

**Environmental Improvement Activities on Natakhtari-Ruisi  
section of the International Tbilisi-Senaki-Leselidze E-60  
Highway**

**Bill of Quantities**

Tbilisi 2015 May

**Environmental Improvement Activities on Natakhtari-Ruisi section of the  
International Tbilisi-Senaki-Leselidze E-60 Highway**

**Total work scope cost**

<b>№</b>	<b>section</b>	<b>Title</b>	<b>Cost, GeL</b>
1	Object estimate	Natakhtari-Ruisi section	
2	Estimate #27	Barbed wire fence	
3	Estimate #28	Traffic organization	
4	Estimate #29	Resroration of irrigation channel	
		<b>Sum</b>	
	<b>D</b>	Dayworks	
		<b>Total</b>	
		VAT 18 %	
		<b>Total cost</b>	

**Environmental Improvement Activities on Natakhtari-Ruisi section of the  
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**SUMMARY OF SCHEDULE D - DAYWORK**

<b>Item</b>	<b>Description</b>	<b>Sum, GEL</b>
D -1	Salary	
D -2	Material	
D -3	Equipment	
	<b>Total</b>	

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International  
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**SCHEDULE D - DAYWORK RATES**

<b>Item</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit cost, GEL</b>	<b>Sum, GEL</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
D - 1	Salary				
D 1-1	Foreman	h	400		
D 1-2	Skilled worker	h	900		
D 1-3	Unskilled worker	h	400		
D 1-4	Driver	h	100		
D 1-5	Driver of excavator or bulldozer	h	960		
	<b>D-1, Total</b>				
D - 2	Material				
D 2-1	Concrete	m <sup>3</sup>	2		
D 2-2	Road metal	m <sup>3</sup>	90		
D 2-3	Geotextile	m <sup>2</sup>	200		
	<b>D-2, Total</b>				
D - 3	Equipment				
D 3-1	Bulldozer	h	480		
D 3-2	Excavator 0.65 m3	h	600		
D 3-3	Crane 16t.	h	120		
D 3-4	Side Dump truck 10t	h	300		
D 3-5	Truck 15t.	h	200		
D 3-6	Demolition hammer	h	40		
	<b>D-3, Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International  
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**Object estimate  
Work scope cost**

**Natakhtari-Ruisi section**

<b>№</b>	<b>Estimate №</b>	<b>Title</b>	<b>Cost, GeL</b>
1	1	km 42-km 43	
2	2	km 54-km 55 (497 km)	
3	3	km 56-km 57	
4	4	km 57-km 58 (495 km)	
5	5	km 58-km 59	
6	6	km 59-km 60 (494 km)	
7	7	km 60-km 61	
8	8	km 61-km 62 (491 km)	
9	9	km 62-km 63	
10	10	km 63-km 64 (489 km)	
11	11	km 64-km 65	
12	12	km 65-km 66	
13	13	km 66-km 67 (486 km)	
14	14	km 67-km 68	
15	15	km 68-km 69 (483 km)	
16	16	km 69-km 70	
17	17	km 70-km 71 (481 km)	
18	18	km 71-km 72	
19	19	km 72-km73	
20	20	km 73-km 74 (478km)	
21	21	km 75-km 76 (477 km)	
22	22	km 76-km 77	
23	23	km 77-km 78 (474 km)	
24	24	km 78-km79	
25	25	km 79-km 80	
26	26	km 80-km 81	
		<b>Total</b>	

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 1**

**Work cost to be performed on 42-43 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at the earthfill #1,2,13 using excavators, with grab capacity of 0,65 (0,5-1)	m3	13852		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	(#1 and #2 earthfills)7652 m3 - 16 km	t	13008.4		
	(#13 earthfill) 6200 m3 - 16 km	t	10540		
	<b>Sum</b>				
	<b>Filling gaps between #1 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	13852.4		
	<b>Sum</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Loading parapet and construction fragments on the dump trucks using automatic-grab crane	m3	3		
2	Transportation, Kaspi 16km	t	7.5		

1	2	3	4	5	6
3	Unload using automatic-grab crane at the storage area	m3	3		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 2**

