GEORGIA
ROADS DEPARTMENT OF THE MINISTRY OF
REGIONAL DEVELOPMENT AND INFRUSTRUCTURE

SECOND SECONDARY AND LOCAL ROADS PROJECT
(SLRP II)

DESIGN DOCUMENTATION

REHABILITATION OF THE SECONDARY ROAD

Agara - Kornisi - Tskinvali

km 1 - km 4; km 9 - km 16

VOLUME I.

EXPLANATORY NOTE, VOLUME OF WORKS

CONTRACT #: SLRPII/CS/QCBS-04

TRANSPROJECT

KOCKS ENGINEERS

TBILISI 2014

Design composition

Volume I - Explanatory note, Tables of volumes of works

Volume II - Drawings

Volume II- I – Drawings. Cross Sections

Volume III - Confidential cost estimates

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Volume V - Environmental Management Plan

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Explanatory Note

1. INTRODUCTION

Design and tender documents for the rehabilitation of secondary road Agara-Kornisi-Tskhinvali sections km 1 – km 4 da km 9 – km 16 was developed by "Transproject" Ltd and KOCKS Consult GMBH under the Agreement No SLRPII/CS/QCBS-04 signed on 10.06.2014 with Roads Department of the Ministry of Regional Development and Infrastructure of Georgia.

Design documentation was prepared based on corresponding field survey and design works. Tender documents for rehabilitation works were prepared as a separate document.

Project road links Agara and Znauri regions and adjacent villages to Tbili–Senaki–Leselidze highway and by means of this road to various regions and cities of Georgia.

This region of Kartli is characterized by abundant produce of agricultural prodcuts. The project road is very important for the transportation of agricultural products and improving of socioeconomic conditions.

Based on the study and analysis of the actual conditions of road and in accordance with the requirements of the Terms of Reference the following design parameters are adopted:

- Width of road bed - 8.0 - 10.0 m
- Width of carriageway - 6.0 m
- Width of traffic lane - 3.0 m
- Width of paved shoulders at km 1, km 4, km 9-km10.5 - 0.5 m
- Width of shoulder - 1.0 - 1.5 m
- Crossfall - 2.0 %
- Minimal radius of horizontal curve - 30 m
- Maximum longitudinal gradient - 8 %

Design was carried out according to Georgian State Standard SST Gzebi 72:2009 "Public roads, geometric and structural requirements" and SNiP 2.05.02.85 former Soviet standards valid in Georgia. Actual parameters of the mentioned section were also envisaged.

2. FIELD TOPOGRAPHIC SURVEY

Topographic survey of the design alignment for the detailed design of Agara-Kornisi-Tskhinvali road sections km 1 – km 4 da km 9 – km 16 was carried out by "Transproject" Ltd. Topographic network was defined and carried out prior to the survey. Reference marks are numbered and fixed at the national network.

Cross-sections are carried out for every 20 m. The interval is reduced on some sections due to terrain requirement. Location of engineering structures, existing communications and canals was considered during the survey.

Field topographic works were carried out along the axis of the project road.

Equipment applied in the topographic survey is as follows:

- High precision GNSS TRIMBLE R-8 included into GEO-CORS system network;
- Electronic tacheometer Nikon NPL-352;
- Electronic tacheometer Nikon AP-8;

Topographic plan is carried out in the scale 1:1000.

Topographic and land measuring works are attached to UTM (WGS84) system of coordinates.

Reference points of the rehabilitation section with corresponding sketches are attached to the report.

Design was developed based on field survey documents and processed in Robur software and „AutoCAD"

3. DESCRIPTION OF THE EXISTING ROAD

Agara-Kornisi-Tskhinvali road starts at km 110 of Tbilisi–Senaki–Leselidze higway (km 109+700) in Daba Agara.

Section km 1 - km 4 of the road starts at the junction with the highway from PK 0+00 and ends at the newly rehabilitated section at PK 39+31. The road crosses the village Kvenatkoca from PK 0+00 to PK 14+40 and agricultaural plots of lands up to PK 39+31.

Actual condition of asphalt concrete road pavement is unsatisfactory at present. The edges are broken, there are longitudinal, transverse and alligator cracks, frequent potholes, cross fall is disturbed.

Project road crosses the river Ptsa with a reinforced concrete bridge. The bridge is in an unsatisfactory condition, the bridge is not subject to repair. Rehabilitation of the bridge is not envisaged in the design under the agreement with the Roads Department of Georgia.

Existing culverts of various cross-sections are mianly used for irrigation. They mainly do not ensure proper water discharge and shall be replaced.

Length of the road section is 3.931 km.

Section km 5 – km 8 of Agara-Kornisi-Tskhinvali road has been recently rehabilitated.

Project section km 9 – km 16 starts at the exit of the village Abisi which represents the end of the rehabilitated section and corresponds to PK 0+00. The road passes the villages Tseronisi, Avlevi, Knolevi and ends at PK76+78 at the Police Post at the end of the village Knolevi (village Knolevi is bordering conflict zone).

Length of the road section is 7.678 km.

Asphalt concrete pavement is actually missing on the mentioned section (rare fragments exist). Surface water flows on the carriageway on many sections, ditches are mainly silted, water discharge from the road is not ensured, shoulders are washed off

Reinforced concrete bridge over the river Prone requires repairing. Existing culverts of various cross-sections are mainly damaged and require replacing and some repairing.

Junctions and yard entrances shall be repaired, road signs shall be installed.

Rehabilitation length of both sections is 11.609 km. See pictures of the existing road.

Pk 0+00

Pk 3+00

Pk 4+00

Pk 9+00

Pk 11+00

Pk 20+00

Pk 30+00

Pk 39+30

Pk 0+00

Pk 3+00

Pk 6+00

Pk 15+00

Pk 25+00

Pk 31+00

Pk 34+00

Pk 40+00

Pk 42+00

Pk 46+00

Pk 47+00

Pk 56+00

Pk 60+00

Pk 69+00

Pk 72+00

Pk 75+50

4. NATURAL CONDITIONS OF THE REGION

4.1 INTRODUCTION

Engineering-geological survey for the rehabilitation project of Agara-Kornisi-Tskhinvali km1-km4 and km9-km16 road sections was carried out in 2014.

Engineering-geological survey of the road included visual inspection and core drillings. Obtained soil samples were given corresponding laboratory tests in the laboratory owned by Geoengineering Ltd. Data available from previous geological studies was reviewed and brief natural and geological description of the study region was developed.

4.2 THE CLIMATE

Climatic data on the study region has been obtained from Georgian construction norms 01.05-08, corresponds to the data obtained from the nearest meteorological station in Agara (above sea level - 638 m). According to the table 3 of the mentioned construction norms, the study area belongs to IIb sub-region. Below are given climatic characteristics taken from corresponding tables of mentioned norms.

Table 1. Main characteristics of climatic sub-region (table 2)

Climatic region	Climatic sub-region	Average temperature in January ^{0}C	Mean wind velocity of for 3 months in winter m/sec	Average temperature in July ^{0}C	Relative humidity, July %
II	IIb	From -5 to -2	-	From +21 to +25	-

Table 2. Air temperature and humidity (Tables 11, 12, 13)

N	Climatic specifications	According to months												Years
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
1	Average annual and monthly temperature, ^{0}C	-1.4	0.1	4.3	10.0	15.3	18.7	21.8	27.7	17.8	12.0	5.7	0.7	10.5
2	Absolute minimum air temperature ,^{0}C	-30												

3	Absolute maximum air temperature, ^{0}C	39												
4	Average maximum of the hottest month, ^{0}C	-	-	-	-	-	-	28.5	-	-	-	-	-	-
5	Average amplitude of air temperature ^{0}C	8.0	8.5	10.5	12.0	11.5	12.0	11.5	12.0	11.5	11.5	9.0	9.0	-
6	Relative humidity, %	81	78	74	68	70	68	68	67	70	77	80	81	74

Table 3. Precipitations and snow cover (Tables 15, 17)

Annual precipitation, mm	Precipitation daily maximum, mm	Weight of snow cover, kpa	Snow cover days	Water content of snow cover, mm
569	70	0,50	16	46

Table 4. Wind pressure normative values (Table-18)

Once in 5 years, kpa	Once in 15 years, kpa
0,38	0,48

Table 5. Wind maximum velocity probable once in 1, 5, 10, 15, 20 years, m/sec (Table-19)

1 year	5 year	10 year	15 year	20 year
22	25	20	28	29

Table 6. Normative depth of soil seasonal freezing, cm (Table-20)

Clay and loam	Fine and dusty sand, loam	Medium grained and coarse grained sand, gravelly sand	Detritus soil
30	36	39	45

According to construction-climatic division into regions, the study region belongs to IIb sub-region.

Construction can be carried out throughout the year.

4.3 GEOMORPHOLOGY

According to geo-morphological zoning of Georgia the study region belongs eastern depression of Georgian Block, in particular the region of Neogene marine and continental semi-rock and plastic sediments.

4.4 GEOLOGICAL STRUCTURE

The study region is mainly composed of Quaternary Age continental formations, alluvial float stone-pebble stone with sand and loam fill. They are accumulated in the flood plains of the rivers Ptsa and Prone.

Diluvial deposits are represented by semi-hard and hard-plastic loam with the insertions of pebbles.

Bed rock is represented by argillite, clay cemented sandstone and siltstone.

Modern physical and geological processes that undergo in the study region include erosion, which is expressed by washout of river banks and deepening of river bed, with undergoing washout of land by surface water.

According to seismic zoning of Georgia, the study region belongs to 8 point zone of seismic activity.

4.6 LABORATORY TEST RESULTS OF SOIL SAMPLES

Types of soils determined based on the results of field and laboratry surveys were described for the whole section of the project road. Each type of soil (layer) is given a peculiar unique number. This number serves to indicate the soil along the whole road alignment according to its frequency.

Three types of soil are detected in the area of project road alignment.

Geotechnical characteristics of layers are based on the results of laboratory tests carried out in Geoenginnering Laboratrory on samples obtained from bore-holes. Summary Table is attached to the Explanatory Note together with Laboratory Test Results of Chemical Content of Water Samples.

4.7 HARD ROCK TEST RESULTS

According to the above-mentioned, the study section is represented by succession of Paleogene Age siltstone and marl layers. Exposure of rock deposits is observed on the slopes located along the existing road. Exposed rock was studied visually and its physical-mechanical properties were described based on standard regulations.

4.8 DESCRIPTION OF THE PROJECT ROAD

The section km 1 – km 4 of the project road crosses flat terrain and is located on Shida Kartli Plateau. The Plateau is covered by semi-hard loam at the surface with the insertions of pebbles 10%.

The road crosses flat terrain from PK 0+00 to PK 8+67 covered by semi-hard loam at the surface with the insertions of pebbles 10%.

Damaged asphalt concrete carriageway thickness 14-15 cm has remained on the whole section. Asphalt concrete carriageway has small-size potholes, with longitudinal and transverse cracks.

Thickness of underlying gravel is 25-30 cm.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

The road crosses the river Ptsa from PK 8+67 to PK 9+02 with the reinforced concrete bridge constructed over the river. The gorge and bottom of the river are represented by pebblestone with the insertions of boulders 30% with loam fill.

The road crosses mountainous-hilly plateau-like terrain from PK 9+02 to PK 29+50 which is covered by semi-hard loam at the surface with the insertions of pebbles up to 10% with humus layer thcikness 25-28 cm.

Alluvial float stone-pebblestone sediments are covred by loam thickness 3.5-5.0 m.

Asphalt concrete carriageway thickness 16-14 cm is damaged and has remained on the whole carriageway, thickness 14-16 cm. There are longitudinal and transverse cracks on the carriageway.

Thickness of underlying gravel soil is 25-28 cm.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

From PK 29+50 to PK 39+31 to the end of the project section the road crosses flat terrain and is located on the old terrace the river Ptsa. The terrace is covered by semi-hard loam at the surface with the insertions of pebbles up to 10%, thickness 2-4 m.

Asphalt concrete carriageway thickness 14-15 cm is damaged and has remained on the whole carriageway. Asphalt concrete carriageway has small-size potholes, with longitudinal and transverse cracks.

Thickness of underlying gravel is 25-28 cm.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

Section km 9 – km 16 of the project road is located on flat terrain with low hills on Shida Kartli Plateau. The Plateau is covered with semi-hard loam with the insertions of pebbles up to 10% at the surface.

The road crosses left and right old terraces of the river Prone from PK0+00 to PK15+67. The terraces are formed by river float stone and pebblestone with loam and loamy sand fill. The terraces are covered by semi-hard loam at the surface with the insertions of pebbles up to 10%.

Asphalt concrete pavement has remained on the carriageway in small fragments, thickness 8-10 cm.

Thickness of underlying gravel is 30-32 cm.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

The road is constructed on the gravel fill from PK 2+40 to PK 6+20, height of fill is 2-4 m.

The road crosses the river Prone with a bridge at PK 3+80.

The gorge and bottom of the river are represented by pebblestone with the insertions of boulders 30% with loam sand loamy sand fill.

From PK 15+02 to PK 49+50 the road crosses hilly plateau like slightly slanted terrain, covered at the surface by semi-hard loam with the insertions of pebbles up to 10%, humus layer thcikness 15-25 cm.

Thickness of loamy soil is 3.5-5.0 m.

Asphalt pavement doesn't actually exist and has remained in fragments. Thickness of gravel pavement is 25-30 cm.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

The road is located on the bench of a stable slope from PK 49+50 to PK 76+78 and to the end of the project section. The slope is formed by siltstone and marl layers which are exposed along the road.

Bedrock is covered with semi-hard loam at the surface with the insertion of pebbles up to 10%, thickness 2-6 m.

The carriageway is mainly of gravel thickness 25-32 cm. Content of clay in gravel is rather high, which causes clay screen on the carriageway.

Deformations and settlements are not detected on the road.

Road structure is constructed on diluvial semi-hard loam with the insertions of pebbles up to 10%.

Ditches shall be constructed along the whole road, especially at the side of the road.

4.9 CONCLUSIONS AND RECOMMENDATIONS

According to geo-morphological zoning of Georgia the study region belongs eastern depression of Georgian Block, in particular the region of Neogene marine and continental semi-rock and plastic sediments.

1. The study region is composed of Quaternary Age continental formations, alluvial float stone and pebblestone with sand and loam fill. Diluvial sediments are represented by semi-hard and hard-plastic loam with the insertions of pebbles.
   Bed rock is represented by argillite, clay-cemented sandstone and siltstone.
2. Physical and geological processes that undergo in the study region include weathering and erosion, which is expressed by washout of river banks and deepening of river bed, with undergoing washout of land by surface water.
3. According to climatic conditions based on construction-climatologic norms of Georgia (p.n. 01.05.08) the study region belongs to IIb sub-region.
4. According to engineering-geological conditions, climatic conditions, conditions of terrain and geological conditions the region where the project road is aligned belongs to I category of average complexity.
5. Description of the works required for road rehabilitation with corresponding recommendations (activities) on separate section is given above in “Brief description of the project road section”.
6. According to standards p.n. 01.01.09 - “Seismic construction”, valid in Georgia the project road section belongs to 8-point seismic zone.

Seismic data according to soil is as follows:

- Layers No1 and No2 - semi-hard loam with the insertions of pebbles up to 10% – design seismicity is 8 points.

- Layers No3 – float stone and pebblestone with sandy loam fill – design seismicity is 8 points.

Table of physical and mechanical properties of soil is attached to the present report, along with the linear chart of the road pavement, California bearing ratio, Summary Table of Laboratory Tests of Soil Samples, chemical analysis of river water, longitudinal profile with geological data.

PHYSICAL AND MECHANICAL PROPERTIES OF SOIL

Layer N	Geolo-gical index	Soil specification	Soil group according to SNiP IV-5-83	Gradi-ent	Density ρ t/m3	Porosity factor e	Fluidity factor I_L	Angle of internal friction φ Degree	Adhesi-vity c mp	Resis-tance R_0 mp	Comp-ression strength R_∞ mp	Defor-mation module E_0 mp
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1	d Q_4	Semi-hard loam with pebbles up to 10%	33^g	1:1	1.9	-	-	23^0	0.01	0.3	-	25
2	d Q_4	Semi-hard clay with pebbles up to 10%	8^g	1:1	1.95	-	-	20	0,06	0.3	-	24
3	alQ_4	Float stone pebble stone with loam fill	6^g	1:1.5	2.0	-	-	36^0	0.005	0.4	-	40
4	Pg_2	Layers of siltstone and marl	1^a	1:1.5	1.6	--	-	25^0	0.7	-	1.0	300

Road: Agara-Kornisi-Tskhinvali km 1 - km 4; km 9 - km 16
Section: km 1 - km 4
Actual condition of the existing pavement and diagram of project activities

Existing Chainage (km)			0+000	1+000	2+000	3+000	3+931
Width of Roadway			7.0	7.0	7.0	7.0	7.0
Width of Unpaved Shoulders	Left		1.5	1.5	1.5	1.5	1.5
	Right		1.5	1.5	1.5	1.5	1.5
Surface Condition	Cracks	%	10	15	12	18	
	Cracks	%	24	28	30	36	
	Potholes	%	2.5	3.5	4.0	5.0	
	Deformation	m^2	-	-	-	-	
	Settlements	m^2	-	-	-	-	
	Rutting	mm	40	50	50	60	
CBR % of the plate-form			8	7	8	7	
Existing Pavement Structure		sm	14 Asphalt concrete 30 Gravelly material Loam, semi-solid with pebbles insertions up to 20%	16 Asphalt concrete 27 Gravelly material Loam, semi-solid with pebbles insertions up to 20%	14 Asphalt concrete 25 Gravelly material Loam, semi-solid with pebbles insertions up to 20%	14 Asphalt concrete 28 Gravelly material Loam, semi-solid with pebbles insertions up to 20%	
Project Measures Type I							
Project Chainage (km)			0	1	2	3	

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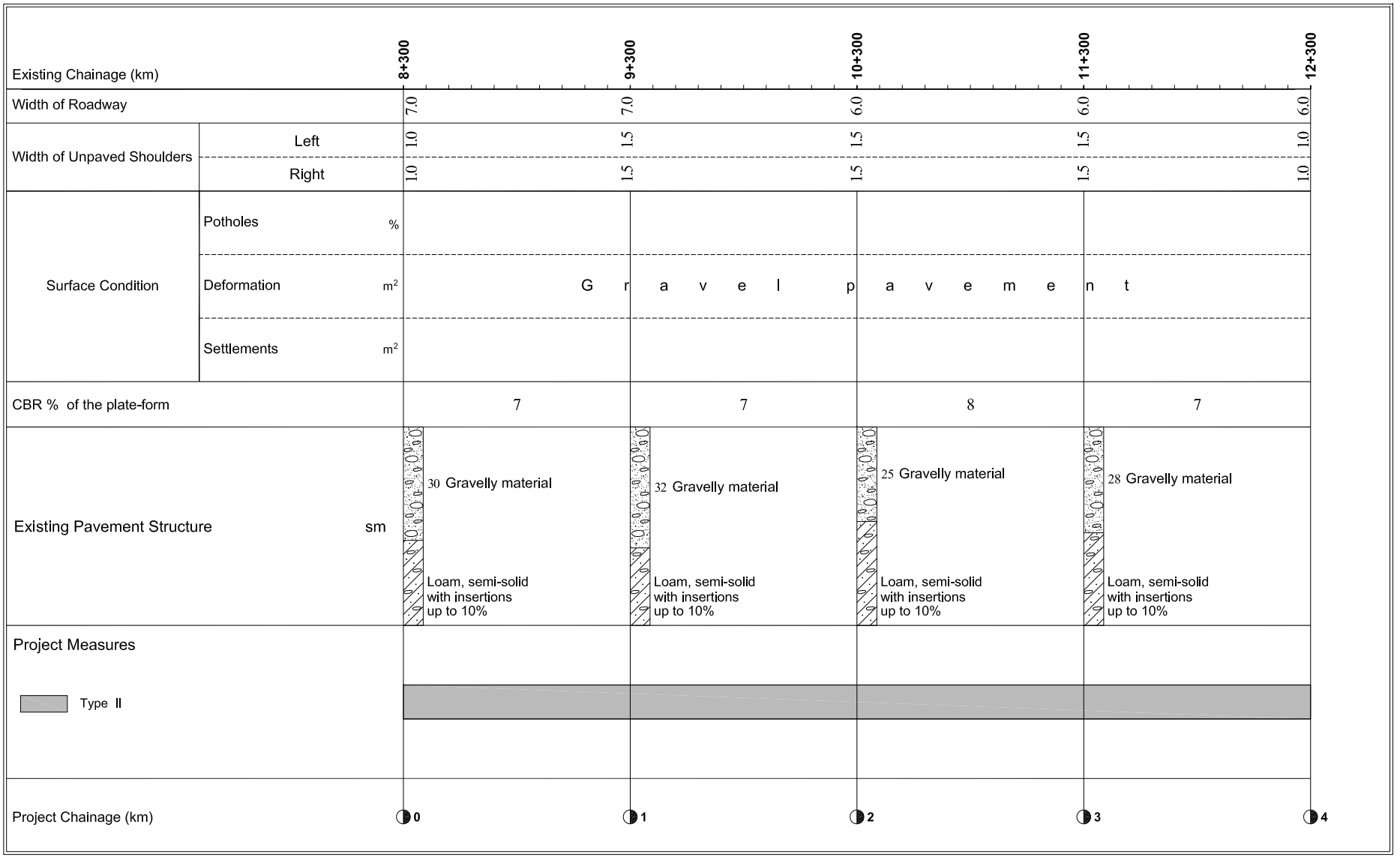
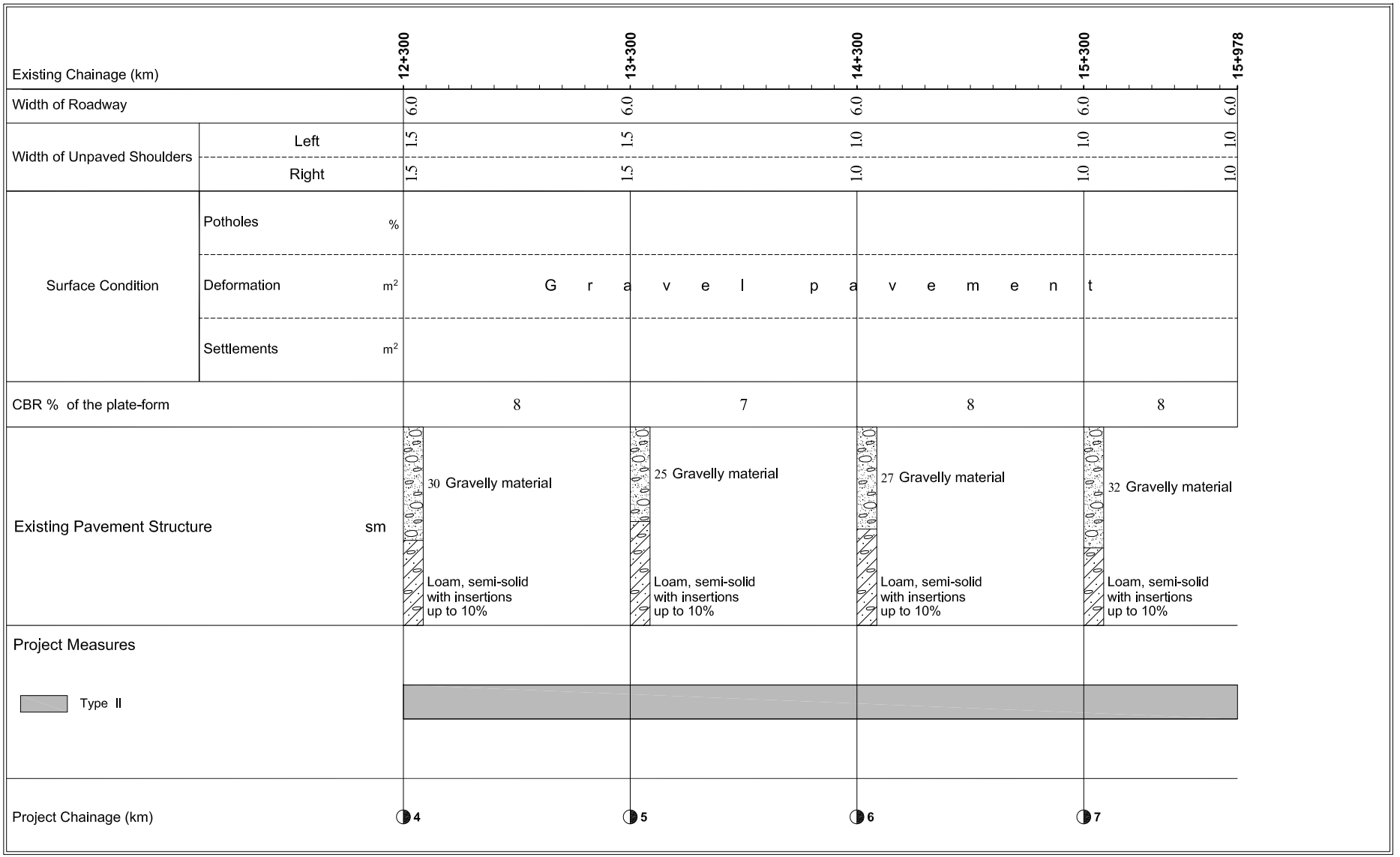
Road: Agara-Kornisi-Tskhinvali km 1 - km 4; km 9 - km 16
Section: km 9 - km 16
Actual condition of the existing pavement and diagram of project activities



Road: Agara-Kornisi-Tskhinvali km 1 - km 4; km 9 - km 16
Section: km 9 - km 16
Actual condition of the existing pavement and diagram of project activities



Project: GC-14 Road Agara-Kornisi-Tskhinvali km1-km4; km9-km16.

