BILL OF QUANTITES
MAIN DESIGN OF LANDSLIDE REMEDY
on state road of IB class No 28, SECTION: Rogačica - Užice
from km 119+545 to km 119+595, ID 1006

Item	WORKS DESCRIPTION	unit	quantity	unit price	Total RSD
	I - PRELIMINARY WORKS				
1	Construction site formation, construction and installation of temporary structures, delivery and mounting of auxilliary facilitiesand equipment, etc.	lump sum	1		
2	Surveying - pegging of road surfaces, elementary and detailed reference marks of the road, with marking protocol.	lump sum	1		
3	Felling of trees, clearing of shrubs and small vegetation.	lump sum	1		
4	Demolition of pavement structure, transportation and excavation ' - damaged surface: 110.52 m2 - for the culverts construction: 4.3*5.8 = 24.94m2	m²	135		
			TOTAL		
	II - EARTH AND DRAINAGE WORKS				
1	Bulk excavation of earth of second and third category for the purpose of replacing deformed and wet earth of the landslide. Excavation is to be done 100% mechanically, with an excavator or bulldozer. Transportation of excavated earth to a disposal, designated by the Supervisor at a distance up to 2 km. This item provides for work in wet conditions. The disposal is to be done in layers of 40 cm partially compacted. Calculation per m3 of excavated material.	m³	1,627.31		
2	Excavation for the purpose of constructing drainage trenches, shafts and wall foundations in the earth of second, third anf fourth category, 80% mechanically, 20% manually, with supporting of trenches with strong timber. Excavation of trenches involves work in damp and wet soil with possible water pumping. Excavated soil iz to be transported to a disposal at a distance of up to 2 km. The disposal is to be done in layers of 40 cm partially compacted. Calculation per m3 of excavated material.	m³	273.80		

Item	WORKS DESCRIPTION	unit	quantity	unit price	Total RSD
3	Supply, transportation and incorporation of drainage material from crushed stone with grain size of 10-25cm of continuous granulation fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	591.65		
4	Construction of gravel wedge from crushed stone aggreggate with the size of 0-63 mm. The ground from crushed stone aggregate should be of continuous granulometric composition, with the coefficient of uniformity of SU>15, coefficient of curvature of CZ=1-3; percentage of particles smaller than 0,06mm up to 5%, CBR >30%; sand equivalent Es>60, compressability module Ms = 60MPa; the stone should have the internal friction angle of $\phi \geq 42°$	m^3	159.72		
5	Construction of the bearing parts of the pavement structure according to SRPS U.E4.014. Bedding of crushed stone aggregate 0/63mm(with a thickness of 35cm). Planning of layers to be done with grader, with manual repair and rolling with vibratory rollers. 135,5*1,35*0,35=	m^3	64.02		
6	Construction of bearing course from crushed stone aggregate 0/31mm (25cm thick). Planing of layers to be done with grader, with manual repair and rolling with vibratory rollers. 135,5*1,35*0,25	m^3	45.73		
7	Construction of bitumenous bearing course BNS 22 with the thickness of 7cm according to SRPS U.E4.014	m^2	140.00		
8	Construction of wearing asphalt concrete course with the thickness of 5cm according to SRPS U.E4.014.	m^2	135.46		
9	Supply, transportation and incorporation of non-woven geotextile of the type 300 (300gr/m^2) as a filter layer of drainage behind the retaining wall and in the drainage canal. Calculation per m2 of incorporated material.	m^2	968.72		
10	Costruction of a clay cap from a layer of compacted clay with the thickness of 20cm. Calculation per m3. 856.09*0.2=	m^3	171.22		
11	Paving of earth canals with broken stone in a 25cm thick layer with sealing of joints with concrete mortar 1:3. The price includes the supply and transportation of broken stone, cement mortar and construction of paving.	m^2	141.36		
			TOTAL		

Item	WORKS DESCRIPTION	unit	quantity	unit price	Total RSD
	III - CONCRETE WORKS				
1	Concreting of a layer of "lean" concrete under the RC canal, with the thickness of 10cm. Calculation per m3 of incorporated concrete. 0.5*(9.56+10.01+16.45+15.62+6.01)=	m³	28.83		
2	Supply, transportion and incorporation of MB30, M-150 concrete in the foundation of the retaining wall according to the regulations for this kind of works. The item includes necessary levelling of the ground, with necessary formwork, fully in accordance with the detail from the design. Reinforcement is calculated separately. Calculation per m3 of incorporated concrete.	m³	135.30		
3	Supply, transportion and incorporation of MB30, M-150 concrete in previously prepared double-sided formwork according to the applicable regulations for this kind of works. This item covers all necessary carpentry works on the preparation of formwork and scaffolding, and concrete curing after concreting. Reinforcement is calculated separately. Calculation per m3 of incorporated concrete.	m³	107.82		
4	Complete construction of RC shafts with cover, from MB30 concrete, under support protection and pumping of any underground water. Concrete filling to be done from inner formwork to excavation with extraction of timber, fully in accordance with the detail from the design. Calculation per m³ of incorporated concrete. =1.9*1.7*3.7-1.5*1.3*3.2+2*1.8*4.9-1.6*1.4*4.35+1.9*1.7*3.6-1.3*1.5*3.1=	m³	19.19		
5	Construction of open concrete canal from MB30, M-150. The item covers concreting, supply and incorporation of mesh reinforcement along the middle with necessary formwork. =101.89-1.14+2.83=	m'	103.58		

Item	WORKS DESCRIPTION	unit	quantity	unit price	Total RSD
6	Supply and laying of RC pipes for the construction of culverts with the opening F1000, MB40, reinforced with Q785. External surface of pipes towards the fill to be insulated with two coats of bitumen. The price includes supply, laying and joining of culverts and sealing of joints with cement mortar with additive-sealer and waterproofing of culverts. Insulate the external side with two coats of bitumen. First apply cold coating (bitulit), and then hot layer from bitumen-based tapes, with thickness of up to 7mm. Calculation per m of laid pipe. =7.4+20+6.4=	m'	34.00		
			TOTAL		
	IV - REINFORCEMENT WORKS				
1	Supply, cutting, shaping, transportation and laying of ribbed reinforcement RA 400/500 and MA 500/560 with required welding fully in accordance with the design. Works to be executed fully in accordance with the details from the design and Techical norms for this kind of works. Calculation per kg of incorporated steel.	kg	19,214.30		
		TOTAL			
	V - OTHER WORKS				
1	Supply and incorporation of PVC pipes of Ø100 for weepholes fully in accordance with the details given in the design. Calculation per m'. =97*0.7+35*0.2=	m'	74.90		
			TOTAL		
	VI - TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
1	**Vertical traffic signalization**				
	Retroreflective traffic sign of round shape, Ø600mm, class II, with anti-graffiti film				
	Triangular a=90 cm I - 2.1	pcs	1		
	Circular f60 cm II - 28	pcs	1		
	III-12	pcs	1		
	Rectangular 60/90cm III-49	pcs	1		
	Traffic sign carrier post, steel galvanized pipe Ø60 mm with PVC cap				
	2,5	pcs	1		
	2,9	pcs	1		
	3,3	pcs	1		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.15 m	m2	19.00		
3	**Road furniture**				
	Guard rail - single side , type N2W5	m	60.00		
	Oblique guard rail endings JDO, 12m	pcs	2.00		
	Reflective studs (catadiopters)	pcs	4.00		
	Delineators	pcs	4.00		
4	Temporary traffic signalization	lump sum	1.00		
			TOTAL		

