BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY
on the state road of IIA class No 141, SECTION: Pecka - Ljubovija
from km 5+230 to km 5+250

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I CONSTRUCTION WORKS				
1	Preliminary works, which include the construction of access roads for the machinery, possible deviations, surveying, clearing of the ground from undergrowth and vegetation	lump sum	1.00		
2	Excavation of 3rd and 4th category of earth in bulk excavation, existing, cracked and deformed pavement , mechanically 100% with transportation of soil up to 1 km. Bulk excavation must be done, because the pavement structure is cracked and deformed, and its subgrade is in wet condition, non-resistant to smallest burden, and must be replaced	m3	300.00		
3	Excavation of 3rd and 4th category of earth (pav. struct.) for the purpose of constructing drainage trenches (ribs), perpendicular to the centre line, located at km:5+225.34, km:5+235.34 and km:5+240.34, with a depth from 0 to 5m1. Excavation is to be done 80% mechanically and 20% manually. The width of all three trenches is 1.50 m1. During excavation, support and timber the trenches. Part of the excavated soil to be left for the topsoil layer, and part to be transported within 1 km. The item covers work in damp and wet soil and pumping of water. Excavation of trenches to be done according to the plans and design.	m3	388.56		
4	Supply and laying of filter-separating layer from non-woven polypropylen (PP) geotextile, type 300gr/m2.	m2	37.50		
5	Supply and incorporation of crushed stone for the construction of the filling of drainage trenches. The size of the stone pieces is 10-25 cm, with continuous granulation, resistant to water, with compressive strength of 100MPa, water absorption less than 3%.	m3	278.86		
6	Construction of concrete gutter on the right, hill side of the road, with dimensions according to the detail from the design, made from MB 25 concrete, resistant to frost M-50.	m1	50.00		

7	Construction of a topsoil layer on the surface of the drainage trenches beyond the substructure in a 20 cm thick layer. Topsoil layer to be made from soil obtained by digging the drainage trenches.	m2	58.46		
8	Excavation of 3rd and 4th category of earth for the purpose of constructing foundations of the exit portal of drainage trenches, with transportation of excavated soil at 1 km. -1m x 1.5m x (10+5)m	m3	22.50		
9	Construction of reinforced-concrete (RC) portals, to drain groundwater collected on the surface of the terrain. -(1.5x1+0.6x2.9)m x (10+5)m	m3	49.50		
10	Supply, transportation, cutting and laying of steel ribbed RA 400/500-2 reinforcement, for the reinforcement of concrete exit portals.	kg.	389.30		
11	Construction of the subgrade of the new pavement levelling, planing and compacting to 98% of the standard Proctor test).	m2	400.00		
12	The existing culvert at km: 5+222.84 is overgrown with weeds, and the exit of the culvert is full of sediments, so it is not possible to assess whether it is in adequate state or not. When bulk excavation on the landslide is done, its state will be visible and the decision on whether to demolish it or repair will be made. For now, in this item, we include cleaning and repair of the culvert.	paušalno	1.00		
13	Construction of a sub base from sandy gravel soil. The sandy gravel soil should be of continuous granulometric composition, with maximum grain size of 33mm. Bulk density in compacted state should be greater than 18 kN/m3. Soil particles smaller than 0.066 mm, less than 3%. Coefficient of uniformity of Cu>4; coefficient of curvature between Cc=1-3. Compaction to be done until the compressibility module of Mv=50 MPa is achieved.	m3	400.00		
14	Construction of the lower bearing course from crushed stone aggregate (broken stone), layer thickness of 20cm in compacted state, grain size from 0 to 30mm. Compaction to the compressibility module of Mv=70 Mpa.	m3	75.00		
15	Construction of the upper bearing course from asphalt concrete (binder) with a thickness of 6 cm.	m2	355.00		
16	Construction of the wearing course of asphalt concrete layers with a thickness of 4 cm.	m2	355.00		
17	Construction of shoulders from sandy gravel soil, coated with topsoil. The sandy gravel soil should be of continuous granulometric composition, with maximum grain size of 33mm. Bulk density in compacted state should be greater than 18 kN/m3. Soil particles smaller than 0.066 mm, less than 5%. Coefficient of uniformity of Cu>4; coefficient of curvature between Cc=1-3. Compaction by standard Proctor test of 98%. Topsoil with which the shoulder is coated is not separately dug, but damp earth from the wide excavation and excavation for drainage ribs is used.	m3	42.00		
			TOTAL:		

	II TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
	Permanent				
1.0	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	35		
2.0	**Road furniture**				
	Guardrail N2W4	m	97		
	Oblique guradreil endings N2W4, 12 m				
	L=12m na H1W4	pc	2		
	Reflective studs (catadiopters)	pc	6		
	Delinators	pc	6		
3.0	**Temporary traffic signalization**	ls	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
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 141, SECTION: Pecka - Ljubovija
from km 4+500 to km 4+565

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Marking of the route The item covers the pegging of the route, all surveys related to the transfer of data from the design onto the terrain and maintenance of the pegged markings on the terrain during the execution of works.	km	0.17		
2	Clearing of the terrain. The item covers all phases of clearing of the existing terrain. The works includes the removal of various garbage, clearing of the existing shrubs and felling of small trees with transportation of the material to a landfill within 1 km.	m^2	1,000.00		
3	Felling of trees with a chainsaw with cutting of branches and leaving aside.				
	diameter 20-30 cm	pcs	20.00		
	diameter 30-50 cm	pcs	5.00		
4	Demolition of concrete gutters, with loading of debris and transportation to a disposal within 10km from km 0+017 to km 0+048, left from km 0+109 to km 0+130, left from km 0+141 to km 0+180, left with transportation of debris to 20m and transportation to a disposal.	m	91.00		
5	Demolition of the existing concrete culverts, with loading of debris and transportation to a disposal within 10km				
	diameter 300 mm, km 0+130 - km 0+141	m	11.00		
	diameter 1000 mm, at km 0+112.3	m	12.00		
6	Demolition of the curb 18/24 with a pick-hammer, with loading of debris and transportation to a disposal within 10km from km 0+048 to km 0+109, left. with transportation of debris to 20m and transportation to a disposal.	m	61.00		
7	Demolition of asphalt surfacing in a layer of 10 cm with a grader, with mechanical loading and transportation of material within 10 km	m2	544.50		

8	Demolition of the base course in a layer of 35 cm with a grader, with mechanical loading and transportation of material within 10 km	m2	506.68		
9	Milling of the existing asphalt, 5-10cm cm thick layer. The item covers the work of milling mashine, a tank truck, and compressor on the milling of asphalt, transportation of milled material within 10 km and work of workers on securing traffic. The calculation is done per m2 of milled pavement with an average thickness of 5-10 cm with loading of material and transportation to a disposal designated by the Supervisor.	m2	211.63		
10	Preparation of construction joints of the existing pavement. The item covers all phases of preparation of the layers of existing pavement for joining with the new pavement. The work includes regular stepped cutting of the existing asphalt pavement in a layer of 5cm, and with the width at the length of joining. Calculation is done per m' of prepared joint of the existing pavement, as approved by the Supervisor.				
	at positions of fitting into the existing pavement	m	12.50		
	at positions of upgrade of gutters at km 0+051 - km 0+063, right	m	12.00		
	at position of demolishing gutters and construction of new shoulder at km 0+048 - km 0+063, left	m	15.00		
			TOTAL:		
	II EARTH WORKS				
11	Mechanical excavation of topsoil. The item includes mechanical excavation of topsoil with an average thickness of 20cm, according to the cross sections, with pushing to 60 m and local stock piling on the side for further use, fully in accordance with the design and according to technical requirements. The works on the excavation of topsoil are charged per m^3 of material, as approved by the Supervisor.				
	90% mechanically	m3	907.27		
	10% manually	m3	100.81		

12	Mechanical excavation of eart material of 3rd and 4th category. The item icludes mechanical and manual excavation of earth material for the construction of traffic surfaces, in accordance with the cross-sections and local stock piling on the side for further use or transportation at a distance of up to 10km, fully in accordance with the design and technical requirements. Calculation is done per m^3 of excavated earth material, as approved by the Supervisor.	m3	9,935.30		
13	Subsoil treatment (foundation soil) . The item includes compaction, possible scarifying, for the purpose of drying or moistening of natural virgin soil on the which the founding (construction) of the pavement is done in a layer determined by the design (approximately 30cm). Calculation is done per m^2 of completed foundation soil, as approved by the Supervisor.	m2	3,245.78		
14	Replacement of material in the embankment with crushed stone material of 0/63 mm. The item includes the replacement of the material in the embankmnet at positions and in layers according to the design, with supply and transportation of the material within 30 km. All work must be executed in accordance with the design and technical requirements. The calculation is done per m^3 of incorporated material where approved by the Supervisor.	m3	853.13		
15	Construction of the fill from crushed stone material of 0/200 mm. The construction of the fill includes the supply and transportation of the material to 30 km, filling, spreading, course and fine planing, wetting and compaction of material in the fill, according to the dimensions determined in the design. All work must be executed in accordance with the design and technical requirements. The calculation is done per m3 of incorporated material where approved by the Engineer.	m3	13,477.20		