Summary table of survey on composition and physical characteristics of soils

No	Location	No of boreholes	No of sample	Intervals of sampling, m	Size of fraction, mm																Natural moisture content, QW%	Plasticity			Consistency index I_L	Density g/cm^3			Porosity n%	Void ratio, e	Moisture degree S_z	Name of soil
					>200	200-100	100-60	60-40	40-20	20-10	10-5	5-2	2-1	1-0.5	0.5-0.25	0.25-0.1	0.1-0.05	0.05-0.01	0.01-0.005	< 0.005		Upper limit, W_L%	Lower limit, W_p%	Plasticity index, I_p		Mineral particles , rs	Natural r	Dry unit weight, r_d				
1	Section km 1- km 4	1	1	1.3										0.6	3.0	17.1	12.0	23.3	14.4	29.6	25.4	41.4	24.5	16.9	0.05	2.72	2.00	1.59	41.36	0.705	0.979	Semi-hard loam
2		3	3	1.2										1.0	4.2	18.9	13.7	21.9	15.1	25.2	22.6	40.6	23.8	16.8	-0.07	2.72	1.97	1.61	40.92	0.693	0.887	Hard loam
3		4	4	1.7								1.5	0.6	0.9	1.0	11.4	18.8	23.5	14.6	27.7	20.7	38.0	23.0	15.0	-0.15	2.71	2.02	1.67	38.24	0.619	0.906	Hard loam
4		5	5	2.5					6.5	5.0	3.0	2.6	2.9	1.4	6.6	8.1	10.1	19.3	11.5	23.0	18.8	35.7	20.6	15.1	-0.12	2.71	1.94	1.63	39.74	0.660	0.772	Hard loam with gravel
5		6	6	1.9									2.2	3.4	4.0	8.1	15.1	24.6	17.2	25.4	20.3	36.4	21.2	15.2	-0.06	2.71	1.92	1.60	41.11	0.698	0.788	Hard loam
6		8	7	2.5								1.4	1.0	2.1	2.1	6.5	17.4	23.1	16.0	30.4	32.0	47.1	30.1	17.0	0.11	2.73	1.85	1.40	48.66	0.948	0.922	Semi-hard loam
7		9	8	1.3								1.0	1.1	2.6	3.6	7.0	15.8	27.4	18.6	22.9	26.3	39.1	23.6	15.5	0.17	2.71	1.89	1.50	44.78	0.811	0.879	Semi-hard loam
8	Section km 9- km 16	1	1	1.4								0.2	0.9	1.1	2.0	10.6	13.4	25.5	17.8	28.5	24.6	40.9	23.7	17.2	0.05	2.72	1.84	1.48	45.71	0.842	0.795	Semi-yard clay
9		5	2	0.9							0.1	0.6	0.7	0.9	1.3	7.7	15.1	21.6	19.4	32.6	25.3	42.6	24.6	18.0	0.04	2.72	1.88	1.50	44.84	0.813	0.847	Semi-yard clay
10		6	3	1.8								0.3	0.4	0.7	1.7	8.6	16.8	13.9	16.7	40.9	26.5	49.5	26.1	23.4	0.02	2.73	1.94	1.53	43.82	0.780	0.927	Semi-yard clay
11		9	4	2.2									0.4	1.1	10.1	22.7	7.0	25.5	13.9	19.3	25.6	39.9	22.5	17.4	0.18	2.71	1.90	1.51	44.18	0.791	0.877	Semi-yard clay
12		12	5	1.2						5.4	1.5	1.0	0.9	0.4	0.8	17.9	10.4	26.8	12.5	22.4	24.8	36.8	23.3	13.5	0.11	2.71	1.88	1.51	44.41	0.799	0.841	Semi-hard loam
13		15	6	2.0						6.1	1.0	0.8	0.8	1.0	6.1	14.3	14.7	19.9	16.1	19.2	23.6	38.3	24.4	13.9	-0.06	2.71	1.93	1.56	42.38	0.736	0.870	Hard loam
14		17	7	2.5					1.6	3.9	2.1	1.0	1.1	0.9	4.5	10.2	9.4	11.6	13.4	40.3	25.1	49.6	28.4	21.2	-0.16	2.73	1.98	1.58	42.02	0.725	0.945	Hard clay
15		19	8	3.5						5.0	1.7	1.5	1.1	0.8	3.9	12.8	12.6	8.9	16.3	37.1	24.6	45.8	25.3	20.5	-0.03	2.73	1.89	1.52	44.44	0.800	0.840	Hard clay
16		20	9	1.2					1.2	4.1	1.1	1.3	1.3	1.9	2.4	10.5	11.1	12.7	15.0	38.5	23.8	44.5	24.3	20.2	-0.02	2.72	1.95	1.58	42.09	0.727	0.891	Hard clay
17		22	10	0.8						4.6	0.8	0.9	0.7	1.0	1.1	8.4	14.9	21.9	15.6	30.1	25.0	42.2	23.6	18.6	0.08	2.72	1.91	1.53	43.82	0.780	0.872	Semi-hard clay
18		23	11	2.8						3.4	1.1	0.7	0.2	0.5	0.6	7.0	13.8	24.2	16.7	31.8	28.5	43.6	25.4	18.2	0.17	2.72	1.92	1.49	45.07	0.820	0.945	Semi-hard clay

Results of laboratory survey of water content

No	Location	Depth of sampling m	Meas. Unit	Content per 1 litre								PH
				Anions					Cations			
				Solid residue	CO_3^{--}	HCO_3^{--}	CL^-	SO_4^{--}	Ca^{++}	Mg^{++}	$Na^+ + K^+$	
1	2	3	4	5	6	7	8	9	10	11	112	14
1	The river Prone		mg-l	176.20		134.20	49.64	0.00	40.00	19.50	0.00	6.91
			mg-eqv		0.00	2.20	1.40	0.00	2.00	1.60	0.00	
			% mg-eqv		0.00	61.1	38.9	0.0	55.5	44.5	0.00	
2	The river Ptsa		mg-l	786.6		317.2	290.77	45.15	64.00	31.62	196.45	6.72
			mg-eqv		0.0	5.20	8.20	0.94	3.19	2.60	8.54	
			% mg-eqv		0.0	36.3	57.2	6.6	22.3	18.1	59.6	

Water corrosive impact on concrete

No	Location	Sample-taking depth, m	Corrosive indexes	Extent of water corrosive impact on structures					
				In the layers Kf>0.1m/24 hrs			In the layers Kf<0.1m/24 hrs		
				Concrete type by water permeability					
				W4	W6	W8	W4	W6	W8
1	The river Prone		Bicarbonate hardness, mg-eqv/l	N/A	N/A	N/A	N/A	N/A	N/A
			Hydrogen ion index	N/A	N/A	N/A	N/A	N/A	N/A
			Corrosive carbonic acid content, mg/l	-	-	N/A	-	-	N/A
			Magnezial salt content, mg/l	N/A	N/A	N/A	N/A	N/A	N/A
			Ammonium salts content mg/l	-	-	-	-	-	-
			High alkali content, mg/l	N/A	N/A	N/A	N/A	N/A	N/A
			Sulpahates for concretes						
			Portland cement (ГОСТ10178-76)	N/A	N/A	N/A	N/A	N/A	N/A
			Portland cement (ГОСТ10178-76) clinker content C3S max. 65%, C3A max 7%, C3A+C4AF max. 22%	N/A	N/A	N/A	N/A	N/A	N/A
			Sulphate-resistant cement	N/A	N/A	N/A	N/A	N/A	N/A

No	Location	Sample-taking depth, m	Corrosive indexes	Extent of water corrosive impact on structures					
				In the layers Kf>0.1m/24 hrs			In the layers Kf<0.1m/24 hrs		
				Concrete type by water permeability					
				W4	W6	W8	W4	W6	W8
2	The river Ptsa		Bicarbonate hardness, mg-eqv/l	N/A	N/A	N/A	N/A	N/A	N/A
			Hydrogen ion index	N/A	N/A	N/A	N/A	N/A	N/A
			Corrosive carbonic acid content, mg/l	-	-	-	-	-	-
			Magnezial salt content, mg/l	-	-	-	-	-	-
			Ammonium salts content mg/l	-	-	-	-	-	-
			High alkali content, mg/l	N/A	N/A	N/A	N/A	N/A	N/A
			Sulpahates for concretes						
			Portland cement (ГОСТ10178-76)	N/A	N/A	N/A	N/A	N/A	N/A
			Portland cement (ГОСТ10178-76) clinker content C3S max. 65%, C3A max 7%, C3A+C4AF max. 22%	N/A	N/A	N/A	N/A	N/A	N/A
			Sulphate-resistant cement	N/A	N/A	N/A	N/A	N/A	N/A

Extent of water corrosive impact on steel and reinforced concrete structures

No	Location	Sample-taking depth, m	Extent of water corrosive impact on reinforcement bars of reinforced concrete structures		Extent of environmental corrosive impact on carbon steel, lower than ground water level for those layers where filtration coefficient is >0.1m/24 hours
			Permanently in water	Periodic wetting	
1	The river Prone		N/A	Weak	N/A
2	The river Ptsa		N/A	Weak	Average

5. MAIN DESIGN SOLUTIONS

5.1 ROAD PLAN

The project section km 1 - km 4 starts at the junction with the highway Tbili–Senaki–Leselidze highway at PK 0+00 and ends at newly rehabilitated section at PK 39+31.

The project section km 9 - km 16 starts at the ends of the village Abisi from the end of the rehabilitated section, which corresponds to PK 0+00 and ends at PK 76+78 at the end of the village Knolevi at the Police Post.

Total length of rehabilitation section is 11.609 m.

Axis of the project road coincides with the existing axis. Geometric parameters and road bed of the existing road plan have maximally been applied.

Design width of carriageway is mainly adopted within the limits of the existing width. Width of carriageway on the section km 1- km 4 and section km 9- km16 from PK 0+00 to PK 15+00 is adopted 7 m. Width of carriageway from PK 15+00 to PK 76+78 is adopted 6 m, which is caused by the fact that the section crosses densely populated villages and increase of width would require occupation of yards of village inhabitants.

Number of turning angles staked on the section km 1- km 4 is 17, whilst that staked on the section km 9 - km 16 is 51. Minimal radius of staked turning angles is 30 m.

Tables of Radii of turning angles, Straights and curves with coordinates of vertexes, Parameters of design cross profile are attached to the design.

5.2 LONGITUDINAL PROFILE

Longitudinal profile of the project road is designed according to geometric and structural standards of public roads of Georgia.

Resulting from road pavement structure and to divert surface water from carriageway red line is mainly elevated above the existing road level by 25-35 cm.

Radius of vertical curve mainly correspond to the requirements thus construction of large fills and cuts is not required. Design longitudinal gradient is variable and do not exceed 8%.

The design is carried out in absolute marks. Existing and design levels of the longitudinal profile belong to road axis, which is on-site linked to temporary reference marks located along the road.

Reference marks are fixed on the concreted steel reinforcements. Locations and skecthes of reference marks are given in corresponding tables, attached to the design.

6. PREPARATORY WORKS

Preparation of organizational and technical issues shall be carried out prior to the commencement of the construction.

Design envisages:

Section km 1 - km 4

- Re-conditioning and fixing of route - 3.931 km;
- Excavation of soil piled on shoulders by excavator, loading and disposal to dumpsite - 90 m^3;
- Milling of existing damaged asphalt concrete pavement (average thickness 14 cm) and disposal to borrow pit for follow up use in the base course - 25740/3603 m^2/m^3;
- Dismantling of the existing road signs of individual design - 4 units.

Section km 9 - km 16

- Re-conditioning and fixing of route - 7.678 km;
- Uprooting of shrubs on shoulders - 0.5 hectar;
- Excavation of soil piled on shoulders by excavator, loading and disposal to dumpsite - 310 m^3;
- Removal of the existing fragments of asphalt concrete pavement by ripper and leveling by grader - 8500/510 m^2/ m^3;
- Dismantling of the existing road signs of individual design - 4 units;
- Dismantling of damaged concrete parapets of special profile - 6 units.

7. ROAD BED

Roadbed is designed according to standards and typical design solutions valid in Georgia.

Width of design roadbed is adopted 10 m for the section km 1 - km 4. Width of carriageway with paved shoulders is adopted 7 m, width of shoulders is 1.5 m.

Width of design roadbed is adopted 9 m for the section km 9 - km 16 from PK 0+00 to PK 15+00. Width of carriageway with paved shoulders is adopted 7 m, width of shoulders is 1.0 m.

Width of design roadbed is adopted 8 m for the section km 9 - km 16 from PK 15+00 to PK 76+78. Width of carriageway with paved shoulders is adopted 6 m, width of shoulders is 1.0 m.

Decrease in width of carriageway is caused by the fact that the road is located in densely populated villages.

Construction of roadbed includes the following works:

- Excavation of soil by excavator, loading and disposal to dumpsite - 5368 m^3;
- Excavation of soil in ditches by excavator, loading and disposal to dumpsite - 1934 m^3;
- Excavation of soil in ditches manually, loading and disposal to dumpsite - 270 m^3;
- Construction of benches mechanically - 705 m^3;
- Construction of embankment from gravel soil - 705 m^3;
- Reshaping of road bed by grader (section km 9-km 16) - 71600 m^2;
- Construction of concrete ditches - 799 m^3.

8. ROAD PAVEMENT

Design of road pavement envisages actual conditions of pavement and traffic density, based on which road pavement structure was selected.

Design of road pavement structure is developed to meet the requirements of temporary construction standard BCH 46-83 valid in Georgia. Design modulus is adopted 190 mpa.

Structural design of road pavement is based on AASHTO standards. Average annual daily traffic according to types for the year 2014 is:

Year	Car	Minibus	Truck (max.3 axles)	More than 3 axles	Total
2014	485	122	36	10	653

Expected percentage growth of traffic flows according to years

Year	Growth rate for cars (%)	Growth rate for heavy vehicles (%)
1	2	3
2015	7	5
2016	5	5
2017	5	4
2018	5	4
2019	5	4
2020	5	3
2021	4	3
2022	4	3
2023	4	3
2024	4	3

Total volume of traffic flow for design period

Year	Car	Minibus	Truck (max.3 axles)	More than 3 axles	Total
2015	189417	47647	13797	3833	254693
2016	198888	50029	14487	4024	267428
2017	208832	52531	15066	4185	280614
2018	219274	55157	15669	4352	294453
2019	230237	57915	16296	4527	308975
2020	241749	60811	16785	4662	324007
2021	251419	63244	17288	4802	336753
2022	261476	65773	17807	4946	350002
2023	271935	68404	18341	5095	363775
2024	282812	71140	18891	5248	378091
ჯამი	**2356038**	**592653**	**164427**	**45674**	**3158792**

Standard axle load of traffic flow for the design period

Year	Car	Minibus	Truck (max.3 axles)	More than 3 axles	Total
2015	3788	953	20833	13414	38988
2016	3978	1001	21875	14084	40938
2017	4177	1051	22750	14648	42625
2018	4385	1103	23660	15234	44383
2019	4605	1158	24607	15843	46213
2020	4835	1216	25345	16318	47714
2021	5028	1265	26105	16808	49206
2022	5230	1315	26888	17312	50745
2023	5439	1368	27695	17832	52333
2024	5656	1423	28526	18366	53971
ჯამი	**47121**	**11853**	**248284**	**159859**	**467117**

Standard axle load per one lane for the design period is: 233559

Road pavement structure adopted in the design is as follows:

- 50 mm pavement (wearing course) fine-grained dense asphalt concrete hot mix.
- 180 mm base course - crushed aggregates (fraction 0-40 mm) stabilized by the addition of bitumen emulsion and cement.
- 250 mm existing gravel material.

Fixing the thicknesses of the road pavement according to AASHTO standard

The calculations have proved that the road pavement has the minimum required design structural number of 64 mm, by considering 0.2336 million SAL during the design life cycle (10 years). The factor of design reliability considers the forecasting of the traffic flow and operation of the road pavement. Accordingly, the traffic reliability is calculated to forecast the traffic density and road serviceability, and fixes the level of reliability when the pavement will be serviceable up to the expiration of the service life.

The pavement serviceability is defined as its ability to ensure traffic. The main factor to measure this indicator is the factual service life (PSI), which changes from 0 (impossible to use) to 5 (excellent road).

The initial index of serviceability p_0, according to AASHTO, amounts to 4.2 for non-rigid road pavement.

The aggregate change in serviceability is calculated by the formula:

$$\Delta PSI = p_o - p_t$$

The aggregate change in the index of final serviceability p_t=2.0 and in the index of initial serviceability p_0=4.2. is 2.2.

Based on road purpose its Δ PSI = 2.

According to the AASHTO standard, designing of the road pavement is based on fixing the structural number to bear the axial loads.

Calculation of road of pavement:

- Reliability rate R-90%
- Standard deviation rate – S_0-0.45
- Number of standard axles W-0.2336 million SAL
- Resident module $M_{r(psi)}$-6.12 K_{psi}, when CBR==7%
- Serviceability index ΔPSI=2
- Required structural number - SN=2.52 inch

Structural number of design road pavement:

SN=50x0.44+180x0.17+250x0.11=22+30.6+27.5=80.1 mm = 3.15 inch

Design structural number exceeds the required structural number.

Design envisages construction of two types of road pavement:

Section km 1 - km 4

- Construction of leveling layer from san and gravel mix;
- Construction of base course - crushed aggregates fraction 0-40 mm (h-8 cm) and asphalt concrete granulate (h-10 cm), stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm;
- Construction of pavement from fine-grained dense asphalt concrete hot mix type B, Class II, thickness 5 cm.

Section km 9 - km 16

- Construction of leveling layer from san and gravel mix;
- Construction of base course – crushed aggregates fraction 0-40 mm, stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm;
- Construction of pavement from fine-grained dense asphalt concrete hot mix type B, Class II, thickness 5 cm.

Works to be carried out for the rehabilitation of road pavement are as follows:

Section km 1 - km 4

- Construction of leveling layer from san and gravel mix - 4701 m^3;
- Base course - crushed aggregates fraction 0-40 mm (h-8 cm) and asphalt concrete granulate (h-10 cm), stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm - 30607 m^2;
- Pavement - fine-grained dense asphalt concrete hot mix type B, Class II, thickness 5 cm - 27572 m^2;
- Shoulders - sand and gravel mix - 3100 m^3.

Section km 9 - km 16

- Construction of leveling layer from san and gravel mix - 7681 m^3;
- Base course - crushed aggregates fraction 0-40 mm, stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm - 54518 m^2;
- Pavement - fine-grained dense asphalt concrete hot mix type B, Class II, thickness 5 cm - 48563 m^2;

- Shoulders - sand and gravel mix - 5024 m^3.

9. ENGINEERING STRUCTURES

SECTION: KM 1 - KM 4

THE BRIDGE OVER THE RIVER PTSA AT PK 8+85

Multiple significant damages were detected on the bridge whilst carrying out field survey works which are not actually subject to rehabilitation.

The bridge over the river Ptsa at km 1 of Agara-Kornisi-Tskhinvali road was built in the fifties of the last century. The bridge has three spans, represents discontinuous beam system, bridge scheme is 12.9+13.2+9.3 m, dimensions are Γ=7+2x0.8. Bridge spans are homogeneous and represent cast in situ reinforced concrete ribbed structure with diaphragms. Based on the study multiple damages on the bridge were detected which in case of rehabilitation wouldn't enable reliable operation of the bridge under the regular conditions in future. Moreover, the bridge wouldn't meet standard requirements:

- Exposed and corroded free lengths of reinforcing bars of the main reinforcement are found in the lower chord of superstructure's main beam and in the bearings sections. Design characteristics of main longitudinal reinforcement are significantly reduced as the protecting layer of the reinforcement was disturbed for a long time. Superstructure manufacturing quality is extremely poor. Grade of concrete (B 22.5) doesn't meet modern requirements.
- Bearing parts are not envisaged on the abutments and piers. Construction of bearing parts is not feasible as it requires vertical displacement of heavily damaged superstructure which is actually impossible;
- Concrete of piers is heavily weathered, especially on pier N2. Grade of concrete (B 15) doesn't meet the requirements. Deepening of piers wasn't determined thus condition and bearing capacity of their foundations is not specified.

Based on the above-mentioned, rehabilitation of the bridge wasn't envisaged in the design under the agreement with the Roads Department of Georgia.

SECTION: KM 9 - KM 16

THE BRIDGE OVER THE RIVER PRONE AT PK 3+71.60

Based on the bridge study and survey it was determined that: bridge over the river Prone located at PK 3+71.6 is a two-span structure, represents discontinuous beam system, bridge scheme is 2x21.6 m, length of bridge is L=51.2 m, dimensions are Γ=8+2x1.0 m. Supersturcture consists of 21.6 m pre-stressed reinforced concrete beams without diaphragms. Number of beams in the cross-section is 5 units.

Based on the detailed study of the bridge it was detected that the present condition of the bridge isn't satisfactory.

Expansion joints and pavement on bridge deck are severely damaged. Waterproofing layer on the bridge deck is lacking and water discharge is not properly ensured.

Elevated-type sidewalks and reinforced concrete railing are heavily damaged.

Beams are in satisfactory conditions. Edge and middle monolithic zones of beams are damaged.

Concrete of the surface of the abutments body is weathered.

Pier body is with one oval column. Actual condition of pier is satisfactory.

Concrete on surface of regulation walls is weathered.

DESIGN SOLUTIONS

Traffic on the above-mentioned road section shall not be disturbed during the construction. Temporary plan of traffic control is envisaged in the design.

Design envisages the following works:

- Construction of pavement on bridge deck (leveling layer, protecting painting, protecting layer and asphalt pavement h=5 cm);
- Restoration of edge and middle monolithic zones of the beams;
- Cleaning of outer surfaces of beams and restoration of protecting layer by sand and cement mortar;
- Construction of enclosed-type expansion joints;
- Manufacturing and installation of sidewalk blocks, construction of steel railing;
- Installation of cast iron drain pipes on the bidge deck;
- Repair of backwalls of the abutments, construction of transition slabs;
- Cleaning and shotcreting of bridge pad, backwall and wings of the abutments;

- Construction of sidewalks within the abutments;
- Repair of regulation walls;
- Construction of riprap at regulation walls;
- Restoration of embankment cones.

CULVERTS

Fourteen culverts of various types and one bridge are found on the first section km 1 - km 4 of the project road and are described as follows:

- 1 steel pipe d=0.5 m;
- 5 asbestos pipes d=0.3 m;
- 5 prefabricated reinforced concrete culverts d=1.0 m.

In addition cross-sections of 3 culverts couldn't be determined as they were completely silted.

None of the above mentioned culverts and pipes is subject to repair. New cast in situ reinforced concrete culverts of 1.2x0.7 m cross-section shall be constructed instead, besides the two culverts located at PK26+88 and PK36+40. Pre-fabricated reinforced concrete pipe-culverts d=1.0m shall be constructed at PK26+88 and PK36+40.

In addition, two new cast in situ reinforced concrete culverts of 1.2x0.7m cross-section shall be constructed at PK 23+00 and PK 31+40 on the first road section based on the longitudinal profile of the road.

Sixteen culverts of various types and one bridge are found on the second section km 9 - km 16 of the project road and are described as follows:

- 1 reinforced concrete culvert, cross-section 3.0x2.0m;
- 1 steel pipe d=0.2m;
- 2 pre-fabricated reinforced concrete culverts d=0.75 m;
- 1 pre-fabricated reinforced concrete culverts d=0.8m;
- 3 pre-fabricated reinforced concrete culverts d=0.5m;
- 5 pre-fabricated reinforced concrete culverts d=1.0m;
- 1 reinforced concrete culvert, cross-section 2.0x0.5m.

Besides cross-sections of 2 culverts couldn't be determined as they were completely silted.

Among the above-mentioned culverts only one culvert of 3.0x2.0m cross-section located at PK 1+03 is subject to repair. The rest of the culverts shall be replaced with the new ones. Two types

of structures were applied: cast in situ reinforced concrete culverts 1.2x0.7m cross-section and prefabricated reinforced concrete culverts d=1.0m. However, reinforced concrete culvert, cross-section 2.0x0.5m located at PK 36+62 shall replaced with cast in situ reinforced concrete culvert of 2.0x0.7m cross-section.

Resulting from the longitudinal profile of the road and to improve water discharge 3 new pre-fabricated reinforced concrete culverts d=1.0m shall be constructed on the second road section.

Design envisages construction of 135 linear m of lower concrete retaining walls and 44.5 linear m of lower gabion retaining walls.

Agara-Kornisi-Tskhinvali Road Sections: km 1-km 4; km 9-km16;

Brief hydrological description

Under project of construction and rehabilitation of culverts

Both sections of the study road section are located on the Shida Kartli plain within the basin of the river Prone being the tributary of the river Suramula.

Section: km 1- km 4 - Starts in the small town Agara, on the right bank of the river Suramula. ~0.88 km (bridge: pk 8+67 -pk 9+02) from the start the road passes over the left bank of the river, further ~0.2 km it goes to the basin of the river Prone, village Qvatkotsa (~pk 26) and till the end of the section (village Shaqshaketi) follows the right bank of the river to the upstream, 0.5 km apart. Here, on the upper section, road crosses the watercourses which are running off the slopes of the watershed of the river Suramula.

Section: km 9- km 16 - is located within the basins of the river West Prone and its right tributary Mid Prone. The section starts at the village Abi, on the right bank of the river West Prone. ~0.35 km (pk 3+46) from the start the road passes over the left bank of the river, where it is intersected by watercourses running off the slopes of the watershed of the river Mid Prone, ~2.6 km, further it goes to the basin of the Mid Prone river and from the village Tserosni till the end follows the river bed to the upstream, 0.45 km apart. Here, on the last section, road crosses the watercourses which are running off the slopes of the watershed of the river west Prone.

The river west Prone starts at the south slope of Surami ridge mountain - Lockhoni at elevation 1925.1m. The river joins with the left tributary of the river Mtkvari - the river Suramula at the altitude 638 m - village Qvanatkotsa at 3.5 km distance from its mouth. Its water gathering basin area is 398km2, average inclination is 2.27%, the average height is 200 m, the length of the riverbed (from the head till the maximum remote point) is 39.6 m,. The river basin verges with basins of the river Choratkhevi from the west and from the north and east with the river Mid Prone. The upper part of the basin (till the village Balta) is characterized with comparatively frequent

hydrographic network. The relief of basin is hilly, half mountainous and is structured with sandstones, marls and partially with porphyrites. The lower part of the basin is mostly structured with sandstones and conglomerates, soil - chernozem - grey-brownish. The upper part of the basin is covered with deciduous trees (45% of the basin area), the lower part of basin contains farmlands. The gorge has V shape in the upper part of the basin (width 10m), below (till the confluence) it has trapezoid shape with width 50-115 m.

Below the altitude ~1100m the gorge is characterized with 2-4 m high clayey terraces, having comparatively flat surface. The width of terraces is 100 m in its upstream, 400 m in its mid stream and 400-700 m between the villages Koda and Abisi (the study road section). The floodplain with flat surface appears below its right tributary - Churiskhevi. Its width increases to the downstream from 15m up to 100 m and height from 0.2 m-0.6 m. Further the riverbed moderately meanders, containing the islands structured with pebble-gravel and covered with brushes.

The river West Prone (and correspondingly its tributaries) belongs to the type of rivers which are characterized with flooding, (from the end of March -peak in May) and unstable low water levels in other seasons of the year, which is violated by the short (up to 3 days) strong flash flood. Freezing events are observed only in the upstream of the river.

Actual condition of all water discharge hydraulic structures situated on the study road section has been investigated and assessed during the filed survey works and measures to improve its operation have been developed. All measures are given in the design: reconstruction of the damaged structures (including the head walls) or replacement of structures with greater size opening in order to increase the structures' discharge capacity. Should be considered the fact, that the natural hydrographic network of the study section is covered with soil reclamation canals, therefore the water stream is distributed among the natural watercourses, and mainly culverts discharge the water stream of canals or ditches.

10. ROAD FURNITURE AND EQUIPMENT

There are 84 junctions found on the project section. Design envisages repair of the existing junctions. Construction of asphalt concrete pavement is envisaged on 66 junctions. Sand and gravel pavement shall be constructed on the remaining 18 junctions as they are used for entering arable lands. Steel pipes d=630 mm shall be constructed where required to divert water from ditches.

Design also envisages repair of yard entrances. Steel pipes d=530 mm and pavement shall be constructed where required.

Locations and volumes of works of junctions and yard entrances are given in corresponding tables. Design envisages construction of bus stops and sidewalks.

Design envisages:

- Construction of junctions 84 units
- Construction of pipes on junctions 35 units
- Repair of yard entrances 167 units
- Construction of sidewalks (section km 9-km 16) 240 linear m
- Construction and repair of bus stops 3 units

Design envisages installation of road signs, guide posts, road barriers, concrete parapets of special profile, pavement marking to ensure traffic regulation and safety.

11. ROAD SAFETY AND TRAFFIC

Design envisages installation of road signs, guide posts, road barriers, concrete parapets of special profile, pavement marking to ensure traffic regulation and safety.

11.1 ROAD SIGNS

Manufacturing and installation of road signs shall be done according to the requirements of standards GOST 52289-2004, GOST 52290-2004, GOST 14918-80, GOST 23457-86, BS 873.

Design envisages application of standard I-II-type size road signs on the project section.

Frames of standard road signs are constructed from steel profiles galvanized with zinc, thickness 0.8-1.2 mm.

The images applied on plates shall be covered with high intensity prism-optical system „IV“ class adhesive film, using appliqué method with cutting on plotters in advance. The film shall meet technical requirements of BS EN 12899 and BS 8408 or ASTM D4956-09 standards.

- Standard road signs - 218 units

- Road signs of individual design - 27 units

Posts for permanent road signs shall be galvanized and shall meet the requirements of BS EN 873 standards; the posts shall be either pipe-like or rectangular and hollow and shall meet the requirements of BS EN 10210.

Standard road signs and road signs of individual design shall be fixed on steel posts d-76 mm, d-89mm and thickness of wall 4 mm, total – 192 units.

Quality management procedure is specified in Technical Specification series 1200.

11.2 CARRIAGEWAY MARKING

Horizontal line marking of carriageway shall be carried out with white nitro enamel with the improved light reflecting glass balls size 600 micrometer (to meet the requirements of standards GOST 23457-86, ISO 9001, EN 1436, EN 1871, EN 1423, EN 1424).

Design envisages:

- Continuous lines (1.1) width 100 mm - 497.6 m^2
- Side marking (1.2) width 100 mm - 2198.2 m^2
- Broken lines, (1.5) ratio 1:3, width 100 mm - 138.5 m^2
- Broken lines, (1.6) ratio 3:1, width 100 mm - 48.5 m^2
- Marking of cross-road, broken lines, (1.7) $l_1=l_2$, width 100 mm - 97.6 m^2
- Marking of places where the driver obliged to stop and give way (1.13) - 2.9 m^2
- Marking of pedestrian crossing, width of painted lines 400 mm, length 4.0 m (1.14.1)19.2 m^2
- Marking of guide islands, which separates traffic of opposite direction (1.16.1) - 10.8 m^2

Total horizontal line marking – 3013.3 m^2.

Quality management procedure for horizontal line marking is specified in Technical Specification series 1212.

11.3 SAFETY BARRIERS

Road barriers shall be carried out according to GOST 23457-86, GOST 52289-2004, GOST 52607-2006, GOST 52721-2007 or EN 1317-(1-5) standards; barriers from steel cables - 713 linear m, concrete parapets of special profile – 90 units; plastic guide posts to be installed on shoulders – 874 units; rumble strip „Sleeping policeman“ - 4 units.

Quality management procedure for road barriers is specified in Technical Specification series 400.

Detailed layout of road signs, road marking and road barriers is specified on separate schemes.

Design activities and solutions adopted to ensure safe and undisturbed traffic shall be in accordance with GOST 23457-86, GOST 52289-2004, GOST 52290-2004, GOST 14918-80, BS 873, ISO 9001, BS EN 12899, BS 8408, EN 1436, EN 1871, EN 1423, EN 1424 , GOST 52607-2006, GOST 52721-2007.