Item	WORKS DESCRIPTION	unit	quantity	unit price	Total RSD

SUMMARY:

GROUP OF WORKS		TOTAL AMOUNT	
I	PRELIMINARY WORKS		
II	EARTH AND DRAINAGE WORKS		
III	CONCRETE WORKS		
IV	REINFORCEMENT WORKS		
V	OTHER WORKS		
VI	TRAFFIC SIGNALIZATION AND ROAD FURNITURE		
	TOTAL:		

BILL OF QUANTITES

MAIN DESIGN OF LANDSLIDE REMEDY

on the state road of IB class No 28, SECTION: Rogačica - Užice from km 117+045 to km 117+095, ID 1007

No.	WORKS DESCRIPTION	Unit	Quantity	Unit price	Износ RSD
I	**PRELIMINARY WORKS**				
1	Forming of the construction site, security guard service, transportation of machinery and workers, construction of access roads for machinery.	lump sum	1		
2	Surveying of designed solution.	lump sum	1		
3	Clearing and preparation of the ground - removal of shrubs and other vegetation with loading and transportation to a landfill.	lump sum	1		
4	Milling of the existing surfacing on average in a 5-10 thick layer from pr 3 to pr. 4 and from pr 9 to pr. 10 in places of joning of old and new asphalt layers according to the detail from the design, mechanical loading and transportation of milled material to a disposal up to 10 km away.	m^2	224.00		
	TOTAL :				
II	**EARTH WORKS**				
1	Bulk excavation of earth of third and fourth category for the purpose of removing deformed and running ground and pavement structure in the section affected by the landslide. Excavation is to be done 100% mechanically, with an excavator or bulldozer. Transportation of excavated earth up to 5km to a Disposal, designated by the Supervisor.	m^3	1,445.00		
2	Bulk excavation of earth of third and fourth category for the purpose of drainage trench, and trench for the placement of culvert. Excavation is to be done 80% mechanically, with excavator, and 20% manually, with supporting of trenches with strong timber. Excavation of trenches involves work in damp and wet soil with possible water pumping. Transportation of excavated earth to a distance of up to 5 km to a disposal designated by the Supervisor.	m^3	80.00		

3	Supply, spreading and construction of the section of ebankment from drainage material with the granulation of 31.5/63mm fully in accordance with the design. Compaction with suitable mechanical means in two layers of 50 cm each. Compaction degree of the first layer on the contact to the autochton ground should be Mv,1=25 Mpa, and of the second Mv,2=50Mpa. The material should match the purpose and meet the requirements given in SRPS U.B1.018, B.B8.004 i B.B8.044.	m^3	472.00		
4	Supply, spreading and construction of the section of embankment from drainage material with the granulation of 0/200mm fully in accordance with the design. Compaction with suitable mechanical means in two layers of 50 cm each. Compaction degree of the first layer on the contact to the autochton ground should be Mv,1=25 Mpa, and of the second Mv,2=50Mpa. The material should match the purpose and meet the requirements given in SRPS U.B1.018, B.B8.004 i B.B8.044.	m^3	762.00		
5	Supply and laying of woven geotextile from polypropylene (PP) fibers of high strength. Tensile strength in longitudinal direction of βz>40 kn/m, ε<20%	m^2	763.00		
6	Making of vegetative layer with the thickness of 20 cm on the slopes of the new embankment and cuts with closing. Topsoiling to be done with active topsoil material which guarantees the indurance of vegetation.	m^2	484.00		
7	Construction of shoulders from sandy-gravel soil on the left and right side of the road. Compact the shoulders to Mv=50 Mpa.	m^3	40.00		
	TOTAL :				
III	**CONCRETE WORKS**				
	Construction of reinforced-concrete shaft for receiving and draining water				
8	Concreting of manhole with MB-30, M-150 with covers (see design drawings) and formwork. This item, and price, include the excavation for the manhole and planing of excavated soil around the manhole and making of clear layer. Work on the excavation of shafts involves work in wet conditions with water pumping.	m^3	3.11		
9	Supply, cutting, and laying of ribbed and meshed steel reinforcement RA 400/500 and MAG 500/560 for the construction of RC manhole according to the specification from the technical documentation.	kg	230.00		
10	Complete constructiion of pipe culvert with output concrete head, concrete coating and concrete flume under the RC pipe of Ø1000. Supply and laying of concrete pipes with the diameter of 100 cm, for the construction of culvert with the length of 11.3m from MB 40 concrete, reinforced with MA 500/560m Q785, spacing 100x100mm.	m	12.00		

	Construction of open concrete canal, MB-30				
11	Concreting of open concrete canal and foundation, with MB 30 concrete, resistent to frost M100, with necessary formwork and excavation in the 3rd and 4th category earth. Excavated earth plan left anf right from the canal. 2.4+6.83+1.0=10.23 m3	m^3	11.00		
12	Supply, cutting, and laying of meshed steel reinforcement MAG 500/560, Q331 according to the specification from the technical documentation. 122+353=475	kg	475.00		
	TOTAL:				
IV	**PAVEMENT STRUCTURE**				
13	Construction of the upper bearing course of pavement structure from BNS22sA (bit 60) with the thickness of 6cm. The item covers supply, preparation with mechanical incorporation and compaction with transportation up to 30 km.	m^2	452.90		
14	Construction of the wearing course AB11 (bit 60), with the thickness of 4cm fully in accordance with the details from the design. The item covers supply, preparation with mechanical incorporation and compaction of hot-mix asphalt from mineral material and bitumen in one layer of constant thickness.	m^2	452.90		
15	Construction of the lower bearing course from crushed stone aggreggate of 0/31.5 mm and thickness of 20 cm.	m^3	46.00		
16	Construction of the lower bearing course from crushed stone aggreggate of 0/63 mm and thickness of 30 cm.	m^3	69.00		
	TOTAL:				

V	**TRAFFIC SIGNALIZATION AND ROAD FURNITURE**				
17	**Vertical traffic signalization**				
	Retroreflective traffic sign of octagonal shape, Ø400mm, class II, with anti-graffiti film II-2	pcs	1		
	Retroreflective traffic sign of round shape, Ø400mm, class II, with anti-graffiti film II-43.1	pcs	1		
	Traffic sign carrier post, steel galvanized pipe Ø60 mm with PVC cap, L=3000 mm	pcs	1		
18	**Horizontal signalization**				
	Unbroken white line with the width of 0.15 m	m2	24.8		
19	**Road furniture**				
	Delineators	pcs	8		
20	Temporary traffic signalization	lump sum	1		
	TOTAL:				