16	Subgrade treatment. The item includes the subgrade treatment of the final layer of the base course in the material of 5th and 6th category, over which the lower bearing course of the pavement structure is constructed. This work includes planing, possible remediation, wetting, or drying of the soil, and compaction to the prescribed compaction degree, fully in accordance with the technical requirements. Calculation is done per m2 of completed and compacted bedding, as approved by the Supervisor.	m2	881.07		
17	Topsoiling of the ground. The item includes the protection of shoulders, berms, and slopes of the embankment with soiling and grassing in layers of 20cm and 60cm, fully in accordance with the design and technical requirements. Calculation is done per m^2 of topsoiled and grassed slope, as approved by the Supervisor.				
	in a 20 cm thick layer	m2	788.00		
	in a 60 cm thick layer	m2	3,162.93		
18	Transportation of the excess topsoil and earth material. The item includes mechanical loading and transportation of excess excavated topsoil and earth material to a distance of 10km, fully in accordance with the design and technical requirements. Calculation is done per m^3 of transported material, as approved by the Supervisor.	m3	12,440.39		
			TOTAL:		
III PAVEMENT STRUCTURE					
19	Layer from crushed stone materail of 0-63mm. The item includes supply, incorporation, course and fine spreading, possible wetting, and compaction of the bearing course from crushed stone material, according to the dimensions given in the design. Paid per m^3 of actually completed, compacted lower bearing course, as approved by the Supervisor, in a 20 cm thick layer.	m3	198.04		

20	Layer from crushed stone materail of 0-31.5mm. The item includes supply, delivery, incorporation, course and fine spreading, possible wetting, and compaction of the bearing course from crushed stone material, according to the dimensions given in the design. Paid per m3 of actually completed, compacted lower bearing course, as approved by the Supervisor, in a 20 cm thick layer.	m3	135.47		
21	Construction of the upper bitumenous bearing course from BNS 22A. Construction of the upper bitumenous bearing course from BNS 22A in a 6cm thick layer. The work includes the supply of necessary material, preparation and incorporation in layers according to the design, on the road surface and gutter. Calculation is done per m^2 of incorporated layer, as approved by the Supervisor.				
	on the road surface, 6 cm thick	m2	720.93		
	on the gutter, 6 cm thick	m2	65.00		
22	Construction of a wearing course from asphalt concrete AB 11. The item includes the construction of the wearing course from AB11 in a 4cm thick layer. The work includes the supply of necessary material, preparation and incorporation in layers according to the design, on the road surface and gutter. Calculation is done per m2 of incorporated layer, as approved by the Supervisor.				
	on the road surface, 4cm thick	m2	720.93		
	on the gutter, 4cm thick	m2	65.00		
23	Construction of prefabricated concrete curbs. The item includes the supply and installation of concrete curbs on the base from MB15 concrete. The calculation is done per m' of completed curb. Curb 24/18cm, from km 0+051 to km 0+174	m	123.00		

24	Construction of prefabricated concrete gutters-channels along the slope of the high fill on the base from MB15 concrete. The item includes the supply, transportation to 30 km and incorporation of MB15 concrete in the base, and installation of prefabricated gutters. To prevent the sliding of the gutters, the concrete base is placed on the stepped slope of the fill. The cutting of the slope is included in the price. Calculation is done per m' of completed curb at km 0+051, and km 0+109	m	69.50		
			TOTAL:		
	IV CONCRETE WORKS				
25	Supply, transportation and incorporation of material for the construction of RC canal K1 on the left side of the road from km 0+016.25 to km 0+174 and in sections of joining with the existing gutters, and of RC canal K2 at the point of discharge of water from the culvert at km 0+169, from MB30 concrete resistant to frost and water. Calculation per m3 of incorporated concrete.	m^3	40.00		
26	Supply, transportation and incorporation of material for the construction of RC from MB30 concrete resistant to frost and water, for the drainage of collected water in canal K1 to the culvert at km 0+169. Calculation per m3 of incorporated concrete.	m^3	3.50		
27	Construction of the area for the spilling of water collected in the culvert, from MB 20 concrete. Lay stone pieces into the concrete so that the water would lose its strength when hitting against them. The plateau is to be constructed from MB 20 concrete, with a thickness of 15 cm, in which stone is placed so that it partially sticks out from the concrete. The price includes the necessary concrete, stone and base layer. Calculation per m2 of built plateau.	m^2	14.00		
			TOTAL:		

V REINFORCEMENT WORKS					
28	Supply, transportation and incorporation of MA 500/560 reinforcement for the reinforcement of the RC canal K1 on the left side of the road from km 0+016.25 to km 0+174 and in places of joining with the existing gutter, and of the RC canal K2 at the point of discharge of water from the culvert at km 0+169. Fully in accordance with the design. Calculation per kg of incorporated reinforcement.	kg	1,928.00		
29	Supply, transportation and incorporation of RA 400/500 and MA 500/560 reinforcement for the reinforcement of the RC shaft, at km 0+169. Fully in accordance with the design. Calculation per kg of incorporated reinforcement. MA 500/560.....288.32 kg RA 400/500..... 16.64 kg GA 240/360……. 3.80 kg	kg	309.00		
			TOTAL:		
VI GEOTEXTILE					
30	Supply, transportation and laying of a filter layer from geotextile (area density of 310 g/m^2, tensile strength of (MD/CMD) 30/30 kN/m, elongation at Fmax (MD/CMD) 13/13%, hole size <7 µm, water permeability of 0.035 m/s, drainage of 30 l/m^2s) between the virgin soil and the embankment, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	5,558.00		
			TOTAL:		
VII CULVERT					
31	Supply, transportation and laying of a RC pipe, Ø 100 cm, at km 0+169, with mandatory sealing of joints with cement mortar or concrete on the base from MB20 concrete, with the thickness of 10cm, the price includes the construction of the RC outlet head. Calculation is given per m of laid pipe.	m	10.00		
32	Supply, transportation and laying of a RC pipe, Ø 30 cm in the section of the access road, with mandatory sealing of joints with cement mortar or concrete on the base from MB20 concrete, with the thickness of 10cm, the price includes the construction of the RC inlet/outlet head. Calculation is given per m of laid pipe.	m	11.00		
			TOTAL:		

VIII GABION LINING					
33	Supply, transportation and installation of gabions, measuring 1x1x1.0 m. Gabion cages are made from double twisted hexagonal wire mesh, with mechanical properties that are greater than those prescribed by the EN 10223-3 standard. The gabions are filled with stone at the place of work execution. Steel wire which is used for the gabions is hard galvanized with galfan - alloy Zn - 5%Al -(alloy of zinc and aluminum). Then, for additional protection, the wire is coated with PVC coating. Nominal thickness of the PVC coating is 0.50 mm. Gabions are are separated into cells by diaphragms that are placed at about 0.5 m (in the middle of the gabions). To rinforce the structure, all edges of the panels of gabions are reinforced with a large-diameter wire. The filling of the cages is made from stone with continuous granulation, with the grain size of 10-20 cm, resistance to wetting and frost M-50. Calculation is given per piece of installed gabion. One gabion: Wire: 1.0*1.0*6 = 6 m2 Stone: 1.0*1.0*1.0=1 m3	kom	11.00		

34	Supply, transportation and installation of gabions, measuring 1x1x1.5 m. Gabion cages are made from double twisted hexagonal wire mesh, with mechanical properties that are greater than those prescribed by the EN 10223-3 standard. The gabions are filled with stone at the place of work execution. Steel wire which is used for the gabions is hard galvanized with galfan - alloy Zn - 5%Al -(alloy of zinc and aluminum). Then, for additional protection, the wire is coated with PVC coating. Nominal thickness of the PVC coating is 0.50 mm. Gabions are are separated into cells by diaphragms that are placed at about 0.5 m (in the middle of the gabions). To rinforce the structure, all edges of the panels of gabions are reinforced with a large-diameter wire. The filling of the cages is made from stone with continuous granulation, with the grain size of 10-20 cm, resistance to wetting and frost M-50. One gabion: Wire: 1.5*1.0*4+1.0*1.0*2 = 8 m2 Stone: 1.0*1.5*1.0=1.5 m3 Calculation is given per piece of installed gabion.	kom	53.00		
			TOTAL:		
	IX OTHER WORKS				
35	Demolition of the existing reinforced-concrete wall. The wall has slided and it is partially cracked. The height of the wall is 4.5 m, and the length is 60 m. Calculation is done per m3 of removed wall.	m^3	306.00		
			TOTAL:		
	X TRAFFIC SIGNALIZATION AND ROAD FURNITURE				
37	Vertical traffic signalization				
	Retroreflective triangular traffic sign, a=900mm, class II, with anti-graffitti film				
	I-2.1	pcs	2.00		
	Retroreflective octagonal traffic sign, Ø600mm, class II, with anti-graffitti film				
	II-30(20)	pcs	2.00		
	III-14(20)	pcs	2.00		
	Traffic sign carrier post, steel galvanized pipe, Ø60 mm with PVC cap				
	L=3000	pcs	2.00		