Tables of Volumes of Works

საავტომობილო გზა: აბარა - ყორნისი - ცხინვალი კმ 1 - კმ 4, კმ 9 - კმ 16
მონაკვეთი: კმ 1 - კმ 4

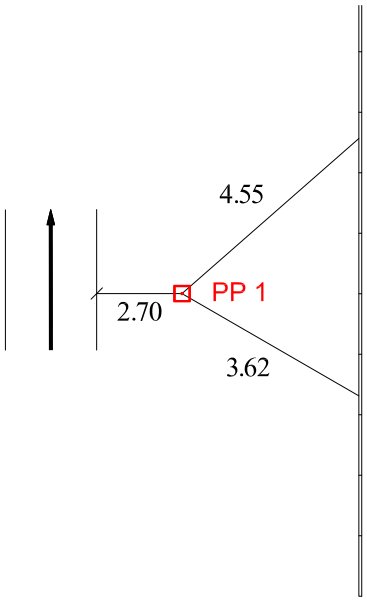
Road: Agara - Kornisi - Tsxinvali km 1 - km 4, km 9 - km 16
Section: km 1 - km 4

გეგმურ - სიმაღლური წერტილები

Reference points

გეგმურ - სიმაღლური წერტილი **PP 1**
პკ 0+95.5

Reference Point PP 1
Pk 0+95.5



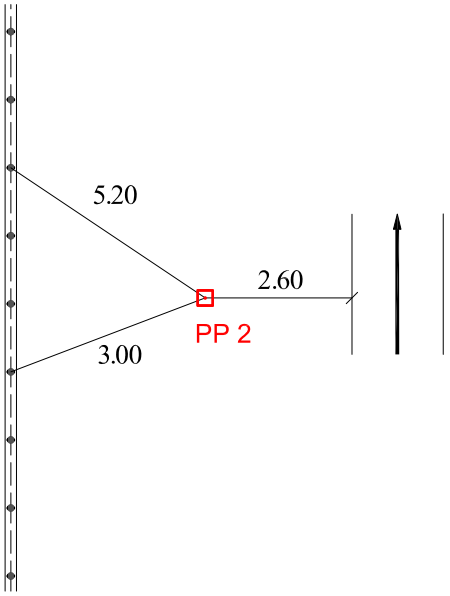
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, ნაწიბურიდან 2.70 მ-ზე და რკ/ბეტონის ღობიდან 3.62-4.55 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 2.70 m from the right edge of the road and 3.62-4.55 m from reinforced concrete fence.

№	X	Y	H
1	4654928.332	401801.500	659.575

გეგმურ - სიმაღლური წერტილი **PP 2**
პკ 4+54.2

Reference Point PP 2
Pk 4+54.2



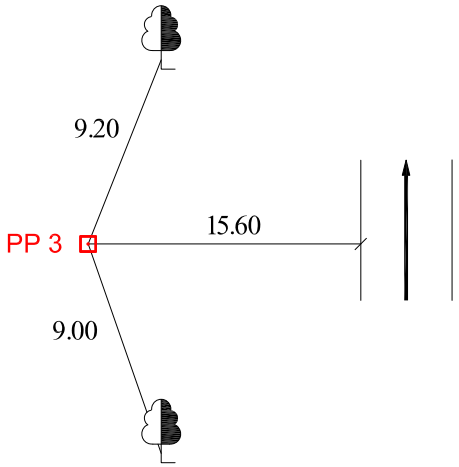
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, ნაწიბურიდან 2.60 მ-ზე და ლითონის ღობის დგარებიდან 3.00-5.20 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 2.60 m from the left edge of the road and 3.00-5.20 m the posts of steel fence.

№	X	Y	H
2	4655255.524	401653.823	659.909

გეგმურ - სიმაღლური წერტილი **PP3**
პკ 20+39.4

Reference Point PP 3
Pk 20+39.4



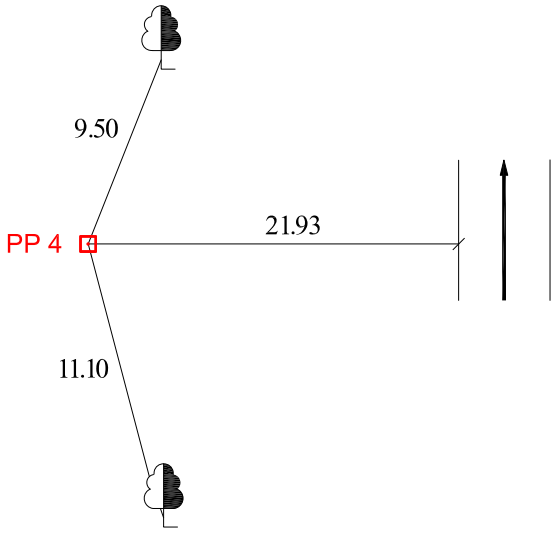
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, ნაწიბურიდან 15.60 მ-ზე და ხეებზე მიჭედებული ტრაფარეტებიდან 9.20-9.00 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 15.60 m from the left edge of the road and 9.20-9.00 m from the plates fixed on the trees.

№	X	Y	H
3	4656556.643	401383.576	671.374

გეგმურ - სიმაღლური წერტილი **PP 4**
პკ 22+89.3

Reference Point PP 4
Pk 22+89.3



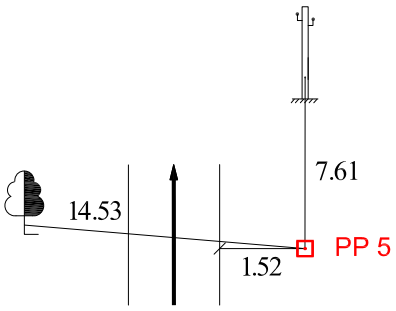
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, ნაწიბურიდან 21.93 მ-ზე და ხეებზე მიჭედებული ტრაფარეტებიდან 11.10-9.50 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 21.93m from the left edge of the road and 11.10-9.50 m from the plates fixed on the trees.

№	X	Y	H
4	4656725.983	401199.652	668.451

გეგმურ - სიმაღლური წერტილი **PP 5**
პკ 37+21.9

Reference Point PP 5
Pk 37+21.

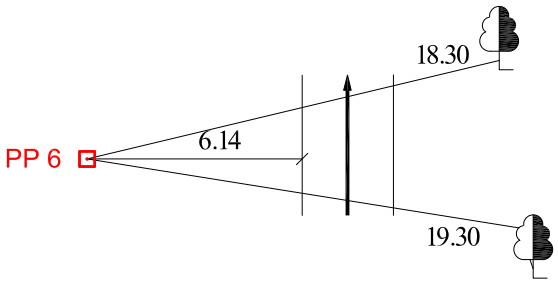


წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, ნაწიბურიდან 1.52 მ-ზე, ხეზე მიჭედებული ტრაფარეტიდან 14.53 მ და რკ/ბეტონის ელ.გადაცემის ბოძიდან 7.61 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 1.52 m from the right edge of the road, 14.53 m from the plate fixed on the tree, 7.61 m from reinforced concrete post of power line.

№	X	Y	H
5	4657675.637	400138.045	670.185

გეგმურ - სიმაღლური წერტილი **PP 6**
პკ 39+03.0
Reference Point PP 6
Pk 39+03.0



წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, ნაწიბურიდან 6.14 მ-ზე და ხეებზე მიჭედებული ტრაფარეტებიდან 19.30-18.30 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 6.14m from left edge of the road,19.30-18.30 m from the plates fixed on the trees.

№	X	Y	H
6	4657757.372	399975.804	671.363

საავტომობილო გზა: აბარა - ყორნისი - ცხინვალი კმ 1 - კმ 4, კმ 9 - კმ 16
მონაკვეთი: კმ 9 - კმ 16

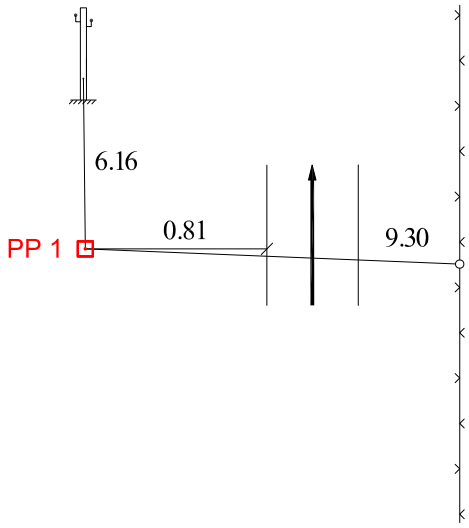
Road: Agara - Kornisi - Tsxinvali km 1 - km 4, km 9 - km 16
Section: km 9 - km 16

გეგმურ - სიმაღლური წერტილები

Reference points

გეგმურ - სიმაღლური წერტილი **PP 1**
პკ 2+30.6

Reference Point PP 1
Pk 2+30.6



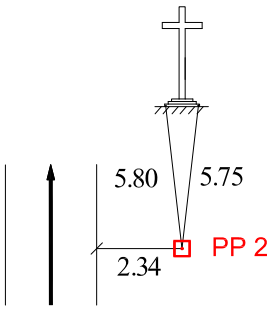
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, წარბადან 0.81 მ-ზე, მავთულის ღობის ლითონის დგარიდან 9.30 მ და ელ.გადაცემის ხის ბოძიდან 6.16 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 0.81 m from the left edge of the road, 9.30m from steel post of mesh fence and 6.16 m from wooden post of power line.

№	X	Y	H
1	4661369.515	397756.669	695.140

გეგმურ - სიმაღლური წერტილი **PP 2**
პკ 4+63.3

Reference Point PP 2
Pk 4+63.3



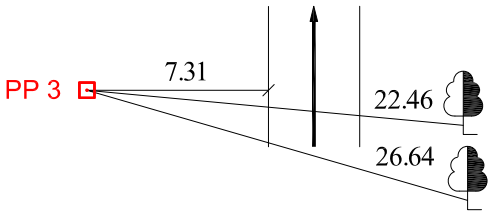
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, წარბადან 2.34 მ-ზე და ჯვრის ბეტონის საყრდენიდან 5.80-5.75 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 2.34 m from the right edge of the road and 5.80-5.75 m from the concrete socle of the cross.

№	X	Y	H
2	4661523.055	397934.351	695.052

გეგმურ - სიმაღლური წერტილი **PP3**
პკ 19+34.3

Reference Point PP 3
Pk 19+34.3



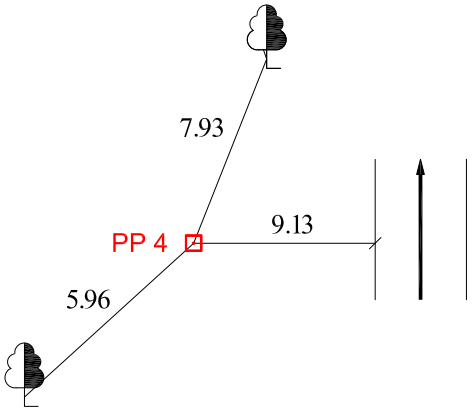
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, წარბადან 7.31 მ-ზე და ხეებზე მიჭედებული ტრაფარეტებიდან 26.64-22.46 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 7.31 m from the left edge of the road and 26.64-22.46 m from the plates fixed on trees.

№	X	Y	H
3	4662951.806	398059.955	713.938

გეგმურ - სიმაღლური წერტილი **PP 4**
პკ 23+2.6

Reference Point PP 4
Pk 23+2.6



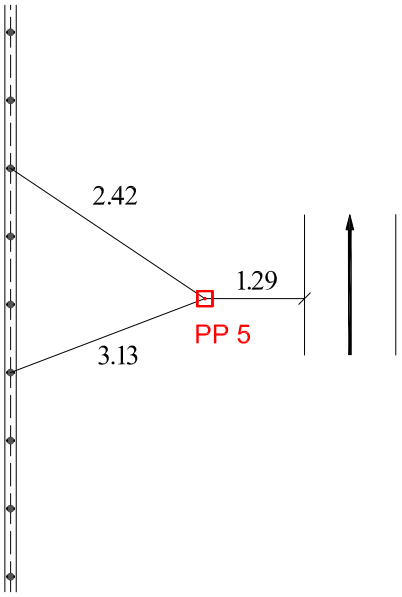
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, წარბადან 9.13 მ-ზე და ხეებზე მიჭედებული ტრაფარეტებიდან 5.96-7.93 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 9.13 m from the left edge of the road and 5.96-7.93 m from the plates fixed on trees.

№	X	Y	H
4	4663246.466	398285.031	723.975

გეგმურ - სიმაღლური წერტილი **PP 5**
პკ 37+54.5

Reference Point PP 5
Pk 37+54.5

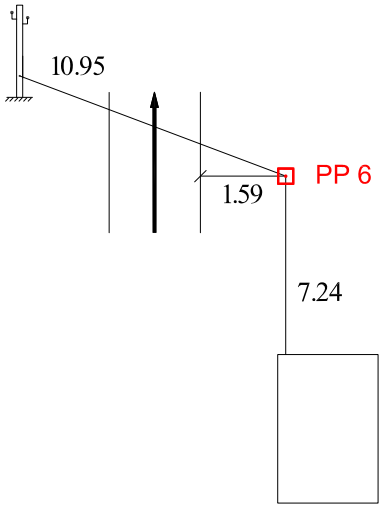


წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, წარბადან 1.29 მ-ზე და ლითონის ღობეზე თეთრი საღებავით გაკეთებული ნიშნებიდან 3.13-2.42 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 1.29 m from the left edge of the road and 3.13-2.42 m from white paint marks made on steel fence.

№	X	Y	H
5	4664402.350	398993.924	726.276

გეგმურ - სიმაღლური წერტილი **PP 6**
პკ 39+11.4
Reference Point PP 6
Pk 39+11.4



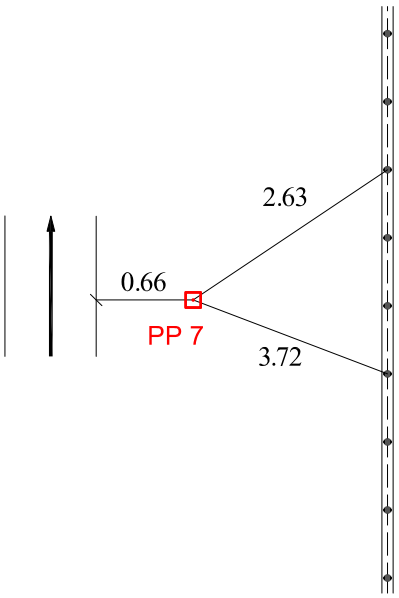
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, წარბადან 1.59 მ-ზე, შენობიდან 7.24 მ და ელ.გადაცემის რკ/ბეტონის ბოძიდან 10.95 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 1.59 m from the right edge of the road, 7.24 m from the building and 10.95 m from reinforced concrete post of power line.

№	X	Y	H
6	4664553.323	399033.986	725.083

გეგმურ - სიმაღლური წერტილი **PP 7**
პკ 52+42.6

Reference Point PP 7
Pk 52+42.6

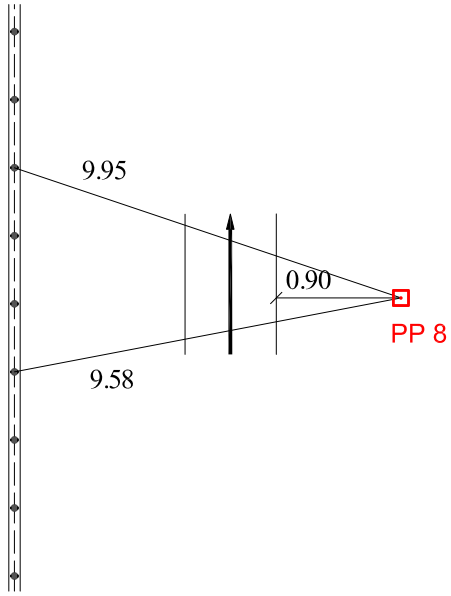


წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, წარბადან 0.66 მ-ზე და ლითონის ღობეზე თეთრი საღებავით გაკეთებული ნიშნებიდან 3.72 - 2.63 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 0.66 m from the right edge of the road and 3.72-2.63 m from white paint mark made on steel fence.

№	X	Y	H
7	4665856.227	398926.322	762.279

გეგმურ - სიმაღლური წერტილი **PP 8**
პკ 54+11.3
Reference Point PP 8
Pk 54+11.3



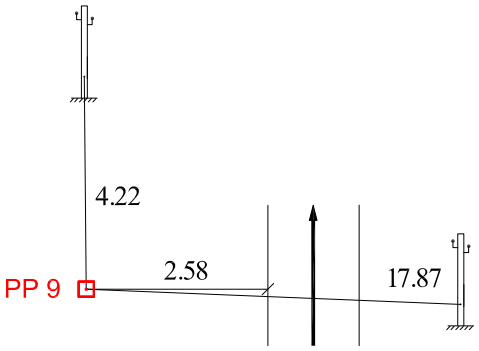
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, წარბადან 0.90 მ-ზე და ლითონის ღობეზე თეთრი საღებავით გაკეთებული ნიშნებიდან 9.58-9.95 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 0.90 m from the right edge of the road and 9.58-9.95 m from white paint marks made on steel fence.

№	X	Y	H
8	4666021.920	398894.039	763.606

გეგმურ - სიმაღლური წერტილი **PP 9**
პკ 69+92.4

Reference Point PP 9
Pk 69+92.4



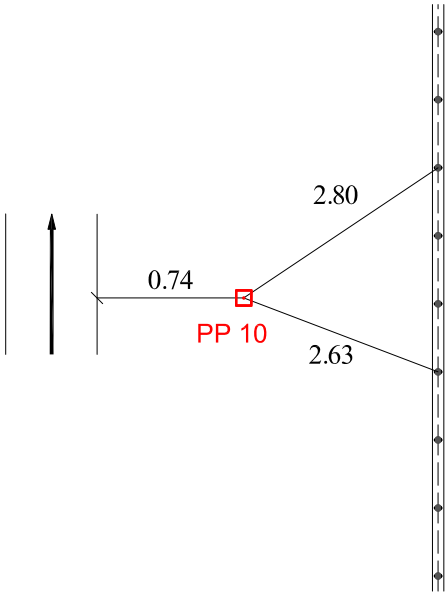
წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარცხენა მხარეს, წარბადან 2.58 მ-ზე და ელ. გადაცემის რკ/ბეტონის ბოძებიდან 17.87-4.22 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 2.58 m from the left edge of the road and 17.87-4.22 m from reinforced concrete posts of power line.

№	X	Y	H
9	4667587.162	398844.397	769.041

გეგმურ - სიმაღლური წერტილი **PP 10**
პკ 73+87.2

Reference Point PP 10
Pk 73+87.2



წერტილი წარმოადგენს გრუნტში ჩაბეტონებულ არმატურის ღეროს, რომელიც მდებარეობს გზის მარჯვენა მხარეს, წარბადან 0.74 მ-ზე და ლითონის ღობეზე თეთრი საღებავით გაკეთებული ნიშნებიდან 2.63-2.80 მ-ზე

Reference point represents reinforcement bar concreted in the soil, located at the distance of 0.74 m from the right edge of the road and 2.63-2.80 m from white paint marks made on steel fence.

№	X	Y	H
10	4667979.243	398799.557	763.087

TURNING ANGLES, STRAIGHTS AND CIRCULAR CURVES
Road: AGARA - KHORNISI - TSKHINVALI KM 1 - KM 4; KM 9 - KM 16

Angle N	Vertex of angle	Turning angle		Elements of circular and transition curves								PK values of elements				Distance between vertexes	of straight m PK+	Coordinates	
	PK+	Left	Right	R	L1	L2	T1	T2	K	Б	Д	STC	SCC	ECC	ETC			X	Y
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Section km 1 - km 4																			
S.R.	0+0.00	0°0'0.0''																4654837.18	401830.96
																69.95	69.95		
AN1	0+69.95	1°24'12.1"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0+69.95	0+69.95	0+69.95	0+69.95			4654902.49	401805.88
																246.45	246.45		
AN2	3+16.40		0°45'5.7"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3+16.40	3+16.40	3+16.40	3+16.40			4655130.32	401711.92
																71.10	71.10		
AN3	3+87.50	1°19'59.5"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3+87.50	3+87.50	3+87.50	3+87.50			4655196.40	401685.67
																131.07	79.01		
AN4	5+18.57		6°37'17.8"	900.00	0.00	0.00	52.06	52.06	104.01	1.50	0.12	4+66.51	4+66.51	5+70.52	5+70.52			4655317.06	401634.48
																141.47	22.21		
AN5	6+59.92		54°59'29.3"	90.00	40.00	40.00	67.19	67.19	126.38	12.29	8.01	5+92.73	6+32.73	6+79.11	7+19.11			4655452.79	401594.60
																179.42	61.13		
AN6	8+31.34		7°18'33.3"	800.00	0.00	0.00	51.10	51.10	102.06	1.63	0.14	7+80.24	7+80.24	8+82.29	8+82.29			4655592.97	401706.58
																172.16	81.35		
AN7	10+3.35	38°39'6.1"		70.00	30.00	30.00	39.71	39.71	77.22	4.75	2.21	9+63.64	9+93.64	10+10.86	10+40.86			4655712.72	401830.28
																133.31	93.60		
AN8	11+34.46		1°1'49.3"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11+34.46	11+34.46	11+34.46	11+34.46			4655844.95	401847.16
																188.99	146.76		
AN9	13+23.45	48°25'58.8"		60.00	30.00	30.00	42.24	42.24	80.72	6.47	3.75	12+81.22	13+11.22	13+31.93	13+61.93			4656031.96	401874.47
																95.21	52.97		
AN10	14+14.91	0°50'21.8"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14+14.91	14+14.91	14+14.91	14+14.91			4656104.76	401813.11
																530.44	491.89		
AN11	19+45.35	5°30'59.9"		800.00	0.00	0.00	38.54	38.54	77.03	0.93	0.06	19+6.80	19+6.80	19+83.83	19+83.83			4656505.30	401465.36
																154.51	115.97		
AN12	20+99.80		0°41'5.9"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20+99.80	20+99.80	20+99.80	20+99.80			4656611.70	401353.32
																594.51	594.51		
AN13	26+94.31	0°18'43.7"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26+94.31	26+94.31	26+94.31	26+94.31			4657026.20	400927.13
																476.84	476.84		
AN14	31+71.15		0°13'39.2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31+71.15	31+71.15	31+71.15	31+71.15			4657356.79	400583.49
																211.24	147.63		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AN15	33+82.39	14°39'12.9"		300.00	50.00	50.00	63.61	63.61	126.73	2.82	0.50	33+18.78	33+68.78	33+95.51	34+45.51			4657503.84	400431.84
																156.28	92.67		
AN16	35+38.18		0°7'56.1"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35+38.18	35+38.18	35+38.18	35+38.18			4657580.72	400295.77
																228.99	99.96		
AN17	37+67.17		1°50'53.3"	8000.00	0.00	0.00	129.04	129.04	258.05	1.04	0.02	36+38.14	36+38.14	38+96.19	38+96.19			4657693.82	400096.66
																163.85	34.81		
E.R.	39+31.00	0°0'0.0"																4657779.30	399956.87
Section km 9 - km 16																			
S.R.	0+0.00	0°0'0.0"																4661153.43	397688.51
																37.07	10.70		
AN1	0+37.07	12°36'13.2"		130.00	24.00	24.00	26.37	26.37	52.60	0.98	0.15	0+10.70	0+34.70	0+39.29	0+63.29			4661189.38	397697.56
																65.54	1.92		
AN2	1+2.46		17°28'13.8"	150.00	30.00	0.00	37.25	23.88	60.74	1.89	0.39	0+65.21	0+95.21	1+25.95	1+25.95			4661254.90	397699.30
																87.65	11.83		
AN3	1+89.73		28°54'41.1"	200.00	0.00	30.00	51.95	66.22	115.92	6.64	2.24	1+37.78	1+37.78	2+23.70	2+53.70			4661337.78	397727.82
																294.31	173.80		
AN4	4+81.57	67°39'22.8"		50.00	40.00	40.00	54.29	54.29	99.04	11.79	9.54	4+27.28	4+67.28	4+86.33	5+26.33			4661535.08	397946.20
																233.69	72.18		
AN5	7+5.72		23°21'45.7"	300.00	90.00	90.00	107.22	107.22	212.33	7.49	2.12	5+98.50	6+88.50	7+20.83	8+10.83			4661755.02	397867.22
																649.62	542.39		
AN6	13+53.22		0°7'13.4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13+53.22	13+53.22	13+53.22	13+53.22			4662403.35	397908.11
																316.45	264.72		
AN7	16+69.67		29°41'29.3"	100.00	50.00	50.00	51.73	51.73	101.82	4.53	1.64	16+17.94	16+67.94	16+69.76	17+19.76			4662719.13	397928.69
																156.55	104.82		
AN8	18+24.58	3°2'4.5"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18+24.58	18+24.58	18+24.58	18+24.58			4662849.79	398014.92
																156.24	105.86		
AN9	19+80.82		7°15'29.6"	400.00	50.00	50.00	50.38	50.38	100.67	1.06	0.09	19+30.43	19+80.43	19+81.11	20+31.11			4662984.57	398093.95
																214.26	163.87		
AN10	21+94.98		2°27'58.8"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21+94.98	21+94.98	21+94.98	21+94.98			4663154.22	398224.81
																480.76	409.99		
AN11	26+75.74		8°5'46.4"	1000.00	0.00	0.00	70.77	70.77	141.31	2.50	0.24	26+4.97	26+4.97	27+46.28	27+46.28			4663521.91	398534.55
																134.41	0.02		
AN12	28+9.91	11°1'23.2"		400.00	50.00	50.00	63.62	63.62	126.96	2.12	0.28	27+46.30	27+96.30	28+23.25	28+73.25			4663611.48	398634.76
																185.54	64.32		
AN13	29+95.17		7°27'30.7"	500.00	50.00	50.00	57.60	57.60	115.09	1.27	0.12	29+37.57	29+87.57	30+2.66	30+52.66			4663759.30	398746.89
																192.42	96.37		
AN14	31+87.48		11°5'31.7"	200.00	38.00	38.00	38.44	38.44	76.72	1.24	0.17	31+49.03	31+87.03	31+87.75	32+25.75			4663896.21	398882.10
																100.71	18.66		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AN15	32+88.02	36°53'13.2"		70.00	40.00	40.00	43.61	43.61	85.07	4.79	2.15	32+44.41	32+84.41	32+89.48	33+29.48			4663952.91	398965.33
																102.87	6.87		
AN16	33+88.74	20°22'6.4"		180.00	40.00	40.00	52.39	52.39	103.99	3.26	0.80	33+36.34	33+76.34	34+0.33	34+40.33			4664050.26	398998.56
																117.33	38.92		
AN17	35+5.27	5°57'24.3"		500.00	0.00	0.00	26.01	26.01	51.98	0.68	0.05	34+79.25	34+79.25	35+31.23	35+31.23			4664167.55	398995.45
																116.57	70.28		
AN18	36+21.79	19°22'6.1"		60.00	20.00	20.00	20.28	20.28	40.28	1.15	0.27	36+1.51	36+21.51	36+21.79	36+41.79			4664283.13	398980.28
																54.55	1.20		
AN19	36+76.07		60°27'0.6"	30.00	30.00	30.00	33.08	33.08	61.65	6.15	4.50	36+42.99	36+72.99	36+74.64	37+4.64			4664331.80	398955.64
																82.19	19.06		
AN20	37+53.76	29°45'7.0"		60.00	28.00	28.00	30.06	30.06	59.16	2.64	0.96	37+23.70	37+51.70	37+54.86	37+82.86			4664400.25	399001.13
																77.59	6.23		
AN21	38+30.39		14°58'17.5"	200.00	30.00	30.00	41.30	41.30	82.26	1.91	0.34	37+89.09	38+19.09	38+41.35	38+71.35			4664477.67	399006.34
																74.60	1.08		
AN22	39+4.65	19°28'43.7"		100.00	30.00	30.00	32.22	32.22	64.00	1.84	0.44	38+72.43	39+2.43	39+6.43	39+36.43			4664548.28	399030.41
																91.77	16.16		
AN23	39+95.97	11°36'7.7"		230.00	40.00	40.00	43.39	43.39	86.57	1.48	0.21	39+52.58	39+92.58	39+99.16	40+39.16			4664640.04	399029.36
																136.14	45.66		
AN24	41+31.90		15°24'11.5"	200.00	40.00	40.00	47.09	47.09	93.77	2.16	0.40	40+84.82	41+24.82	41+38.59	41+78.59			4664773.07	399000.46
																115.94	17.88		
AN25	42+47.45	17°35'8.3"		200.00	40.00	40.00	50.98	50.98	101.39	2.72	0.58	41+96.46	42+36.46	42+57.85	42+97.85			4664888.84	399006.83
																77.20	0.18		
AN26	43+24.07		5°57'39.9"	500.00	0.00	0.00	26.03	26.03	52.02	0.68	0.05	42+98.03	42+98.03	43+50.05	43+50.05			4664963.60	398987.58
																122.88	40.60		
AN27	44+46.90		11°52'56.4"	300.00	50.00	50.00	56.25	56.25	112.22	1.97	0.28	43+90.65	44+40.65	44+52.87	45+2.87			4665085.14	398969.46
																121.25	65.00		
AN28	45+67.87		2°55'48.3"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45+67.87	45+67.87	45+67.87	45+67.87			4665206.18	398976.66
																116.71	116.71		
AN29	46+84.58	1°45'22.1"		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46+84.58	46+84.58	46+84.58	46+84.58			4665322.18	398989.53
																50.86	11.16		
AN30	47+35.44		17°31'34.5''	160.00	30.00	30.00	39.70	39.70	78.94	2.13	0.45	46+95.74	47+25.74	47+44.68	47+74.68			4665372.87	398993.59
																79.00	1.10		
AN31	48+13.99	28°48'4.5"		90.00	30.00	30.00	38.20	38.20	75.24	3.35	1.16	47+75.79	48+5.79	48+21.03	48+51.03			4665446.06	399023.32
																116.79	63.20		
AN32	49+29.62		11°15'0.6"	80.00	15.00	15.00	15.39	15.39	30.71	0.50	0.07	49+14.23	49+29.23	49+29.94	49+44.94			4665562.06	399009.70
																47.81	0.40		
AN33	49+77.36	37°10'15.8"		50.00	30.00	30.00	32.02	32.02	62.44	3.54	1.60	49+45.34	49+75.34	49+77.77	50+7.77			4665609.72	399013.49
																82.19	2.93		
AN34	50+57.95		15°29'20.6''	200.00	40.00	40.00	47.24	47.24	94.07	2.18	0.41	50+10.71	50+50.71	50+64.78	51+4.78			4665678.94	398969.19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
																113.53	19.20		
AN35	51+71.07		5°59'25.8"	900.00	0.00	0.00	47.09	47.09	94.10	1.23	0.09	51+23.98	51+23.98	52+18.07	52+18.07			4665787.44	398935.75
																339.97	184.63		
AN36	55+10.95		15°31'47.9"	500.00	80.00	80.00	108.24	108.24	215.52	5.17	0.96	54+2.71	54+82.71	55+38.23	56+18.23			4666121.01	398870.08
																245.20	83.62		
AN37	57+55.19		2°2'14.0"	3000.00	0.00	0.00	53.34	53.34	106.67	0.47	0.01	57+1.85	57+1.85	58+8.52	58+8.52			4666365.49	398888.85
																250.75	133.59		
AN38	60+5.92	12°50'43.6"		300.00	60.00	60.00	63.82	63.82	127.26	2.40	0.38	59+42.11	60+2.11	60+9.37	60+69.37			4666614.66	398916.93
																233.81	105.08		
AN39	62+39.36		11°23'24.3"	400.00	50.00	50.00	64.91	64.91	129.52	2.25	0.31	61+74.45	62+24.45	62+53.97	63+3.97			4666847.01	398890.79
																129.57	22.52		
AN40	63+68.63	16°45'5.7"		150.00	40.00	40.00	42.14	42.14	83.86	2.07	0.42	63+26.49	63+66.49	63+70.35	64+10.35			4666976.09	398902.03
																93.21	0.20		
AN41	64+61.42		10°14'49.8"	400.00	30.00	30.00	50.87	50.87	101.54	1.70	0.21	64+10.55	64+40.55	64+82.08	65+12.08			4667067.34	398883.00
																78.45	2.30		
AN42	65+39.66	18°47'5.0"		80.00	24.00	24.00	25.27	25.27	50.23	1.39	0.32	65+14.38	65+38.38	65+40.61	65+64.61			4667145.76	398880.90
																48.01	1.04		
AN43	65+87.35		8°16'25.5"	300.00	0.00	0.00	21.70	21.70	43.32	0.78	0.08	65+65.65	65+65.65	66+8.97	66+8.97			4667190.78	398864.24
																79.40	57.70		
AN44	66+66.67		2°34'25.5"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66+66.67	66+66.67	66+66.67	66+66.67			4667268.43	398847.67
																111.83	59.54		
AN45	67+78.51		12°26'37.1"	250.00	50.00	50.00	52.29	52.29	104.30	1.90	0.29	67+26.22	67+76.22	67+80.51	68+30.51			4667378.75	398829.27
																79.22	1.90		
AN46	68+57.44		9°32'21.3"	300.00	0.00	0.00	25.03	25.03	49.95	1.04	0.12	68+32.41	68+32.41	68+82.35	68+82.35			4667457.86	398833.39
																107.61	50.60		
AN47	69+64.94	23°51'43.2"		80.00	30.00	30.00	31.99	31.99	63.32	2.24	0.65	69+32.95	69+62.95	69+66.27	69+96.27			4667562.92	398856.70
																48.89	0.13		
AN48	70+13.17		3°50'30.5"	500.00	0.00	0.00	16.77	16.77	33.53	0.28	0.01	69+96.40	69+96.40	70+29.93	70+29.93			4667610.85	398847.09
																218.44	161.40		
AN49	72+31.60	3°4'33.0"		1500.00	0.00	0.00	40.27	40.27	80.53	0.54	0.02	71+91.32	71+91.32	72+71.85	72+71.85			4667827.41	398818.55
																98.10	11.56		
AN50	73+29.68		5°17'54.2"	1000.00	0.00	0.00	46.27	46.27	92.47	1.07	0.07	72+83.41	72+83.41	73+75.88	73+75.88			4667923.85	398800.54
																151.07	63.73		
AN51	74+80.68	6°42'55.8"		700.00	0.00	0.00	41.07	41.07	82.05	1.20	0.09	74+39.61	74+39.61	75+21.66	75+21.66			4668074.28	398786.63
																197.52	156.45		
E.R.	76+78.11	0°0'0.0"																4668267.48	398745.56