**Work cost to be performed on 54-55 (497) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (15 p)	m3	41.58		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (15p)	m3	4.2		
	Ballast	m3	5.25		
3	Geotextile arrangement with the size of 2.0X1.4 m (15 p)	m2	42		
	Geotextile	m2	44.94		
4	Filling with the ground manually;size-2.2X1.4 m, the depth- 0.9 m (15 p)	m3	37.38		
	<b>Sum</b>				
	<b>Stabilization of inert material abandoned quarry №1</b>				
1	Profiling - planning of the slope with the grab of the excavator, 1 m3	m2	2267		
2	Cutting-arrangement of mountain channels manually with the width of 0.6 m, the depth-0.6 m and the length - 214 m	m3	77.04		
3	Paving the channel with the concrete cloth using excavator	m2	1782.77		
	Concrete cloth of "Concrete canvas" CC5 type with the thickness of 5 mm	m2	1782.77		
4	Watering with irrigation machine twice	m2	1782.77		
	Technical water	l	48621		
5	Cutting-arrangement of mountain channels manually with the width of 1.0 ∅, the depth 0.6 m and the length 397.65 m	m3	238.59		
6	Paving the channel with the concrete cloth manually	m2	874.83		
	Concrete cloth of "Concrete canvas" CC5 type with the thickness of 5 mm	m2	918.57		
7	Watering with irrigation machine twice	m2	874.83		



1	2	3	4	5	6
	Technical water	l	26244.9		
	<b>Sum</b>				
	<b>Fertile ground layer deposition on #2 slope</b>				
1	Ground transportation using the dump trucks				
	( #2 earthfill)1896 m3 - 15 km	t	3223.20		
2	Ground distribution from storage area onto the slope using carts and then spreading	m3	1896		
3	Ground compaction manually, using pneumatic compectors	m2	2267		
	<b>Sum</b>				
	<b>Planting necessary plants</b>				
1	Planting trees on terraces	p	780		
	Cotinus with the 1.5 m step ( non-profit legal entitiy- Gori sapling)	p	586		
	PIne 3 m step (Khashuri district, village Ali)	p	194		
2	Paving of humus in the holes	m3	30.62		
	Transportation of Humus from #6 earthfill - 10 km	t	52.05		
3	Weeding over a period of two years (three times per year)	p	4680.00		
4	Watering of pine seedlings over a period of two years (6 times per year)	p	9360.00		
	Water	t	112.32		
	<b>Total planting</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Consolidated concrete solution-loading on the dump truck using excavator	m3	2		
2	Transportatio, Kaspi 6km	t	2.8		
3	Block wall waste at Igoeti "New Energy" base-loading on the dump trucks automatic-grab crane (497 km)	m3	440		
4	Transportatio, Kaspi 4km	t	1100		
5	Unload by autocrane at the storage area	m3	442		
	<b>Sum</b>				
	<b>№1 Slope stabilization</b>				
	<b>Arrangement of drainage channel L=291 m</b>				
1	Soil processing manually	m3	100		
2	Removal of excavated soil using dumping trucks, 15 km away	t	170		
3	Arrangement of 3cm thick sand cushion	m2	87.3		
	sand	m3	3		

1	2	3	4	5	6
4	Cover the channel with concrete canvas manually	m2	523.8		
	5mm thick "Concrete canvas" CC5	m2	576.18		
5	Watering on a one-off basis using a watering truck	m2	523.8		
	Technical water	l	1571.4		
	<b>Sum</b>				
	<b>Slope micro-terraces works</b>				
1	Arrangement of micro-terraces manually	m3	265.2		
2	Uploading of excavated soil using a 0.25 m3 excavator bucket	m3	265.2		
3	Removal of excavated soil using dumping trucks, 15 km away	t	450.84		
	<b>Sum</b>				
	<b>Technical recultivation of the slope</b>				
1	Uploading of humus onto dumping trucks using a 0,65m3 capacity excavator bucket	m3	696		
2	Transportation of humus by dumping trucks from a borrow pit to the site				
	696 m3 - 15 km	t	1183.20		
3	Distribution of humus over the slope and its spreading using hand carts	m3	696		
4	Manual compaction of spread humus	m2	6960		
	<b>Sum</b>				
	<b>Total №1 Slope stabilization</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 3**