38	Horizontal signalization				
	Unbroken white line with the width of 0.15 m	m2	24.00		
39	Road furniture				
	N2W2, guard rail with bumper	m	132.00		
	Oblique gurad rail endings L=12m, N2W2	pcs	2.00		
	Reflective studs (catadiopters)	pcs	10.00		
	Delineators	pcs	4.00		
40	Temporary traffic signalization	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III PAVEMENT STRUCTURE	
IV CONCRETE WORKS	
V REINFORCEMENT WORKS	
VI GEOTEXTILE	
VII CULVERT	
VIII GABION LINING	
IX OTHER WORKS	
X TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY
on the state road of IIA class No 141, SECTION: Pecka - Ljubovija
from km 5+690 to km 5+790

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Total RSD
I	**CONSTRUCTION WORKS**				
1	Preliminary works, which include the forming of construction site, construction of access roads for the machinery, possible deviations, surveyings, clearing of the ground from undergrowth and vegetation.	lump sum	1.00		
2	Excavation of 3rd and 4th category of earth in cuts, bulk excavation, mechanically 100% with transportation of soil up to 1 km. Bulk excavation must be done, because the supporting structure is cracked and deformed, and its subgrade is in wet condition, non-resistant to smallest burden, and had to be replaced.	m3	1,498.00		
3	Excavation of 3rd and 4th category of earth (pav. struct.) for the purpose of constructing drainage trenches (ribs), perpendicular to the centre line, placed at a distance of 7-8 m1, with the depth of 3 to 5 m1. The excavation is to be done 80% mechanically and 20% manually. During excavation, support and timber the trenches. Excavated soil to be transported to a distance up to 1 km. The item covers work in damp and wet soil and pumping of water. Excavation of trenches to be done according to the plans and design.	m3	1,235.00		
4	Supply and laying of filter-separating layer from non-woven polypropylen (PP) geotextile, type 300gr/m2.	m2	1,074.00		

5	Supply and incorporation of filling from crushed stone, with the grain size of 10-25 cm, resistant to water, with the compressive strength of 100MPa, water absorption less than 3%.	m3	1,201.00		
6	Construction of concrete gutter on the right, hil side of the road, with dimensions according to the detail from the design, made from MB 20 concrete, resistant to frost M-50.	m1	85.50		
7	Construction of the topsoil layer with a thickness of 20 cm. The topsoil layer is to be made from the soil obtained by digging the drainage trenches.	m2	199.00		
8	Construction of the subgrade of the new pavement structure (levelling, grading and compacting to 98% of the standard Proctor test).	m2	729.00		
9	The existing culvert between sections 7 and 8 is overgrown with weeds, and the outlet of the culvert is full of sediments, so it is not possible to assess whether it is in adequate state or not. When wide excavation on the landslide is done, its state will be visible and the decision on whether to demolish it or repair it will be made. For now, in this item, we include cleaning and repair of the culvert.	lum sum	1.00		
10	Construction of the sub base with the thickness of 70 cm from sandy gravel soil. Sandy gravel soil should be of continuous granulometric composition, with maximum grain size of 33 mm. Bulk density in compacted state should be greater than 18 kN/m3. The percentage of soil particles that are smaller than 0.066 mm, less than 3%. Coefficient of uniformity Cu>4; coefficient of curvature between Cc=1-3. Compacting to be done until the compressibility module of MV=50 MPa is achieved.	m3	425.00		

11	Construction of the lower bearing course from crushed stone aggregate (crushed stone), layer thickness of 20cm in compacted state, grain size from 0 to 30mm. Compaction to the compressibility module of Mv=70 Mpa.	m3	122.00		
12	Construction of the upper bearing course from bitumenous base course BNS 22sA, the thickness of the course is 6 cm.	m2	607.00		
13	Construction of the wearing course from AB 11 asphalt concrete with a thickness of 4 cm.	m2	607.00		
14	Construction of shoulders from sandy gravel soil, coated with topsoil. The sandy gravel soil should be of continuous granulometric composition, with maximum grain size of 33mm. Bulk density in compacted state should be greater than 18 kN/m3. The percentage of soil particles smaller than 0.066 mm, less than 5%. Coefficient of uniformity of Cu>4; coefficient of curvature between Cc=1-3. Compaction by standard Proctor test of 98%. Topsoil with which the shoulder is coated is not separately dug, but damp earth from the bulk excavation and excavation for herringbone drain is used.	m3	41.50		
				TOTAL:	

II	**TRAFFIC SIGNALIZATION AND ROAD FURNITURE**				
	Horizontal signalization				
	Unbroken white line with the width of 0.12 m				
		m²	41		
	Road furniture				
	Delinators	kom.	18		
16	Temporary traffic signalization	lum sum	1.00		
				TOTAL:	

SUMMARY:

GROUP OF WORKS		TOTAL
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 141, SECTION: Crniljevo - Osečina
from km 10+700 to km 10+740

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Total RSD
	I EARTH WORKS				
1	Preliminary works, which include the forming of construction site, construction of access roads for the machinery, possible deviations, surveyings, clearing of the ground from undergrowth and vegetation.	lump sum	1.00		
2	Mechanical excavation of earth in bulk excavation from km 0+018.932 to km 0+078.93, of 3rd and 4th category for the purpose of removing deformed and displaced ground and pavement structure in the section affected by the landslide. The excavation is to be done 100% mechanically, with an excavator or bulldozer. Transportation of the excavated earth up to a distance of 1km to a disposal designated by the Supervisor. Calculation per m^3.	m^3	824.16		
3	Topsoiling of the embankment slope from km 0+018.932 to km 0+078.93 in a layer of 20cm with topsoil from the disposal at 60m and the rest with the transportation of topsoil up to 5km. Calculation per m^2 of topsoil.	m^2	36.25		
4	Construction of stabilized shoulders from km 0+018.932 to km 0+078.93. The item includes the construction of the shoulder from crushed stone aggregate with surface course from stone chippings, width of the shoulder according to the Design. The thickness of the shoulder is 10 cm with rolling. The price includes the supply of crushed stone aggregate with transportation to 20 km, manual spreading of the material and rolling with a vibrating roller. Calculation per m^2 of shoulder.	m^2	50.30		

5	Demolition and removal of the slided wall at the outlet of the existing culvert, transportation up to 1km to a disposal designated by the Supervisor.	lump sum	1.00		
			TOTAL:		
II CONCRETE WORKS					
Construction of the reinforced-concrete manhole for receiving and de-watering surface water.					
6	Concreting of the manhole with MB-30, M-150, with covers (see the drawing in the design) and formwork. This item, and the price, include the excavation for the mahnole and grading of the excavated soil around the mahnole and construction of a base layer. The work on the excavation of mahnoles involves working in wet conditions with pumping of water.	m^3	3.11		
7	Supply, cutting and laying of ribbed and mesh steel reinforcement RA400/500 and MA400/500, for RC shaft according to the specification of the technical documentation.	kg	230.00		
8	Complete construction of pipe culvert with outlet concrete head, concrete coating and flume below the RC pipe with Φ 1000. Supply and laying of concrete pipes with a diameter of 100cm, for the construction of the culvert with a length of 11.0m from MB 40 concrete, reinforced with MA 500/560, Q785, wire spacing 100x100 mm.	m	8.00		
Construction of open concrete canal, from MB 30, at the outlet of the culvert Φ1000					
9	Concreting of the open reinforced-concrete canal and foundation, with MB-30 concrete, resistant to frost M-100, with necessary formwork and excavation of earth of 3rd and 4th category. The excavated earth to be graded left an right from the canal. 3.1x0.16+0.5x0.5x0.54=0.63m^3	m^3	0.69		

10	Supply, cutting and laying of mesh steel reinforcement MA400/500, Q 331 according to the specification of technical documentation. 1.51x3.1x5.33=24.95kg	kg	25.00		
Construction of the RC wall, from MB 30, at the outlet of the culvert Φ1000					
11	Concreting of the RC wall with MB-30, M-150, with necessary formwork.	m^3	7.33		
12	Supply, cutting and laying of ribbed and mesh steel reinforcement RA400/500 and MA400/500, for the RC shaft according to the specification of technical documentation.	kg	129.00		
				TOTAL:	
III WORKS ON THE CONSTRUCTION OF SOIL REINFORCEMENT WITH GABION FRONT					
13	Supply and laying of cages with overhang - extension, from hexagonal steel mesh with wires of tensile strength of βz=550N/mm^2, hard galvanized with 260-290g/m^2 or galavanized with galfan, with a diameter of 2.7/3.7mm; gabions to be interconnected with steel rings with a diameter of 3.6mm and cable wires with a diameter of 3.6mm, hard galvanized or galvanized with galfan. The dimensions of the cages are 0.8x0.5x2,0(m), with an extension of 3.2m (12.8m^2).	pcs	7.00		
14	Supply and laying of cages with overhang - extension, from hexagonal steel mesh with wires of tensile strength of βz=550N/mm2, hard galvanized with 260-290g/m2 or galavanized with galfan, with a diameter of 2.7/3.7mm; gabions to be interconnected with steel rings with a diameter of 3.6mm and cable wires with a diameter of 3.6mm, hard galvanized or galvanized with galfan. The dimensions of the cages are 0.8x0.5x2,0(m), with an extension of 5.2m (16.8m2).	pcs	6.00		