PARAMETERS OF DESIGN CROSS PROFILE
Road: AGARA - KHORNISI - TSKHINVALI KM 1 - KM 4; KM 9 - KM 16

PK+	Distance from axe				Level, m					Slope ‰				Axes coordinates	
	Left		Right		Left		Axe	Right		Left		Right			
	Brow	Edge	Edge	Brow	Brow	Edge		Edge	Brow	Shoulder	carriageway	carriageway	Shoulder	X	Y
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Section km 1 - km 4															
0+20.00	-4.66	-3.66	3.50	4.50	698.16	698.20	698.27	698.26	698.26	40.00	20.00	1.05	1.05	4661172.83	397693.35
0+40.00	-4.95	-3.95	3.50	4.50	698.00	698.04	698.18	698.30	698.33	40.00	34.29	-34.29	-34.29	4661192.49	397696.96
0+60.00	-4.55	-3.55	3.50	4.50	697.75	697.78	697.85	697.78	697.74	27.70	20.00	20.00	40.00	4661212.45	397698.17
0+80.00	-4.50	-3.50	3.50	4.50	697.30	697.30	697.27	697.20	697.16	-6.92	-6.92	20.00	40.00	4661232.44	397698.82
1+0.00	-4.50	-3.50	3.50	4.50	696.63	696.60	696.49	696.39	696.35	-30.00	-30.00	30.00	40.00	4661252.33	397700.78
1+20.00	-4.50	-3.50	3.50	4.50	695.95	695.92	695.81	695.71	695.67	-30.00	-30.00	30.00	40.00	4661271.81	397705.24
1+40.00	-5.00	-3.50	3.50	5.00	659.81	659.87	659.94	659.87	659.81	40.00	20.00	20.00	40.00	4654967.24	401779.17
1+60.00	-5.00	-3.50	3.50	5.00	659.81	659.87	659.94	659.87	659.81	40.00	20.00	20.00	40.00	4654985.73	401771.55
1+80.00	-5.00	-3.50	3.50	5.00	659.80	659.86	659.93	659.86	659.80	40.00	20.00	20.00	40.00	4655004.22	401763.92
2+0.00	-5.00	-3.50	3.50	5.00	659.80	659.86	659.93	659.86	659.80	40.00	20.00	20.00	40.00	4655022.71	401756.30
2+20.00	-5.00	-3.50	3.50	5.00	659.80	659.86	659.93	659.86	659.80	40.00	20.00	20.00	40.00	4655041.20	401748.67
2+40.00	-5.00	-3.50	3.50	5.00	659.79	659.85	659.92	659.85	659.79	40.00	20.00	20.00	40.00	4655059.69	401741.05
2+60.00	-5.00	-3.50	3.50	5.00	659.79	659.85	659.92	659.85	659.79	40.00	20.00	20.00	40.00	4655078.18	401733.42
2+80.00	-5.00	-3.50	3.50	5.00	659.79	659.85	659.92	659.85	659.79	40.00	20.00	20.00	40.00	4655096.67	401725.80
3+0.00	-5.00	-3.50	3.50	5.00	659.78	659.84	659.91	659.84	659.78	40.00	20.00	20.00	40.00	4655115.16	401718.17
3+20.00	-5.00	-3.50	3.50	5.00	659.78	659.84	659.91	659.84	659.78	40.00	20.00	20.00	40.00	4655133.67	401710.59
3+40.00	-5.00	-3.50	3.50	5.00	659.78	659.84	659.91	659.84	659.78	40.00	20.00	20.00	40.00	4655152.25	401703.21
3+60.00	-5.00	-3.50	3.50	5.00	659.77	659.83	659.90	659.83	659.77	40.00	20.00	20.00	40.00	4655170.84	401695.83
3+80.00	-5.00	-3.50	3.50	5.00	659.77	659.83	659.90	659.83	659.77	40.00	20.00	20.00	40.00	4655189.43	401688.44
4+0.00	-5.00	-3.50	3.50	5.00	659.77	659.83	659.90	659.83	659.77	40.00	20.00	20.00	40.00	4655207.91	401680.79
4+20.00	-5.00	-3.50	3.50	5.00	659.76	659.82	659.89	659.82	659.76	40.00	20.00	20.00	40.00	4655226.32	401672.98
4+40.00	-5.00	-3.50	3.50	5.00	659.76	659.82	659.89	659.82	659.76	40.00	20.00	20.00	40.00	4655244.73	401665.17
4+60.00	-5.00	-3.50	3.50	5.00	659.72	659.78	659.85	659.78	659.72	40.00	20.00	20.00	40.00	4655263.14	401657.35
4+70.00	-5.00	-3.50	3.50	5.00	659.68	659.74	659.81	659.74	659.68	40.00	20.00	20.00	40.00	4655272.35	401653.45
4+80.00	-5.00	-3.50	3.50	5.00	659.64	659.70	659.77	659.70	659.64	40.00	20.00	20.00	40.00	4655281.59	401649.64
4+90.00	-5.00	-3.50	3.50	5.00	659.58	659.64	659.71	659.64	659.58	40.00	20.00	20.00	40.00	4655290.87	401645.92
5+0.00	-5.00	-3.50	3.50	5.00	659.52	659.58	659.65	659.58	659.52	40.00	20.00	20.00	40.00	4655300.20	401642.31
5+10.00	-5.00	-3.50	3.50	5.00	659.46	659.52	659.59	659.52	659.46	40.00	20.00	20.00	40.00	4655309.56	401638.80
5+20.00	-5.00	-3.50	3.50	5.00	659.42	659.48	659.55	659.48	659.42	40.00	20.00	20.00	40.00	4655318.96	401635.39
5+30.00	-5.00	-3.50	3.50	5.00	659.40	659.46	659.53	659.46	659.40	40.00	20.00	20.00	40.00	4655328.40	401632.09
5+40.00	-5.00	-3.50	3.50	5.00	659.39	659.45	659.52	659.45	659.39	40.00	20.00	20.00	40.00	4655337.88	401628.90
5+50.00	-5.00	-3.50	3.50	5.00	659.39	659.45	659.52	659.45	659.39	40.00	20.00	20.00	40.00	4655347.39	401625.81
5+60.00	-5.00	-3.50	3.50	5.00	659.40	659.46	659.53	659.46	659.40	40.00	20.00	20.00	40.00	4655356.93	401622.82
5+70.00	-5.00	-3.50	3.50	5.00	659.43	659.49	659.56	659.49	659.43	40.00	20.00	20.00	40.00	4655366.51	401619.95
5+80.00	-5.00	-3.50	3.50	5.00	659.48	659.54	659.61	659.54	659.48	40.00	20.00	20.00	40.00	4655376.11	401617.13
6+0.00	-5.00	-3.50	3.75	5.00	659.70	659.71	659.74	659.67	659.62	9.10	9.10	20.00	40.00	4655395.30	401611.51
6+10.00	-5.00	-3.50	4.10	5.10	659.85	659.85	659.83	659.74	659.70	-5.91	-5.91	20.00	40.00	4655404.95	401608.90
6+20.00	-5.00	-3.50	4.45	5.45	660.01	659.98	659.91	659.81	659.77	-20.91	-20.91	20.91	40.00	4655414.72	401606.76
6+30.00	-5.00	-3.50	4.80	5.80	660.16	660.11	659.98	659.81	659.77	-35.91	-35.91	35.91	40.00	4655424.62	401605.37
6+40.00	-5.00	-3.50	4.90	5.90	660.25	660.19	660.05	659.85	659.81	-40.00	-40.00	40.00	40.00	4655434.61	401604.99
6+50.00	-5.00	-3.50	4.90	5.90	660.31	660.25	660.11	659.91	659.87	-40.00	-40.00	40.00	40.00	4655444.58	401605.71
6+60.00	-5.00	-3.50	4.90	5.90	660.35	660.29	660.15	659.96	659.92	-40.00	-40.00	40.00	40.00	4655454.40	401607.54
6+70.00	-5.00	-3.50	4.90	5.90	660.39	660.33	660.19	659.99	659.95	-40.00	-40.00	40.00	40.00	4655463.96	401610.45
6+80.00	-5.00	-3.50	4.87	5.87	660.41	660.35	660.21	660.03	659.99	-38.67	-38.67	38.67	40.00	4655473.15	401614.40
6+90.00	-5.00	-3.50	4.52	5.52	660.35	660.31	660.23	660.12	660.08	-23.67	-23.67	23.67	40.00	4655481.86	401619.29
7+0.00	-5.00	-3.50	4.17	5.17	660.28	660.27	660.24	660.15	660.11	-8.67	-8.67	20.00	40.00	4655490.16	401624.87

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
7+10.00	-5.00	-3.50	3.82	5.00	660.20	660.21	660.23	660.15	660.11	6.33	6.33	20.00	40.00	4655498.15	401630.88
7+20.00	-5.00	-3.50	3.50	5.00	660.11	660.15	660.22	660.15	660.09	21.78	20.00	20.00	40.00	4655505.98	401637.09
7+40.00	-5.00	-3.50	3.50	5.00	660.04	660.10	660.17	660.10	660.04	40.00	20.00	20.00	40.00	4655521.61	401649.58
7+60.00	-5.00	-3.50	3.50	5.00	660.00	660.06	660.13	660.06	660.00	40.00	20.00	20.00	40.00	4655537.24	401662.06
7+80.00	-5.00	-3.50	3.50	5.00	659.95	660.01	660.08	660.01	659.95	40.00	20.00	20.00	40.00	4655552.86	401674.54
7+90.00	-5.00	-3.50	3.50	5.00	659.93	659.99	660.06	659.99	659.93	40.00	20.00	20.00	40.00	4655560.64	401680.83
8+0.00	-5.00	-3.50	3.50	5.00	659.90	659.96	660.03	659.96	659.90	40.00	20.00	20.00	40.00	4655568.33	401687.22
8+10.00	-5.00	-3.50	3.50	5.00	659.89	659.95	660.02	659.95	659.89	40.00	20.00	20.00	40.00	4655575.95	401693.70
8+20.00	-5.00	-3.50	3.50	5.00	659.88	659.94	660.01	659.94	659.88	40.00	20.00	20.00	40.00	4655583.49	401700.27
8+30.00	-5.00	-3.50	3.50	5.00	659.89	659.95	660.02	659.95	659.89	40.00	20.00	20.00	40.00	4655590.94	401706.94
8+40.00	-5.00	-3.50	3.50	5.00	659.92	659.98	660.05	659.98	659.92	40.00	20.00	20.00	40.00	4655598.30	401713.70
8+50.00	-5.00	-3.50	3.50	5.00	659.96	660.02	660.09	660.02	659.96	40.00	20.00	20.00	40.00	4655605.59	401720.55
8+60.00	-5.00	-3.50	3.50	5.00	660.01	660.07	660.14	660.07	660.01	40.00	20.00	20.00	40.00	4655612.78	401727.50
9+20.00	-5.00	-3.50	3.50	5.00	661.59	661.65	661.72	661.65	661.59	40.00	20.00	20.00	40.00	4655654.74	401770.39
9+40.00	-5.00	-3.50	3.50	5.00	663.19	663.25	663.32	663.25	663.19	40.00	20.00	20.00	40.00	4655668.65	401784.76
9+60.00	-5.00	-3.50	3.50	5.00	664.88	664.94	665.01	664.94	664.91	40.00	20.00	20.00	23.26	4655682.56	401799.13
9+70.00	-5.00	-3.92	3.50	5.00	665.74	665.78	665.86	665.85	665.85	40.00	20.00	3.26	3.26	4655689.53	401806.30
9+80.00	-5.42	-4.42	3.50	5.00	666.58	666.62	666.70	666.76	666.79	40.00	20.00	-16.74	-16.74	4655696.72	401813.25
9+90.00	-5.92	-4.92	3.50	5.00	667.22	667.26	667.44	667.57	667.62	40.00	36.74	-36.74	-36.74	4655704.42	401819.62
10+0.00	-6.00	-5.00	3.50	5.00	667.79	667.83	668.03	668.17	668.23	40.00	40.00	-40.00	-40.00	4655712.84	401824.99
10+10.00	-5.99	-4.99	3.50	5.00	668.24	668.28	668.48	668.62	668.68	40.00	39.46	-39.46	-39.46	4655721.95	401829.11
10+20.00	-5.49	-4.49	3.50	5.00	668.65	668.69	668.78	668.85	668.88	40.00	20.00	-19.46	-19.46	4655731.53	401831.95
10+30.00	-5.00	-3.99	3.50	5.00	668.83	668.87	668.95	668.95	668.94	40.00	20.00	0.54	0.54	4655741.35	401833.83
10+40.00	-5.00	-3.50	3.50	5.00	668.86	668.92	668.99	668.92	668.88	40.00	20.00	20.00	20.54	4655751.25	401835.20
10+60.00	-5.00	-3.50	3.50	5.00	668.90	668.96	669.03	668.96	668.90	40.00	20.00	20.00	40.00	4655771.09	401837.73
10+80.00	-5.00	-3.50	3.50	5.00	668.94	669.00	669.07	669.00	668.94	40.00	20.00	20.00	40.00	4655790.93	401840.26
11+0.00	-5.00	-3.50	3.50	5.00	668.99	669.05	669.12	669.05	668.99	40.00	20.00	20.00	40.00	4655810.77	401842.80
11+20.00	-5.00	-3.50	3.50	5.00	669.03	669.09	669.16	669.09	669.03	40.00	20.00	20.00	40.00	4655830.61	401845.33
11+40.00	-5.00	-3.50	3.50	5.00	669.08	669.14	669.21	669.14	669.08	40.00	20.00	20.00	40.00	4655850.43	401847.96
11+60.00	-5.00	-3.50	3.50	5.00	669.12	669.18	669.25	669.18	669.12	40.00	20.00	20.00	40.00	4655870.22	401850.85
11+80.00	-5.00	-3.50	3.50	5.00	669.16	669.22	669.29	669.22	669.16	40.00	20.00	20.00	40.00	4655890.01	401853.74
12+0.00	-5.00	-3.50	3.50	5.00	669.21	669.27	669.34	669.27	669.21	40.00	20.00	20.00	40.00	4655909.80	401856.63
12+20.00	-5.00	-3.50	3.50	5.00	669.30	669.36	669.43	669.36	669.30	40.00	20.00	20.00	40.00	4655929.59	401859.52
12+40.00	-5.00	-3.50	3.50	5.00	669.46	669.52	669.59	669.52	669.46	40.00	20.00	20.00	40.00	4655949.38	401862.41
12+60.00	-5.00	-3.50	3.50	5.00	669.71	669.77	669.84	669.77	669.71	40.00	20.00	20.00	40.00	4655969.18	401865.30
12+80.00	-5.00	-3.50	3.50	5.00	670.03	670.09	670.16	670.09	670.05	40.00	20.00	20.00	23.10	4655988.97	401868.19
12+90.00	-5.00	-3.95	3.50	5.00	670.20	670.24	670.32	670.31	670.30	40.00	20.00	3.10	3.10	4655998.87	401869.57
13+0.00	-5.48	-4.48	3.50	5.00	670.35	670.39	670.48	670.53	670.56	40.00	20.00	-16.90	-16.90	4656008.83	401870.47
13+10.00	-6.02	-5.02	3.50	5.00	670.40	670.44	670.62	670.75	670.81	40.00	36.91	-36.90	-36.90	4656018.82	401870.33
13+20.00	-6.10	-5.10	3.50	5.00	670.51	670.55	670.76	670.90	670.96	40.00	40.00	-40.00	-40.00	4656028.67	401868.66
13+30.00	-6.10	-5.10	3.50	5.00	670.64	670.68	670.88	671.02	671.08	40.00	40.00	-40.00	-40.00	4656038.10	401865.38
13+40.00	-5.69	-4.69	3.50	5.00	670.83	670.87	670.99	671.07	671.11	40.00	24.54	-24.54	-24.54	4656046.88	401860.62
13+50.00	-5.15	-4.15	3.50	5.00	670.96	671.00	671.09	671.10	671.11	40.00	20.00	-4.54	-4.54	4656055.03	401854.82
13+60.00	-5.00	-3.62	3.50	5.00	671.04	671.10	671.17	671.12	671.09	40.00	20.00	15.46	15.46	4656062.77	401848.50
13+80.00	-5.00	-3.50	3.50	5.00	671.17	671.23	671.30	671.23	671.17	40.00	20.00	20.00	40.00	4656078.07	401835.61
14+0.00	-5.00	-3.50	3.50	5.00	671.25	671.31	671.38	671.31	671.25	40.00	20.00	20.00	40.00	4656093.36	401822.72
14+20.00	-5.00	-3.50	3.50	5.00	671.29	671.35	671.42	671.35	671.29	40.00	20.00	20.00	40.00	4656108.60	401809.77
14+40.00	-5.00	-3.50	3.50	5.00	671.27	671.33	671.40	671.33	671.27	40.00	20.00	20.00	40.00	4656123.71	401796.66
14+60.00	-5.00	-3.50	3.50	5.00	671.21	671.27	671.34	671.27	671.21	40.00	20.00	20.00	40.00	4656138.81	401783.55
14+80.00	-5.00	-3.50	3.50	5.00	671.15	671.21	671.28	671.21	671.15	40.00	20.00	20.00	40.00	4656153.91	401770.44
15+0.00	-5.00	-3.50	3.50	5.00	671.08	671.14	671.21	671.14	671.08	40.00	20.00	20.00	40.00	4656169.01	401757.33
15+20.00	-5.00	-3.50	3.50	5.00	671.02	671.08	671.15	671.08	671.02	40.00	20.00	20.00	40.00	4656184.12	401744.21
15+40.00	-5.00	-3.50	3.50	5.00	670.98	671.04	671.11	671.04	670.98	40.00	20.00	20.00	40.00	4656199.22	401731.10
15+60.00	-5.00	-3.50	3.50	5.00	670.95	671.01	671.08	671.01	670.95	40.00	20.00	20.00	40.00	4656214.32	401717.99
15+80.00	-5.00	-3.50	3.50	5.00	670.94	671.00	671.07	671.00	670.94	40.00	20.00	20.00	40.00	4656229.42	401704.88

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16+0.00	-5.00	-3.50	3.50	5.00	670.93	670.99	671.06	670.99	670.93	40.00	20.00	20.00	40.00	4656244.53	401691.77
16+20.00	-5.00	-3.50	3.50	5.00	670.92	670.98	671.05	670.98	670.92	40.00	20.00	20.00	40.00	4656259.63	401678.65
16+40.00	-5.00	-3.50	3.50	5.00	670.91	670.97	671.04	670.97	670.91	40.00	20.00	20.00	40.00	4656274.73	401665.54
16+60.00	-5.00	-3.50	3.50	5.00	670.90	670.96	671.03	670.96	670.90	40.00	20.00	20.00	40.00	4656289.83	401652.43
16+80.00	-5.00	-3.50	3.50	5.00	670.89	670.95	671.02	670.95	670.89	40.00	20.00	20.00	40.00	4656304.93	401639.32
17+0.00	-5.00	-3.50	3.50	5.00	670.91	670.97	671.04	670.97	670.91	40.00	20.00	20.00	40.00	4656320.04	401626.21
17+20.00	-5.00	-3.50	3.50	5.00	670.98	671.04	671.11	671.04	670.98	40.00	20.00	20.00	40.00	4656335.14	401613.10
17+40.00	-5.00	-3.50	3.50	5.00	671.11	671.17	671.24	671.17	671.11	40.00	20.00	20.00	40.00	4656350.24	401599.98
17+60.00	-5.00	-3.50	3.50	5.00	671.29	671.35	671.42	671.35	671.29	40.00	20.00	20.00	40.00	4656365.34	401586.87
17+80.00	-5.00	-3.50	3.50	5.00	671.47	671.53	671.60	671.53	671.47	40.00	20.00	20.00	40.00	4656380.45	401573.76
18+0.00	-5.00	-3.50	3.50	5.00	671.65	671.71	671.78	671.71	671.65	40.00	20.00	20.00	40.00	4656395.55	401560.65
18+20.00	-5.00	-3.50	3.50	5.00	671.81	671.87	671.94	671.87	671.81	40.00	20.00	20.00	40.00	4656410.65	401547.54
18+40.00	-5.00	-3.50	3.50	5.00	671.96	672.02	672.09	672.02	671.96	40.00	20.00	20.00	40.00	4656425.75	401534.42
18+60.00	-5.00	-3.50	3.50	5.00	672.09	672.15	672.22	672.15	672.09	40.00	20.00	20.00	40.00	4656440.85	401521.31
18+80.00	-5.00	-3.50	3.50	5.00	672.21	672.27	672.34	672.27	672.21	40.00	20.00	20.00	40.00	4656455.96	401508.20
19+0.00	-5.00	-3.50	3.50	5.00	672.34	672.40	672.47	672.40	672.34	40.00	20.00	20.00	40.00	4656471.06	401495.09
19+10.00	-5.00	-3.50	3.50	5.00	672.40	672.46	672.53	672.46	672.40	40.00	20.00	20.00	40.00	4656478.61	401488.53
19+20.00	-5.00	-3.50	3.50	5.00	672.46	672.52	672.59	672.52	672.46	40.00	20.00	20.00	40.00	4656486.09	401481.89
19+30.00	-5.00	-3.50	3.50	5.00	672.52	672.58	672.65	672.58	672.52	40.00	20.00	20.00	40.00	4656493.49	401475.17
19+40.00	-5.00	-3.50	3.50	5.00	672.57	672.63	672.70	672.63	672.57	40.00	20.00	20.00	40.00	4656500.81	401468.35
19+50.00	-5.00	-3.50	3.50	5.00	672.59	672.65	672.72	672.65	672.59	40.00	20.00	20.00	40.00	4656508.03	401461.44
19+60.00	-5.00	-3.50	3.50	5.00	672.56	672.62	672.69	672.62	672.56	40.00	20.00	20.00	40.00	4656515.18	401454.44
19+70.00	-5.00	-3.50	3.50	5.00	672.49	672.55	672.62	672.55	672.49	40.00	20.00	20.00	40.00	4656522.23	401447.36
19+80.00	-5.00	-3.50	3.50	5.00	672.38	672.44	672.51	672.44	672.38	40.00	20.00	20.00	40.00	4656529.20	401440.18
20+0.00	-5.00	-3.50	3.50	5.00	672.04	672.10	672.17	672.10	672.04	40.00	20.00	20.00	40.00	4656542.98	401425.68
20+20.00	-5.00	-3.50	3.50	5.00	671.55	671.61	671.68	671.61	671.55	40.00	20.00	20.00	40.00	4656556.75	401411.18
20+40.00	-5.00	-3.50	3.50	5.00	670.91	670.97	671.04	670.97	670.91	40.00	20.00	20.00	40.00	4656570.52	401396.68
20+60.00	-5.00	-3.50	3.50	5.00	670.25	670.31	670.38	670.31	670.25	40.00	20.00	20.00	40.00	4656584.29	401382.17
20+80.00	-5.00	-3.50	3.50	5.00	669.62	669.68	669.75	669.68	669.62	40.00	20.00	20.00	40.00	4656598.06	401367.67
21+0.00	-5.00	-3.50	3.50	5.00	669.16	669.22	669.29	669.22	669.16	40.00	20.00	20.00	40.00	4656611.84	401353.17
21+20.00	-5.00	-3.50	3.50	5.00	668.91	668.97	669.04	668.97	668.91	40.00	20.00	20.00	40.00	4656625.78	401338.83
21+40.00	-5.00	-3.50	3.50	5.00	668.82	668.88	668.95	668.88	668.82	40.00	20.00	20.00	40.00	4656639.73	401324.50
21+60.00	-5.00	-3.50	3.50	5.00	668.74	668.80	668.87	668.80	668.74	40.00	20.00	20.00	40.00	4656653.67	401310.16
21+80.00	-5.00	-3.50	3.50	5.00	668.67	668.73	668.80	668.73	668.67	40.00	20.00	20.00	40.00	4656667.61	401295.82
22+0.00	-5.00	-3.50	3.50	5.00	668.56	668.62	668.69	668.62	668.56	40.00	20.00	20.00	40.00	4656681.56	401281.48
22+20.00	-5.00	-3.50	3.50	5.00	668.42	668.48	668.55	668.48	668.42	40.00	20.00	20.00	40.00	4656695.50	401267.15
22+40.00	-5.00	-3.50	3.50	5.00	668.23	668.29	668.36	668.29	668.23	40.00	20.00	20.00	40.00	4656709.45	401252.81
22+60.00	-5.00	-3.50	3.50	5.00	668.02	668.08	668.15	668.08	668.02	40.00	20.00	20.00	40.00	4656723.39	401238.47
22+80.00	-5.00	-3.50	3.50	5.00	667.85	667.91	667.98	667.91	667.85	40.00	20.00	20.00	40.00	4656737.33	401224.13
23+0.00	-5.00	-3.50	3.50	5.00	667.72	667.78	667.85	667.78	667.72	40.00	20.00	20.00	40.00	4656751.28	401209.80
23+20.00	-5.00	-3.50	3.50	5.00	667.65	667.71	667.78	667.71	667.65	40.00	20.00	20.00	40.00	4656765.22	401195.46
23+40.00	-5.00	-3.50	3.50	5.00	667.63	667.69	667.76	667.69	667.63	40.00	20.00	20.00	40.00	4656779.17	401181.12
23+60.00	-5.00	-3.50	3.50	5.00	667.65	667.71	667.78	667.71	667.65	40.00	20.00	20.00	40.00	4656793.11	401166.79
23+80.00	-5.00	-3.50	3.50	5.00	667.69	667.75	667.82	667.75	667.69	40.00	20.00	20.00	40.00	4656807.06	401152.45
24+0.00	-5.00	-3.50	3.50	5.00	667.73	667.79	667.86	667.79	667.73	40.00	20.00	20.00	40.00	4656821.00	401138.11
24+20.00	-5.00	-3.50	3.50	5.00	667.77	667.83	667.90	667.83	667.77	40.00	20.00	20.00	40.00	4656834.94	401123.77
24+40.00	-5.00	-3.50	3.50	5.00	667.82	667.88	667.95	667.88	667.82	40.00	20.00	20.00	40.00	4656848.89	401109.44
24+60.00	-5.00	-3.50	3.50	5.00	667.86	667.92	667.99	667.92	667.86	40.00	20.00	20.00	40.00	4656862.83	401095.10
24+80.00	-5.00	-3.50	3.50	5.00	667.90	667.96	668.03	667.96	667.90	40.00	20.00	20.00	40.00	4656876.78	401080.76
25+0.00	-5.00	-3.50	3.50	5.00	667.94	668.00	668.07	668.00	667.94	40.00	20.00	20.00	40.00	4656890.72	401066.42
25+20.00	-5.00	-3.50	3.50	5.00	667.98	668.04	668.11	668.04	667.98	40.00	20.00	20.00	40.00	4656904.66	401052.09
25+40.00	-5.00	-3.50	3.50	5.00	668.02	668.08	668.15	668.08	668.02	40.00	20.00	20.00	40.00	4656918.61	401037.75
25+60.00	-5.00	-3.50	3.50	5.00	668.02	668.08	668.15	668.08	668.02	40.00	20.00	20.00	40.00	4656932.55	401023.41
25+80.00	-5.00	-3.50	3.50	5.00	667.98	668.04	668.11	668.04	667.98	40.00	20.00	20.00	40.00	4656946.50	401009.07
26+0.00	-5.00	-3.50	3.50	5.00	667.94	668.00	668.07	668.00	667.94	40.00	20.00	20.00	40.00	4656960.44	400994.74