SUMMARY:

GROUP OF WORKS				**TOTAL AMOUNT**	
I	PRELIMINARY WORKS				
II	EARTH WORKS				
III	CONCRETE WORKS				
IV	PAVEMENT STRUCTURE				
V	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
TOTAL:					

BILL OF QUANTITES
MAIN DESIGN OF LANDSLIDE REMEDY
on the state road of IB class No 28, SECTION: Rogačica - Užice
from km 111+754 to km 111+825, ID 1008

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Total RSD
I	PRELIMINARY WORKS				
1	Forming of the construction site. Calculation is given as a lump sum.	lump sum	1		
2	Clearing and preparation of the ground. Calculation is given as a lump sum.	lump sum	1		
3	Demolition of the existing pavement in the section of the road where retaining RC wall is constructed in the width of one lane and with thickness of cca. 10cm with mechanical loading and transportation of the material to a disposal at a distance of up to 10 km, fully in accordance with the design. Calculation is given per m2 of demolished pavement.	m²	145.00		
4	Milling of the existing surfacing, in a layer of avegare thickness of 5 cm at the beginning and the end of the section in places of joining old and new asphalt layers, mechanical loading and transportation of the milled material to a disposal at a distance of up to 10 km designated by the Client. Calculation is given per m2 of profiled pavement.	m²	400.00		
5	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1		
	TOTAL:				
II	EARTH WORKS				
1	Mechanical excavation of earth of third and fourth category with demolition of pavement structure in liners of max length of 4m with mechanical loading and transportation of excess earth material to a disposal designated by the Supervisor, at a distance of up to 3 km, fully in accordance with the detail from the design. Calculation per m^3 of excavated material.	m³	1,058.00		
2	Construction of embankment from 3rd and 4th category materials fully in accordance with the detail from the design. Calculation per m3 of constructed embankment.	m³	74.00		
3	Planing, levelling and topsoiling of slopes in accordance with the detail from the design. Calculation per m^2 of laid topsoil.	m²	165.00		
	TOTAL:				

III	REINFORCEMENT WORKS				
1	Supply, transportation and incorporation of reinforcement steel RA 400/500 for the reinforcement of RC retaining wall (on the right side of the road from km 0+069.52 – km 0+120.52) fully in accordance with the detail from the design. Calculation per kg of incorporated material.	kg	9,263.00		
	TOTAL:				
IV	CONCRETE WORKS				
1	Supply, transportation and incorporation of MB 30 concrete for the concreting of RC retaining wall in the length of up to 51m and drainage outfall, together with corresponding formwork. Parameters of resistance: V8, M+S=1, M150. Wall chainage is from km 0+069.52 – km 0+120.52; fully in accordance with the details of the design. Calculation per m^3 of incorporated material.	m^3	145.00		
2	Supply, transportation and incorporation of MB 30 concrete for the concreting of the shoulder between the asphalt flume on the left side and the existing retaining wall fully in accordance with the details of the design. Calculation per m3 of incorporated material.	m^3	5.00		
3	Supply, transportation and incorporation of MB 20 concrete for the levelling of the layers under the footing of the RC retaining wall and the base for the drainage pipe. Fully in accordance with the details of the design. Calculation per m3 of incorporated material.	m^3	29.00		
4	Supply, transportation and incorporation of concrete flume on gravel or lean concrete base for water drainage from the culvert at km 0 + 054.14. Calculation per m of laid flumes.	m	20.00		
5	Supply, transportation and incorporation of MB 30 concrete for the concreting of exit block of the culvert on the lean concrete base, together with accompanying formwork at km 0+054.14. Calculation per number of pieces of constructed exit blocks.	pcs	1.00		
	TOTAL:				

V	DRAINAGE WORKS				
1	Supply, transportation and laying of full PVC pipes of Ø20 cm on a 10 cm thick sand or gravel layer for draining water from the drainage outlet, fully in accordance with the design at km: 0+069.52. The price includes sand/gravel. Calculation per pipe length.	m	7.00		
2	Supply, transportation and laying of geotextile of the type 300g/m^2 at the bottom of the drainage trench on the overhang of the RC wall from km: 0+069.52 to km: 0+120.52 fully in accordance with the design. Calculation per surface area of incorporated geotextile increased by 10% due to overlapping.	m²	443.00		
3	Supply, transportation and laying of semi-perforated PVC pipe of Ø15 cm into the drainage trench from km: 0+069.52 to km: 0+120.52, fully in accordance with the design. Calculation per pipe length.	m	51.00		
4	Construction of drainage filling of the drainage trench on the RC wall overhang from km: 0+069.52 to km: 0+120.52 from CSA with the fraction of 31.5-150 mm, fully in accordance with the design. Calculation per cubic meter of incorporated material.	m^3	448.00		
	TOTAL:				

VI	PAVEMENT STRUCTURE				
1	Mechanical compaction ofsubgrade. Calculation per m^2	m^2	166.00		
2	Construction of a new lower bearing base course from crushed stone aggreggate of 0/63 mm and thickness of 25 cm in certain sections fully in accordance with the design.	m^3	72.00		
3	Construction of a new lower bearing base course from crushed stone aggreggate of 0/31.5 mm and thickness of 25 cm in certain sections fully in accordance with the design.	m^3	49.00		
4	Construction of a new upper bearing base course of BNS22A, with thickness of 6cm fully in accordance with the details from the design.	m^2	550.00		
5	Construction of a new wearing course of AB11s with thickness of 5cm fully in accordance with the details from the design.	m^2	550.00		
6	Construction of asphalt flumes on both sides of the road. The price covers: supply and incorporation of asphalt concrete from lime aggregate with transportation up to 30 km. Calculation is done per running meter.	m	262.00		
7	Supply, transportation and incorporation of high curbs 18/24 next to asphalt flumes on both sides of the road on the base from lean MB15 concrete. Calculation per m of laid curb.	m	165.00		
8	Construction of stabilized shoulders and berms in the section of asphalt flume from crushed stone aggreggate of 0/31, of varying thickness	m^3	10.00		
	TOTAL:				
VII	SPECIAL WORKS				
1	Supply, transport and installation of pedestrian fence on the overhag of the RC retaining wall fully in accordance with the detail from the design.	m	51.00		
2	Cleaning and removal of all material and debris from culvert and remedy of existing culvert on km 0+054.12 with cement mortar if necessary.	pcs	1.00		
	TOTAL:				