15	Supply and laying of cages with overhang - extension, from hexagonal steel mesh with wires of tensile strength of βz=550N/mm2, hard galvanized with 260-290g/m2 or galavanized with galfan, with a diameter of 2.7/3.7mm; gabions to be interconnected with steel rings with a diameter of 3.6mm and cable wires with a diameter of 3.6mm, hard galvanized or galvanized with galfan. The dimensions of the cages are 0.8x1.0x2,0(m), with an extension of 3.2m (16.0m2).	pcs	30.00		
16	Supply and laying of cages with overhang - extension, from hexagonal steel mesh with wires of tensile strength of βz=550N/mm2, hard galvanized with 260-290g/m2 or galavanized with galfan, with a diameter of 2.7/3.7mm; gabions to be interconnected with steel rings with a diameter of 3.6mm and cable wires with a diameter of 3.6mm, hard galvanized or galvanized with galfan. The dimensions of the cages are 0.8x0.5x2,0(m), with an extension of 3.2m (20m2).	pcs	28.00		
17	Supply and incorporation of crushed stone for the construction of the filling of gabion cages, with the grain size of 10-25cm. The quality of the stone should be the one prescribed in the technical description of works and quality requirements.	m^3	103.20		
18	Supply and laying of a separating course from non-woven geotextile of the type 300 (300gr/m²) between the gabions and fill.	m^2	387.00		
			TOTAL:		

IV WORKS ON THE PAVEMENT					
18	Construction of the bituminious base course from BNS 22sA (bit 60) of the pavement with a thickness of 6 cm. The item includes the supply, preparation with mechanical incorporation and compaction with transportation up to 30km. Calculation per m^2	m^2	354.00		
19	Construction of the wearing course from AB11 (bit 60) fully in accordance with the detail from the design with a thickness of 4 cm. The item includes the supply, preparation with mechanical incorporation and compaction of hot mix asphalt from mineral material and bitumen in one course of constant thickness. Calculation per m^2.	m^2	354.00		
20	Construction of the upper bearing course from non-cohesive stone aggregate from crushed stone of 0/31mm, with a thickness of 20cm. Calculation per $m^{3.}$	m^3	81.60		
21	Construction of the lower bearing course from non-cohesive stone aggregate from crushed stone of 0/63mm, with a thickness of 30cm. Supply, spreading and construction of the filling of the supporting structure from reinforced soil with gabion front. Calculation per m3.	m^3	588.97		
22	Construction of the asphalt gutter from km 0+018.932 to km 0+078.93. Calculation per m of gutter.	m	60.00		
23	Construction of the 18/24 curb on the right side of the road. The price includes the curb, preparation and incorporation of concrete into the base with the transportation of concrete with concrete truck to 30km and installation of the curb. Calculation is done per m' of installed curb.	m	60.00		
			TOTAL:		

V TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
	Vertical traffic signalization				
25	Retroreflective octagonal traffic sign, Ø600mm, class II, with anti-graffitti film				
	II-2	pcs	1.00		
	Traffic sign carrier post, steel galvanized pipe of Ø60 mm with PVC cap				
	L=3000	pcs	1.00		
	Horizontal signalization				
26	Unbroken white line with the width of 0.12 m	m2	10.08		
	Road furniture				
	N2W1 guard rail with bumper	m	60.00		
27	Oblique gurad rail endinngs L=12m, N2W1	pcs	2.00		
	Reflective studs (catadiopters)	pcs	4.00		
	Delineators	pcs	2.00		
28	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I EARTH WORKS	
II CONCRETE WORKS	
III WORKS ON THE CONSTRUCTION OF SOIL REINFORCEMENT WITH GABION FRONT	
IV WORKS ON THE PAVEMENT	
V TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY

ON THE STATE ROAD OF IIA CLASS NO 137 SECTION: KRUPANJ - MAČKOV KAMEN - GRAČANICA
at km 2+900

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a landfill. Calculation is given as a lump sum.	lump sum	1.00		
3	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation from km 2+073.26 to km 2+149.23 in tunnel liners up to 7 m of earth of 2nd, 3rd and 4th category with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	3,443.00		
2	Mechanical excavation of topsoil from km 2+073.26 to km 2+149.23 in a layer of 10-20 cm with removal of grass and undergrowth with a section of up to 5cm with pushing up to 40-60m. Calculation per m2 of removed topsoil.	m^2	1,041.00		
3	Construction of the embankment from km 2+073.26 to km 2+149.23 in side cut from crushed stone aggregate with good granulation in layers of 50cm. The price includes the supply, transportation of stone to a disposal on the construction site and all othe manipulation of the stone. Calculation per m3 of constructed embankment.	m^3	2,487.00		
4	Topsoiling of the embankment slope from km 2+073.26 to km 2+149.23 in a layer of 20 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	1,146.00		
			TOTAL:		

III REINFORCEMENT WORKS					
1	Supply, transportation and installation of MA 500/560, RA 400/500 and GA 240/360 reinforcement for the construction of the RC shaft from MB 30 at km 2+073.26 fully in accordance with the design. Calculation per kg of installed reinforcement.	kg	400.00		
			TOTAL:		
IV CONCRETE WORKS					
1	Construction of the plateau for the spilling of water from MB 20. Pieces of stone to be laid into the concrete so that water loses its strength when hitting against the stones. The price includes the necessary concrete, stone and sub base. Calculation per m2 of constructed plateau.	m^2	12.00		
2	Supply of material and construction of RC shaft from MB30 concrete for the drainage of water from the canal and riparian drain into the culvert at km 2+073.26. The price includes the steel cover with bearing capacity of 400 kN. Calculation per m3 of incorporated concrete.	m^3	5.00		
			TOTAL:		
V DRAINAGE WORKS					
1	Supply, transportation and laying of RC pipe, Ø 100 cm, at the place at km 2+073.26, with mandatory sealing of joints with cement mortar or concrete and on a base from MB20 concrete with the thickness of 10cm, the price includes the construction of the RC outlet head of the culvert, fully in accordance with the design. Calculation per m of pipe.	m	10.00		
2	Supply and laying of semiperforated PVC pipes, Ø 15 cm, wrapped with geotextile on the base from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the riparian drain from km 2+074.15 to km 2+149.23, fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	75.00		
3	Construction of drainage filling of riparian drain from km 2+074.15 to km 2+149.23 from CSA with the fraction of 0/63 mm in layers, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	77.00		

4	Supply, transportation and installation of prefabricated canal K2 which serves for the drainage of water from the culvert at km 2+073.26, with the width of 50 cm and depth of 50 cm, from prefabricated concrete elements, from MB 20. The canal is done on the base from gravel. Calculation per m' of laid canal.	m'	4.00		
5	Complete construction of RC canal K1 on the left side from 2+073.26 to km 2+164.56, 1.4 m wide, 0.6 m deep, from MB 30, fully in accordance with the design. The canal is done on the base from gravel. The price includes all material, works, transportation and everything else that is necessary for the completion of works. Calculation per m' of constructed canal.	m'	90.00		
6	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the deep drain DR1 on the left side of the road from km 1+791.20 to km 1+824, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	383.00		
			TOTAL:		
	VI PAVEMENT				
1	Subgrade treatment. Calculation per m2 of layer.	m^2	602.00		
2	Construction of a new lower sub base course from crushed stone aggregate of 0/63 mm in a layer of 25 cm, fully in accordance with the design. Calculation per m3 of layer.	m^3	109.41		
3	Construction of a new upper sub base course from crushed stone aggregate of 0/31.5 mm, in a layer of 15 cm, fully in accordance with the design.	m^3	75.22		
4	Construction of a bituminous base course from BNS22 A with BIT 50/70, with the thickness of 6cm, fully in accordance with the design. Calculation per m2 of layer.	m^2	589.00		
5	Construction of a new wearing course from AB11s with BIT 50/70, in a layer of 4cm, fully in accordance with the details from the design. Calculation per m2 of the layer.	m^2	589.00		
6	Construction of stabilized shoulders from crushed stone aggregate of 0/31 in a layer of 10 cm. Calculation per m2 of layer.	m^2	150.00		
			TOTAL:		

VII TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	28.80		
2	**Road furniture**				
	Guardrail N2W4		96.00		
	Oblique guradreil endings N2W4, 12 m	pcs	1.00		
	Reflective studs (catadiopters)	pcs	6.00		
3	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

