV OTHER WORKS				
10	Installation of guard rails	m	165.00		
		TOTAL IV:			
	VI. DEWATERING				
23	Manual excavation of material, III and IV categories for a new gutter with loading and transport of material to the	m3		392.40	
24	Manual excavation of material, III and IV categories for concrete pipe to drain water down the embankment with loading and transport of material to the landfill.	m3		394.20	
25	Supply of material and construction of reinforced concrete box with a metal grate for the reception of water from the gutters, with formwork and reinforcement, according to detail	pcs		39,240.00	
26	Construction of reinforced concrete outflow structures in places of water discharges from the pipe in the bed of river Ribnica according to detail	pcs		65,400.00	
27	Supply of material and construction of reinforced concrete drainage channel for dewatering from the structure to the regulated bed of the river Ribnica according to detail, on a layer of gravel of 10 cm	m		3,500.00	
28	Setting concrete pipes F300 for the reception of water from the concrete box	m		6,540.00	
		TOTAL VI:			
		OVERALL:			

Traffic signals

Item no.	Signals element	Unit	Quantity	Unit price per piece (RSD)	Total price (RSD)
	Permanent traffic signals				
1	**Traffic signs**				
1.1	Traffic signs				
	- sign II-30 (40) round 600mm	pcs	2		
	- sign III-61 right-angled 900x1000mm, class II	m2	3.8		
	Total traffic signs				
1.2	Traffic signs supports				
	- single-column support of one sign in length of 2.6 m	pcs	2		
	- double-column support of one sign in length of 2 x 3.2 m	m	6.4		
	Total traffic signs supports				
2	**ROAD MARKINGS**				
2.1	unbroken line of white color, width of d =12 cm	m2	95.4		
	Total lines				
	TOTAL permanent traffic signals				
	Temporary Traffic Signalling				
3	Temporary Traffic Signalling. Supply, transportation, installation temporary traffic signalling according to Design specifications. Temporary traffic signs remain in the possesment of the Contractor after the completion of the works.	lump	1		
	TOTAL Temporary Traffic Signalling				
	TOTAL Traffic Signals				

PRICED BILL OF QUANTITIES - MONTAGE OF THE SIGNBOARDS

Scetch of signboard and method statement for montage attached

No	DESCRIPTION	UoM	Quantity	Unit Price	TOTAL RSD
I	**PREPARATORY WORKS**				
1	Mounting and dismounting of the metal pipe scaffold, fully according to standing regulations and PP measures. The scaffold shall be structurally stable, and properly grounded. Working platforms made of 5cm boards shall be placed at 2.00m of height. From the exterior, 5cm boards shall be placed vertically as guards. The scaffold shall be used throughout the montage of the signboard and untill concrete foundation reaches70% of its load bearing capacity.Same scaffold is to be used for mantage of all signboards. Calculated per m2 of vertical projection of the assembled scaffold.	m2	10.00		
	TOTAL				
II	**EARTH WORKS**				
	Manual excavation of 3rd category soil for signboard foundations. The excavation shall be executed and levelled according to the design and provided elevation points. The sides shall be clean and verticaly cut and the bottom levelled. Excavated soil shall be wheelbarrowed, poured and the terrain levelled or loaded onto a lorry and transported to the town landfill. Calculated per m3 of soil, measured in autochthonous state.	m3	0.50		
	TOTAL				
III	**CONCRETE WORKS**				
	Manufacture of the unreinforced concrete foundation mark MB20;Hight of fuondation is 80cm and other two dimensions 90x60cm. Concrete should be poured over the gravel layer thickness 10cm The top surface shall be floated and the concrete shall be cured according the regulations. Unit price shall consider gravel layr and all neccessary formwork Calculated per m3 of foundation.	m3	0.45		
	TOTAL				
IV	**MONTAGE WORKS**				
	Installation of steel plates for marking of donor.Table is rectangular in shape, dimensions and materialization according to the sketch , mounted on a steel substructure consisting of steel profiles 80x80x4mm , and metal sheet d = 1mm . The total height of the table is 4m, of which 80cm is anchored into the concrete, and the lower angle of table is at a height of 2.2m above ground level. Calculated per peace of installed signboard	kom	1.00		
	TOTAL				

	TOTAL MONTAGE OF SIGNBOARDS WORK				

SUMMARY OF REHABILITATION WORKS ON THE BRIDGE OVER THE RIVER TAMIS
ID 25009 Farkaždin-Kovačica

In Kovačica Municipalitiy

RSD

1	BRIDGE REHABILITATION			
2	ROAD OVERLAPPING			
3	TRAFFIC SIGNALLING			
4	MONTAGE OF THE SIGNBOARDS			

TOTAL	