VII	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
1	**Vertical traffic signalization**				
	Retroreflective traffic sign of rectangular shape, a=900mm, class II, with anti-graffiti film				
	I-1	pcs	1		
	Retroreflective traffic sign of octagonal shape, Ø400mm, class II, with anti-graffiti film				
	II-2	pcs	2		
	Retroreflective traffic sign of round shape, Ø400mm, class II, with anti-graffiti film				
	II-30(20)	pcs	1		
	III-27(20)	pcs	1		
	Retroreflective traffic sign of square shape, side of 700 mm, class III, with anti-graffiti film				
	III-63 i III-63.2	pcs	9		
	Traffic sign carrier post, steel galvanized pipe Ø60 mm with PVC cap				
	L=3000	pcs	7		
	L=2250 with two holders for traffic signs III-63	pcs	9		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.15 m	m0	24.80		
	Line 1m+1m - with the width of 0.15m	m1	0.60		
	Line 5m+10m - with the width of 0.15m	m2	8.30		
3	**Road furniture**				
	Guard rail - single side with distancer which is mounted on the concrete parapet with poles at a distance of 1.33 meters, H1W5	m	60.00		
	Oblique guard rail endings JDO, 12m	pcs	2		
	Reflective studs (catadiopters)	pcs	4		
	Delineators	pcs	4		
4	Temporary traffic signalization	lump sum	1		
	TOTAL:				

SUMMARY:

GROUP OF WORKS					**TOTAL AMOUNT**
I	PRELIMINARY WORKS				
II	EARTH WORKS				
III	REINFORCEMENT WORKS				
IV	CONCRETE WORKS				
V	DRAINAGE WORKS				
VI	PAVEMENT STRUCTURE				
VII	SPECIAL WORKS				
VIII	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
TOTAL:					

BILL OF QUANTITES
MAIN DESIGN OF LANDSLIDE REMEDY
on the state road of IB class No 28, SECTION:
Rogačica - Kostojevići
from km 64+369 to km 64+419, ID 1011

Item	WORK DESCRIPTION	Unit	Quantity	Unit price	Total RSD
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers, construction of access roads for machinery.	lump sum	1		
2	Surveying of designed solution.	lump sum	1		
3	Clearing and preparation of the ground - removal of shrubs and other vegetation with loading and transportation to a disposal.	lump sum	1		
	TOTAL				
	A. CONSTRUCTION WORKS **II - EARTH AND DRAINAGE WORKS**				
1	Excavation of earth of 2nd and 4th category for the purpose of constructing retaining wall, pipe culverts and manhole. The excavation is to be done 80% mechanically, and 20% manually. Excavation to be done with supporting and pumping of water from the foundation pit. After the excavation, do the planing of the pit bottom with accuracy of ±1.5cm and do the compaction of subsoil to the compressability module of Ms=15.0MRa. Transportation of excavated soil up to a distance of 5km to a disposal designated by the Supervisor. 1074.01+33.812+13.413+119.052=1240.28m2 Calculation per m3 of removed material.	m^3	1,240.28		
2	Mechanical excavation of earth, and to a lesser extent manual, in 2nd and 4th category of soil for the purpose of constructing drainage trench up to the depth of 4-4.5m, with supporting. Timbering to be done with classic timber of appropriate section - vertical planks, beams with 2" planks - tie rods or some newer system - boards and 'Amerikaner' - KRINGS formwork, fully in accordance with the regulations for this kind of work. Properly cut off lateral sides and level the bottom. Transportation of excavated material up to the distance of 5km to a disposal designated by theSupervisor. 244.28+22.54=266.80m3 Calculation per m3 of removed material.	m^3	266.82		

3	Supply, transportation and incorporation of embankment behind the retaining wall with crushed stone, with the grain size of 10-25cm. Calculation per m3 of incorporated material.	m^3	712.83		
4	Supply, transportation and incorporation of filling of drainage trench with crushed stone, with the grain size of 10-25cm. Calculation per m3 of incorporated material.	m^3	244.28		
5	Construction of clay cap of the drainage trench, in a 60 cm thick layer, from inorganic clay, of medium and high plasticity. Compact the clay with compactor. Calculation per m3 of incorporated material.	m^3	44.27		
6	Backfilling behind the retaining walls with selected earth from the excavation in layers not thicker than 30 cm. The backfilling material must not contain organic nor other harmful materials. Filling to be done in agreement with the Supervisor and accordig to the applicable regulations for this kind of works. Calculation per m3 of incorporated material.	m^3	347.57		
7	Filling and compaction of base layer from gravel material up to the compaction degree of Ms=25MPa in a 10 cm thick layer over the previously levelled and compacted subsoil of the foundation pit of the retaining wall. Unit price covers all required works, material, machinery and transport of necessary material. Calculation per m2 of executed layer.	m^2	288.59		
8	Making of vegetative layer with the thickness of 20cm on the slopes of the new embankment. Topsoiling to be done by using active topsoil material which guarantees the durability of vegetation. Calculation per m2 of soiled surface.	m^2	363.69		
	TOTAL				

	III - CONCRETE WORKS				
1	Supply, transportation and incorporation of elements of drainage canal along the crown of the retaining wall from prefabricated trench drains of concrete quality of MB30, resistent to frost M100. 66.0+11.0=77.0m' Calculation per m' of canal.	m'	77.00		
2	Supply, transportation and incorporation of prefabricated elements of collector-drainage trapezoidal canal of concrete quality MB30, resistent to frost M100. The canals flow into receiving RC shaft at km 0+085,00. Calculation per m' of constructed canal.	m'	29.50		
3	Supply, laying and joining of pipes of Ø1000 to be done on a layer of concrete base according to the design and fully in accordance with SRPS U.N1.054. Coat the pipes with MB20 concrete fully in accordance with SRPS U.S4.034. Exit head according to the details given in the design and in accordance with SRPS U.S4.032. Pipe quality must conform to SRPS U.N1.050. Calculation per m' of constructed culvert.	m'	19.39		
4	Supply, laying and joining of refabricated pipes of Ø500 fully in accordance with SRPS U.N1.054. Calculation per m' of constructed culvert.	m'	8.00		
5	Supply of material and construction of a layer for the slope on the culvert side of the foundation pit towards the back side of the wall of MB30 unreinforced concrete, thickness according to the design. Unit price includes all necessary works, transportation and material. Calculation per m3 of incorporated concrete.	m³	20.20		
6	Supply of material and construction of a layer of lean concrete from unreinforced concrete MB20 with the thickness of 10 cm. Base concrete is incorporated over the layer of compacted gravel. Unit price includes all necessary works, transportation and material. Calculation per m2 of incorporated concrete.	m²	288.59		