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
26+20.00	-5.00	-3.50	3.50	5.00	667.92	667.98	668.05	667.98	667.92	40.00	20.00	20.00	40.00	4656974.39	400980.40
26+40.00	-5.00	-3.50	3.50	5.00	667.93	667.99	668.06	667.99	667.93	40.00	20.00	20.00	40.00	4656988.33	400966.06
26+60.00	-5.00	-3.50	3.50	5.00	667.95	668.01	668.08	668.01	667.95	40.00	20.00	20.00	40.00	4657002.27	400951.72
26+80.00	-5.00	-3.50	3.50	5.00	667.99	668.05	668.12	668.05	667.99	40.00	20.00	20.00	40.00	4657016.22	400937.39
27+0.00	-5.00	-3.50	3.50	5.00	668.05	668.11	668.18	668.11	668.05	40.00	20.00	20.00	40.00	4657030.14	400923.03
27+20.00	-5.00	-3.50	3.50	5.00	668.13	668.19	668.26	668.19	668.13	40.00	20.00	20.00	40.00	4657044.01	400908.62
27+40.00	-5.00	-3.50	3.50	5.00	668.23	668.29	668.36	668.29	668.23	40.00	20.00	20.00	40.00	4657057.87	400894.20
27+60.00	-5.00	-3.50	3.50	5.00	668.35	668.41	668.48	668.41	668.35	40.00	20.00	20.00	40.00	4657071.74	400879.79
27+80.00	-5.00	-3.50	3.50	5.00	668.48	668.54	668.61	668.54	668.48	40.00	20.00	20.00	40.00	4657085.60	400865.38
28+0.00	-5.00	-3.50	3.50	5.00	668.64	668.70	668.77	668.70	668.64	40.00	20.00	20.00	40.00	4657099.47	400850.96
28+20.00	-5.00	-3.50	3.50	5.00	668.81	668.87	668.94	668.87	668.81	40.00	20.00	20.00	40.00	4657113.34	400836.55
28+40.00	-5.00	-3.50	3.50	5.00	669.01	669.07	669.14	669.07	669.01	40.00	20.00	20.00	40.00	4657127.20	400822.14
28+60.00	-5.00	-3.50	3.50	5.00	669.22	669.28	669.35	669.28	669.22	40.00	20.00	20.00	40.00	4657141.07	400807.72
28+80.00	-5.00	-3.50	3.50	5.00	669.43	669.49	669.56	669.49	669.43	40.00	20.00	20.00	40.00	4657154.93	400793.31
29+0.00	-5.00	-3.50	3.50	5.00	669.64	669.70	669.77	669.70	669.64	40.00	20.00	20.00	40.00	4657168.80	400778.90
29+20.00	-5.00	-3.50	3.50	5.00	669.84	669.90	669.97	669.90	669.84	40.00	20.00	20.00	40.00	4657182.67	400764.48
29+40.00	-5.00	-3.50	3.50	4.50	670.00	670.06	670.13	670.06	670.02	40.00	20.00	20.00	40.00	4657196.53	400750.07
29+60.00	-5.00	-3.50	3.50	4.50	670.14	670.20	670.27	670.20	670.16	40.00	20.00	20.00	40.00	4657210.40	400735.66
29+80.00	-5.00	-3.50	3.50	4.50	670.26	670.32	670.39	670.32	670.28	40.00	20.00	20.00	40.00	4657224.26	400721.25
30+0.00	-5.00	-3.50	3.50	4.50	670.35	670.41	670.48	670.41	670.37	40.00	20.00	20.00	40.00	4657238.13	400706.83
30+20.00	-5.00	-3.50	3.50	4.50	670.42	670.48	670.55	670.48	670.44	40.00	20.00	20.00	40.00	4657251.99	400692.42
30+40.00	-5.00	-3.50	3.50	4.50	670.50	670.56	670.63	670.56	670.52	40.00	20.00	20.00	40.00	4657265.86	400678.01
30+60.00	-5.00	-3.50	3.50	4.50	670.57	670.63	670.70	670.63	670.59	40.00	20.00	20.00	40.00	4657279.73	400663.59
30+80.00	-5.00	-3.50	3.50	5.00	670.65	670.71	670.78	670.71	670.65	40.00	20.00	20.00	40.00	4657293.59	400649.18
31+0.00	-5.00	-3.50	3.50	5.00	670.72	670.78	670.85	670.78	670.72	40.00	20.00	20.00	40.00	4657307.46	400634.77
31+20.00	-5.00	-3.50	3.50	5.00	670.80	670.86	670.93	670.86	670.80	40.00	20.00	20.00	40.00	4657321.32	400620.35
31+40.00	-5.00	-3.50	3.50	5.00	670.87	670.93	671.00	670.93	670.87	40.00	20.00	20.00	40.00	4657335.19	400605.94
31+60.00	-5.00	-3.50	3.50	5.00	670.95	671.01	671.08	671.01	670.95	40.00	20.00	20.00	40.00	4657349.06	400591.53
31+80.00	-5.00	-3.50	3.50	5.00	671.02	671.08	671.15	671.08	671.02	40.00	20.00	20.00	40.00	4657362.95	400577.14
32+0.00	-5.00	-3.50	3.50	5.00	671.10	671.16	671.23	671.16	671.10	40.00	20.00	20.00	40.00	4657376.87	400562.78
32+20.00	-5.00	-3.50	3.50	5.00	671.17	671.23	671.30	671.23	671.17	40.00	20.00	20.00	40.00	4657390.79	400548.42
32+40.00	-5.00	-3.50	3.50	5.00	671.22	671.28	671.35	671.28	671.22	40.00	20.00	20.00	40.00	4657404.72	400534.07
32+60.00	-5.00	-3.50	3.50	5.00	671.27	671.33	671.40	671.33	671.27	40.00	20.00	20.00	40.00	4657418.64	400519.71
32+80.00	-5.00	-3.50	3.50	5.00	671.30	671.36	671.43	671.36	671.30	40.00	20.00	20.00	40.00	4657432.56	400505.35
33+0.00	-5.00	-3.50	3.50	5.00	671.32	671.38	671.45	671.38	671.32	40.00	20.00	20.00	40.00	4657446.49	400490.99
33+20.00	-5.00	-3.51	3.50	5.00	671.35	671.41	671.48	671.41	671.38	40.00	20.00	19.20	19.20	4657460.41	400476.63
33+30.00	-5.00	-3.67	3.50	5.00	671.36	671.42	671.49	671.45	671.44	40.00	20.00	10.20	10.20	4657467.36	400469.44
33+40.00	-5.00	-3.83	3.50	5.00	671.38	671.42	671.50	671.50	671.50	40.00	20.00	1.20	1.20	4657474.25	400462.20
33+50.00	-5.00	-3.99	3.50	5.00	671.39	671.43	671.51	671.54	671.55	40.00	20.00	-7.80	-7.80	4657481.05	400454.86
33+60.00	-5.15	-4.15	3.50	5.00	671.40	671.44	671.53	671.59	671.61	40.00	20.00	-16.80	-16.80	4657487.69	400447.39
33+70.00	-5.30	-4.30	3.50	5.00	671.40	671.44	671.55	671.63	671.67	40.00	25.00	-25.00	-25.00	4657494.12	400439.73
33+80.00	-5.30	-4.30	3.50	5.00	671.42	671.46	671.57	671.66	671.70	40.00	25.00	-25.00	-25.00	4657500.29	400431.87
33+90.00	-5.30	-4.30	3.50	5.00	671.46	671.50	671.60	671.69	671.73	40.00	25.00	-25.00	-25.00	4657506.21	400423.80
34+0.00	-5.23	-4.23	3.50	5.00	671.51	671.55	671.64	671.72	671.75	40.00	21.26	-21.26	-21.26	4657511.85	400415.54
34+10.00	-5.07	-4.07	3.50	5.00	671.57	671.61	671.69	671.73	671.75	40.00	20.00	-12.26	-12.26	4657517.24	400407.12
34+20.00	-5.00	-3.91	3.50	5.00	671.62	671.66	671.74	671.75	671.76	40.00	20.00	-3.26	-3.26	4657522.43	400398.57
34+30.00	-5.00	-3.75	3.50	5.00	671.66	671.71	671.79	671.77	671.76	40.00	20.00	5.74	5.74	4657527.47	400389.94
34+40.00	-5.00	-3.59	3.50	5.00	671.71	671.77	671.84	671.79	671.77	40.00	20.00	14.74	14.74	4657532.42	400381.25
34+60.00	-5.00	-3.50	3.50	5.00	671.76	671.82	671.89	671.82	671.76	40.00	20.00	20.00	40.00	4657542.26	400363.84
34+80.00	-5.00	-3.50	3.50	5.00	671.73	671.79	671.86	671.79	671.73	40.00	20.00	20.00	40.00	4657552.10	400346.43
35+0.00	-5.00	-3.50	3.50	5.00	671.62	671.68	671.75	671.68	671.62	40.00	20.00	20.00	40.00	4657561.94	400329.01
35+20.00	-5.00	-3.50	3.50	5.00	671.43	671.49	671.56	671.49	671.43	40.00	20.00	20.00	40.00	4657571.78	400311.60
35+40.00	-5.00	-3.50	3.50	5.00	671.16	671.22	671.29	671.22	671.16	40.00	20.00	20.00	40.00	4657581.62	400294.19
35+60.00	-5.00	-3.50	3.50	5.00	670.88	670.94	671.01	670.94	670.88	40.00	20.00	20.00	40.00	4657591.50	400276.80
35+80.00	-5.00	-3.50	3.50	5.00	670.63	670.69	670.76	670.69	670.63	40.00	20.00	20.00	40.00	4657601.37	400259.41

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
36+0.00	-5.00	-3.50	3.50	5.00	670.47	670.53	670.60	670.53	670.47	40.00	20.00	20.00	40.00	4657611.25	400242.02
36+20.00	-5.00	-3.50	3.50	5.00	670.39	670.45	670.52	670.45	670.39	40.00	20.00	20.00	40.00	4657621.13	400224.63
36+40.00	-5.00	-3.50	3.50	5.00	670.36	670.42	670.49	670.42	670.36	40.00	20.00	20.00	40.00	4657631.01	400207.24
36+50.00	-5.00	-3.50	3.50	5.00	670.35	670.41	670.48	670.41	670.35	40.00	20.00	20.00	40.00	4657635.96	400198.55
36+60.00	-5.00	-3.50	3.50	5.00	670.34	670.40	670.47	670.40	670.34	40.00	20.00	20.00	40.00	4657640.91	400189.86
36+70.00	-5.00	-3.50	3.50	5.00	670.34	670.40	670.47	670.40	670.34	40.00	20.00	20.00	40.00	4657645.88	400181.18
36+80.00	-5.00	-3.50	3.50	5.00	670.33	670.39	670.46	670.39	670.33	40.00	20.00	20.00	40.00	4657650.86	400172.51
36+90.00	-5.00	-3.50	3.50	5.00	670.32	670.38	670.45	670.38	670.32	40.00	20.00	20.00	40.00	4657655.85	400163.85
37+0.00	-5.00	-3.50	3.50	5.00	670.31	670.37	670.44	670.37	670.31	40.00	20.00	20.00	40.00	4657660.85	400155.19
37+10.00	-5.00	-3.50	3.50	5.00	670.30	670.36	670.43	670.36	670.30	40.00	20.00	20.00	40.00	4657665.86	400146.53
37+20.00	-5.00	-3.50	3.50	5.00	670.30	670.36	670.43	670.36	670.30	40.00	20.00	20.00	40.00	4657670.89	400137.88
37+30.00	-5.00	-3.50	3.50	5.00	670.31	670.37	670.44	670.37	670.31	40.00	20.00	20.00	40.00	4657675.92	400129.24
37+40.00	-5.00	-3.50	3.50	5.00	670.32	670.38	670.45	670.38	670.32	40.00	20.00	20.00	40.00	4657680.96	400120.61
37+50.00	-5.00	-3.50	3.50	5.00	670.35	670.41	670.48	670.41	670.35	40.00	20.00	20.00	40.00	4657686.02	400111.98
37+60.00	-5.00	-3.50	3.50	5.00	670.38	670.44	670.51	670.44	670.38	40.00	20.00	20.00	40.00	4657691.08	400103.36
37+70.00	-5.00	-3.50	3.50	5.00	670.42	670.48	670.55	670.48	670.42	40.00	20.00	20.00	40.00	4657696.16	400094.74
37+80.00	-5.00	-3.50	3.50	5.00	670.47	670.53	670.60	670.53	670.47	40.00	20.00	20.00	40.00	4657701.25	400086.13
37+90.00	-5.00	-3.50	3.50	5.00	670.53	670.59	670.66	670.59	670.53	40.00	20.00	20.00	40.00	4657706.34	400077.53
38+0.00	-5.00	-3.50	3.50	5.00	670.60	670.66	670.73	670.66	670.60	40.00	20.00	20.00	40.00	4657711.45	400068.93
38+10.00	-5.00	-3.50	3.50	5.00	670.67	670.73	670.80	670.73	670.67	40.00	20.00	20.00	40.00	4657716.57	400060.34
38+20.00	-5.00	-3.50	3.50	5.00	670.75	670.81	670.88	670.81	670.75	40.00	20.00	20.00	40.00	4657721.70	400051.76
38+30.00	-5.00	-3.50	3.50	5.00	670.84	670.90	670.97	670.90	670.84	40.00	20.00	20.00	40.00	4657726.84	400043.18
38+40.00	-5.00	-3.50	3.50	5.00	670.94	671.00	671.07	671.00	670.94	40.00	20.00	20.00	40.00	4657731.99	400034.61
38+50.00	-5.00	-3.50	3.50	5.00	671.05	671.11	671.18	671.11	671.05	40.00	20.00	20.00	40.00	4657737.16	400026.05
38+60.00	-5.00	-3.50	3.50	5.00	671.17	671.23	671.30	671.23	671.17	40.00	20.00	20.00	40.00	4657742.33	400017.49
38+70.00	-5.00	-3.50	3.50	5.00	671.28	671.34	671.41	671.34	671.28	40.00	20.00	20.00	40.00	4657747.51	400008.94
38+80.00	-5.00	-3.50	3.50	5.00	671.37	671.43	671.50	671.43	671.37	40.00	20.00	20.00	40.00	4657752.71	400000.39
38+90.00	-5.00	-3.50	3.50	5.00	671.44	671.50	671.57	671.50	671.44	40.00	20.00	20.00	40.00	4657757.91	399991.85
39+0.00	-5.00	-3.50	3.50	5.00	671.49	671.55	671.62	671.55	671.49	40.00	20.00	20.00	40.00	4657763.13	399983.32
39+20.00	-5.00	-3.50	3.50	5.00	671.59	671.65	671.72	671.65	671.59	40.00	20.00	20.00	40.00	4657773.56	399966.26
39+31.00	-5.00	-3.50	3.50	5.00	671.67	671.73	671.78	671.70	671.64	40.00	14.00	24.00	40.00	4657779.30	399956.87
Section km 9 - km 16															
0+20.00	-4.66	-3.66	3.50	4.50	698.16	698.20	698.27	698.26	698.26	40.00	20.00	1.05	1.05	4661172.83	397693.37
0+30.00	-4.87	-3.87	3.50	4.50	698.12	698.16	698.25	698.33	698.36	40.00	23.95	-23.95	-23.95	4661182.59	397695.55
0+40.00	-4.95	-3.95	3.50	4.50	698.00	698.04	698.18	698.30	698.33	40.00	34.29	-34.29	-34.29	4661192.45	397697.18
0+50.00	-4.75	-3.75	3.50	4.50	697.93	697.97	698.05	698.08	698.09	40.00	20.00	-10.41	-10.41	4661202.40	397698.16
0+60.00	-4.55	-3.55	3.50	4.50	697.75	697.78	697.85	697.78	697.74	27.70	20.00	20.00	40.00	4661212.38	397698.77
0+70.00	-4.50	-3.50	3.50	4.50	697.55	697.56	697.59	697.52	697.48	9.75	9.75	20.00	40.00	4661222.37	397699.30
0+80.00	-4.50	-3.50	3.50	4.50	697.30	697.30	697.27	697.20	697.16	-6.92	-6.92	20.00	40.00	4661232.35	397699.90
0+90.00	-4.50	-3.50	3.50	4.50	697.00	696.97	696.89	696.81	696.77	-23.58	-23.58	23.58	40.00	4661242.32	397700.73
1+0.00	-4.50	-3.50	3.50	4.50	696.63	696.60	696.49	696.39	696.35	-30.00	-30.00	30.00	40.00	4661252.24	397701.96
1+10.00	-4.50	-3.50	3.50	4.50	696.26	696.23	696.12	696.02	695.98	-30.00	-30.00	30.00	40.00	4661262.09	397703.67
1+20.00	-4.50	-3.50	3.50	4.50	695.95	695.92	695.81	695.71	695.67	-30.00	-30.00	30.00	40.00	4661271.84	397705.88
1+30.00	-4.50	-3.50	3.50	4.50	695.69	695.66	695.56	695.45	695.41	-30.00	-30.00	30.00	40.00	4661281.47	397708.57
1+40.00	-4.50	-3.50	3.50	4.50	695.50	695.47	695.37	695.26	695.22	-30.00	-30.00	30.00	40.00	4661290.96	397711.72
1+50.00	-4.50	-3.50	3.50	4.50	695.37	695.34	695.23	695.13	695.09	-30.00	-30.00	30.00	40.00	4661300.29	397715.33
1+60.00	-4.50	-3.50	3.50	4.50	695.29	695.26	695.15	695.05	695.01	-30.00	-30.00	30.00	40.00	4661309.42	397719.39
1+70.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.14	695.03	694.99	-30.00	-30.00	30.00	40.00	4661318.35	397723.91
1+80.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.14	695.03	694.99	-30.00	-30.00	30.00	40.00	4661327.03	397728.86
1+90.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.13	695.03	694.99	-30.00	-30.00	30.00	40.00	4661335.45	397734.25
2+0.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.13	695.03	694.99	-30.00	-30.00	30.00	40.00	4661343.60	397740.05
2+10.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.13	695.03	694.99	-30.00	-30.00	30.00	40.00	4661351.45	397746.25
2+20.00	-4.50	-3.50	3.50	4.50	695.27	695.24	695.13	695.03	694.99	-30.00	-30.00	30.00	40.00	4661358.97	397752.83
2+30.00	-4.50	-3.50	3.50	4.50	695.23	695.21	695.13	695.04	695.00	-23.53	-23.53	23.53	40.00	4661366.17	397759.77
2+40.00	-4.50	-3.50	3.50	4.50	695.13	695.13	695.10	695.03	694.99	-6.87	-6.87	20.00	40.00	4661373.08	397767.00

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2+50.00	-4.50	-3.50	3.50	4.50	695.03	695.04	695.08	695.01	694.97	9.80	9.80	20.00	40.00	4661379.84	397774.37
2+60.00	-4.50	-3.50	3.50	4.50	694.95	694.98	695.05	694.98	694.94	27.76	20.00	20.00	40.00	4661386.54	397781.79
2+80.00	-4.50	-3.50	3.50	4.50	694.89	694.93	695.00	694.93	694.89	40.00	20.00	20.00	40.00	4661399.95	397796.63
3+0.00	-4.50	-3.50	3.50	4.50	694.84	694.88	694.95	694.88	694.84	40.00	20.00	20.00	40.00	4661413.36	397811.47
3+20.00	-4.50	-3.50	3.50	4.50	694.79	694.83	694.90	694.83	694.79	40.00	20.00	20.00	40.00	4661426.76	397826.31
3+40.00	-5.20	-4.00	4.00	5.20	694.73	694.77	694.85	694.77	694.73	40.00	20.00	20.00	40.00	4661440.17	397841.15
4+0.00	-5.36	-4.00	4.00	5.36	694.57	694.63	694.71	694.63	694.57	40.00	20.00	20.00	40.00	4661480.40	397885.67
4+20.00	-4.57	-3.57	3.57	4.57	694.54	694.58	694.66	694.58	694.55	40.00	20.00	20.00	34.12	4661493.80	397900.51
4+30.00	-4.61	-3.61	3.50	4.50	694.52	694.56	694.63	694.58	694.56	40.00	20.00	15.59	15.59	4661500.51	397907.93
4+40.00	-4.99	-3.99	3.50	4.50	694.49	694.53	694.61	694.60	694.60	40.00	20.00	0.59	0.59	4661507.34	397915.23
4+50.00	-5.36	-4.36	3.50	4.50	694.45	694.49	694.58	694.63	694.65	40.00	20.00	-14.41	-14.41	4661514.61	397922.09
4+60.00	-5.74	-4.74	3.50	4.50	694.38	694.42	694.56	694.66	694.69	40.00	29.41	-29.41	-29.41	4661522.62	397928.07
4+70.00	-6.00	-5.00	3.50	4.50	694.29	694.33	694.53	694.67	694.71	40.00	40.00	-40.00	-40.00	4661531.48	397932.67
4+80.00	-6.00	-5.00	3.50	4.50	694.27	694.31	694.51	694.65	694.69	40.00	40.00	-40.00	-40.00	4661541.07	397935.45
4+90.00	-5.86	-4.86	3.50	4.50	694.29	694.33	694.49	694.61	694.65	40.00	34.30	-34.30	-34.30	4661551.02	397936.26
5+0.00	-5.48	-4.48	3.50	4.50	694.35	694.39	694.48	694.55	694.57	40.00	20.00	-19.30	-19.30	4661560.96	397935.29
5+10.00	-5.11	-4.11	3.50	4.50	694.35	694.39	694.48	694.49	694.49	40.00	20.00	-4.30	-4.30	4661570.70	397933.02
5+20.00	-4.73	-3.73	3.50	4.50	694.36	694.40	694.47	694.44	694.43	40.00	20.00	10.70	10.70	4661580.22	397929.97
5+40.00	-4.50	-3.50	3.50	4.50	694.37	694.41	694.48	694.41	694.37	40.00	20.00	20.00	40.00	4661599.05	397923.23
5+60.00	-4.50	-3.50	3.50	4.50	694.41	694.45	694.52	694.45	694.41	40.00	20.00	20.00	40.00	4661617.87	397916.47
5+80.00	-4.50	-3.50	3.50	4.50	694.46	694.50	694.57	694.50	694.46	40.00	20.00	20.00	40.00	4661636.69	397909.71
6+0.00	-4.50	-3.50	3.52	4.50	694.55	694.57	694.64	694.57	694.53	18.87	18.87	20.00	40.00	4661655.52	397902.95
6+10.00	-4.50	-3.50	3.60	4.50	694.63	694.64	694.68	694.61	694.57	12.20	12.20	20.00	40.00	4661664.93	397899.58
6+20.00	-4.50	-3.50	3.69	4.50	694.70	694.71	694.73	694.66	694.62	5.53	5.53	20.00	40.00	4661674.36	397896.25
6+30.00	-4.50	-3.50	3.78	4.50	694.78	694.78	694.78	694.70	694.67	-1.13	-1.13	20.00	40.00	4661683.82	397892.99
6+40.00	-4.50	-3.50	3.87	4.50	694.86	694.85	694.83	694.75	694.72	-7.80	-7.80	20.00	40.00	4661693.31	397889.85
6+50.00	-4.50	-3.50	3.96	4.50	694.94	694.93	694.88	694.80	694.77	-14.47	-14.47	20.00	40.00	4661702.85	397886.85
6+60.00	-5.00	-3.50	4.05	5.05	695.03	695.00	694.92	694.84	694.80	-21.13	-21.13	21.13	40.00	4661712.44	397884.03
6+70.00	-5.00	-3.50	4.14	5.14	695.11	695.07	694.97	694.86	694.82	-27.80	-27.80	27.80	40.00	4661722.10	397881.44
6+80.00	-5.00	-3.50	4.23	5.23	695.19	695.14	695.02	694.88	694.84	-34.47	-34.47	34.47	40.00	4661731.82	397879.09
6+90.00	-5.00	-3.50	4.30	5.30	695.27	695.21	695.07	694.90	694.86	-40.00	-40.00	40.00	40.00	4661741.61	397877.05
7+0.00	-5.00	-3.50	4.30	5.30	695.32	695.26	695.12	694.95	694.91	-40.00	-40.00	40.00	40.00	4661751.46	397875.33
7+10.00	-5.00	-3.50	4.30	5.30	695.37	695.31	695.17	695.00	694.96	-40.00	-40.00	40.00	40.00	4661761.36	397873.93
7+20.00	-5.00	-3.50	4.30	5.30	695.42	695.36	695.22	695.04	695.00	-40.00	-40.00	40.00	40.00	4661771.30	397872.87
7+30.00	-5.00	-3.50	4.22	5.22	695.43	695.38	695.26	695.12	695.08	-33.75	-33.75	33.75	40.00	4661781.28	397872.14
7+40.00	-5.00	-3.50	4.13	5.13	695.45	695.41	695.31	695.20	695.16	-27.09	-27.09	27.09	40.00	4661791.27	397871.70
7+50.00	-5.00	-3.50	4.04	5.04	695.46	695.43	695.36	695.28	695.24	-20.42	-20.42	20.42	40.00	4661801.27	397871.53
7+60.00	-5.00	-3.50	3.95	5.00	695.48	695.46	695.41	695.33	695.29	-13.75	-13.75	20.00	40.00	4661811.26	397871.58
7+70.00	-5.00	-3.50	3.86	5.00	695.50	695.48	695.46	695.38	695.34	-7.09	-7.09	20.00	40.00	4661821.26	397871.82
7+80.00	-5.00	-3.50	3.77	5.00	695.51	695.51	695.51	695.43	695.38	-0.42	-0.42	20.00	40.00	4661831.25	397872.21
7+90.00	-5.00	-3.50	3.68	5.00	695.53	695.54	695.56	695.48	695.43	6.25	6.25	20.00	40.00	4661841.24	397872.71
8+0.00	-5.00	-3.50	3.59	5.00	695.54	695.56	695.61	695.53	695.48	12.91	12.91	20.00	40.00	4661851.22	397873.29
8+10.00	-5.00	-3.50	3.51	5.00	695.56	695.59	695.65	695.58	695.52	19.58	19.58	20.00	40.00	4661861.21	397873.91
8+20.00	-5.00	-3.50	3.50	5.00	695.58	695.63	695.70	695.63	695.57	38.74	20.00	20.00	40.00	4661871.19	397874.54
8+40.00	-5.00	-3.50	3.50	5.00	695.67	695.73	695.80	695.73	695.67	40.00	20.00	20.00	40.00	4661891.15	397875.80
8+60.00	-5.00	-3.50	3.50	5.00	695.77	695.83	695.90	695.83	695.77	40.00	20.00	20.00	40.00	4661911.11	397877.06
8+80.00	-5.00	-3.50	3.50	5.00	695.87	695.93	696.00	695.93	695.87	40.00	20.00	20.00	40.00	4661931.07	397878.32
9+0.00	-5.00	-3.50	3.50	5.00	695.96	696.02	696.09	696.02	695.96	40.00	20.00	20.00	40.00	4661951.03	397879.58
9+20.00	-5.00	-3.50	3.50	5.00	696.06	696.12	696.19	696.12	696.06	40.00	20.00	20.00	40.00	4661970.99	397880.84
9+40.00	-5.00	-3.50	3.50	5.00	696.14	696.20	696.27	696.20	696.14	40.00	20.00	20.00	40.00	4661990.95	397882.10
9+60.00	-5.00	-3.50	3.50	5.00	696.21	696.27	696.34	696.27	696.21	40.00	20.00	20.00	40.00	4662010.91	397883.36
9+80.00	-5.00	-3.50	3.50	5.00	696.29	696.35	696.42	696.35	696.29	40.00	20.00	20.00	40.00	4662030.87	397884.62
10+0.00	-5.00	-3.50	3.50	5.00	696.37	696.43	696.50	696.43	696.37	40.00	20.00	20.00	40.00	4662050.83	397885.87
10+20.00	-5.00	-3.50	3.50	5.00	696.45	696.51	696.58	696.51	696.45	40.00	20.00	20.00	40.00	4662070.79	397887.13
10+40.00	-5.00	-3.50	3.50	5.00	696.52	696.58	696.65	696.58	696.52	40.00	20.00	20.00	40.00	4662090.75	397888.39