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

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY

ON THE STATE ROAD OF IIA CLASS NO 137 SECTION: KRUPANJ - MAČKOV KAMEN - GRAČANICA
at km 4+400

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
3	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation from km 3+431.45 to km 3+468.61 in tunnel liners up to 7 m of earth of 2nd, 3rd and 4th category with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	1,178.00		
2	Mechanical excavation of topsoil from km 3+431.45 to km 3+475 in a layer of 10-20 cm with removal of grass and undergrowth with a section of up to 5cm with pushing up to 40-60m. Calculation per m2 of removed topsoil.	m^2	682.00		
3	Construction of the embankment from km 3+431.45 to km 3+468.61 in stepped cut from crushed stone aggregate with good granulation in layers of 50cm. The price includes the supply, transportation of stone to a disposal on the construction site and all othe manipulation of the stone. Calculation per m3 of constructed embankment.	m^3	1,327.00		

4	Topsoiling of the embankment slope from km 3+431.45 to km 3+475 in a layer of 20 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	578.00		
5	Mechanical excavation for riparian drainage from km 3+431.45 to km 3+475 in tunnel liners up to 7 m of earth of 2nd, 3rd and 4th category with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	136.00		
6	Construction of the embankment next to the riparian drainage from km 3+431.45 to km 3+475 from earthen material. Calculation per m3 of constructed embankment	m^3	13.00		
			TOTAL:		
	III DRAINAGE WORKS				
1	Supply, transportation and laying of RC pipe, Ø 30 cm, at the place of entrance into the field. The pipe should be laid so that water from the canal does not retain, fully in accordance with the design. Calculation er m of pipe.	m	3.00		
2	Supply and laying of semiperforated PVC pipes, Ø 15 cm, wrapped with geotextile on the base from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the riparian drain from km 3+431.45 to km 3+475, fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	43.00		
3	Construction of drainage filling of riparian drain from km 3+431.45 to km 3+475 from CSA with the fraction of 0/63 mm in layers, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	30.00		

4	Construction of the filter part of the drainage filling of the riparian drainage from km 3+431.45 to km 3+475 from CSA with the fraction of 0/31.5 mm in layers, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m'	34.00		
5	Complete construction of RC canal K1 on the left side from 2+073.26 to km 2+164.56, 1.4 m wide, 0.6 m deep, from MB 30, fully in accordance with the design. The canal is done on the base from gravel. The price includes all material, works, transportation and everything else that is necessary for the completion of works. Calculation per m' of laid canal.	m'	43.00		
6	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the deep drain DR1 on the left side of the road from km 3+431.45 to km 3+475, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	172.00		
			TOTAL:		
	IV PAVEMENT				
1	Subgrade treatment. Calculation per m2 of layer.	m^2	358.60		
2	Construction of a new lower base course from crushed stone aggregate of 0/63 mm in a layer of 25 cm, fully in accordance with the design. Calculation per m3 of layer.	m^3	67.76		
3	Construction of a new upper base course from crushed stone aggregate of 0/31.5 mm, in a layer of 15 cm, fully in accordance with the design.	m^3	47.96		
4	Construction of a bituminous base course from BNS22 A with BIT 50/70, with the thickness of 6cm, fully in accordance with the design. Calculation per m2 of layer.	m^2	268.10		

5	Construction of a new wearing course from AB11s with BIT 50/70, in a layer of 4cm, fully in accordance with the details from the design. Calculation per m2 of the layer.	m^2	268.10		
6	Construction of stabilized shoulders from crushed stone aggregate of 0/31 in a layer of 10 cm. Calculation per m2 of layer.	m^2	88.00		
			TOTAL:		
V TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	25.00		
2	**Road furniture**				
	Guard Rail N2W4		84.00		
	Oblique guradrail endings N2W4, 12 m	pcs	1.00		
	Reflective studs (catadiopters)	pcs	6.00		
3	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III DRAINAGE WORKS	
IV PAVEMENT	
V TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY

ON THE STATE ROAD OF IIA CLASS NO 137 SECTION: KRUPANJ - MAČKOV KAMEN - GRAČANICA
at km 5+700

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
3	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
4	Removal of the existing pavement in a layer of cca 30 cm, with loading and transportation to a disposal. Calculation per m2 of removed pavement.	m^2	735.00		
5	Removal of the existing culvert, manhole and outlet head in the length of cca 16 m, with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation from km 4+872.12 to km 4+968.31and for riparian drainage and culvert, in tunnel liners up to 7 m of earth of 2nd, 3rd and 4th category with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	3,314.00		
2	Mechanical excavation of topsoil from km 4+872.12 to km 4+968.31 in a layer of 10-20 cm with removal of grass and undergrowth with a section of up to 5cm with pushing up to 40-60m. Calculation per m2 of removed topsoil.	m^2	1,587.00		
3	Construction of the embankment from km 4+872.12 to km 4+968.31 from earth from excavation. Calculation per m3 ofconstructed embankment.	m^3	11.00		

4	Topsoiling of the embankment slope from km 4+872.12 to km 4+968.31 in a layer of 20 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	172.00		
5	Supply, transportation and incorporation of CSA with the grain size of up to 25 cm into the road base from km 4+872.12 to km 4+968.31, in layers of 50 cm, with compaction of each layer, fully in accordance with the design. 2629+9=2638 m3. Calculation per m3 of incorporated material.	m^3	2,638.00		
6	Topsoiling of the embankment slope from km 4+872.12 to km 4+968.31 in a layer of 60 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	1,099.00		
			TOTAL:		
III CONSTRUCTION OF RIPARIAN DRAINAGE					
1	Supply and laying of semiperforated PVC pipes, Ø 15 cm, wrapped with geotextile on the base from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the riparian drain from km 4+879.92 to km 4+968.31, fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	91.00		
2	Supply, transport and incorporation of filter material wrapped in geotextile at the bottom of the riparian drainage from km 4+879.92 to km 4+968.31 from CSA with the fraction of 0/31.5 mm in layers, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	71.00		
4	Supply, transport and incorporation of CSA with the grain size of up to 25 cm into the upper part of the riparian drainage from km 4+879.92 to km 4+968.31 in layers of 50 cm, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	36.00		

5	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the drainage, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	371.00		
			TOTAL:		
IV CONSTRUCTION OF CULVERT AND MANHOLE					
1	Supply, transportation and installation of MA 500/560, RA 400/500 and GA 240/360 reinforcement for the construction of the RC shaft from MB 30 at km 4+879.12 fully in accordance with the design. Calculation per kg of installed reinforcement.	kg	310.00		
2	Construction of the plateau for the spilling of water from MB 20. Pieces of stone to be laid into the concrete so that water loses its strength when hitting against the stones. The plateau is constructed from MB 20 concrete with the thickness of 15 cm in which stone is laid so that it partly sticks out from the concrete. The price includes the necessary concrete, stone and blanket base. Calculation per m2 of constructed plateau.	m^2	8.00		
3	Supply of material and construction of RC manhole from MB30 concrete for the drainage of collected water in canal K1 and riparian drainage into the culvert at km 4+879.12. Calculation per m3 of incorporated concrete.	m^3	4.00		
4	Supply, transportation and laying of RC pipe, Ø 100 cm, at the place at km 4+879.12, with mandatory sealing of joints with cement mortar or concrete and on a base from MB20 concrete with the thickness of 10cm, the price includes the construction of the RC outlet head of the culvert, fully in accordance with the design. Calculation per m of pipe.	m	9.00		
5	Supply, transportation and incorporation of steel cover with the bearing capacity of 400 kN, fully in accordance with the design. Calculation per cover piece.	pcs	1.00		
			TOTAL:		

V OTHER DRAINAGE WORKS					
1	Supply, transportation and installation of prefabricated canals K1 from km 4+872.12 to km 4+878.32 and from km 4+879.92 to km 4+968.31 and K2 which serves for the drainage of water from the culvert at km 4+879.12, with the bottom width of 40 cm, and depth of 50 cm, from prefabricated concrete elements, from MB 20. The canal is done on the base from gravel or sand. Calculation per m' of constructed canal.	m'	100.00		
2	Supply, transportation and installation of curbs from km 4+872.12 to km 4+948. Calculation per m' of installed curb.	m'	76.00		
3	Supply, transportation and installation of wedged concret flume at km: 4+872.12, km:4+896 and km 4+920. The wedged concret flume are laid on the base from gravel or sand. Calculation per m' of constructed wedged concret flume.	m'	33.00		
			TOTAL:		
VI PAVEMENT					
1	Construction of a new lower base course from crushed stone aggregate of 0/63 mm in a layer of 30 cm, fully in accordance with the design. Calculation per m3 of layer.	m^3	217.00		
2	Construction of a new upper base course from crushed stone aggregate of 0/31.5 mm, in a layer of 10 cm, fully in accordance with the design.	m^3	59.00		
3	Construction of a bituminous base course from BNS22 A with BIT 50/70, with the thickness of 6cm, fully in accordance with the design. Calculation per m2 of layer.	m^2	616.00		
4	Construction of a new wearing course from AB11s with BIT 50/70, in a layer of 4cm, fully in accordance with the details from the design. Calculation per m2 of the layer.	m^2	611.00		
			TOTAL:		