**Work cost to be performed on 56-57 (495-496 km) from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (16 p)	m3	44.35		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (16p)	m3	4.48		
	Ballast	m3	5.60		
3	Geotextile arrangement with the size of 2.0X1.4 m (16 p)	m2	44.8		
	Geotextile	m2	47.94		
4	Filling with the ground manually;size- 2.2X1.4 m, the depth- 0.9 m (16 p)	m3	39.87		
5	Arrangement of water transfer tunnel from the estacade	m	184		
	Ferro-concrete gutter 0,45X 0,5X 0,15 L=1,0 m	m	184		
	<b>Sum</b>				
	<b>Recultivation</b>				
1	Recultivation of "New Energy" former base in Igoeti	m2	10000		
	Transportation from #3 earthfill 1500 m3 - 8 km	t	2550		
2	Surface leveling with bulldozer	m3	1500		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 4**

**Work cost to be performed on 57-58 (495) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Building dismantling and removal	m3	22.4		
2	Transportation, Kaspi 8 km	t	56		
3	Ferro-concrete, gutters and beams, parapets, ferro-concrete columns and construction waste- loading on the dump trucks using automatic-grab cranes -495 km	m3	78.25		
4	Transportation, Kaspi 5km	t	195.63		
5	Unload manually at the storage area	m3	100.65		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-Leselidze E-60 Highway**

**Estimate № 5**

**Work cost to be performed on 58-59 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (12 p)	m3	33.26		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (12 p)	m3	3.36		
	Ballast	m3	4.20		
3	Geotextile arrangement with the size of 2.0X1.4 m (12 p)	m2	33.6		
	Geotextile	m2	35.95		
4	Filling with the ground manually; size- 2.2X1.4 m, the depth - 0.9 m (12 p)	m3	29.90		
	<b>Sum</b>				
	<b>Stabilization of №2 closed inert material quarry</b>				
1	Unloading of humus transported from #8,15 and 16 mounds by dump truck and levelling of the area by bulldozer	∅3	13530		
2	Compaction of surface by 5t smooth self-propelled compactor	∅2	16913		
3	Arrangement of draining channel with the width of 1.0 m, the depth- 0.6 m and the length 2142.08 m using bulldozer	m3	1285.25		
	<b>Sum</b>				
	<b>Planting necessary plants</b>				
1	Planting trees on terraces	p	1162		
	Pine- 2 m step (Khashuri district, village Ali)	p	1162		
2	Paving of humus in the holes	m3	2100		
	Transportation of Humus from the earthfill #2 , 1952 m3 -9 km	t	3318.40		
	Transportation of Humus from the earthfill #3, 148 m3 -12 km	t	251.60		
3	Weeding of seedlings over a period of two years (three times per year)	p	6972.00		

1	2	3	4	5	6
4	Watering of pine seedlings over a period of two years (six times per year)	p	13944.00		
	Water	t	139.44		
	<b>Total planting</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 6**

**Work cost to be performed on 59--60 (494) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at #3.4.5 earthfills using excavators, with grab capacity of 0,65 (0,5-1)	m3	14110		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	( #3 earthfill 6752 m3 - 6 km	t	11478.40		
	( #4 earthfill) 630 m3 - 4 km	t	1071.00		
	( #5 earthfill) 6728 m3 - 3 km	t	11437.60		
	<b>Sum</b>				
	<b>Filling gaps between #2 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	14110		
	<b>Sum</b>				
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (10+37p)	m3	13.16		
	Ballast	m3	16.45		
2	Geotextile arrangment with the size of 2.0X1.4 m (10+37 p)	m2	131.6		
	Geotextile	m2	140.81		
	<b>Sum</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Parapet- Loading on the dump truck using automatic-grab crane - 494 km	m3	1.5		
2	Transportation, Kaspi 6km	t	3.75		
3	Unload using automatic-grab crane at the storage area	m3	1.5		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-Leselidze E-60 Highway**

**Estimate № 7**

**Work cost to be performed on 60-61 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (37p)	m3	10.36		
	Ballast	m3	12.95		
2	Geotextile arrangement with the size of 2.0X1.4 m (37 p)	m2	103.6		
	Geotextile	m2	110.85		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				



**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 8**

**Work cost to be performed on 61-62 (491) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Road parapets- Loading on the dump truck using automatic-grab crane-491km	m3	3		
2	Transportation, Kaspi 9km	t	7.50		
3	Dismantling of the bus shelter -491 km and loading on the dump trucks using the excavator	m3	4		
4	Transportation, Kaspi 9km	t	10		
5	Unload using automatic-grab crane at the storage area	m3	7		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-Leselidze E-60 Highway**