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
10+60.00	-5.00	-3.50	3.50	5.00	696.60	696.66	696.73	696.66	696.60	40.00	20.00	20.00	40.00	4662110.71	397889.65
10+80.00	-5.00	-3.50	3.50	5.00	696.68	696.74	696.81	696.74	696.68	40.00	20.00	20.00	40.00	4662130.67	397890.91
11+0.00	-5.00	-3.50	3.50	5.00	696.76	696.82	696.89	696.82	696.76	40.00	20.00	20.00	40.00	4662150.63	397892.17
11+20.00	-5.00	-3.50	3.50	5.00	696.86	696.92	696.99	696.92	696.86	40.00	20.00	20.00	40.00	4662170.59	397893.43
11+40.00	-5.00	-3.50	3.50	5.00	696.97	697.03	697.10	697.03	696.97	40.00	20.00	20.00	40.00	4662190.55	397894.69
11+60.00	-5.00	-3.50	3.50	5.00	697.09	697.15	697.22	697.15	697.09	40.00	20.00	20.00	40.00	4662210.51	397895.95
11+80.00	-5.00	-3.50	3.50	5.00	697.22	697.28	697.35	697.28	697.22	40.00	20.00	20.00	40.00	4662230.47	397897.21
12+0.00	-5.00	-3.50	3.50	5.00	697.35	697.41	697.48	697.41	697.35	40.00	20.00	20.00	40.00	4662250.43	397898.46
12+20.00	-5.00	-3.50	3.50	5.00	697.48	697.54	697.61	697.54	697.48	40.00	20.00	20.00	40.00	4662270.39	397899.72
12+40.00	-5.00	-3.50	3.50	5.00	697.61	697.67	697.74	697.67	697.61	40.00	20.00	20.00	40.00	4662290.35	397900.98
12+60.00	-5.00	-3.50	3.50	5.00	697.74	697.80	697.87	697.80	697.74	40.00	20.00	20.00	40.00	4662310.31	397902.24
12+80.00	-5.00	-3.50	3.50	5.00	697.87	697.93	698.00	697.93	697.87	40.00	20.00	20.00	40.00	4662330.27	397903.50
13+0.00	-5.00	-3.50	3.50	5.00	698.00	698.06	698.13	698.06	698.00	40.00	20.00	20.00	40.00	4662350.23	397904.76
13+20.00	-5.00	-3.50	3.50	5.00	698.13	698.19	698.26	698.19	698.13	40.00	20.00	20.00	40.00	4662370.19	397906.02
13+40.00	-5.00	-3.50	3.50	5.00	698.28	698.34	698.41	698.34	698.28	40.00	20.00	20.00	40.00	4662390.15	397907.28
13+60.00	-5.00	-3.50	3.50	5.00	698.46	698.52	698.59	698.52	698.46	40.00	20.00	20.00	40.00	4662410.11	397908.55
13+80.00	-5.00	-3.50	3.50	5.00	698.69	698.75	698.82	698.75	698.69	40.00	20.00	20.00	40.00	4662430.07	397909.85
14+0.00	-5.00	-3.50	3.50	5.00	698.96	699.02	699.09	699.02	698.96	40.00	20.00	20.00	40.00	4662450.03	397911.15
14+20.00	-5.00	-3.50	3.50	5.00	699.27	699.33	699.40	699.33	699.27	40.00	20.00	20.00	40.00	4662469.99	397912.45
14+40.00	-5.00	-3.50	3.50	5.00	699.61	699.67	699.74	699.67	699.61	40.00	20.00	20.00	40.00	4662489.94	397913.75
14+60.00	-5.00	-3.50	3.50	5.00	700.00	700.06	700.13	700.06	700.00	40.00	20.00	20.00	40.00	4662509.90	397915.05
14+80.00	-5.00	-3.50	3.50	5.00	700.43	700.49	700.56	700.49	700.43	40.00	20.00	20.00	40.00	4662529.86	397916.36
15+0.00	-5.00	-3.50	3.50	5.00	700.89	700.95	701.02	700.95	700.89	40.00	20.00	20.00	40.00	4662549.82	397917.66
15+20.00	-4.50	-3.00	3.00	4.50	701.38	701.44	701.50	701.44	701.38	40.00	20.00	20.00	40.00	4662569.77	397918.96
15+40.00	-4.50	-3.00	3.00	4.50	701.85	701.91	701.97	701.91	701.85	40.00	20.00	20.00	40.00	4662589.73	397920.26
15+60.00	-4.50	-3.00	3.00	4.50	702.32	702.38	702.44	702.38	702.32	40.00	20.00	20.00	40.00	4662609.69	397921.56
15+80.00	-4.50	-3.00	3.00	4.50	702.79	702.85	702.91	702.85	702.79	40.00	20.00	20.00	40.00	4662629.65	397922.86
16+0.00	-4.50	-3.00	3.00	4.50	703.28	703.34	703.40	703.34	703.28	40.00	20.00	20.00	40.00	4662649.61	397924.16
16+20.00	-4.50	-3.00	3.05	4.50	703.89	703.92	703.97	703.91	703.85	17.29	17.29	20.00	40.00	4662669.56	397925.46
16+30.00	-4.50	-3.00	3.27	4.50	704.27	704.27	704.29	704.23	704.18	5.29	5.29	20.00	40.00	4662679.54	397926.17
16+40.00	-4.50	-3.00	3.49	4.50	704.67	704.66	704.64	704.57	704.53	-6.71	-6.71	20.00	40.00	4662689.49	397927.12
16+50.00	-4.50	-3.00	3.71	4.71	705.10	705.07	705.01	704.94	704.90	-18.71	-18.71	20.00	40.00	4662699.39	397928.51
16+60.00	-4.50	-3.00	3.93	4.93	705.55	705.50	705.41	705.29	705.25	-30.71	-30.71	30.71	40.00	4662709.19	397930.52
16+70.00	-4.50	-3.00	4.09	5.09	706.01	705.95	705.83	705.67	705.63	-39.47	-39.47	39.47	40.00	4662718.77	397933.36
16+80.00	-4.50	-3.00	3.87	4.87	706.38	706.34	706.26	706.15	706.11	-27.47	-27.47	27.47	40.00	4662728.05	397937.09
16+90.00	-4.50	-3.00	3.65	4.65	706.76	706.74	706.69	706.62	706.58	-15.47	-15.47	20.00	40.00	4662737.00	397941.54
17+0.00	-4.50	-3.00	3.43	4.50	707.13	707.13	707.12	707.05	707.01	-3.47	-3.47	20.00	40.00	4662745.67	397946.52
17+10.00	-4.50	-3.00	3.21	4.50	707.50	707.52	707.54	707.48	707.43	8.53	8.53	20.00	40.00	4662754.14	397951.83
17+20.00	-4.50	-3.00	3.00	4.50	707.86	707.89	707.95	707.89	707.83	20.88	20.00	20.00	40.00	4662762.50	397957.32
17+40.00	-4.50	-3.00	3.00	4.50	708.58	708.64	708.70	708.64	708.58	40.00	20.00	20.00	40.00	4662779.20	397968.33
17+60.00	-4.50	-3.00	3.00	4.50	709.25	709.31	709.37	709.31	709.25	40.00	20.00	20.00	40.00	4662795.89	397979.35
17+80.00	-4.50	-3.00	3.00	4.50	709.89	709.95	710.01	709.95	709.89	40.00	20.00	20.00	40.00	4662812.58	397990.36
18+0.00	-4.50	-3.00	3.00	4.50	710.54	710.60	710.66	710.60	710.54	40.00	20.00	20.00	40.00	4662829.27	398001.38
18+20.00	-4.50	-3.00	3.00	4.50	711.19	711.25	711.31	711.25	711.19	40.00	20.00	20.00	40.00	4662845.97	398012.40
18+40.00	-4.50	-3.00	3.00	4.50	711.83	711.89	711.95	711.89	711.83	40.00	20.00	20.00	40.00	4662863.09	398022.72
18+60.00	-4.50	-3.00	3.00	4.50	712.48	712.54	712.60	712.54	712.48	40.00	20.00	20.00	40.00	4662880.35	398032.83
18+80.00	-4.50	-3.00	3.00	4.50	713.12	713.18	713.24	713.18	713.12	40.00	20.00	20.00	40.00	4662897.60	398042.95
19+0.00	-4.50	-3.00	3.00	4.50	713.77	713.83	713.89	713.83	713.77	40.00	20.00	20.00	40.00	4662914.85	398053.07
19+20.00	-4.50	-3.00	3.00	4.50	714.42	714.48	714.54	714.48	714.42	40.00	20.00	20.00	40.00	4662932.10	398063.18
19+40.00	-4.50	-3.00	3.10	4.50	715.13	715.15	715.18	715.12	715.06	10.24	10.24	20.00	40.00	4662949.35	398073.31
19+50.00	-4.50	-3.00	3.20	4.50	715.48	715.49	715.49	715.42	715.37	0.24	0.24	20.00	40.00	4662957.95	398078.41
19+60.00	-4.50	-3.00	3.30	4.50	715.82	715.81	715.78	715.71	715.66	-9.76	-9.76	20.00	40.00	4662966.50	398083.60
19+70.00	-4.50	-3.00	3.40	4.50	716.15	716.12	716.06	715.99	715.94	-19.76	-19.76	20.00	40.00	4662974.97	398088.92
19+80.00	-4.50	-3.00	3.50	4.50	716.45	716.41	716.32	716.22	716.18	-29.76	-29.76	29.76	40.00	4662983.33	398094.40
19+90.00	-4.50	-3.00	3.41	4.50	716.67	716.63	716.57	716.50	716.46	-20.91	-20.91	20.91	40.00	4662991.56	398100.08

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20+0.00	-4.50	-3.00	3.31	4.50	716.87	716.85	716.82	716.75	716.71	-10.91	-10.91	20.00	40.00	4662999.68	398105.92
20+10.00	-4.50	-3.00	3.21	4.50	717.07	717.07	717.07	717.01	716.95	-0.91	-0.91	20.00	40.00	4663007.70	398111.89
20+20.00	-4.50	-3.00	3.11	4.50	717.28	717.29	717.32	717.26	717.20	9.09	9.09	20.00	40.00	4663015.66	398117.94
20+30.00	-4.50	-3.00	3.01	4.50	717.48	717.51	717.57	717.51	717.45	19.09	19.09	20.00	40.00	4663023.58	398124.04
20+40.00	-4.50	-3.00	3.00	4.50	717.70	717.76	717.82	717.76	717.70	38.18	20.00	20.00	40.00	4663031.50	398130.15
20+60.00	-4.50	-3.00	3.00	4.50	718.19	718.25	718.31	718.25	718.19	40.00	20.00	20.00	40.00	4663047.34	398142.37
20+80.00	-4.50	-3.00	3.00	4.50	718.69	718.75	718.81	718.75	718.69	40.00	20.00	20.00	40.00	4663063.18	398154.58
21+0.00	-4.50	-3.00	3.00	4.50	719.19	719.25	719.31	719.25	719.19	40.00	20.00	20.00	40.00	4663079.01	398166.80
21+20.00	-4.50	-3.00	3.00	4.50	719.68	719.74	719.80	719.74	719.68	40.00	20.00	20.00	40.00	4663094.85	398179.01
21+40.00	-4.50	-3.00	3.00	4.50	720.18	720.24	720.30	720.24	720.18	40.00	20.00	20.00	40.00	4663110.68	398191.23
21+60.00	-4.50	-3.00	3.00	4.50	720.68	720.74	720.80	720.74	720.68	40.00	20.00	20.00	40.00	4663126.52	398203.44
21+80.00	-4.50	-3.00	3.00	4.50	721.18	721.24	721.30	721.24	721.18	40.00	20.00	20.00	40.00	4663142.36	398215.66
22+0.00	-4.50	-3.00	3.00	4.50	721.67	721.73	721.79	721.73	721.67	40.00	20.00	20.00	40.00	4663158.06	398228.04
22+20.00	-4.50	-3.00	3.00	4.50	722.17	722.23	722.29	722.23	722.17	40.00	20.00	20.00	40.00	4663173.35	398240.93
22+40.00	-4.50	-3.00	3.00	4.50	722.67	722.73	722.79	722.73	722.67	40.00	20.00	20.00	40.00	4663188.65	398253.81
22+60.00	-4.50	-3.00	3.00	4.50	723.17	723.23	723.29	723.23	723.17	40.00	20.00	20.00	40.00	4663203.95	398266.70
22+80.00	-4.50	-3.00	3.00	4.50	723.66	723.72	723.78	723.72	723.66	40.00	20.00	20.00	40.00	4663219.24	398279.58
23+0.00	-4.50	-3.00	3.00	4.50	724.16	724.22	724.28	724.22	724.16	40.00	20.00	20.00	40.00	4663234.54	398292.47
23+20.00	-4.50	-3.00	3.00	4.50	724.66	724.72	724.78	724.72	724.66	40.00	20.00	20.00	40.00	4663249.83	398305.35
23+40.00	-4.50	-3.00	3.00	4.50	725.15	725.21	725.27	725.21	725.15	40.00	20.00	20.00	40.00	4663265.13	398318.24
23+60.00	-4.50	-3.00	3.00	4.50	725.65	725.71	725.77	725.71	725.65	40.00	20.00	20.00	40.00	4663280.43	398331.12
23+80.00	-4.50	-3.00	3.00	4.50	726.12	726.18	726.24	726.18	726.12	40.00	20.00	20.00	40.00	4663295.72	398344.01
24+0.00	-4.50	-3.00	3.00	4.50	726.58	726.64	726.70	726.64	726.58	40.00	20.00	20.00	40.00	4663311.02	398356.89
24+20.00	-4.50	-3.00	3.00	4.50	727.01	727.07	727.13	727.07	727.01	40.00	20.00	20.00	40.00	4663326.31	398369.78
24+40.00	-4.50	-3.00	3.00	4.50	727.43	727.49	727.55	727.49	727.43	40.00	20.00	20.00	40.00	4663341.61	398382.66
24+60.00	-4.50	-3.00	3.00	4.50	727.83	727.89	727.95	727.89	727.83	40.00	20.00	20.00	40.00	4663356.91	398395.55
24+80.00	-4.50	-3.00	3.00	4.50	728.24	728.30	728.36	728.30	728.24	40.00	20.00	20.00	40.00	4663372.20	398408.44
25+0.00	-4.50	-3.00	3.00	4.50	728.64	728.70	728.76	728.70	728.64	40.00	20.00	20.00	40.00	4663387.50	398421.32
25+20.00	-4.50	-3.00	3.00	4.50	729.01	729.07	729.13	729.07	729.01	40.00	20.00	20.00	40.00	4663402.79	398434.21
25+40.00	-4.50	-3.00	3.00	4.50	729.30	729.36	729.42	729.36	729.30	40.00	20.00	20.00	40.00	4663418.09	398447.09
25+60.00	-4.50	-3.00	3.00	4.50	729.51	729.57	729.63	729.57	729.51	40.00	20.00	20.00	40.00	4663433.39	398459.98
25+80.00	-4.50	-3.00	3.00	4.50	729.63	729.69	729.75	729.69	729.63	40.00	20.00	20.00	40.00	4663448.68	398472.86
26+0.00	-4.50	-3.00	3.00	4.50	729.68	729.74	729.80	729.74	729.68	40.00	20.00	20.00	40.00	4663463.98	398485.75
26+10.00	-4.50	-3.00	3.00	4.50	729.67	729.73	729.79	729.73	729.67	40.00	20.00	20.00	40.00	4663471.62	398492.20
26+20.00	-4.50	-3.00	3.00	4.50	729.65	729.71	729.77	729.71	729.65	40.00	20.00	20.00	40.00	4663479.20	398498.72
26+30.00	-4.50	-3.00	3.00	4.50	729.60	729.66	729.72	729.66	729.60	40.00	20.00	20.00	40.00	4663486.72	398505.31
26+40.00	-4.50	-3.00	3.00	4.50	729.54	729.60	729.66	729.60	729.54	40.00	20.00	20.00	40.00	4663494.17	398511.98
26+50.00	-4.50	-3.00	3.00	4.50	729.45	729.51	729.57	729.51	729.45	40.00	20.00	20.00	40.00	4663501.55	398518.73
26+60.00	-4.50	-3.00	3.00	4.50	729.34	729.40	729.46	729.40	729.34	40.00	20.00	20.00	40.00	4663508.87	398525.54
26+70.00	-4.50	-3.00	3.00	4.50	729.22	729.28	729.34	729.28	729.22	40.00	20.00	20.00	40.00	4663516.12	398532.43
26+80.00	-4.50	-3.00	3.00	4.50	729.07	729.13	729.19	729.13	729.07	40.00	20.00	20.00	40.00	4663523.30	398539.40
26+90.00	-4.50	-3.00	3.00	4.50	728.91	728.97	729.03	728.97	728.91	40.00	20.00	20.00	40.00	4663530.40	398546.43
27+0.00	-4.50	-3.00	3.00	4.50	728.72	728.78	728.84	728.78	728.72	40.00	20.00	20.00	40.00	4663537.44	398553.53
27+10.00	-4.50	-3.00	3.00	4.50	728.51	728.57	728.63	728.57	728.51	40.00	20.00	20.00	40.00	4663544.41	398560.71
27+20.00	-4.50	-3.00	3.00	4.50	728.29	728.35	728.41	728.35	728.29	40.00	20.00	20.00	40.00	4663551.30	398567.95
27+30.00	-4.50	-3.00	3.00	4.50	728.04	728.10	728.16	728.10	728.04	40.00	20.00	20.00	40.00	4663558.12	398575.26
27+40.00	-4.50	-3.00	3.00	4.50	727.77	727.83	727.89	727.83	727.79	40.00	20.00	20.00	32.20	4663564.87	398582.64
27+50.00	-4.50	-3.04	3.00	4.50	727.49	727.55	727.61	727.56	727.54	40.00	20.00	16.10	16.10	4663571.55	398590.08
27+60.00	-4.50	-3.14	3.00	4.50	727.20	727.25	727.32	727.30	727.29	40.00	20.00	6.10	6.10	4663578.23	398597.53
27+70.00	-4.50	-3.24	3.00	4.50	726.91	726.96	727.02	727.03	727.04	40.00	20.00	-3.90	-3.90	4663584.96	398604.92
27+80.00	-4.50	-3.34	3.00	4.50	726.62	726.66	726.73	726.77	726.79	40.00	20.00	-13.90	-13.90	4663591.78	398612.24
27+90.00	-4.50	-3.44	3.00	4.50	726.31	726.35	726.44	726.51	726.54	40.00	23.90	-23.90	-23.90	4663598.72	398619.44
28+0.00	-4.50	-3.50	3.00	4.50	726.01	726.05	726.16	726.25	726.29	40.00	30.00	-30.00	-30.00	4663605.82	398626.48
28+10.00	-4.50	-3.50	3.00	4.50	725.76	725.80	725.91	726.00	726.04	40.00	30.00	-30.00	-30.00	4663613.08	398633.35
28+20.00	-4.50	-3.50	3.00	4.50	725.54	725.58	725.68	725.77	725.82	40.00	30.00	-30.00	-30.00	4663620.52	398640.04

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
28+30.00	-4.50	-3.43	3.00	4.50	725.36	725.40	725.48	725.55	725.58	40.00	23.05	-23.05	-23.05	4663628.12	398646.53
28+40.00	-4.50	-3.33	3.00	4.50	725.19	725.24	725.30	725.34	725.36	40.00	20.00	-13.05	-13.05	4663635.86	398652.87
28+50.00	-4.50	-3.23	3.00	4.50	725.04	725.09	725.15	725.16	725.16	40.00	20.00	-3.05	-3.05	4663643.70	398659.07
28+60.00	-4.50	-3.13	3.00	4.50	724.91	724.96	725.02	725.00	724.99	40.00	20.00	6.95	6.95	4663651.62	398665.18
28+70.00	-4.50	-3.03	3.00	4.50	724.80	724.86	724.92	724.87	724.85	40.00	20.00	16.95	16.95	4663659.57	398671.24
28+80.00	-4.50	-3.00	3.00	4.50	724.71	724.77	724.83	724.77	724.72	40.00	20.00	20.00	33.90	4663667.54	398677.28
29+0.00	-4.50	-3.00	3.00	4.50	724.52	724.58	724.64	724.58	724.52	40.00	20.00	20.00	40.00	4663683.48	398689.37
29+20.00	-4.50	-3.00	3.00	4.50	724.28	724.34	724.40	724.34	724.28	40.00	20.00	20.00	40.00	4663699.41	398701.46
29+40.00	-4.50	-3.00	3.03	4.53	723.99	724.01	724.07	724.01	723.95	17.38	17.38	20.00	40.00	4663715.34	398713.55
29+50.00	-4.50	-3.00	3.13	4.63	723.83	723.84	723.86	723.80	723.74	7.38	7.38	20.00	40.00	4663723.30	398719.60
29+60.00	-4.50	-3.00	3.23	4.73	723.64	723.64	723.63	723.56	723.50	-2.62	-2.62	20.00	40.00	4663731.23	398725.69
29+70.00	-4.00	-3.00	3.33	4.33	723.43	723.42	723.38	723.31	723.27	-12.62	-12.62	20.00	40.00	4663739.11	398731.86
29+80.00	-4.00	-3.00	3.43	4.43	723.23	723.21	723.14	723.06	723.02	-22.62	-22.62	22.62	40.00	4663746.90	398738.12
29+90.00	-4.00	-3.00	3.50	4.50	723.04	723.01	722.92	722.81	722.77	-30.00	-30.00	30.00	40.00	4663754.59	398744.52
30+0.00	-4.00	-3.00	3.50	4.50	722.84	722.81	722.72	722.61	722.57	-30.00	-30.00	30.00	40.00	4663762.14	398751.07
30+10.00	-4.00	-3.00	3.42	4.42	722.62	722.60	722.53	722.46	722.42	-22.46	-22.46	22.46	40.00	4663769.57	398757.76
30+20.00	-4.00	-3.00	3.32	4.32	722.42	722.41	722.37	722.30	722.26	-12.46	-12.46	20.00	40.00	4663776.88	398764.58
30+30.00	-4.00	-3.00	3.22	4.22	722.23	722.23	722.22	722.16	722.12	-2.46	-2.46	20.00	40.00	4663784.11	398771.50
30+40.00	-4.00	-3.00	3.12	4.12	722.06	722.07	722.09	722.03	721.99	7.54	7.54	20.00	40.00	4663791.27	398778.48
30+50.00	-4.00	-3.00	3.02	4.02	721.91	721.93	721.98	721.92	721.88	17.54	17.54	20.00	40.00	4663798.39	398785.50
30+60.00	-4.00	-3.00	3.00	4.00	721.79	721.83	721.89	721.83	721.79	35.08	20.00	20.00	40.00	4663805.51	398792.52
30+80.00	-4.00	-3.00	3.00	4.00	721.66	721.70	721.76	721.70	721.66	40.00	20.00	20.00	40.00	4663819.74	398806.58
31+0.00	-4.00	-3.00	3.00	4.00	721.60	721.64	721.70	721.64	721.60	40.00	20.00	20.00	40.00	4663833.97	398820.63
31+20.00	-4.00	-3.00	3.00	4.00	721.61	721.65	721.71	721.65	721.61	40.00	20.00	20.00	40.00	4663848.20	398834.69
31+40.00	-4.00	-3.00	3.00	4.00	721.66	721.70	721.76	721.70	721.66	37.68	20.00	20.00	40.00	4663862.43	398848.74
31+50.00	-4.00	-3.00	3.02	4.02	721.71	721.73	721.79	721.73	721.69	18.17	18.17	20.00	40.00	4663869.54	398855.77
31+60.00	-4.00	-3.00	3.15	4.15	721.80	721.80	721.81	721.75	721.71	2.38	2.38	20.00	40.00	4663876.64	398862.81
31+70.00	-4.00	-3.00	3.28	4.28	721.89	721.88	721.84	721.77	721.73	-13.41	-13.41	20.00	40.00	4663883.63	398869.96
31+80.00	-4.00	-3.00	3.41	4.41	721.98	721.95	721.86	721.76	721.72	-29.20	-29.20	29.20	40.00	4663890.42	398877.30
31+90.00	-4.00	-3.00	3.47	4.47	722.03	722.00	721.89	721.76	721.72	-36.91	-36.91	36.91	40.00	4663896.91	398884.91
32+0.00	-4.00	-3.00	3.37	4.37	722.00	721.98	721.91	721.82	721.78	-24.23	-24.23	24.23	40.00	4663903.05	398892.80
32+10.00	-4.00	-3.00	3.26	4.26	721.97	721.96	721.92	721.86	721.82	-11.55	-11.55	20.00	40.00	4663908.91	398900.90
32+20.00	-4.00	-3.00	3.16	4.16	721.93	721.93	721.93	721.87	721.83	1.13	1.13	20.00	40.00	4663914.61	398909.12
32+40.00	-4.08	-3.08	3.00	4.00	721.84	721.88	721.94	721.90	721.88	40.00	20.00	13.77	13.77	4663925.87	398925.65
32+50.00	-4.25	-3.25	3.00	4.00	721.83	721.87	721.93	721.93	721.93	40.00	20.00	1.61	1.61	4663931.51	398933.90
32+60.00	-4.41	-3.41	3.00	4.00	721.82	721.86	721.93	721.96	721.97	40.00	20.00	-10.55	-10.55	4663937.32	398942.05
32+70.00	-4.57	-3.57	3.00	4.00	721.80	721.84	721.92	721.99	722.01	40.00	22.72	-22.72	-22.72	4663943.57	398949.85
32+80.00	-4.73	-3.73	3.00	4.00	721.74	721.78	721.91	722.02	722.05	40.00	34.88	-34.88	-34.88	4663950.50	398957.05
32+90.00	-4.79	-3.79	3.00	4.00	721.72	721.76	721.91	722.02	722.06	40.00	38.92	-38.92	-38.92	4663958.28	398963.32
33+0.00	-4.59	-3.59	3.00	4.00	721.79	721.83	721.91	721.98	722.01	40.00	23.92	-23.92	-23.92	4663966.84	398968.48
33+10.00	-4.39	-3.39	3.00	4.00	721.82	721.86	721.93	721.95	721.96	40.00	20.00	-8.92	-8.92	4663975.90	398972.71
33+20.00	-4.19	-3.19	3.00	4.00	721.85	721.89	721.95	721.93	721.93	40.00	20.00	6.08	6.08	4663985.23	398976.31
33+40.00	-4.05	-3.05	3.00	4.00	721.93	721.97	722.03	721.98	721.96	40.00	20.00	16.28	21.88	4664004.14	398982.82
33+50.00	-4.17	-3.17	3.00	4.00	721.99	722.03	722.09	722.08	722.08	40.00	20.00	2.69	2.69	4664013.62	398985.99
33+60.00	-4.30	-3.30	3.00	4.00	722.05	722.09	722.15	722.18	722.19	40.00	20.00	-9.81	-9.81	4664023.16	398988.99
33+70.00	-4.42	-3.42	3.00	4.00	722.11	722.15	722.23	722.30	722.32	40.00	22.31	-22.31	-22.31	4664032.79	398991.67
33+80.00	-4.50	-3.50	3.00	4.00	722.17	722.21	722.31	722.40	722.43	40.00	30.00	-30.00	-30.00	4664042.54	398993.90
33+90.00	-4.50	-3.50	3.00	4.00	722.26	722.30	722.41	722.50	722.53	40.00	30.00	-30.00	-30.00	4664052.40	398995.58
34+0.00	-4.50	-3.50	3.00	4.00	722.37	722.41	722.51	722.60	722.63	40.00	30.00	-30.00	-30.00	4664062.33	398996.72
34+10.00	-4.38	-3.38	3.00	4.00	722.52	722.56	722.63	722.68	722.70	40.00	20.00	-17.67	-17.67	4664072.31	398997.33
34+20.00	-4.25	-3.25	3.00	4.00	722.65	722.69	722.75	722.77	722.77	40.00	20.00	-5.17	-5.17	4664082.31	398997.52
34+30.00	-4.13	-3.13	3.00	4.00	722.79	722.83	722.89	722.87	722.86	40.00	20.00	7.33	7.33	4664092.31	398997.42
34+40.00	-4.00	-3.00	3.00	4.00	722.93	722.97	723.03	722.97	722.96	40.00	20.00	19.83	19.83	4664102.31	398997.18
34+60.00	-4.00	-3.00	3.00	4.00	723.25	723.29	723.35	723.29	723.25	40.00	20.00	20.00	40.00	4664122.30	398996.65
34+80.00	-4.00	-3.00	3.00	4.00	723.57	723.61	723.67	723.61	723.57	40.00	20.00	20.00	40.00	4664142.29	398996.12