7	Supply, transportation and incorporation of MB30 concrete, M100 into the retaining wall foundation with mechanical compaction and in accordance with the regulations for this kind of works. Reinforcement is calculated separately. Calculation per m3 of incorporated concrete.	m³	259.95		
8	Supply, transportation and incorporation of MB30 concrete, M100 in preprepared double-sided formwork for reinforced-concrete retaining wall in layers with mechanical compaction of each layer in accordance with the applicable regulations for this kind of works. In addition to the listed, unit price also covers all preliminary works, construction of formwork with all necessary works and material for its assembly and disassembly, with the support and transportation, weepholes and all other works, tools and materials necessary for the execution of works. Reinforcement is calculated separately. Calculation per m3 of incorporated concrete.	m³	242.77		
9	Construction of inspection manhole with a diameter of Ø1000 from prefabricated elements. Initial ring - RC low water channel is placed over the prepared concrete base and over it a required number of RC rings according to the design. The final ring is placed on the top with narrowing and cover. The price covers the supply and mounting of ladders and additional scaffoldings. Calculation per m'.	m'	4.60		
10	Construction of RC manhole from MB30 concrete, resistent to frost M100, in required formwork with mechanical compaction and according to the regulations for this kind of works fully in accordance with the details from the design. Reinforcement is calculated separately. Calculation per m3 of shaft concrete.	m³	8.25		
	TOTAL				

	IV - REINFORCEMENT WORKS				
1	Supply, transportation, cleaning, straightening, cutting, bending and mounting of B500B reinforcement according to SRPS EN10080 standard and fully in accordance with the specifications and reinforcement schedules given in the design. 28196+188+733=29061kg Calculation per kg of installed reinforcement.	kg	29,117.00		
	TOTAL				
	V - OTHER WORKS				
1	Mechanical demolition of the existing retaining wall, loading and transportation of demolished material to a disposal designated by the Supervisor outside the construction site at a distance up to 5km. 66.0*1.60=105.6m3 Calculation per m3 of demolished wall.	m³	105.60		
2	Supply, transportation and incorporation of non-woven geotextile of the type 300 (300gr/m2) as a filter drainage layer behind the retaining wall, or drainage trench. 716.67+711.67=1428.34m2 Calculation per m2 of incorporated material.	m²	1,428.34		
3	Supply and laying of plastic non-perforated corrugated HDPE pipes, with a diamter of Ø300 at the place of exit of the pipe from the drainage canal and in the section between the shafts. The pipes are supplied with all the fittings and joining material. Only good pipes will be laid and fittings that have been atested and that satisfy the SRPS EN 1452 standard. Calculation per m' of laid pipe.	m'	11.50		
4	Demolition of asphalt surfacing of the road in the length of cca. 90m' which will be precisely determined on the spot by the Supervisor and Contractor. Includes items: demolition, loading and transport of demolished material to a disposal designated by the Supervisor at a distance up to 5km. 90*6.5=585.0m2 Calculation per m² of demolished road.	m²	585.00		
5	Supply, transportation and incorporation of lower bearing course of the pavement structure from crushed stone aggregate of 0/31mm with continuous granulometric composition, with the thickness of 25cm in compacted state. Calculation per m3 of incorporated material.	m³	146.25		

6	Supply, transportation and incorporation of upper bitumenous bearing course of BNS32 (thickness of 10cm). Calculation per m2 of constructed layer.	m²	585.00		
7	Supply, transportation and incorporation of the wearing course of the road from AB16 asphalt with the thickness of 6cm in the part of the road section that is being rehabilitated and fitting into the existing road surface. Calculation per m2 of consturcted layer.	m²	585.00		
8	Construction of shoulders from crushed stone aggregate of the size 0 - 31.5mm. Calculation per m3 of incorporated material.	m³	146.87		
9	Construction of concrete drain flume along the retaining wall and in the part of the curve on the local asphalt road in the head part of the landslide. Drain flume is made of MB 30 concrete, resistent to frost M100. Calculation per m' of constructed drain flume.	m'	150.00		
10	Stone lining in concrete of the output canal of the manhole with the thickness of 25cm. Calculation per m' of executed cladding.	m'	11.20		
11	Construction of anti-erosion partitions - wattle dams in locations given in the design. Calculation per m' of executed wattle dams.	m'	55.20		
	TOTAL				
	VI - TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.15 m	m²	40.50		
3	**Road furniture**				
	Guard rail - single side with posts with the spacing of 2.0 meters, N2W4	m	170.00		
	Oblique guard rail endings 12m	kom	2		
	Reflective studs (catadiopters)	kom	9		
4	Temporary traffic signalization	lump sum	1		
	TOTAL				

SUMMARY:

GROUP OF WORKS					
I	PRELIMINARY WORKS				
II	EARTH AND DRAINAGE WORKS				
III	CONCRETE WORKS				
IV	REINFORCEMENT WORKS				
V	OTHER WORKS				
VI	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
TOTAL:					

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE
on the state road of IB class No 28,
SECTION: Rogačica - Bajina Bašta -
Patina vodenica
from km 58+269 to km 58+419, ID 1013

Item	WORKS DESCRIPTION	Unit	Unit price	Quantity	Total RSD
I CONSTRUCTION WORKS					
1	Forming of the construction site, security guard service, transportation of machinery and workers, construction of access roads for machinery.	lump sum	1		
2	Surveying of designed solution.	lump sum	1		
3	Clearing and preparation of the ground - removal of shrubs and other vegetation with loading and transportation to a landfill.	lump sum	1		
4	Bulk excavation of earth of third and fourth category for the purpose of replacing deformed and wet earth of the landslide. Excavation is to be done 100% mechanically, with an excavator or bulldozer. Transportation of excavated earth to a disposal, designated by the Supervisor at a distance up to 2 km. This item provides for work in wet conditions. The landfill is to be done in layers of 40 cm and partially compacted.	m3	7,023.27		
5	Excavation for the purpose of constructing retaining wall and stone structure in the earth of third anf fourth category, 80% mechanically, 20% manually, with supporting with strong timber. Excavation involves work in damp and wet soil with possible water pumping. Excavated soil is to be transported to a disposal designated by the Supervisor at a distance of up to 2 km. Calculation per m3 of excavated material.	m3	1,000.00		

6	Demolition of road pavement with the thickness of 30cm. This item covers demolition, loading and transportation of demolished material to a disposal designated by the Supervisor at a distance of up to 5km.	m3	573.00		
7	Construction of stone structure. Crushed stone should be made from rocks that have compressive strength of 100 Mpa.	m3	2,579.91		
8	Concrete works on the construction of reinforcement-concrete wall of MB 30- M-150 with varying heigth and foundations of constant dimensions. Calculation per cubic meters of incorporated concrete.	m3	1,471.89		
9	Concrete for construction of manhole (2 pieces) in the vicinity of culvert.	m3	11.02		
10	Reinforcement works on the construction of the reinforcement-concrete wall with varying heigth and foundations of constant dimensions. Including 5% wastage. Calculation per kilogram of incorporated reinforcement.	kg	96,905.00		
11	Reinforcement works on the construction of the reinforcement-concrete manhole (2 pieces). Including 5% wastage. Calculation per kilogram of incorporated reinforcement.	kg	1,036.00		
12	Construction of base layer under the foundation of the RC wall.	m2	85.30		
13	Lean concrete under the foundation of the RC wall.	m2	85.30		
14	Lean concrete under the culvert pipe.	m3	15.15		
15	Construction of embankment from crushed stone aggregate of the grain size of 0-63 mm. Ground from crushed stone aggregate should be of continuous granulometric composition, with coefficient of uniformity of CU>15, coefficient of curvature of CC=1-3; percentage of particles that are smaller than 0.06mm up to 5%, CBR >30%; sand equivalent Es>60, compressability modulus Ms = 60MPa; stone should have the internal friction angle of $\phi \geq 42°$	m3	3,351.79		