**Estimate № 9**

**Work cost to be performed on 62-63 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Rectangular wells-loading on the dump trucks using automatic-grab cranes	m3	32.75		
2	Transportation, Kaspi 13 km	t	81.88		
3	Unload using automatic-grab crane at the storage area	m3	32.75		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 10**

**Work cost to be performed on 63-64 (489) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at #5 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	9152		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	( #5 earthfill) 9152.0 m3 - 1 km	t	15558.40		
	<b>Sum</b>				
	<b>Filling gaps between #3 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	9152.00		
	<b>Sum</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Dismantling of the bus shelter -489 km and loading on the dump trucks using the excavator	m3	9		
2	Transportation, Kaspi 11 km	t	22.5		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**EStimate № 11**

**Work cost to be performed on 64-65 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (73p)	m3	20.44		
	Ballast	m3	25.55		
2	Geotextile arrangment with the size of 2.0X1.4 m (73p)	m2	204.4		
	Geotextile	m2	218.71		
	<b>Sum</b>				
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at #5 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	6407		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	(#5 earthfill) 6407 m3 - 2 km	t	10891.90		
	<b>Sum</b>				
	<b>Filling gaps between #4 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	6407		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 12**

**Work cost to be performed on 65-66 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (17+29p)	m3	12.88		
	Ballast	m3	16.10		
2	Geotextile arrangement with the size of 2.0X1.4 m (17 +29p)	m2	128.8		
	Geotextile	m2	137.82		
	<b>Sum</b>				
	<b>Transportation of topsoil to the closed quarry at 58 km</b>				
1	Uploading of humus onto dump trucks at #8 mound by excavators with a scoop shovel of 0,65 (0,5-1)	m3	10630		
2	Transportation of humus by dump trucks (works outside quarries)				
	(#8 mound) 10630 m3 - 16 km	t	18071.0		
	<b>Subtotal</b>				
	<b>Total</b>				
	Overhead expenses				
	<b>Total</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 13**

**Work cost to be performed on 66-67(486-487) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Dismantling of the bus shelter -486 km and loading on the dump trucks using the excavator	m3	21		
2	Transportation, Kaspi 13 km	t	52.5		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
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**Estimate № 14**

**Work cost to be performed on 67-68 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (19+62p)	m3	22.68		
	Ballast	m3	28.35		
2	Geotextile arrangement with the size of 2.0X1.4 m (19+62 p)	m2	226.8		
	Geotextile	m2	242.68		
	<b>Sum</b>				
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at #5 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	7505		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	(#5 earthfill) 7505 მ3 -4,30	t	12758.50		
	<b>Sum</b>				
	<b>Filling gaps between #5 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	7505.0		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 15**

**Work cost to be performed on 68-69 (483) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (23+62p )	m3	23.8		
	Ballast	m3	29.75		
2	Geotextile arrangment with the size of 2.0X1.4 m (23+62 p)	m2	238		
	Geotextile	m2	254.66		
	<b>Sum</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Dismantling of the bus shelter and loading on the dump trucks using the excavator	m3	6		
2	Transportation, Kaspi 16 km	t	15		
	<b>Sum</b>				
	<b>Transportation of humus to the closed quarry at 58 km</b>				
1	Uploading of humus onto dump trucks at #15.16 mounds by excavators with a scoop shovel of 0,65 (0,5-1)	m3	2900		
2	Transportation of humus by dump trucks (works outside quarries)				
	(#15.16 mounds) 2900 m3 - 16 km	t	4930.0		
	<b>Total</b>				
	<b>Total</b>				
	Overhead expenses				
	<b>Total</b>				
	Profit				
	<b>Total</b>				



**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 16**

**Work cost to be performed on 69-70 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at #5,6 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	15746		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	(#5 earthfill) 7788 m3 -5 km	t	13239.60		
	(#6 earthfill) 7958 m3 -6 km	t	13528.60		
	<b>Sum</b>				
	<b>Filling gaps between #6 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	15746		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 17**

**Work cost to be performed on 70-71 (481)km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (93 p)	m3	26.04		
	Ballast	m3	32.55		
2	Geotextile arrangment with the size of 2.0X1.4 m (93p)	m2	260.4		
	Geotextile	m2	278.63		
	<b>Sum</b>				
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Construction waste- loading on the dump trucks using automatic-grab cranes	m3	4		
2	Transportation, Gori 18 km	t	10		
3	Unload using automatic-grab crane at the storage area	m3	4		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 18**