VII TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Vertical traffic signalization**				
	Retroreflective round traffic sign, Ø600mm, class II, with anti-gaffitti film				
	II-30(30)	pcs	2.00		
	Traffic sign carrier post, steel galvanized pipe, Ø60 mm with PVC cap				
	L=2500	pcs	2.00		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	28.90		
3	**Road furniture**				
	Guardrail N2W4		152.00		
	Oblique guardrail endings N2W4, 12 m	pcs	4.00		
	Reflective studs (catadiopters)	pcs	10.00		
4	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III CONSTRUCTION OF RIPARIAN DRAINAGE	
IV CONSTRUCTION OF CULVERT AND MANHOLE	
V OTHER DRAINAGE WORKS	
VI PAVEMENT	
VII TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY

ON THE STATE ROAD OF IIA CLASS NO 137 SECTION: KRUPANJ - MAČKOV KAMEN - GRAČANICA
at km 6+100

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
3	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
4	Removal of the existing pavement in a layer of cca 30 cm, with loading and transportation to a disposal. Calculation per m2 of removed pavement.	m^2	315.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation of earth of 3rd, 4th, 5th and locally 6th category for the 1st phase of excavation from km 5+095.25 to km 5+129.64 with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	788.00		
2	Mechanical excavation of earth of 3rd, 4th, 5th and locally 6th category for the 2nd phase of excavation from km 5+095.25 to km 5+129.64 with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	697.00		
3	Excavation of earth for deep drain of 3rd, 4th, 5th and locally 6th category, 80% mechanically and 20% manually, with supporting of trenches with strong timber, from km 5+095.25 to km 5+129.64 with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m^3	276.00		

4	Mechanical excavation of topsoil from km 5+095.25 to km 5+129.64 in a layer of 10-20 cm with removal of grass and undergrowth with a section of up to 5cm with pushing up to 40-60m. Calculation per m2 of removed topsoil.	m^2	145.00		
3	Construction of the embankment from km 5+095.25 to km 5+129.64 from earth from excavation. Calculation per m3 of constructed embankment.	m^3	19.00		
4	Topsoiling of the embankment slope from km 5+095.25 to km 5+129.64 in a layer of 20 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	163.00		
5	Construction of a layer from clay with the thickness of 20 cm, in accordance with the detail from the design with manual compacting. The item includes the excavation of clay, loading, transportation, spreadin and manual compacting. Calculation per m3 of incorporated layer of clay.	m^3	3.00		
6	Supply, transportation and incorporation of CSA with the grain size of up to 15 cm behind the gabion wall from km 5+095.25 to km 5+129.64, in layers of 50 cm, with compaction of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	54.00		
			TOTAL:		
III CONSTRUCTION OF COATING STRUCTURE FROM GABIONS					
1	Supply, transportation and incorporation of lean concrete MB15 for the construction of the base for placing gabion G1. The base is laid on the sub base from gravel with the thickness of 10 cm. The price includes necessary material for the sub base. 0.4*33 = 13.2 m3. Calculation is given per m3 of incorporated concrete.	m^3	14.00		

2	Supply, transportation and installation of gabion measuring 1x1x1.5 m. The gabion cages are made from double-twisted hexagonal steel mesh, with mechanical properties greater than those prescribed by EN 10223-3 standard. The gabions are filled with stone at the place of works execution. The steel wire which is used for the construction of gabions is hard galvanized with Galfanom - alloy Zn - 5%Al -(alloy of zinc and aluminum). Then, for additional protection, the wire is coated with PVC coating. Nominal thickness of the PVC coating is 0.50 mm. Gabions are separated into cells with diaphragms placed at about 0.5 m (in the middle of the gabion). In order to strengthen the structure, all edges of the gabion panel are strengthened with wire of greater diameter. The filling of the cages is done from stone of continuous granulation, with the grain size of 10-20 cm, resistance to wetting and frost of M-50. Calculation is given per piece of installed gabion.	pcs	33.00		
3	Supply, transportation and installation of gabion measuring 1x1x1.0 m. The gabion cages are made from double-twisted hexagonal steel mesh, with mechanical properties greater than those prescribed by EN 10223-3 standard. The gabions are filled with stone at the place of works execution. The steel wire which is used for the construction of gabions is hard galvanized with Galfanom - alloy Zn - 5%Al -(alloy of zinc and aluminum). Then, for additional protection, the wire is coated with PVC coating. Nominal thickness of the PVC coating is 0.50 mm. Gabions are separated into cells with diaphragms placed at about 0.5 m (in the middle of the gabion). In order to strengthen the structure, all edges of the gabion panel are strengthened with wire of greater diameter. The filling of the cages is done from stone of continuous granulation, with the grain size of 10-20 cm, resistance to wetting and frost of M-50. Calculation is given per piece of installed gabion.	kom	98.00		
			TOTAL:		

IV CONCRETE WORKS					
1	Construction of the plateau for the spilling of water from MB 20. Pieces of stone to be laid into the concrete so that water loses its strength when hitting against the stones. The plateau is constructed from MB 20 concrete with the thickness of 15 cm in which stone is laid so that it partly sticks out from the concrete. The price includes the necessary concrete, stone and sube base. Calculation per m2 of constructed plateau.	m^2	10.00		
2	Supply, transportation and installation of prefabricated canal K1 from km 5+096.05 to km 5+142.37 below the gabion coating, from prefabricated concrete elements, from MB 20 resistant to frost and water. The canal is constructed on the blanket from gravel or sand. Calculation per m' of installed canal.	m'	49.00		
3	Supply, transportation and installation of prefabricated canal K2 from km 5+096.05 to km 5+129.64 below the gabion coating, from prefabricated concrete elements, from MB 20 resistant to frost and water. The canal is constructed on the blanket from gravel or sand. Calculation per m' of installed canal.	m'	36.00		
4	Supply, transportation and installation of prefabricated canal K3 from km 5+096.05 at the exit from the culvert, from prefabricated concrete elements, from MB 20 resistant to frost and water. The canal is constructed on the blanket from gravel or sand. Calculation per m' of installed canal.	m'	7.00		
5	Supply, transportation and installation of curbs from km 5+095.25 to km 5+129.64. Calculation per m' of installed curb.	m'	50.00		
6	Supply, transportation and installation of wedged concrete flume at km 5+095.25 and 5+121.40 for the discharge of collected water along the curb, from prefabricated concrete elements, from MB40 resistant to frost and water. The wedged concrete flume is laid on the base from gravel or sand. Calculation per m' of installed wedged concrete flume.	m'	15.00		

7	Supply, transportation and incorporation of material for the construction of RC manhole from MB30 concrete resistant to frost and water, for the drainage of collected water in canals K1 and K2 into the culvert at km 5+095.25. Calculation per m3 of incorporated concrete.	m³	6.00		
			TOTAL:		
	V REINFORCEMENT WORKS				
1	Supply, transportation and installation of RA 400/500 and MA 500/560 reinforcement for REINFORCING RC shaft at km 5+095.25. Fully in accordance with the design. MA 500/560.....348 kg RA 400/500..... 5 kg Calculation per kg of installed reinforcement.	kg	353.00		
			TOTAL:		
	VI DRAINAGE WORKS				
1	Supply, transportation and laying of RC pipe, Ø 100 cm, at the place of culvert at km 5+095.25, with mandatory sealing of joints with cement mortar or concrete and coating with 10 cm thick concrete on a base from MB20 concrete with the thickness of 10cm, the price includes the construction of the RC outlet head of the culvert, fully in accordance with the design. Calculation per m of pipe. Calculation per m of pipe.	m	10.00		
2	Supply and laying of PVC pipe, Ø 15 cm, wrapped with MB15 concrete with the thickness of 15 cm on a sand layer with the thickness of 5 cm, at the bottom of the deep drain DR2 at km 5+095.25, fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of laid PVC pipe.	m	9.00		
3	Excavation of earth for deep drain DR2 of 3rd, 4th, 5th and locally 6th category, 80% mechanically and 20% manually, with supporting of trenches with strong timber, at km 5+095.25, with mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m³	83.00		

4	Supply, transport and incorporation of filter material wrapped in geotextile at the bottom of the riparian drainage on the concrete flume from km 5+096.05 to km 5+129.64 and at km 5+095.25 into drain DR2, from CSA with the fraction of 8/31.5 mm in layers, with compacting of each layer, fully in accordance with the design. The price includes the making of concrete flume from cca 10 cm. Calculation per m3 of incorporated material.	m^3	68.00		
5	Supply, transportation and incorporation of CSA with the grain size of up to 8/63 mm into the upper part of deep drains DR1 and DR2, in layers of 50 cm, with compaction of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	242.00		
6	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the drainage, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	323.00		
7	Supply, transportation and incorporation of steel cover with the bearing capacity of 400 kN, fully in accordance with the design. Calculation per cover piece.	pcs	1.00		
8	Supply, transportation and incorporation of material for the construction of the outlet head of the culvert from MB30, resistant to frost and water, fully in accordance with the design. The price includes all necessarymaterial, transportation, formwork and works. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	VII PAVEMENT				
1	Construction of a new lower base course from crushed stone aggregate of 0/63 mm in a layer of 30 cm, fully in accordance with the design. Calculation per m3 of layer.	m^3	90.00		
2	Construction of a new upper base course from crushed stone aggregate of 0/31.5 mm, in a layer of 10 cm, fully in accordance with the design.	m^3	26.00		
3	Construction of a bituminous basecourse from BNS22 A with BIT 50/70, with the thickness of 6cm, fully in accordance with the design. Calculation per m2 of layer.	m^2	290.00		