16	Constrcution of the lower bearing course of the pavement from a layer of crushed stone, with grain size of up to 0-63mm, with continuous granulometric composition, and thickness of 30cm in compacted state in the length of 160m.	m3	670.94		
17	Constrcution of the lower bearing course of the pavement from a layer of ballast, with grain size of up to 0-31mm, with continuous granulometric composition, and thickness of 25cm in compacted state in the length of 160m.	m3	437.52		
18	Construction of the upper bitumenous bearing course from BNS 22, with the thickness of 7cm according to SRPS U.E4.014. in the length of 120m.	m2	1,910.00		
19	Construction of the wearing course of asphalt concrete AB 11s, with the thickness of 5cm according to SRPS U.E4.014. in the length of 120m.	m2	1,910.00		
20	Supply and laying of RC pipes for the construcion of culvert with the opening of 1.0 m1, MB30, reinforced with Q785.	m	23.30		
21	Semi-perforated pipe with the diamter of 200mm for the drainage of water behind the retaining wall. The price includes lean concrete 0.37 m3/m', drain concrete 0.54m3/m' and geotextile 2.22 m3/m' Calculation per m' of completelly incorporated pipe.	m	180.00		
22	Construction of shoulders and berms from crushed stone aggregate of 0/31	m3	85.52		
23	Delivery and installation of prefabricated drain flumes	m	162.00		
24	Drain pipes (weep holes) with the diameter of 52mm partially perforated along the rim	m	40.00		
	TOTAL CONSTRUCTION WORKS:				

II TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
26	**Vertical traffic signalization**				
26.1	Standard traffic sign of class 2				
	Triangular, a=90 cm				
	I-1	pcs	1		
	I-1.1	pcs	1		
	Round Ø600mm				
	II-30	pcs	2		
26.2	Traffic sign carrier post, steel galvanized pipe Ø60 mm with PVC cap				
	L=3900 mm	pcs	2		
27	**Horizontal signalization**				
27.1	White unbroken line with the width of 0.15 m	m2	365		
28	**Road furniture**				
28.1	Guard rail -single side, with poles at a distance of 2.0 meters, N2W4	m	310		
28.2	Oblique gurad rail endinngs 12m N2W4	pcs	2		
28.3	Reflective studs (catadiopters)	pcs	16		
28.4	Delineators	pcs	17		
29	Temporary traffic signalization	lump sum	1		
TOTAL TRAFFIC SIGNALIZATION AND EQUIPMENT:					

SUMMARY

I CONSTRUCTION WORKS				
TION AND ROAD FURNITURE				
TOTAL:				

BILL OF QUANTITIES

MAIN DESIGN OF LANDSLIDE REMEDY

Kremna - Mokra Gora

from km 501+050 to km 501+138, ID 1024

Item	WORKS DESCRIPTION	Unit	Unit price	Quantity	Total RSD
I CONSTRUCTION WORKS					
1	Forming of the construction site, security guard service, transportation of machinery and workers, construction of access roads for machinery.	lump sum	1		
2	Surveying of designed solution.	lump sum	1		
3	Clearing and preparation of the ground - removal of shrubs and other vegetation with loading and transportation to a landfill.	lump sum	1		
4	Demolition of the existing stone wall on the right side of the road over which the land slided from the slope.	lump sum	1		

5	Excavation of earth of third and fourth category for the purpose of founding the retaining RC wall. Excavation is to be done 90% mechanically, with an excavator, and 10% manually. Excavated trenches, where needed, partly support and timbering. The excavation of foundation involves work in wet conditions with possible pumping of water. Transportation of excavated earth to a transportation length of up to 2km. Foundations of supporting structure to be done according to the Design. RC wall 1: 425.75m^3 RC wall 2: 782.44m^3	m^3	1,208.19		
6	Excavation of earth of third and fourth category for the purpose of constructing drainage trenches, to be done 80% mechanically, and 20% manually, with supporting with strong timber. The excavation of trenches involves work in wet conditions with possible pumping of water. Transportation of excavated earth to a disposal at a distance of up to 2km. Calculation per m3 of excavated material. A-C: 124.95m^3 B-C: 158.46m^3 C-D: 73.5m^3	m^3	356.91		
7	Excavation of earth of third and fourth category for the purpose of constructing RC shaft, to be done 80% mechanically, and 20% manually, with supporting with	m^3	55.10		

8	Excavation of drainage trenches and filling behind the RC walls with crushed stone of grain size of 10-25cm, of continuous granulation fully in accordance with the design. Calculation per m3 of filled material. A-C: 139.5m^3 B-C: 154.6m^3 C-D: 83.5m^3 RC wall 1: 400.71m^3 RC wall 2: 768.54m^3	m^3	1,686.63		
9	Supply, transportation and incorporation of concrete base for the constructiion of the foundations of RC walls and RC canals from MB20 concrete. RC wall 1: 18.6m^3 RC wall 2: 44.1m^3 RC canal 1: 5.04m^3 RC canal 2: 2.12m^3 RC canal 3: 4.43m^3 RC canal 4: 4.83m^3 concrete drain flume: 2.11m^3	m^3	81.23		
10	Supply, transportation and incorporation of concrete for the purpose of constructing concrete coating of the culvert according to SRPS U.S4.034 and foundations under the paved slope of the road embankment from MБ30 concrete.	m^3	6.66		

11	Supply, transportation and incorporation of concrete for the purpose of constructing the retaining wall from МБ30, М-150, into prepepared formworks in layers with the thickness of 30cm with mechanical compaction of each layer according to the applicable regulations for this kind of works. This item covers all required carpentry works on the preparation of formworks and scaffolding and concrete curing after concreting. RC wall 1: 191.47m^3 RC wall 2: 438.21m^3	m^3	629.68		
12	Supply, transportation, cutting, shaping and laying of ribbed reinforcement RA 400/500 and meshed reinforcement MA 500/560 RC wall 1: 7.500.9kg RC wall 2: 20.645.0kg RC canal 1: 860.0kg RC canal 2: 361.4kg RC canal 3: 952.0kg RC canal 4: 792.2kg RC shaft: 421.4kg	kg	28,567.30		
13	Complete construction of RC manhole with cover, from МБ30, М-150, concrete, under the protection of support and possible groundwater pumping. Concrete filling to be done from inner formwork to excavation, with pulling out of timber, fully in accordance with the details from the design. Calculation per m^3 of incorporated concrete.	m^3	7.01		