**Work cost to be performed on 71-72 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at # 6,11 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	2066		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	( #6 earthfill) 2002 m3 -8 km	t	3403.40		
	( #11 earthfill) 64 m3 -3 km	t	108.80		
	<b>Sum</b>				
	<b>Filling gaps between #7 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	2066		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 19**

**Work cost to be performed on 72-73 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (173+38 p)	m3	584.89		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (173+38p)	m3	59.08		
	Ballast	m3	73.85		
3	Geotextile arrangement with the size of 2.0X1.4 m (173+38 p)	m2	590.8		
	Geotextile	m2	632.16		
4	Filling with the ground manually;size- 2.2X1.4 m, the depth- 0.9 m (173+38 p)	m3	525.81		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 20**

**Work cost to be performed on 73-74 (478-479) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Concrete tile, road parapets- loading on the dump trucks using automatic-grab cranes	m3	11.35		
2	Transportation, Gori 13 km	t	28.38		
3	Unload using automatic-grab crane at the storage area	m3	11.35		
	<b>Sum</b>				
	<b>Ground earthfillremoval works</b>				
1	Loading ground on the dump trucks at # 11 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	1398		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	(#11 earthfill) 1398 m3 -2 km	t	2376.60		
	<b>Sum</b>				
	<b>Filling gaps between #8 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	1398		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 21**

**Work cost to be performed on 75-76(477) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Road parapets- loading on the dump trucks using automatic-grab cranes	m3	3.75		
2	Transportation, Gori 12 km	t	9.38		
3	Unload using automatic-grab crane at the storage area	m3	3.75		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 22**

**Work cost to be performed on 76-77 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (3 p)	m3	8.32		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (3p)	m3	0.84		
	Ballast	m3	1.05		
3	Geotextile arrangement with the size of 2.0X1.4 m (3 p)	m2	8.4		
	Geotextile	m2	9.0		
4	Filling with the ground manually; size- 2.2X1.4 m, the depth- 0.9 m (3 p)	m3	7.94		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 23**

**Work cost to be performed on 77-78 (474) km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Construction waste management in the adjacent territory of the highway</b>				
1	Large pieces of concrete blocks- loading on the dump trucks automatic-grab cranes (secondary)	m3	20		
2	Transportation, Gori 9 km	t	50		
3	Road parapets- loading on the dump trucks using automatic-grab cranes	m3	7.5		
4	Transportation, Gori 9 km	t	18.75		
5	Unload using automatic-grab crane at the storage area	m3	27.5		
	<b>Sum</b>				
	<b>Recultivation</b>				
1	Bringing the ground from #11 earthfill into the former quarry	m2	4720		
	Transportation, from #11 earthfill 1718 m3 - 8km	t	2920.6		
2		m3	1718		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				



**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 24**

**Work cost to be performed on 78-79 (473-474 km) from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Ground earthfill removal works</b>				
1	Loading ground on the dump trucks at # 11 earthfill using excavators, with grab capacity of 0,65 (0,5-1)	m3	520		
2	Ground transportation with dump trucks (working outside the quarries) in order to fill the dividing line.				
	( #11 earthfill) 520 m3 -3 km	t	884.00		
	<b>Sum</b>				
	<b>Filling gaps between #9 dividing line parapets</b>				
1	Unloading the ground from dump trucks and spreading on the territory manually	m3	520		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-  
Leselidze E-60 Highway**

**Estimate № 25**

**Work cost to be performed on 79-80 km from Tbilisi**

№	Type of the work	Dimension	Quantity	Work cost GeL	
				It. Cost	Sum
1	2	3	4	5	6
	<b>Arrangement of drainage holes on the middle dividing line</b>				
1	Trench arrangement manually with size 2.2X1.4 m, depth-0.9 m (39 p)	m3	108.11		
2	Bringing ballast and spreading across the drainage line with size of 2.0X0.7 m, Thickness 0.2 m (39 p)	m3	10.92		
	Ballast	m3	13.65		
3	Geotextile arrangment with the size of 2.0X1.4 m (39 p)	m2	109.2		
	Geotextile	m2	116.84		
4	Filling with the ground manually;size- 2.2X1.4 m, the depth- 0.9 m (39 p)	m3	97.19		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead cost				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental improvement at Natakhtari-Ruisi Section of Tbilisi-Senaki-Leselidze E-60/s-1 Highway of  
International Importance  
Estimate № 26**