4	Construction of a new wearing course from AB11s with BIT 50/70, in a layer of 4cm, fully in accordance with the details from the design.				
	Calculation per m2 of the layer.	m^2	289.00		
			TOTAL:		
VIII TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Vertical traffic signalization**				
	Retroreflective triangular traffic sign, Ø900mm, class II				
	I-2	pcs	1.00		
	Retroreflective round traffic sign, Ø600mm, class II				
	II-28	pcs	2.00		
	III-25	pcs	2.00		
	Traffic sign carrier post, steel galvanized pipe, Ø60 mm with PVC cap				
	L=2500	pcs	5.00		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	20.50		
	White line 10m+5m	m^2	4.80		
	White line 5m+10m	m^2	2.40		
3	**Road furniture**				
	Guardrail N2W4		216.00		
	Oblique guradrail endings N2W4, 12 m	pcs	4.00		
	Reflective studs (catadiopters)	pcs	14.00		
4	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III CONSTRUCTION OF COATING STRUCTURE FROM GABIONS	
IV CONCRETE WORKS	
V REINFORCEMENT WORKS	
VI DRAINAGE WORKS	
VII PAVEMENT	
VIII TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY
NA DRŽAVNOM PUTU IIA 137 DEONICA: KRUPANJ-MAČKOV KAMEN-GRAČANICA- BOŠNJAK
at km 3+600

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
3	Surveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation from km 2+819.22 to km 2+894.65 and for riparian drainage and drain DR1 beyond the road, in tunnel liners up to 7 m of earth of 2nd, 3rd and 4th category with mechanical loading and transportation of excess earthen material to a disposal determined by the EngineerSupervisor, at a distance of up to 5 km, fully in accordance with the detail from the design. 1390+540+59=1989. Calculation per m3 of excavated material.	m^3	1,989.00		
2	Mechanical excavation of topsoil from km 2+819.22 to km 2+894.65 in a layer of 10-20 cm with removal of grass and undergrowth with a section of up to 5cm with pushing up to 40-60m. Calculation per m2 of removed topsoil.	m^2	651.00		
3	Construction of the embankment from km 2+819.22 to km 2+894.65 from earth from excavation. Calculation per m3 of constructed embankment.	m^3	8.00		
4	Topsoiling of the embankment slope from km 2+819.22 to km 2+894.65 in a layer of 20 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	362.00		
			TOTAL:		

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
III CONSTRUCTION OF DRAIN DR1					
1	Supply and laying of semiperforated PVC pipes, Ø 20 cm, wrapped with geotextile on the base from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the drain from DR1 fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	10.00		
2	Supply and laying of non-perforated PVC pipes, Ø 20 cm, in a coating from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the drain from DR1 fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	5.00		
3	Supply, transport and incorporation of filtering material wrapped in geotextile in drain DR1 from CSA with the fraction of 0/63 mm in layers, with compacting of each layer, fully in accordance with the design. 109+135=244. Calculation per m3 of incorporated material.	m^3	244.00		
4	Supply, transport and incorporation of CSA with the grain size of up to 25 cm into the upper part of the drain in layers of 50 cm, with compacting of each layer, fully in accordance with the design. 264+501=765. Calculation per m3 of incorporated material.	m^3	765.00		
5	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the deep drain DR1, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	576.00		
6	Topsoiling of the embankment slope in the section where the drain is being constructed beyond the road in a layer of 80 cm with topsoil from a disposal at 60m and the rest with transportation within 5km. Calculation per m2 topsoil.	m^2	284.00		
			TOTAL:		

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
IV CONSTRUCTION OF RIPARIAN DRAINAGE					
1	Supply and laying of semiperforated PVC pipes, Ø 15 cm, wrapped with geotextile on the base from MB15 concrete with the thickness of 10 cm and from sand with the thickness of 5 cm, at the bottom of the riparian drain from km 2+865.77 to km 2+894.65, fully in accordance with the design. The price covers the supply, transportation and incorporation of sand, preparation and incorporation of concrete, supply, transportation and laying of pipes. Calculation per m of semi-perforated PVC pipe.	m	33.00		
2	Supply, transport and incorporation of filter material wrapped in geotextile at the bottom of the riparian drainage from km 2+865.77 to km 2+894.65 from CSA with the fraction of 0/63 mm in layers, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	26.00		
4	Supply, transportation and incorporation of CSA with the grain size of up to 25 cm into the upper part of the riparian drainage from km 2+865.77 to km 2+894.65 in layers of 50 cm, with compacting of each layer, fully in accordance with the design. Calculation per m3 of incorporated material.	m^3	23.00		
5	Supply, transportation and laying of filter layer from geotextile (water permeability 0.03 m/s, drainage 30 l/m²s) along the edge of the deep drain DR1, fully in accordance with the design. Calculation per m2 of laid geotextile.	m^2	137.00		
			TOTAL:		

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	V OTHER DRAINAGE WORKS				
1	Supply, transportation and laying of RC pipe, Ø 30 cm, at places of entering the estates. The pipe and canal should be fitted on the spot, fully in accordance with the design. Calculation per m of pipe.	m	13.00		
2	Supply, transportation and installation of prefabricated canals K3 and K4 which serve for the drainage of water from the drain DR1 and culvert, with the width of 50 cm, and depth of 50 cm, from prefabricated concrete elements, from MB 20. The canal is done on the base from gravel or sand. Calculation per m' of laid canal.	m'	11.00		
3	Supply, transportation and construction of the concrete plateau for the spilling of water in places of outlet of canals K3 and K4. The plateaus should be built from MB 20 with the thickness of 15 cm in which stone is laid so that it partly sticks out from the concrete. Fully in accordance with the design. Calculation per m2 of constructed surface.	m^2	13.00		
			TOTAL:		
	VI PAVEMENT				
1	Construction of a new lower base course from crushed stone aggregate of 0/63 mm in a layer of 30 cm, fully in accordance with the design. 1.99 x 75.5 = 150.3 m3. Calculation per m3 of the layer.	m^3	151.00		
2	Construction of a new upper base course from crushed stone aggregate of 0/31.5 mm, in a layer of 10 cm, fully in accordance with the design. 0.74 x 75.5 = 55.87 m3. Calculation per m3 of the layer.	m^3	56.00		
3	Construction of a bituminous base course from BNS22 A with BIT 50/70, with the thickness of 6cm, fully in accordance with the design. 6.85 x 75.5 = 517.2 m2. Calculation per m2 of layer.	m^2	518.00		
4	Construction of a new wearing course from AB11s with BIT 50/70, in a layer of 4cm, fully in accordance with the details from the design. 6.8 x 75.5 = 513.4 m2. Calculation per m2 of the layer.	m^2	514.00		
5	Supply, transportation and installation of trapezoidal concrete canals K1 and K2, with the depth and width of the bottom of 50 cm, on the left and right side of the road on the base from gravel. 53.5+68=121.5 m. Calculation per m of installed canal.	m	122.00		
			TOTAL:		

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
VII TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Vertical traffic signalization**				
	Retroreflective round traffic sign, Ø600mm, class II, with anti-gaffitti film				
	II-30(20)	pcs	2.00		
	Traffic sign carrier post, steel galvanized pipe, Ø60 mm with PVC cap				
	L=2500	pcs	2.00		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	22.80		
3	**Road furniture**				
	Guradrail N2W4		136.00		
	Oblique gurdarail endings N2W4, 12 m	pcs	2.00		
	Reflective studs (catadiopters)	pcs	12.00		
4	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III CONSTRUCTION OF DRAIN DR1	
IV CONSTRUCTION OF RIPARIAN DRAINAGE	
V OTHER DRAINAGE WORKS	
VI PAVEMENT	
VII TRAFFIC SIGNALIZATION AND ROAD FURNITURE	
TOTAL:	

BILL OF QUANTITIES
MAIN DESIGN OF LANDSLIDE REMEDY
ON THE STATE ROAD OF IIA CLASS NO 141 SECTION: PECKA - LJUBOVIJA
FROM KM 8+950 TO KM 9+050