14	Filter layer of thermo pressed non-woven geotextile of type 300, (300 g/m2). Calculation per m^2 of laid geotextile. A-C: 275.56m^2 B-C: 322.1m^2 C-D: 126.8m^2 RC wall 1: 441.48m^2 RC wall 2: 795.8m^2	m^2	1,961.74		
15	Construction of clay cap from a layer of compacted clay with the thickness of 30cm above the drainage trenches and the filling behind the RC walls. A-C: 11.7m^3 B-C: 15.3m^3 C-D: 6.39m^3 RC wall 1: 100.13+21.2m^3 RC wall 2: 102.97m^3	m^3	257.69		
16	Supply and laying of RC pipes for the construction of culvert with the oopening of Æ600, MB40, reinforced with Q785. Calculation per m' of laid pipe.	m'	12.00		
17	Construction of open concrete canal 1 and 2 from МБ30. The item includes concreting, supply and incorporation of mesh reinforcement along the middle with necessary formwork. Calculation per m^1 of constructed canal. RC canal 1: 860.0kg RC canal 2: 361.4kg RC canal 3: 952.0kg RC canal 4: 792.2kg	m'	307.00		
18	Executio of prefabricated concrete drain flume behind the RC wall 1 from MB40	m'	40.00		

19	Supply and laying of semi-preforated OVC pipe, with a diameter of Ø150 at the bottom of the stone filling behind the RC wall 2, according to the design. The pipe is perforated on the upper side, and they are supplied with all fittings and joining materials. Only good pipes will be laid and fittings that have been attested. Plastic pipes to be taken out from the drainage behind the RC wall 2 and introduced into the newly designed shaft. Calculation per m' of laid pipe.	m'	85.50		
20	Slope planing and soiling in the layer of 20cm mixed with grass seeds.	m^2	6,000.00		
21	Paving of the slope of road embankment below the culvert exit with crushed stone in the layer of 25cm with sealing of joints with cement mortar in the ratio of 1:3. The price includes supply and transportation of crushed stone, cement mortar and paving.	m^2	6.45		
22	Backfilling of trench after the construction of concrete culvert with gravelly sand material the size of 0-63 mm. Ground from sandy gravel material should be of continuous granulometric composition, with the coefficient of uniformity of CU>15, coefficient of curvature of CC=1-3; percentage of particles smaller than 0.06mm up to 5%, CBR >30%; sand equivalent Es>60, compressability modulus Ms = 60MPa;	m^3	29.12		

23	Construction of the lower bearing course of the pavement structure from a layer of crushed stone material, with the grain size of up to 0-63mm, and continuous granulometric composition, with the thickness of 35cm in compacted state in the place of construction of concrete culvert.	m^3	15.44		
24	Construction of the lower bearing course of the pavement structure from crushed stone material, with the grain size of up to 0-31mm, and continuous granulometric composition, with the thickness of 25cm in compacted state in the place of construction of concrete culvert.	m^3	11.54		
25	Construction of the upper bitumenous bearing course from BNS 22 with the thickness of 11cm according to SRPS U.E4.014. in the place of construction of concrete culvert.	m^2	43.21		
26	Construction of the wearing course of asphalt concrete AB 11 s with the thickness of 4cm according to SRPS U.E4.014. in the place of construction of concrete culvert.	m^2	43.82		
	TOTAL CONSTRUCTION WORKS:				

II TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
28	**Horizontal signalization**				
28.1	White unbroken line with the width of	m2	59.5		
29	**Road furniture**				
29.1	Guard rail - single side, with poles at a	m	192		
29.2	Oblique gurad rail endinngs 12m N2W4	pcs	2		
29.3	Reflective studs (catadiopters)	pcs	8		
29.4	Delineators	pcs	8		
29.5	Temporary traffic signalization	ump sun	1.00		
	TOTAL TRAFFIC SIGNALIZATION AND EQUIPMENT:				

SUMMARY

	I CONSTRUCTION WORKS				
	II TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
	TOTAL:				

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY
ON THE STATE ROAD OF IIA CLASS NO 171 SECTION: BAJINA BAŠTA - DUB
FROM KM 104+854 TO KM 104+954, ID 1025

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Total RSD
I	PRELIMINARY WORKS				
1	Forming of the construction site, construction and installation of temporary structures, delivery and installation of ancilliary facilities and equipment, preparation of working plateau, construction of access roads for machinery, etc.	lump sum	1		
2	Surveying - pegging of traffic surfaces, elementary and detailed benchmarks of the road, with the protocol of marking.	lump sum	1		
3	Felling of trees, clearing of undergrowth and small vegetation.	lump sum	1		
	TOTAL:				
II	EARTH WORKS				
4	Excavation of earth in tunnel liners, mechanically, and to a lesser extent manually, in the soil of 3rd and 4th category for the purpose of constructing drain trenches up to the depth of 4m, manhole and for pipe culvert. The excavation should be done 60% mechanically, with an excavator, and 40% manually. Lateral sides should be regularly cut and the bottom levelled. The transportation of the excavated soil should be done up to a distance of 5 km to a disposal determined by the Supervisor.	m3	564.94		
5	Supporting of the trench the entire length on two sides, the classic way or with heavy metal formwork of the type . The supporting should be done double-sided for safe work in the trench. The price includes the delivery of the formwork to the site, installation, disassembling, cleaning and returning to the plant.	m2	564.00		
6	Supply and laying of non-woven geotextile from polypropylene fibers (PP), with the weigth of 300gr/m2, with tensile strength of $\beta z \geq 20$ kN/m, and elongation of $\varepsilon \geq 55\%$.	m2	1,081.00		

7	Supply and laying of water impermeable geomembrane from thermoplastic synthetic film produced from low density poly-ethylene (LDPE), with the thickness of 1.5mm.	m2	454.02		
8	Supply and laying of hard plastic pipes (HDPE), with the diameter of Ø400mm. The pipes are perforated on the upper part. The pipes must be with fittings and materials for joining. They must comply with SRPS EN 1452.	m1	94.00		
9	Filling of drain trenches with crushed stone, with the grain size of 10-25cm. The filling of the trenches should be done in layers of 50-100cm. Crushed stone must be firmsolid and clean and resistant to frost, with compressive strength of >120MPa and with excellent resistance properties φ>42°.	m3	252.86		
10	Mechanical excavation of earth in a wide excavation, 2nd to 4th category for the purpose of removing deformed and displaced ground of the road embankment in the section affected by the landslide. The excavation should be done 80% mechanically, and 20% manually. The excavation should be done with side cutting from the top to the bottom. Transportation of the excavated soil should be done up to a distance of 5km to a disposal determined by the Supervisor.	m3	75.60		
11	Construction of a part of the embankment from mixed sandy-gravel material. Before spreading, the steppes with cross slope are construced. The embankment is constructed from mixed material, with the grain size of 0-60mm, bulk density of γ>19kN/m3, widely granulated Cu > 9, ϕ>32°. Compacting should be done in layers of 30-60cm. The works include the supply of material, spreading, rough and fine grading, wetting and compacting of the embankment.	m3	100.98		
12	Making of the vegetation layer with the thickness of 20cm on the slopes of the new embankment. Topsoil should not be excavated separately, but selected from wet soil excavated during the removal of the original deformed embankment.	m2	151.20		
	TOTAL:				