**Cost of stabilization works to be carried out on slope #2 at 80-81 km from Tbilisi**

№	Description	Measure ment	Q-ty	Cost of works, GEL	
				Unit price	Total
1	2	3	4	5	6
	<b>Arrangement of drainage channel L=489 m</b>				
1	Soil processing manually	m3	162		
2	Removal of excavated soil, 15 km away	t	275.4		
3	Arrangement of 3cm thick sand cushion	m2	146.7		
	sand	m3	4		
4	Cover the channel with concrete canvas manually	m2	880		
	5mm thick "Concrete canvas" CC5	m2	968.00		
5	Watering on a one-off basis using a watering truck	m2	880		
	Technical water	l	2640		
	<b>Sum</b>				
	<b>Slope micro-terraces works</b>				
1	Arrangement of micro-terraces manually	m3	220.5		
2	Uploading of excavated soil using a 0.25 m3 excavator bucket	m3	220.5		
3	Removal of excavated soil, 15 km away	t	374.85		
	<b>Sum</b>				
	<b>Technical recultivation of the slope</b>				
1	Uploading of humus onto dumping trucks using a 0,65m3 capacity excavator bucket	∅3	578		
2	Transportation of humus by dumping trucks from a borrow pit to the site				
	578 m3 - 15 km	∅	982.60		
3	Distribution of humus over the slope and its spreading using hand carts	∅3	578		
4	Manual compaction of spread humus	∅2	5778.5		
	<b>Sum</b>				
	<b>Total</b>				
	Overhead expenses				
	<b>Sum</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of E-60 Highway**

**Cost estimation № 27**

**Barbed wire fence**

№	Description of works	Measure ment	Q-ty	Cost of works, GEL	
				Unit price	Total
1	2	3	4	5	6
	<b>#1 Quarry (54-55 km)</b>				
	<b>Fence (656lm)</b>				
1	Arrangement of wooden posts	unit	332		
	wooden post (H=2.1 m, D=10 cm)	unit	332		
2	Treatment of posts'ends with hot bitumen	unit	332.0		
	Bitumen	t	0.0614		
3	Stretching of barbed wire	lm	5644		
	Rough steel barbed wire	lm	5644		
	100 mm nails for staplers	kg	44.4		
	Tying wire	kg	15.0		
	<b>Double-wing fence</b>				
4	Arrangement of wooden bars	lm	50.0		
	Wooden bar with a cross-section of 50X60 mm	m3	0.15		
	Steel hinges	unit	12		
5	Stretching of barbed wire	lm	40		
	Rough steel barbed wire	lm	40		
	100 mm nails for staplers	kg	1.0		
	<b>Subtotal</b>				
	<b>#2 Quarry (58-59 km)</b>				
	<b>Fence (1100 lm)</b>				
1	Arrangement of wooden posts	unit	554		
	wooden post (H=2.1 m, D=10 cm)	unit	554		
2	Treatment of posts'ends with hot bitumen	unit	554.0		
	Bitumen	t	0.1025		
3	Stretching of barbed wire	lm	9418		
	Rough steel barbed wire	lm	9418		
	100 mm nails for staplers	kg	74.0		
	Tying wire	kg	24.5		
	<b>Double-wing fence</b>				
4	Arrangement of wooden bars	lm	50.0		
	Wooden bar with a cross-section of 50X60 mm	m3	0.15		
	Steel hinges	unit	12		
5	Stretching of barbed wire	lm	40		
	Rough steel barbed wire	lm	40		
	100 mm nails for staplers	kg	1.0		
	<b>Total</b>				
	<b>Total</b>				
	Overhead expenses				
	<b>Total</b>				
	Profit				
	<b>Total</b>				

**Environmental Improvement Activities on Natakhtari-Ruisi section of the  
International Tbilisi-Senaki-Leselidze E-60 Highway**