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
34+90.00	-4.00	-3.00	3.00	4.00	723.72	723.76	723.82	723.76	723.72	40.00	20.00	20.00	40.00	4664152.28	398995.74
35+0.00	-4.00	-3.00	3.00	4.00	723.88	723.92	723.98	723.92	723.88	40.00	20.00	20.00	40.00	4664162.27	398995.16
35+10.00	-4.00	-3.00	3.00	4.00	724.04	724.08	724.14	724.08	724.04	40.00	20.00	20.00	40.00	4664172.24	398994.38
35+20.00	-4.00	-3.00	3.00	4.00	724.20	724.24	724.30	724.24	724.20	40.00	20.00	20.00	40.00	4664182.19	398993.40
35+30.00	-4.00	-3.00	3.00	4.00	724.36	724.40	724.46	724.40	724.36	40.00	20.00	20.00	40.00	4664192.12	398992.22
35+40.00	-4.00	-3.00	3.00	4.00	724.52	724.56	724.62	724.56	724.52	40.00	20.00	20.00	40.00	4664202.03	398990.92
35+60.00	-4.00	-3.00	3.00	4.00	724.83	724.87	724.93	724.87	724.83	40.00	20.00	20.00	40.00	4664221.86	398988.32
35+80.00	-4.00	-3.00	3.00	4.00	725.15	725.19	725.25	725.19	725.15	40.00	20.00	20.00	40.00	4664241.69	398985.72
36+0.00	-4.00	-3.00	3.00	4.00	725.47	725.51	725.57	725.51	725.49	40.00	20.00	20.00	23.26	4664261.52	398983.11
36+10.00	-4.50	-3.50	3.00	4.00	725.62	725.66	725.73	725.73	725.73	40.00	20.00	-0.92	-0.92	4664271.43	398981.73
36+20.00	-5.10	-4.10	3.00	4.00	725.74	725.78	725.89	725.96	725.99	40.00	25.93	-25.92	-25.92	4664281.20	398979.65
36+30.00	-4.71	-3.71	3.00	4.00	725.93	725.97	726.04	725.98	725.94	37.66	20.00	20.00	40.00	4664290.60	398976.24
36+40.00	-4.11	-3.11	3.03	4.03	726.12	726.13	726.19	726.13	726.09	17.94	17.94	20.00	40.00	4664299.62	398971.93
36+50.00	-4.00	-3.00	3.26	4.26	726.31	726.31	726.32	726.25	726.21	0.32	0.32	20.00	40.00	4664308.57	398967.47
36+60.00	-4.00	-3.00	3.50	4.50	726.49	726.47	726.42	726.35	726.31	-17.29	-17.29	20.00	40.00	4664317.83	398963.73
36+70.00	-4.00	-3.00	3.73	4.73	726.65	726.61	726.51	726.38	726.34	-34.91	-34.91	34.91	40.00	4664327.62	398961.80
36+80.00	-4.00	-3.00	3.69	4.69	726.70	726.67	726.57	726.46	726.42	-31.71	-31.71	31.71	40.00	4664337.53	398962.75
36+90.00	-4.00	-3.00	3.49	4.49	726.68	726.67	726.62	726.55	726.51	-16.53	-16.53	20.00	40.00	4664346.85	398966.34
37+0.00	-4.00	-3.00	3.28	4.28	726.65	726.65	726.64	726.58	726.54	-1.36	-1.36	20.00	40.00	4664355.47	398971.39
37+20.00	-4.16	-3.16	3.00	4.00	726.53	726.57	726.63	726.60	726.59	40.00	20.00	10.52	10.52	4664372.14	398982.45
37+30.00	-4.42	-3.42	3.00	4.00	726.49	726.53	726.60	726.62	726.62	40.00	20.00	-5.47	-5.47	4664380.48	398987.96
37+40.00	-4.69	-3.69	3.00	4.00	726.43	726.47	726.55	726.61	726.63	40.00	21.46	-21.45	-21.45	4664389.02	398993.15
37+50.00	-4.96	-3.96	3.00	4.00	726.28	726.32	726.47	726.58	726.62	40.00	37.44	-37.44	-37.44	4664398.03	398997.49
37+60.00	-4.83	-3.83	3.00	4.00	726.24	726.28	726.39	726.48	726.51	40.00	29.88	-29.88	-29.88	4664407.57	399000.44
37+70.00	-4.51	-3.51	3.00	4.00	726.20	726.24	726.31	726.35	726.36	40.00	20.00	-10.60	-10.60	4664417.43	399002.08
37+80.00	-4.19	-3.19	3.00	4.00	726.14	726.17	726.24	726.18	726.14	31.74	20.00	20.00	40.00	4664427.39	399002.96
37+90.00	-4.00	-3.00	3.10	4.10	726.10	726.11	726.16	726.09	726.05	13.77	13.77	20.00	40.00	4664437.37	399003.63
38+0.00	-4.00	-3.00	3.34	4.34	726.08	726.08	726.08	726.01	725.97	-1.33	-1.33	20.00	40.00	4664447.34	399004.34
38+10.00	-4.00	-3.00	3.58	4.58	726.06	726.05	726.00	725.93	725.89	-16.43	-16.43	20.00	40.00	4664457.30	399005.23
38+20.00	-4.00	-3.00	3.80	4.80	726.04	726.01	725.92	725.80	725.76	-30.00	-30.00	30.00	40.00	4664467.23	399006.46
38+30.00	-4.00	-3.00	3.80	4.80	725.96	725.93	725.84	725.73	725.69	-30.00	-30.00	30.00	40.00	4664477.08	399008.17
38+40.00	-4.00	-3.00	3.80	4.80	725.90	725.87	725.78	725.66	725.62	-30.00	-30.00	30.00	40.00	4664486.83	399010.37
38+50.00	-4.00	-3.00	3.57	4.57	725.78	725.77	725.72	725.65	725.61	-15.67	-15.67	20.00	40.00	4664496.47	399013.04
38+60.00	-4.00	-3.00	3.31	4.31	725.67	725.67	725.67	725.61	725.57	0.70	0.70	20.00	40.00	4664506.00	399016.05
38+70.00	-4.00	-3.00	3.05	4.05	725.54	725.58	725.64	725.58	725.56	40.00	20.00	20.00	23.58	4664515.48	399019.23
38+80.00	-4.30	-3.30	3.00	4.00	725.51	725.55	725.62	725.60	725.59	40.00	20.00	6.55	6.55	4664524.96	399022.44
38+90.00	-4.66	-3.66	3.00	4.00	725.49	725.53	725.60	725.63	725.64	40.00	20.00	-9.82	-9.82	4664534.51	399025.40
39+0.00	-5.02	-4.02	3.00	4.00	725.45	725.49	725.60	725.68	725.70	40.00	26.20	-26.20	-26.20	4664544.21	399027.80
39+10.00	-4.97	-3.97	3.00	4.00	725.47	725.51	725.61	725.68	725.70	40.00	23.87	-23.87	-23.87	4664554.09	399029.32
39+20.00	-4.60	-3.60	3.00	4.00	725.51	725.55	725.62	725.65	725.65	40.00	20.00	-7.20	-7.20	4664564.07	399029.99
39+30.00	-4.23	-3.23	3.00	4.00	725.55	725.59	725.65	725.62	725.61	40.00	20.00	9.47	9.47	4664574.07	399030.10
39+40.00	-4.00	-3.00	3.00	4.00	725.59	725.63	725.69	725.63	725.60	40.00	20.00	20.00	31.95	4664584.06	399030.00
39+60.00	-4.15	-3.15	3.00	4.00	725.70	725.74	725.80	725.77	725.76	40.00	20.00	10.60	10.60	4664604.06	399029.77
39+70.00	-4.35	-3.35	3.00	4.00	725.76	725.80	725.87	725.88	725.88	40.00	20.00	-1.90	-1.90	4664614.06	399029.57
39+80.00	-4.55	-3.55	3.00	4.00	725.84	725.88	725.95	725.99	726.01	40.00	20.00	-14.40	-14.40	4664624.05	399029.17
39+90.00	-4.75	-3.75	3.00	4.00	725.90	725.94	726.04	726.12	726.15	40.00	26.90	-26.90	-26.90	4664634.03	399028.48
40+0.00	-4.79	-3.79	3.00	4.00	725.99	726.03	726.14	726.23	726.26	40.00	29.24	-29.24	-29.24	4664643.97	399027.40
40+10.00	-4.66	-3.66	3.00	4.00	726.14	726.18	726.26	726.32	726.34	40.00	21.29	-21.29	-21.29	4664653.86	399025.90
40+20.00	-4.53	-3.53	3.00	4.00	726.27	726.31	726.38	726.42	726.43	40.00	20.00	-13.33	-13.33	4664663.69	399024.09
40+30.00	-4.41	-3.41	3.00	4.00	726.41	726.45	726.51	726.53	726.54	40.00	20.00	-5.37	-5.37	4664673.49	399022.08
40+40.00	-4.28	-3.28	3.00	4.00	726.55	726.59	726.66	726.65	726.65	40.00	20.00	2.59	2.59	4664683.26	399019.97
40+60.00	-4.02	-3.02	3.00	4.00	726.89	726.92	726.98	726.92	726.88	23.76	20.00	20.00	40.00	4664702.81	399015.73
40+80.00	-4.00	-3.00	3.14	4.14	727.31	727.32	727.33	727.27	727.23	5.58	5.58	20.00	40.00	4664722.35	399011.48
40+90.00	-4.00	-3.00	3.22	4.22	727.52	727.52	727.51	727.45	727.41	-2.37	-2.37	20.00	40.00	4664732.12	399009.36
41+0.00	-4.00	-3.00	3.30	4.30	727.73	727.72	727.69	727.63	727.59	-10.33	-10.33	20.00	40.00	4664741.91	399007.31

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
41+10.00	-4.00	-3.00	3.38	4.38	727.95	727.93	727.87	727.80	727.76	-18.29	-18.29	20.00	40.00	4664751.73	399005.44
41+20.00	-4.00	-3.00	3.46	4.46	728.16	728.13	728.05	727.96	727.92	-26.24	-26.24	26.24	40.00	4664761.61	399003.88
41+30.00	-4.00	-3.00	3.50	4.50	728.35	728.32	728.23	728.13	728.09	-30.00	-30.00	30.00	40.00	4664771.55	399002.75
41+40.00	-4.00	-3.00	3.48	4.48	728.52	728.50	728.41	728.31	728.27	-28.45	-28.45	28.45	40.00	4664781.52	399002.12
41+50.00	-4.00	-3.00	3.38	4.38	728.66	728.65	728.59	728.52	728.48	-18.23	-18.23	20.00	40.00	4664791.52	399001.96
41+60.00	-4.00	-3.00	3.28	4.28	728.83	728.82	728.80	728.73	728.69	-8.01	-8.01	20.00	40.00	4664801.52	399002.16
41+70.00	-4.00	-3.00	3.18	4.18	729.09	729.09	729.10	729.03	728.99	2.20	2.20	20.00	40.00	4664811.51	399002.59
41+80.00	-4.00	-3.00	3.08	4.08	729.40	729.44	729.50	729.44	729.40	40.00	20.00	20.00	34.84	4664821.50	399003.12
42+0.00	-4.13	-3.13	3.00	4.00	730.50	730.54	730.60	730.58	730.58	40.00	20.00	7.15	7.15	4664841.47	399004.22
42+10.00	-4.23	-3.23	3.00	4.00	731.20	731.24	731.31	731.32	731.32	40.00	20.00	-3.07	-3.07	4664851.45	399004.72
42+20.00	-4.33	-3.33	3.00	4.00	731.98	732.02	732.08	732.12	732.14	40.00	20.00	-13.29	-13.29	4664861.45	399005.05
42+30.00	-4.44	-3.44	3.00	4.00	732.74	732.78	732.86	732.93	732.96	40.00	23.50	-23.50	-23.50	4664871.45	399005.08
42+40.00	-4.50	-3.50	3.00	4.00	733.50	733.54	733.64	733.73	733.76	40.00	30.00	-30.00	-30.00	4664881.44	399004.70
42+50.00	-4.50	-3.50	3.00	4.00	734.27	734.31	734.41	734.50	734.53	40.00	30.00	-30.00	-30.00	4664891.40	399003.82
42+60.00	-4.47	-3.47	3.00	4.00	735.00	735.04	735.13	735.21	735.24	40.00	27.19	-27.19	-27.19	4664901.30	399002.45
42+70.00	-4.35	-3.35	3.00	4.00	735.67	735.71	735.78	735.83	735.84	40.00	20.00	-14.69	-14.69	4664911.13	399000.62
42+80.00	-4.22	-3.22	3.00	4.00	736.26	736.30	736.37	736.37	736.37	40.00	20.00	-2.19	-2.19	4664920.90	398998.45
42+90.00	-4.10	-3.10	3.00	4.00	736.78	736.82	736.88	736.85	736.84	40.00	20.00	10.31	10.31	4664930.61	398996.06
43+0.00	-4.00	-3.00	3.00	4.00	737.23	737.27	737.33	737.27	737.25	40.00	20.00	20.00	24.50	4664940.29	398993.58
43+10.00	-4.00	-3.00	3.00	4.00	737.62	737.66	737.72	737.66	737.62	40.00	20.00	20.00	40.00	4664950.01	398991.22
43+20.00	-4.00	-3.00	3.00	4.00	737.94	737.98	738.04	737.98	737.94	40.00	20.00	20.00	40.00	4664959.77	398989.06
43+30.00	-4.00	-3.00	3.00	4.00	738.19	738.23	738.29	738.23	738.19	40.00	20.00	20.00	40.00	4664969.58	398987.09
43+40.00	-4.00	-3.00	3.00	4.00	738.37	738.41	738.47	738.41	738.37	40.00	20.00	20.00	40.00	4664979.42	398985.32
43+50.00	-4.00	-3.00	3.00	4.00	738.50	738.54	738.60	738.54	738.50	40.00	20.00	20.00	40.00	4664989.30	398983.74
43+60.00	-4.00	-3.00	3.00	4.00	738.63	738.67	738.73	738.67	738.63	40.00	20.00	20.00	40.00	4664999.19	398982.27
43+80.00	-4.00	-3.00	3.00	4.00	738.89	738.93	738.99	738.93	738.89	40.00	20.00	20.00	40.00	4665018.97	398979.32
44+0.00	-4.00	-3.00	3.15	4.15	739.20	739.21	739.24	739.18	739.14	10.55	10.55	20.00	40.00	4665038.75	398976.38
44+10.00	-4.00	-3.00	3.31	4.31	739.37	739.37	739.37	739.31	739.27	0.55	0.55	20.00	40.00	4665048.65	398974.98
44+20.00	-4.00	-3.00	3.47	4.47	739.55	739.54	739.52	739.45	739.41	-9.45	-9.45	20.00	40.00	4665058.57	398973.70
44+30.00	-4.00	-3.00	3.63	4.63	739.75	739.73	739.67	739.60	739.56	-19.45	-19.45	20.00	40.00	4665068.51	398972.62
44+40.00	-4.00	-3.00	3.79	4.79	739.96	739.93	739.84	739.73	739.69	-29.45	-29.45	29.45	40.00	4665078.48	398971.80
44+50.00	-4.00	-3.00	3.80	4.80	740.15	740.12	740.03	739.91	739.87	-30.00	-30.00	30.00	40.00	4665088.46	398971.30
44+60.00	-4.00	-3.00	3.68	4.68	740.32	740.30	740.23	740.14	740.10	-22.76	-22.76	22.76	40.00	4665098.46	398971.13
44+70.00	-4.00	-3.00	3.52	4.52	740.49	740.48	740.44	740.37	740.33	-12.76	-12.76	20.00	40.00	4665108.46	398971.24
44+80.00	-4.00	-3.00	3.36	4.36	740.66	740.66	740.65	740.58	740.54	-2.76	-2.76	20.00	40.00	4665118.45	398971.57
44+90.00	-4.00	-3.00	3.20	4.20	740.83	740.84	740.86	740.79	740.75	7.24	7.24	20.00	40.00	4665128.44	398972.06
45+0.00	-4.00	-3.00	3.04	4.04	740.99	741.00	741.05	740.99	740.95	17.24	17.24	20.00	40.00	4665138.43	398972.63
45+20.00	-4.00	-3.00	3.00	4.00	741.25	741.29	741.35	741.29	741.25	40.00	20.00	20.00	40.00	4665158.39	398973.81
45+40.00	-4.00	-3.00	3.00	4.00	741.41	741.45	741.51	741.45	741.41	40.00	20.00	20.00	40.00	4665178.36	398975.00
45+60.00	-4.00	-3.00	3.00	4.00	741.45	741.49	741.55	741.49	741.45	40.00	20.00	20.00	40.00	4665198.32	398976.19
45+80.00	-4.00	-3.00	3.00	4.00	741.45	741.49	741.55	741.49	741.45	40.00	20.00	20.00	40.00	4665218.23	398978.00
46+0.00	-4.00	-3.00	3.00	4.00	741.45	741.49	741.55	741.49	741.45	40.00	20.00	20.00	40.00	4665238.11	398980.20
46+20.00	-4.00	-3.00	3.00	4.00	741.45	741.49	741.55	741.49	741.45	40.00	20.00	20.00	40.00	4665257.99	398982.41
46+40.00	-4.00	-3.00	3.00	4.00	741.46	741.50	741.56	741.50	741.46	40.00	20.00	20.00	40.00	4665277.87	398984.61
46+60.00	-4.00	-3.00	3.00	4.00	741.52	741.56	741.62	741.56	741.52	40.00	20.00	20.00	40.00	4665297.74	398986.82
46+80.00	-4.00	-3.00	3.00	4.00	741.59	741.63	741.69	741.63	741.59	40.00	20.00	20.00	40.00	4665317.62	398989.03
47+0.00	-4.00	-3.00	3.09	4.09	741.82	741.83	741.86	741.80	741.76	11.12	11.12	20.00	40.00	4665337.55	398990.77
47+10.00	-4.00	-3.00	3.26	4.26	742.05	742.05	742.03	741.96	741.92	-5.55	-5.55	20.00	40.00	4665347.50	398991.66
47+20.00	-4.00	-3.00	3.42	4.42	742.33	742.31	742.24	742.17	742.13	-22.22	-22.22	22.22	40.00	4665357.43	398992.85
47+30.00	-4.00	-3.00	3.50	4.50	742.63	742.60	742.51	742.40	742.36	-30.00	-30.00	30.00	40.00	4665367.29	398994.54
47+40.00	-4.00	-3.00	3.50	4.50	742.94	742.91	742.82	742.72	742.68	-30.00	-30.00	30.00	40.00	4665377.02	398996.84
47+50.00	-4.00	-3.00	3.39	4.39	743.26	743.24	743.18	743.12	743.08	-18.55	-18.55	20.00	40.00	4665386.59	398999.73
47+60.00	-4.00	-3.00	3.23	4.23	743.61	743.61	743.60	743.53	743.49	-2.70	-2.70	20.00	40.00	4665396.00	399003.11
47+70.00	-4.00	-3.00	3.07	4.07	743.96	744.00	744.06	744.00	743.97	40.00	20.00	20.00	28.66	4665405.31	399006.77
47+80.00	-4.09	-3.09	3.00	4.00	744.47	744.51	744.58	744.55	744.54	40.00	20.00	9.22	9.22	4665414.57	399010.52

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
47+90.00	-4.25	-3.25	3.00	4.00	745.04	745.08	745.14	745.17	745.18	40.00	20.00	-9.79	-9.79	4665423.90	399014.13
48+0.00	-4.41	-3.41	3.00	4.00	745.62	745.66	745.75	745.84	745.87	40.00	28.80	-28.80	-28.80	4665433.41	399017.23
48+10.00	-4.50	-3.50	3.00	4.00	746.24	746.28	746.42	746.54	746.58	40.00	40.00	-40.00	-40.00	4665443.15	399019.48
48+20.00	-4.50	-3.50	3.00	4.00	746.95	746.99	747.13	747.25	747.29	40.00	40.00	-40.00	-40.00	4665453.07	399020.64
48+30.00	-4.34	-3.34	3.00	4.00	747.75	747.79	747.86	747.93	747.95	40.00	21.32	-21.32	-21.32	4665463.07	399020.74
48+40.00	-4.18	-3.18	3.00	4.00	748.49	748.53	748.60	748.60	748.60	40.00	20.00	-1.32	-1.32	4665473.04	399020.07
48+50.00	-4.01	-3.01	3.00	4.00	749.23	749.27	749.33	749.27	749.25	40.00	20.00	18.68	18.68	4665482.98	399018.98
48+60.00	-4.00	-3.00	3.00	4.00	749.96	750.00	750.06	750.00	749.96	40.00	20.00	20.00	38.68	4665492.92	399017.82
48+80.00	-4.00	-3.00	3.00	4.00	751.42	751.46	751.52	751.46	751.42	40.00	20.00	20.00	40.00	4665512.78	399015.48
49+0.00	-4.00	-3.00	3.00	4.00	752.97	753.01	753.07	753.01	752.97	40.00	20.00	20.00	40.00	4665532.64	399013.15
49+20.00	-4.00	-3.00	3.20	4.20	754.77	754.77	754.76	754.69	754.65	-3.52	-3.52	20.00	40.00	4665552.51	399010.85
49+30.00	-4.00	-3.00	3.49	4.49	755.82	755.78	755.66	755.52	755.48	-39.29	-39.29	39.29	40.00	4665562.49	399010.20
49+40.00	-4.00	-3.00	3.17	4.17	756.50	756.54	756.60	756.54	756.51	40.00	20.00	20.00	30.04	4665572.48	399010.54
49+50.00	-4.25	-3.25	3.00	4.00	757.47	757.51	757.57	757.54	757.53	40.00	20.00	10.11	10.11	4665582.45	399011.31
49+60.00	-4.74	-3.74	3.00	4.00	758.31	758.35	758.43	758.46	758.47	40.00	20.00	-9.76	-9.76	4665592.43	399011.77
49+70.00	-5.24	-4.24	3.00	4.00	758.95	758.99	759.12	759.21	759.24	40.00	29.63	-29.63	-29.63	4665602.41	399011.24
49+80.00	-5.39	-4.39	3.00	4.00	759.44	759.48	759.64	759.75	759.78	40.00	35.54	-35.54	-35.54	4665612.17	399009.11
49+90.00	-4.91	-3.91	3.00	4.00	759.88	759.92	760.00	760.05	760.06	40.00	20.00	-16.47	-16.47	4665621.39	399005.28
50+0.00	-4.44	-3.44	3.00	4.00	760.08	760.12	760.19	760.13	760.09	38.26	20.00	20.00	40.00	4665630.11	399000.38
50+20.00	-4.00	-3.00	3.21	4.21	760.34	760.34	760.36	760.30	760.26	6.89	6.89	20.00	40.00	4665646.99	398989.66
50+30.00	-4.00	-3.00	3.40	4.40	760.47	760.47	760.45	760.38	760.34	-5.17	-5.17	20.00	40.00	4665655.48	398984.38
50+40.00	-4.00	-3.00	3.60	4.60	760.61	760.59	760.54	760.47	760.43	-17.23	-17.23	20.00	40.00	4665664.10	398979.31
50+50.00	-4.00	-3.00	3.79	4.79	760.74	760.71	760.63	760.51	760.47	-29.29	-29.29	29.29	40.00	4665672.90	398974.56
50+60.00	-4.00	-3.00	3.80	4.80	760.83	760.80	760.71	760.60	760.56	-30.00	-30.00	30.00	40.00	4665681.91	398970.23
50+70.00	-4.00	-3.00	3.69	4.69	760.89	760.87	760.80	760.71	760.67	-23.32	-23.32	23.33	40.00	4665691.13	398966.35
50+80.00	-4.00	-3.00	3.49	4.49	760.93	760.92	760.89	760.82	760.78	-10.82	-10.82	20.00	40.00	4665700.51	398962.87
50+90.00	-4.00	-3.00	3.29	4.29	760.99	761.00	761.00	760.94	760.90	1.68	1.68	20.00	40.00	4665709.99	398959.69
51+0.00	-4.00	-3.00	3.09	4.09	761.07	761.09	761.13	761.07	761.03	14.18	14.18	20.00	40.00	4665719.52	398956.68
51+20.00	-4.00	-3.00	3.00	4.00	761.35	761.39	761.45	761.39	761.35	40.00	20.00	20.00	40.00	4665738.64	398950.79
51+30.00	-4.00	-3.00	3.00	4.00	761.54	761.58	761.64	761.58	761.54	40.00	20.00	20.00	40.00	4665748.20	398947.87
51+40.00	-4.00	-3.00	3.00	4.00	761.74	761.78	761.84	761.78	761.74	40.00	20.00	20.00	40.00	4665757.79	398945.04
51+50.00	-4.00	-3.00	3.00	4.00	761.92	761.96	762.02	761.96	761.92	40.00	20.00	20.00	40.00	4665767.41	398942.32
51+60.00	-4.00	-3.00	3.00	4.00	762.05	762.09	762.15	762.09	762.05	40.00	20.00	20.00	40.00	4665777.06	398939.70
51+70.00	-4.00	-3.00	3.00	4.00	762.14	762.18	762.24	762.18	762.14	40.00	20.00	20.00	40.00	4665786.75	398937.20
51+80.00	-4.00	-3.00	3.00	4.00	762.19	762.23	762.29	762.23	762.19	40.00	20.00	20.00	40.00	4665796.45	398934.80
51+90.00	-4.00	-3.00	3.00	4.00	762.20	762.24	762.30	762.24	762.20	40.00	20.00	20.00	40.00	4665806.19	398932.51
52+0.00	-4.00	-3.00	3.00	4.00	762.18	762.22	762.28	762.22	762.18	40.00	20.00	20.00	40.00	4665815.95	398930.32
52+10.00	-4.00	-3.00	3.00	4.00	762.18	762.22	762.28	762.22	762.18	40.00	20.00	20.00	40.00	4665825.73	398928.25
52+20.00	-4.00	-3.00	3.00	4.00	762.20	762.24	762.30	762.24	762.20	40.00	20.00	20.00	40.00	4665835.53	398926.28
52+40.00	-4.00	-3.00	3.00	4.00	762.31	762.35	762.41	762.35	762.31	40.00	20.00	20.00	40.00	4665855.16	398922.42
52+60.00	-4.00	-3.00	3.00	4.00	762.48	762.52	762.58	762.52	762.48	40.00	20.00	20.00	40.00	4665874.78	398918.55
52+80.00	-4.00	-3.00	3.00	4.00	762.66	762.70	762.76	762.70	762.66	40.00	20.00	20.00	40.00	4665894.40	398914.69
53+0.00	-4.00	-3.00	3.00	4.00	762.84	762.88	762.94	762.88	762.84	40.00	20.00	20.00	40.00	4665914.03	398910.83
53+20.00	-4.00	-3.00	3.00	4.00	763.01	763.05	763.11	763.05	763.01	40.00	20.00	20.00	40.00	4665933.65	398906.96
53+40.00	-4.00	-3.00	3.00	4.00	763.19	763.23	763.29	763.23	763.19	40.00	20.00	20.00	40.00	4665953.27	398903.10
53+60.00	-4.00	-3.00	3.00	4.00	763.37	763.41	763.47	763.41	763.37	40.00	20.00	20.00	40.00	4665972.90	398899.24
53+80.00	-4.00	-3.00	3.00	4.00	763.54	763.58	763.64	763.58	763.54	40.00	20.00	20.00	40.00	4665992.52	398895.37
54+0.00	-4.00	-3.00	3.00	4.00	763.67	763.70	763.76	763.70	763.66	25.20	20.00	20.00	40.00	4666012.14	398891.51
54+10.00	-4.00	-3.00	3.05	4.00	763.64	763.66	763.70	763.64	763.60	15.38	15.38	20.00	40.00	4666021.95	398889.58
54+20.00	-4.00	-3.00	3.11	4.00	763.53	763.54	763.56	763.50	763.46	9.13	9.13	20.00	40.00	4666031.77	398887.67
54+30.00	-4.00	-3.00	3.17	4.00	763.33	763.33	763.34	763.28	763.24	2.88	2.88	20.00	40.00	4666041.59	398885.80
54+40.00	-4.00	-3.00	3.23	4.00	763.05	763.05	763.04	762.97	762.94	-3.37	-3.37	20.00	40.00	4666051.43	398883.99
54+50.00	-4.00	-3.00	3.30	4.00	762.69	762.68	762.65	762.58	762.55	-9.62	-9.62	20.00	40.00	4666061.28	398882.28
54+60.00	-4.00	-3.00	3.36	4.00	762.24	762.22	762.18	762.11	762.08	-15.87	-15.87	20.00	40.00	4666071.15	398880.69
54+70.00	-4.00	-3.00	3.42	4.00	761.71	761.69	761.62	761.55	761.53	-22.12	-22.12	22.12	40.00	4666081.05	398879.24