No	WORKS DESCRIPTION	Unit	Quantity	Unit price	Dinara
	I PRELIMINARY WORKS				
1	Forming of the construction site, security guard service, transportation of machinery and workers. Calculation is given as a lump sum.	lump sum	1.00		
2	Clearing and preparation of the ground - manual cutting of thick undergrowth with loading and transportation to a disposal. Calculation is given as a lump sum.	lump sum	1.00		
3	Demolition of asphalt layers of the existing pavement from km 0+060.00 to km 0+195.00 with the thickness of approx. 10cm with mechanical loading and transportation of material to a landfill up to a distance of 10 km, fully in accordance with the design. Calculation is given per m2 of demolished pavement.	m²	942.00		
4	Milling of the existing pavement surface in a layer of 5 cm on average, at the beginning and at the end of the section, in places of joining of old and new asphalt layers, mechanical loading and transportation of milled material to a disposal within 10 km designated by the Investor. Calculation is given per m2 of profiled road surface.	m²	70.00		
5	Sutveying of designed solution. Calculation is given as a lump sum.	lump sum	1.00		
			TOTAL:		
	II EARTH WORKS				
1	Mechanical excavation of topsoil from km 0+060.00 to km 0+195.00 in a layer of 20 cm with removal of grass and vegetation in a section of up to 5cm with pushing from 40 to 60m. Calculation per m2 of removed topsoil.	m²	794.00		
2	Mechanical excavation of the earth of 3rd and 4th category in tunnel liners from km 0+060.00 to km 0+195.00 with the selection of quality material and mechanical loading and transportation of excess earthen material to a disposal determined by the Supervisor, at a distance of up to 3 km, fully in accordance with the detail from the design. Calculation per m3 of excavated material.	m³	2,219.00		

3	Construction of the embankment from material of 3rd and 4th category from excavation above the RC pipe Ø 200mm at km 0+185.00. The price includes the incorporation and necessary compacting of material. Calculation per m3 of constructed embankment.	m³	52.00		
4	Planning, levelling and topsoiling of the embankment slopes and shoulders in a layer of 20 cm according to the detail from the design, with topsoil from a disposal at 60m and the rest with the transportation of the topsoil up to 5 km. Calculatio per m^2 of laid topsoil.	m²	811.00		
			TOTAL:		
III CONCRETE WORKS					
1	Supply, transportation and concreting with MB 30 concrete of buried inspection chamber in double-sided formwork at km 0+185.00 fully in accordance with the details from the design. Calculation per m^3 of incorporated material.	m³	0.50		
2	Supply, transportation and incorporation of MB15 concrete in front of the coating structure from gabions from km 0+070.00 to km 0+110.00 fully in accordance with the details from the design. Calculation per m3 of incorporated concrete.	m³	10.00		
			TOTAL:		
IV TRANSVERSE RIBS, LONGITUDINAL TRENCH					
1	Processing of the (foundation soil) subsoil. The item includes compaction, possible timbering, for the purpose of drying or wetting of natural vergin soil on which the foundation (construction) of the pavement is done with the thickness determined by the design (approximately 30cm). Calculation is done per m^2 of developed subsoil, as approved by the Supervisor.	m^2	1,080.00		
2	Supply and laying of geotextile of the type 300-400g/m^2 into longitudinal trench PDR from km: 0+060 to km: 0+185 and into transverse ribs PPR from km 0+060.00 to 0+176.00 at 10m spacing fully in accordance with the design. Calculation per m^2 of geotextile.	m^2	730.00		

3	Supply and laying of semi-perforated PVC pipe, Ø150 mm, on the base from MB 15 concrete at the bottom of the longitudinal trench PDR from km: 0+060 to km: 0+185.00. The price includes the supply, transportation and laying of pipes, and construction of a concrete layer, fully in accordance with the design.	m	130.00		
4	Construction of the embankment from km 0+060.00 to km 0+185.00 in transverse ribs PPR and in the longitudinal trench PDR from crushed stone aggregate 8/150 in 50cm thick layers while reaching necessary compaction degree. The price includes the supply, transportation of stone to the site and all handling of material. Calculation per m3 of constructed embankment.	m^3	144.00		
5	Construction of the embankment from km 0+060.00 to km 0+185.00 and in the transverse trench PDR from crushed stone aggregate of 0/63mm in layers with mandatory compacting of each layer to the subgrade of the pavement, fully in accordance with the design. Calculation per m^3 of incorporated material.	m^3	1,640.00		
6	Construction of the clay cap from clay from surface layers of the excavation over the filling in the transverse trench PDR from km: 0+060.00 to km: 0+185.00 fully in accordance with the details from the design. The price includes the construction of the clay cap with manual or mechanical compacting.	m^3	58.00		
7	Supply and laying of concrete pipes, Ø20 cm (full) for drainage of water, into the transverse drain trench DR2 at km: 0+030 fully in accordance with the design. Calculation per m of concrete pipes.	m	12.50		
			TOTAL:		

V CONSTRUCTION OF THE SUPPORTING STRUCTURE FROM GABIONS					
1	Supply, transportation and incorporation of gabions measuring 1x1x1.0 m. The gabion cages are made from double twisted steel wire hexagonal mesh. The gabions are filled with stone at the place of the execution of works. Steel wire which is used for the production of gabions is hard galvanized with Galfan - alloy Zn - 5%Al - (alloy of zinc and aluminum). Gabions are divided into cells with diaphragms placed at about 0.5 m (along the middle of the gabions). In order to reinforce the structure, all edges of the gabion panel are strengthened with wire of greater diameter. Calculation is given per piece of incorporated gabions.	pcs	92.00		
			TOTAL:		
VI TRIMMIMG OF SLOPES					
1	Trimming of stone slopes in the cut, manually and mechanically, with loading and transportation of toppled material to a disposal. The price includes works on the removal of smaller unstable rock blocks with the use of machines and tools, collecting and loading of toppled material on the truck and transportation to a disposal at adistance of up to 3 km. Calculation is given per m3 of removed material.	m^3	100.00		
			TOTAL:		
VII PAVEMENT					
1	Mechanical compacting of the subgrade of the road. Calculation per m^2	m^2	1,080.00		
2	Construction of the new lower base course from crushed stone aggregate of 0/31.5 mm, with the thickness of 15 cm from km: 0+060 to km: 0+185 fully in accordance with the design. Calculation per m3 of layer.	m^3	219.00		
3	Construction of a bbituminous base course from BNS22, with the thickness of 6cm. The item includes the supply, preparation with mechanical incorporation and compaction with transportation up to 30 km from km 0+060 to km 0+185 fully in accordance with the design. Calculation per m2 of the layer.	m^2	1,080.00		
4	Construction of a new wearing course from AB11, in a layer of 4cm, fully in accordance with the details from the design. The item includes the supply of material, spreading, incorporation and compacting of hot mix asphalt from mineral material and bitumen in one layer with constant thickness. Calculation per m2 of the layer.	m^2	1,080.00		

5	Supply, transportation and incorporation of wedged concrete flumes from MB 40, on the base from MB 20 on the left side of the road at km 0+055. Calculation per m of installed flume.	m	5.00		
6	Supply, transportation and incorporation of high curb of 18/24 on the right side of the road on the base from lean concrete MB15 from km 0+060.00 to km 0+195.00. Calculation per m of laid curb.	m	132.00		
			TOTAL:		
VIII TRAFFIC SIGNALIZATION AND ROAD FURNITURE					
1	**Vertical traffic signalization**				
	Retroreflective triangular traffic sign, Ø900mm, class II, with anti-gaffitti film				
	I-1	pcs	1.00		
	I-25	pcs	1.00		
	Traffic sign carrier post, steel galvanized pipe, Ø60 mm with PVC cap				
	L=4000	pcs	1.00		
2	**Horizontal signalization**				
	Unbroken white line with the width of 0.12 m	m^2	20.40		
3	**Temporary traffic signalization**	lump sum	1.00		
			TOTAL:		

SUMMARY:

GROUP OF WORKS	TOTAL
I PRELIMINARY WORKS	
II EARTH WORKS	
III CONCRETE WORKS	
IV TRANSVERSE RIBS, LONGITUDINAL TRENCH	
V CONSTRUCTION OF THE SUPPORTING STRUCTURE FROM GABIONS	
VI TRIMMIMG OF SLOPES	
VII PAVEMENT	
VIII 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	**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	5		
	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	4.5		
	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	10		
	TOTAL				

	TOTAL MONTAGE OF SIGNBOARDS WORK				

TOTAL SUMMARY
FOR REMEDY OF TEN LANDSLIDES
ON THE STATE ROAD OF IIA 137 AND 141

In Krupanj and Osečina Municipalities

I	23 Pecka - Ljubovija from km 5+230 to km 5+250, ID NV2	
II	24 Pecka - Ljubovija from km 4+500 to km 4+565, ID3591	
III	25 Pecka - Ljubovija from km 5+690 to km 5+790, ID 3592	
IV	26 Crniljevo - Osečina from km 10+700 to km 10+740, ID 3593	
V	39 Sabac - Mackov kamen at km2+900 , ID 3587	
VI	40 Sabac - Mackov kamen at km 4+400 , ID 3588	
VII	41 Sabac - Mackov kamen at km 5+700 , ID 3589	
VIII	42 Sabac - Mackov kamen at km 6+100 , ID 3590	
IX	44 Sabac - Mackov kamen at km 3+600 , ID 3667	
X	47 Pecka - Ljubovija from km 8+950 to km 9+050, ID 3677	
XI	MONTAGE OF THE SIGNBOARDS	
	TOTAL	