**TEMPORARY TYPICAL SCHEME OF ROAD TRAFFIC ORGANIZATION  
(LEFT SIDE OF THE MEDIAN STRIP)**

**Estimate № 28**

**Temporary scheme for one-way traffic during the implementation of works within the dividing line**

#	Number	Name of works and expenditures	Unit	Quantity	Unit Cost, GEL	Total cost, GEL
1	2	3	4	5	6	7
1	Costs of construction resources 2014IVkv pg121	Loading of inventory road signs on dump trucks, transportation and transporting back after the completion of works.	t	0.0725		
2	Costs of construction resources 2014IVkv pg121	Loading of steel bars of road signs on dump trucks and transporting them back after the completion of works.	t	0.3182		
3	Costs of construction resources 2014IVkv pg121	Loading of concrete pads on dump trucks and transporting them back after the completion of works.	m <sup>3</sup>	1.1		
4	27-180 k-0.5	Installation of transported road signs. They will be Dismantled after the completion of works.	pcs	11		
5	27-186 k-0.5	Installation of shields of road signs on the existing pillars, with following explanation	pcs	16		
6	Data of "Losouch Graal" Ltd	Optional cost of road sign pillars:				
		a) length 3.5m, Φ76mm	pcs	1.0		
		b) length 4m, Φ76mm	pcs	10		
7	Data of "Losouch Graal" Ltd	Optional cost of road sign shields:				
		a) Rectangular 350X700 mm	pcs	4.0		
		b) Round Φ700mm	pcs	13		
		c) Triangular 900X900X900 mm	pcs	8		
		d) kvadratuli 700X700 mm	pcs	2		
8	27-214 K-0.5	Arrangement of Plastic road barriers with further explanation	pcs	54		
9	Costs of construction resources 2014 IV kv pg 106.p	Optional cost of Plastic road barriers	pcs	54		
10	27-214 k-0.5	Installation of Yellow warning shimmer, with further removal	pcs	3		
11	Costs of construction resources 2014 IV kv pg 106.p	Optional cost of Yellow warning shimmer	pcs	3		
<b>Total</b>			<b>GEL</b>	<b>—</b>		
Overhead costs			%			
<b>Total</b>			<b>GEL</b>			
Profit			%			
<b>Total</b>			<b>GEL</b>	<b>—</b>		
Minus optional cost p6,p7,p9,p11			GEL	<b>—</b>		
<b>Total without optional cost</b>			<b>GEL</b>	<b>—</b>		

**Environmental Improvement Activities on Natakhtari-Ruisi section of the International Tbilisi-Senaki-Leselidze E-60 Highway**

**Local Estimate #29**

**Restoration of irrigation channel in village Gamdlistskaro**

Item #	Description	Quantity	Unit	Unit cost, GEL	Remark	Total cost, GEL
1	Post- Steel square shaped 80X80 (mm) Δ2mm	126.91	l.m			
2	Top of post 50X50 (mm) Δ 2mm	42.7	l.m			
3	Metal strip 50 (mm) Δ 4mm	142.95	l.m			
4	Sheet metal 80X80 Δ 8mm 50X50 (mm) Δ5mm	171.2	kg			
	Formwork	40.00	m <sup>2</sup>			
5	Reinforcement	259.86	kg			
6	Anchor φ 16 mm, L=200mm	56.00	unit			
7	Bolt and nut	15.00	kg			
8	Weld rod -Э42A	65.00	kg			
9	Disc for cutting metal	20.00	unit			
10	Solvent (Drying oil)	17.00	kg			
	Oil paint	17.00	kg			
11	Concrete B22,5 (C25/20), F200, W6	10.25	m <sup>3</sup>			
12	Plastic pipe d=300mm, Δ wall=8 mm	315.00	l.m			
<b>Total Materials</b>						
#	Salary	No of workers/ engineers	No of days	Rate, GEL		Total rate, GEL
13	m3Excavating pits manually, 12,0 m <sup>3</sup> (75pits) Backfilling manually, m <sup>3</sup> Levelling remaing soil manually, 9,5 m <sup>3</sup>	3	3.00			
		3	2.00			
		3	2.00			
		1	3.00			
	<b>Sum</b>					
14	Connecting pipes (cost of 1 l.m. pipe 3 Gel)	312.00				
15	Manufacturing and painting steel pipe supports (74 posts and 28 fittings)	5.00	15.00			
		1.00	15.00			
	<b>Sum</b>					
16	Installation of posts, fittings and pipe	5.00	15.00			
		1.00	15.00			
		1.00	15.00			
	<b>Sum</b>					
17	Formworks and reinforcement	3.00	2.00			
		1.00	2.00			
		1.00	1.00			
	<b>Sum</b>					
18	Transportation expenses	1.00				
	<b>Total Salary</b>					
	<b>Total, without VAT (18%)</b>					