III	CONCRETE WORKS Concrete works on the construction of flume, canal, manhole, culvert and gutter				
13	Construction of concrete flume from lean MB15 concrete, with the thickness of 30cm and with a cross-fall of 4%.	m1	30.08		
14	Construction of concrete canal for receiving and draining water from the backside of the top of the trench. Construct the canals from MB-30 concrete, M-100, with mesh steel reinforcement Q 553 in the middle. Do the canals in tunnel liners.	m1	94.00		
15	Construction of concrete manhole, with rectangular cross-section. The manholes are to be constructed from MB-30 concrete, M-150, with steel reiforcement according to the design. Cast iron ladders (DIN 1211a) should be treated with cement mortar in two layers, with skimming to black shine, and coated with bitulit on the outside. The price includes excavation, timbering of the trench, planning of the trench bottom, construction of the base from gravel or sand, formwork with the stiffening of the walls and slab, laying of reinforcement, concreting, construction of ladders and coating of walls.				
	concrete:	m3	5.00		
	reinforcement:	kg	116.94		

16	Construction of concrete culvert. The culvert has a diameter of 1000mm, double reinforced, and made form MB-40 concrete, M-150. The outer surface of the pipe towards the embankment should be insulated with two coats of bitumen. At the end of the culvert, construct outlet head from MB-30 concrete, M-150. The price includes the excavation of the trench (3rd and 4th category of soil), supply, laying and extension of the culvert and sealing of joints with cement mortar with additive-sealer, and construction of outlet head.	m1	11.00		
17	Construction of the hydro insulation of the culvert. The outer side should be insulated with two coats of bitumen. First the cold coat (bitulit) should be applied, and then the hot coat from bituminous tapes, with a thickness of up to 7mm.	m2	41.47		
18	Construction of concrete gutter on the left side of the road for receiving and controlled draining of water from the pavement. The gutter should be constructed from MB-30 concrete, M-150, resistant to frost and salt. Mesh reinforcement Q188 should be laid in the middle. The price includes the supply and laying of mesh reinforcement and concreting of the gutter on the spot with necessary formwork.	m1	80.00		
Concrete works on the construction of drilled piles and capping beam					
19	Construction of drilled piles from MB-30, with a diameter of 90 cm. The item includes mechanical excavation (in all categories) and concreting of piles. During the excavation, the excavated material needs to be plotted.	m1	327.50		
20	Concreting of the capping beam, measuring b/h=120/90cm, from concrete of quality MB-30, M-150, with necessary formwork. The price includes the cropping of RC piles by min. 30 cm.	m1	67.80		
21	Supply, construction and laying of reinforcement RA400/500, GA240/360 and MAR500/560 for piles and capping beam fully in accordance with the design.	kg	63,173.29		
	TOTAL:				

IV	PAVEMENT				
22	Construction of the bearing course of the pavement according to SRPS U.E4.014. The subgrade from crushed stone aggregate of 0/63mm (with the thickness of 30cm). Planning of layers should be done with a grader, with manual repairs and rolling with vibrating rollers.	m3	0.48		
23	Construction of the sub base layer from crushed stone aggregate of 0/31mm (with the thickness of 15cm). Planning of layers should be done with a grader, with manual repairs and rolling with vibrating rollers.	m3	0.24		
24	Construction of the wearing course of the pavement from asphalt AB11, the thickness of the course is 5cm. The works include the supply of material, preparation, mechanical incorporation and compacting of asphalt layers on cleaned surface.	m2	0.08		
	TOTAL:				
V	OTHER WORKS				
25	Supply and installation of equipment for geodetic and geotechnical observation of the structure. The observation is done by establishing a network of geodetic benchmarks and one inclinometer and one piezometer.				
	- geodetic benchmarks	pcs	6.00		
	- inclinometric structure from a plastic pipe with grooves and secured with concrete block measuring 0.5 x 0.5 x 0.2 m and protective cap.	m1	14.00		
	- piezometric structure from a PVC pipe, with the diameter of 65-90 mm, backfilled with sorted filter and with sedimentation trap and secured with concrete block and cap	m1	14.00		
	- observation of inclinometric and piezometric structures and geodetic benchmarks	pcs	12.00		
	TOTAL:				

VI	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
27	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	12.00		
	White broken (5+10) line with the width of 0.12m	m^2	6.60		
28	**Road furniture**				
	Guardrail N2W4		80		
	Obilque gurdrail endings N2W4, 12 m	pcs	2		
	Reflective studs (catadiopters)	pcs	5		
29	**Temporary traffic signalization**	lump sum	1		
	TOTAL:				

SUMMARY:

GROUP OF WORKS				**TOTAL**	
I	PRELIMINARY WORKS				
II	EARTH WORKS				
III	CONCRETE WORKS				
IV	PAVEMENT				
V	OTHER WORKS				
VI	TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
TOTAL:					

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	**PRIPREMNO ZAVRŠNI RADOVI**				
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		
	UKUPNO PRIPREMNO ZAVRŠNI RADOVI				
II	**ZEMLJANI RADOVI**				
	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	3.5		
	UKUPNO ZEMLJANI RADOVI				
III	**BETONSKI RADOVI**				
	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	3.15		
	UKUPNO BETONSKI RADOVI				
IV	**MONTAŽERSKI RADOVI**				
	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	7		
	UKUPNO MONTAŽERSKI RADOVI				

	TOTAL MONTAGE OF SIGNBOARDS WORK				

TOTAL
BoQ FOR REMEDY OF SEVEN LANDSLIDES ON THE STATE ROAD OF IB 28 AND IIA 171

In Užice and Bajina Bašta Municipality

I	6 Rogačica - Užice from km 119+545 to 119+595, ID 1006	
II	7 Rogačica - Užice from km 117+045 to 117+095, ID 1007	
III	8 Rogačica - Užice from km 111+754 to 111+825, ID 1008	
IV	9 Rogačica - Kostojevići from km 64+369 to 64+419, ID 1011	
V	10 Rogačica - Bajina Bašta from km 58+269 to 58+419, ID 1013	
VI	11 Kremna - Mokra Gora from km 501+050 to 501+138, ID 1024	
VII	45 Bajina Bašta-Dub from km 104+854 to104+954, ID 1025	
VIII	MONTAGE OF THE SIGNBOARDS	
	TOTAL	