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
54+80.00	-4.50	-3.00	3.48	4.50	761.18	761.14	761.06	760.96	760.92	-28.37	-28.37	28.37	40.00	4666090.96	398877.95
54+90.00	-4.50	-3.00	3.50	4.50	760.62	760.58	760.49	760.38	760.34	-30.00	-30.00	30.00	40.00	4666100.90	398876.85
55+0.00	-4.50	-3.00	3.50	4.50	760.06	760.01	759.92	759.82	759.78	-30.00	-30.00	30.00	40.00	4666110.86	398875.96
55+10.00	-4.50	-3.00	3.50	4.50	759.50	759.45	759.36	759.26	759.22	-30.00	-30.00	30.00	40.00	4666120.84	398875.26
55+20.00	-4.50	-3.00	3.50	4.50	758.99	758.94	758.85	758.75	758.71	-30.00	-30.00	30.00	40.00	4666130.83	398874.76
55+30.00	-4.50	-3.00	3.50	4.50	758.55	758.50	758.41	758.31	758.27	-30.00	-30.00	30.00	40.00	4666140.82	398874.46
55+40.00	-4.50	-3.00	3.49	4.50	758.16	758.12	758.03	757.93	757.89	-28.82	-28.82	28.83	40.00	4666150.82	398874.36
55+50.00	-4.50	-3.00	3.43	4.50	757.81	757.78	757.71	757.63	757.59	-22.57	-22.57	22.58	40.00	4666160.82	398874.46
55+60.00	-4.50	-3.00	3.36	4.50	757.53	757.50	757.45	757.39	757.34	-16.32	-16.32	20.00	40.00	4666170.82	398874.73
55+70.00	-4.50	-3.00	3.30	4.50	757.30	757.29	757.26	757.19	757.15	-10.07	-10.07	20.00	40.00	4666180.81	398875.14
55+80.00	-4.50	-3.00	3.24	4.50	757.15	757.14	757.13	757.06	757.01	-3.82	-3.82	20.00	40.00	4666190.79	398875.67
55+90.00	-4.50	-3.00	3.18	4.50	757.05	757.05	757.06	757.00	756.94	2.43	2.43	20.00	40.00	4666200.77	398876.29
56+0.00	-4.50	-3.00	3.11	4.50	757.01	757.03	757.05	756.99	756.93	8.68	8.68	20.00	40.00	4666210.75	398876.99
56+10.00	-4.50	-3.00	3.05	4.50	757.04	757.06	757.11	757.05	756.99	14.93	14.93	20.00	40.00	4666220.72	398877.74
56+20.00	-4.50	-3.00	3.00	4.50	757.13	757.17	757.23	757.17	757.11	23.76	20.00	20.00	40.00	4666230.69	398878.50
56+40.00	-4.50	-3.00	3.00	4.50	757.42	757.48	757.54	757.48	757.42	40.00	20.00	20.00	40.00	4666250.63	398880.03
56+60.00	-4.50	-3.00	3.00	4.50	757.74	757.80	757.86	757.80	757.74	40.00	20.00	20.00	40.00	4666270.58	398881.56
56+80.00	-4.50	-3.00	3.00	4.50	758.06	758.12	758.18	758.12	758.06	40.00	20.00	20.00	40.00	4666290.52	398883.09
57+0.00	-4.50	-3.00	3.00	4.50	758.26	758.32	758.38	758.32	758.26	40.00	20.00	20.00	40.00	4666310.46	398884.62
57+10.00	-4.50	-3.00	3.00	4.50	758.27	758.33	758.39	758.33	758.27	40.00	20.00	20.00	40.00	4666320.43	398885.40
57+20.00	-4.50	-3.00	3.00	4.50	758.22	758.28	758.34	758.28	758.22	40.00	20.00	20.00	40.00	4666330.40	398886.21
57+30.00	-4.50	-3.00	3.00	4.50	758.10	758.16	758.22	758.16	758.10	40.00	20.00	20.00	40.00	4666340.36	398887.05
57+40.00	-4.50	-3.00	3.00	4.50	757.93	757.99	758.05	757.99	757.93	40.00	20.00	20.00	40.00	4666350.32	398887.93
57+50.00	-4.50	-3.00	3.00	4.50	757.76	757.82	757.88	757.82	757.76	40.00	20.00	20.00	40.00	4666360.28	398888.84
57+60.00	-4.50	-3.00	3.00	4.50	757.59	757.65	757.71	757.65	757.59	40.00	20.00	20.00	40.00	4666370.24	398889.78
57+70.00	-4.50	-3.00	3.00	4.50	757.42	757.48	757.54	757.48	757.42	40.00	20.00	20.00	40.00	4666380.19	398890.76
57+80.00	-4.50	-3.00	3.00	4.50	757.29	757.35	757.41	757.35	757.29	40.00	20.00	20.00	40.00	4666390.14	398891.76
57+90.00	-4.50	-3.00	3.00	4.50	757.21	757.27	757.33	757.27	757.21	40.00	20.00	20.00	40.00	4666400.08	398892.81
58+0.00	-4.50	-3.00	3.00	4.50	757.17	757.23	757.29	757.23	757.17	40.00	20.00	20.00	40.00	4666410.02	398893.88
58+20.00	-4.50	-3.00	3.00	4.50	757.23	757.29	757.35	757.29	757.23	40.00	20.00	20.00	40.00	4666429.90	398896.11
58+40.00	-4.50	-3.00	3.00	4.50	757.47	757.53	757.59	757.53	757.47	40.00	20.00	20.00	40.00	4666449.77	398898.35
58+60.00	-4.50	-3.00	3.00	4.50	757.89	757.95	758.01	757.95	757.89	40.00	20.00	20.00	40.00	4666469.65	398900.59
58+80.00	-4.50	-3.00	3.00	4.50	758.50	758.56	758.62	758.56	758.50	40.00	20.00	20.00	40.00	4666489.52	398902.83
59+0.00	-4.50	-3.00	3.00	4.50	759.25	759.31	759.37	759.31	759.25	40.00	20.00	20.00	40.00	4666509.40	398905.07
59+20.00	-4.50	-3.00	3.00	4.50	760.00	760.06	760.12	760.06	760.00	40.00	20.00	20.00	40.00	4666529.27	398907.30
59+40.00	-4.50	-3.00	3.00	4.50	760.74	760.80	760.86	760.80	760.76	40.00	20.00	20.00	23.98	4666549.15	398909.54
59+50.00	-4.50	-3.11	3.00	4.50	761.05	761.11	761.17	761.13	761.11	40.00	20.00	13.32	13.32	4666559.08	398910.66
59+60.00	-4.50	-3.24	3.00	4.50	761.31	761.36	761.43	761.41	761.41	40.00	20.00	4.99	4.99	4666569.03	398911.73
59+70.00	-4.50	-3.37	3.00	4.50	761.53	761.57	761.64	761.65	761.65	40.00	20.00	-3.34	-3.34	4666578.98	398912.70
59+80.00	-4.51	-3.51	3.00	4.50	761.69	761.73	761.80	761.83	761.85	40.00	20.00	-11.68	-11.68	4666588.94	398913.52
59+90.00	-4.64	-3.64	3.00	4.50	761.80	761.84	761.91	761.97	762.00	40.00	20.01	-20.01	-20.01	4666598.93	398914.13
60+0.00	-4.77	-3.77	3.00	4.50	761.82	761.86	761.97	762.05	762.10	40.00	28.34	-28.34	-28.34	4666608.92	398914.47
60+10.00	-4.79	-3.79	3.00	4.50	761.83	761.87	761.98	762.07	762.11	40.00	29.38	-29.38	-29.38	4666618.92	398914.50
60+20.00	-4.66	-3.66	3.00	4.50	761.82	761.86	761.94	762.00	762.03	40.00	21.04	-21.04	-21.04	4666628.91	398914.20
60+30.00	-4.52	-3.52	3.00	4.50	761.77	761.81	761.88	761.92	761.94	40.00	20.00	-12.71	-12.71	4666638.90	398913.63
60+40.00	-4.50	-3.39	3.00	4.50	761.71	761.76	761.83	761.84	761.84	40.00	20.00	-4.38	-4.38	4666648.87	398912.84
60+50.00	-4.50	-3.26	3.00	4.50	761.65	761.70	761.77	761.76	761.75	40.00	20.00	3.96	3.96	4666658.82	398911.89
60+60.00	-4.50	-3.12	3.00	4.50	761.59	761.65	761.71	761.67	761.66	40.00	20.00	12.29	12.29	4666668.76	398910.83
60+80.00	-4.50	-3.00	3.00	4.50	761.48	761.54	761.60	761.54	761.48	40.00	20.00	20.00	40.00	4666688.64	398908.60
61+0.00	-4.50	-3.00	3.00	4.50	761.36	761.42	761.48	761.42	761.36	40.00	20.00	20.00	40.00	4666708.52	398906.37
61+20.00	-4.50	-3.00	3.00	4.50	761.25	761.31	761.37	761.31	761.25	40.00	20.00	20.00	40.00	4666728.39	398904.13
61+40.00	-4.50	-3.00	3.00	4.50	761.14	761.20	761.26	761.20	761.14	40.00	20.00	20.00	40.00	4666748.26	398901.90
61+60.00	-4.50	-3.00	3.00	4.50	761.02	761.08	761.14	761.08	761.02	40.00	20.00	20.00	40.00	4666768.14	398899.66
61+80.00	-4.50	-3.00	3.06	4.56	760.97	760.99	761.03	760.97	760.91	13.21	13.21	20.00	40.00	4666788.01	398897.43
61+90.00	-4.50	-3.00	3.16	4.66	760.97	760.97	760.97	760.91	760.85	1.21	1.21	20.00	40.00	4666797.95	398896.34

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
62+0.00	-4.50	-3.00	3.26	4.76	760.96	760.95	760.91	760.85	760.79	-10.79	-10.79	20.00	40.00	4666807.90	398895.33
62+10.00	-4.00	-3.00	3.36	4.36	760.95	760.93	760.86	760.78	760.74	-22.79	-22.79	22.79	40.00	4666817.86	398894.45
62+20.00	-4.00	-3.00	3.46	4.46	760.94	760.91	760.80	760.68	760.64	-34.79	-34.79	34.79	40.00	4666827.84	398893.74
62+30.00	-4.00	-3.00	3.50	4.50	760.90	760.86	760.74	760.60	760.56	-40.00	-40.00	40.00	40.00	4666837.83	398893.26
62+40.00	-4.00	-3.00	3.50	4.50	760.85	760.81	760.69	760.55	760.51	-40.00	-40.00	40.00	40.00	4666847.82	398893.03
62+50.00	-4.00	-3.00	3.50	4.50	760.79	760.75	760.63	760.49	760.45	-40.00	-40.00	40.00	40.00	4666857.82	398893.05
62+60.00	-4.00	-3.00	3.45	4.45	760.74	760.70	760.60	760.49	760.45	-33.98	-33.98	33.98	40.00	4666867.82	398893.32
62+70.00	-4.00	-3.00	3.37	4.37	760.71	760.69	760.61	760.53	760.49	-24.18	-24.18	24.18	40.00	4666877.81	398893.80
62+80.00	-4.00	-3.00	3.29	4.29	760.72	760.71	760.67	760.60	760.56	-14.39	-14.39	20.00	40.00	4666887.79	398894.46
62+90.00	-4.00	-3.00	3.20	4.20	760.78	760.77	760.76	760.69	760.65	-4.59	-4.59	20.00	40.00	4666897.76	398895.23
63+0.00	-4.00	-3.00	3.12	4.12	760.87	760.87	760.89	760.83	760.79	5.20	5.20	20.00	40.00	4666907.72	398896.08
63+20.00	-4.09	-3.09	3.00	4.00	761.17	761.21	761.27	761.23	761.21	40.00	20.00	15.23	15.23	4666927.65	398897.81
63+30.00	-4.26	-3.26	3.00	4.00	761.39	761.43	761.50	761.48	761.48	40.00	20.00	5.48	5.48	4666937.61	398898.68
63+40.00	-4.44	-3.44	3.00	4.00	761.61	761.65	761.72	761.74	761.74	40.00	20.00	-4.27	-4.27	4666947.58	398899.48
63+50.00	-4.61	-3.61	3.00	4.00	761.84	761.88	761.95	761.99	762.01	40.00	20.00	-14.03	-14.03	4666957.56	398900.05
63+60.00	-4.79	-3.79	3.00	4.00	762.00	762.04	762.13	762.20	762.22	40.00	23.78	-23.78	-23.78	4666967.56	398900.24
63+70.00	-4.90	-3.90	3.00	4.00	762.03	762.07	762.18	762.27	762.30	40.00	30.00	-30.00	-30.00	4666977.55	398899.86
63+80.00	-4.68	-3.68	3.00	4.00	762.00	762.04	762.11	762.17	762.18	40.00	20.00	-17.82	-17.82	4666987.50	398898.86
63+90.00	-4.46	-3.46	3.00	4.00	761.82	761.86	761.93	761.95	761.95	40.00	20.00	-5.35	-5.35	4666997.38	398897.35
64+0.00	-4.23	-3.23	3.00	4.00	761.62	761.66	761.73	761.71	761.70	40.00	20.00	7.12	7.12	4667007.21	398895.51
64+10.00	-4.01	-3.01	3.00	4.00	761.45	761.47	761.53	761.47	761.43	20.66	20.00	20.00	40.00	4667017.00	398893.50
64+20.00	-4.00	-3.00	3.16	4.16	761.31	761.31	761.33	761.26	761.22	3.94	3.94	20.00	40.00	4667026.80	398891.47
64+30.00	-4.00	-3.00	3.33	4.33	761.17	761.16	761.12	761.06	761.02	-12.67	-12.67	20.00	40.00	4667036.60	398889.51
64+40.00	-4.00	-3.00	3.49	4.49	761.04	761.01	760.92	760.82	760.78	-29.29	-29.29	29.29	40.00	4667046.44	398887.72
64+50.00	-4.00	-3.00	3.50	4.50	760.84	760.81	760.72	760.62	760.58	-30.00	-30.00	30.00	40.00	4667056.32	398886.16
64+60.00	-4.00	-3.00	3.50	4.50	760.64	760.61	760.52	760.42	760.38	-30.00	-30.00	30.00	40.00	4667066.23	398884.84
64+70.00	-4.00	-3.00	3.50	4.50	760.44	760.41	760.32	760.21	760.17	-30.00	-30.00	30.00	40.00	4667076.17	398883.77
64+80.00	-4.00	-3.00	3.50	4.50	760.24	760.21	760.12	760.01	759.97	-30.00	-30.00	30.00	40.00	4667086.14	398882.96
64+90.00	-4.00	-3.00	3.37	4.37	759.98	759.97	759.92	759.85	759.81	-17.11	-17.11	20.00	40.00	4667096.12	398882.38
65+0.00	-4.00	-3.00	3.21	4.21	759.72	759.72	759.71	759.65	759.61	-1.06	-1.06	20.00	40.00	4667106.12	398881.99
65+10.00	-4.00	-3.00	3.05	4.05	759.41	759.45	759.51	759.45	759.43	40.00	20.00	20.00	26.24	4667116.11	398881.70
65+20.00	-4.33	-3.33	3.00	4.00	759.21	759.25	759.31	759.30	759.30	40.00	20.00	3.59	3.59	4667126.11	398881.41
65+30.00	-4.81	-3.81	3.00	4.00	758.99	759.03	759.11	759.17	759.19	40.00	20.27	-20.27	-20.27	4667136.09	398880.83
65+40.00	-5.20	-4.20	3.00	4.00	758.70	758.74	758.91	759.03	759.07	40.00	40.00	-40.00	-40.00	4667145.99	398879.44
65+50.00	-4.73	-3.73	3.00	4.00	758.59	758.63	758.71	758.76	758.77	40.00	20.00	-16.25	-16.25	4667155.67	398876.95
65+60.00	-4.23	-3.23	3.00	4.00	758.40	758.44	758.51	758.48	758.47	40.00	20.00	8.75	8.75	4667165.13	398873.72
65+70.00	-4.00	-3.00	3.00	4.00	758.21	758.25	758.31	758.25	758.21	40.00	20.00	20.00	31.00	4667174.52	398870.29
65+80.00	-4.00	-3.00	3.00	4.00	758.01	758.05	758.11	758.05	758.01	40.00	20.00	20.00	40.00	4667184.00	398867.11
65+90.00	-4.00	-3.00	3.00	4.00	757.88	757.92	757.98	757.92	757.88	40.00	20.00	20.00	40.00	4667193.59	398864.25
66+0.00	-4.00	-3.00	3.00	4.00	757.81	757.85	757.91	757.85	757.81	40.00	20.00	20.00	40.00	4667203.26	398861.71
66+20.00	-4.00	-3.00	3.00	4.00	757.85	757.89	757.95	757.89	757.85	40.00	20.00	20.00	40.00	4667222.79	398857.41
66+40.00	-4.00	-3.00	3.00	4.00	758.15	758.19	758.25	758.19	758.15	40.00	20.00	20.00	40.00	4667242.35	398853.23
66+60.00	-4.00	-3.00	3.00	4.00	758.58	758.62	758.68	758.62	758.58	40.00	20.00	20.00	40.00	4667261.91	398849.06
66+80.00	-4.00	-3.00	3.00	4.00	759.02	759.06	759.12	759.06	759.02	40.00	20.00	20.00	40.00	4667281.58	398845.48
67+0.00	-4.00	-3.00	3.00	4.00	759.42	759.46	759.52	759.46	759.42	40.00	20.00	20.00	40.00	4667301.31	398842.19
67+20.00	-4.00	-3.00	3.00	4.00	759.64	759.67	759.73	759.67	759.63	32.20	20.00	20.00	40.00	4667321.03	398838.90
67+30.00	-4.00	-3.00	3.06	4.06	759.70	759.72	759.76	759.70	759.66	16.10	16.10	20.00	40.00	4667330.90	398837.25
67+40.00	-4.00	-3.00	3.22	4.22	759.74	759.74	759.76	759.70	759.66	6.10	6.10	20.00	40.00	4667340.77	398835.64
67+50.00	-4.00	-3.00	3.38	4.38	759.77	759.77	759.76	759.69	759.65	-3.90	-3.90	20.00	40.00	4667350.65	398834.14
67+60.00	-4.00	-3.00	3.54	4.54	759.81	759.80	759.75	759.68	759.64	-13.90	-13.90	20.00	40.00	4667360.57	398832.83
67+70.00	-4.00	-3.00	3.70	4.70	759.85	759.82	759.75	759.66	759.62	-23.90	-23.90	23.90	40.00	4667370.51	398831.78
67+80.00	-4.00	-3.00	3.80	4.80	759.87	759.84	759.75	759.63	759.59	-30.00	-30.00	30.00	40.00	4667380.49	398831.08
67+90.00	-4.00	-3.00	3.65	4.65	759.87	759.85	759.79	759.72	759.68	-20.40	-20.40	20.40	40.00	4667390.48	398830.77
68+0.00	-4.00	-3.00	3.49	4.49	759.96	759.95	759.92	759.85	759.81	-10.40	-10.40	20.00	40.00	4667400.48	398830.78
68+10.00	-4.00	-3.00	3.33	4.33	760.14	760.13	760.13	760.07	760.03	-0.40	-0.40	20.00	40.00	4667410.48	398831.04

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
68+20.00	-4.00	-3.00	3.17	4.17	760.39	760.40	760.43	760.37	760.33	9.60	9.60	20.00	40.00	4667420.47	398831.46
68+30.00	-4.00	-3.00	3.01	4.01	760.73	760.75	760.81	760.75	760.71	19.60	19.60	20.00	40.00	4667430.46	398831.96
68+40.00	-4.00	-3.00	3.00	4.00	761.17	761.21	761.27	761.21	761.17	39.20	20.00	20.00	40.00	4667440.44	398832.58
68+50.00	-4.00	-3.00	3.00	4.00	761.72	761.76	761.82	761.76	761.72	40.00	20.00	20.00	40.00	4667450.39	398833.51
68+60.00	-4.00	-3.00	3.00	4.00	762.33	762.37	762.43	762.37	762.33	40.00	20.00	20.00	40.00	4667460.31	398834.78
68+70.00	-4.00	-3.00	3.00	4.00	762.96	763.00	763.06	763.00	762.96	40.00	20.00	20.00	40.00	4667470.18	398836.38
68+80.00	-4.00	-3.00	3.00	4.00	763.58	763.62	763.68	763.62	763.58	40.00	20.00	20.00	40.00	4667479.99	398838.31
69+0.00	-4.00	-3.00	3.00	4.00	764.82	764.86	764.92	764.86	764.82	40.00	20.00	20.00	40.00	4667499.52	398842.63
69+20.00	-4.00	-3.00	3.00	4.00	766.07	766.11	766.17	766.11	766.07	40.00	20.00	20.00	40.00	4667519.05	398846.97
69+40.00	-4.29	-3.29	3.00	4.00	767.30	767.34	767.40	767.39	767.38	40.00	20.00	5.68	5.68	4667538.58	398851.28
69+50.00	-4.69	-3.69	3.00	4.00	767.81	767.85	767.92	767.97	767.98	40.00	20.00	-14.32	-14.32	4667548.40	398853.13
69+60.00	-5.09	-4.09	3.00	4.00	768.16	768.20	768.34	768.45	768.48	40.00	34.32	-34.32	-34.32	4667558.33	398854.28
69+70.00	-5.05	-4.05	3.00	4.00	768.49	768.53	768.66	768.76	768.79	40.00	32.32	-32.32	-32.32	4667568.33	398854.34
69+80.00	-4.65	-3.65	3.00	4.00	768.77	768.81	768.88	768.92	768.93	40.00	20.00	-12.32	-12.32	4667578.27	398853.32
69+90.00	-4.25	-3.25	3.00	4.00	768.90	768.94	769.00	768.98	768.97	40.00	20.00	7.68	7.68	4667588.13	398851.63
70+0.00	-4.00	-3.00	3.00	4.00	768.92	768.96	769.02	768.96	768.94	40.00	20.00	20.00	27.68	4667597.94	398849.69
70+10.00	-4.00	-3.00	3.00	4.00	768.85	768.89	768.95	768.89	768.85	40.00	20.00	20.00	40.00	4667607.77	398847.89
70+20.00	-4.00	-3.00	3.00	4.00	768.67	768.71	768.77	768.71	768.67	40.00	20.00	20.00	40.00	4667617.64	398846.29
70+40.00	-4.00	-3.00	3.00	4.00	768.13	768.17	768.23	768.17	768.13	40.00	20.00	20.00	40.00	4667637.46	398843.58
70+60.00	-4.00	-3.00	3.00	4.00	767.60	767.64	767.70	767.64	767.60	40.00	20.00	20.00	40.00	4667657.29	398840.97
70+80.00	-4.00	-3.00	3.00	4.00	767.06	767.10	767.16	767.10	767.06	40.00	20.00	20.00	40.00	4667677.12	398838.35
71+0.00	-4.00	-3.00	3.00	4.00	766.52	766.56	766.62	766.56	766.52	40.00	20.00	20.00	40.00	4667696.94	398835.74
71+20.00	-4.00	-3.00	3.00	4.00	766.06	766.10	766.16	766.10	766.06	40.00	20.00	20.00	40.00	4667716.77	398833.13
71+40.00	-4.00	-3.00	3.00	4.00	765.71	765.75	765.81	765.75	765.71	40.00	20.00	20.00	40.00	4667736.60	398830.52
71+60.00	-4.00	-3.00	3.00	4.00	765.45	765.49	765.55	765.49	765.45	40.00	20.00	20.00	40.00	4667756.43	398827.90
71+80.00	-4.00	-3.00	3.00	4.00	765.29	765.33	765.39	765.33	765.29	40.00	20.00	20.00	40.00	4667776.26	398825.29
72+0.00	-4.00	-3.00	3.00	4.00	765.17	765.21	765.27	765.21	765.17	40.00	20.00	20.00	40.00	4667796.08	398822.65
72+10.00	-4.00	-3.00	3.00	4.00	765.10	765.14	765.20	765.14	765.10	40.00	20.00	20.00	40.00	4667805.99	398821.26
72+20.00	-4.00	-3.00	3.00	4.00	765.04	765.08	765.14	765.08	765.04	40.00	20.00	20.00	40.00	4667815.88	398819.80
72+30.00	-4.00	-3.00	3.00	4.00	764.98	765.02	765.08	765.02	764.98	40.00	20.00	20.00	40.00	4667825.76	398818.27
72+40.00	-4.00	-3.00	3.00	4.00	764.92	764.96	765.02	764.96	764.92	40.00	20.00	20.00	40.00	4667835.63	398816.67
72+50.00	-4.00	-3.00	3.00	4.00	764.86	764.90	764.96	764.90	764.86	40.00	20.00	20.00	40.00	4667845.49	398815.01
72+60.00	-4.00	-3.00	3.00	4.00	764.80	764.84	764.90	764.84	764.80	40.00	20.00	20.00	40.00	4667855.34	398813.29
72+70.00	-4.00	-3.00	3.00	4.00	764.73	764.77	764.83	764.77	764.73	40.00	20.00	20.00	40.00	4667865.18	398811.49
72+80.00	-4.00	-3.00	3.00	4.00	764.66	764.70	764.76	764.70	764.66	40.00	20.00	20.00	40.00	4667875.01	398809.66
72+90.00	-4.00	-3.00	3.00	4.00	764.58	764.62	764.68	764.62	764.58	40.00	20.00	20.00	40.00	4667884.85	398807.84
73+0.00	-4.00	-3.00	3.00	4.00	764.47	764.51	764.57	764.51	764.47	40.00	20.00	20.00	40.00	4667894.70	398806.12
73+10.00	-4.00	-3.00	3.00	4.00	764.35	764.39	764.45	764.39	764.35	40.00	20.00	20.00	40.00	4667904.56	398804.50
73+20.00	-4.00	-3.00	3.00	4.00	764.21	764.25	764.31	764.25	764.21	40.00	20.00	20.00	40.00	4667914.45	398802.97
73+30.00	-4.00	-3.00	3.00	4.00	764.06	764.10	764.16	764.10	764.06	40.00	20.00	20.00	40.00	4667924.34	398801.55
73+40.00	-4.00	-3.00	3.00	4.00	763.89	763.93	763.99	763.93	763.89	40.00	20.00	20.00	40.00	4667934.26	398800.22
73+50.00	-4.00	-3.00	3.00	4.00	763.72	763.76	763.82	763.76	763.72	40.00	20.00	20.00	40.00	4667944.18	398798.99
73+60.00	-4.00	-3.00	3.00	4.00	763.56	763.60	763.66	763.60	763.56	40.00	20.00	20.00	40.00	4667954.12	398797.86
73+70.00	-4.00	-3.00	3.00	4.00	763.41	763.45	763.51	763.45	763.41	40.00	20.00	20.00	40.00	4667964.06	398796.84
73+80.00	-4.00	-3.00	3.00	4.00	763.30	763.34	763.40	763.34	763.30	40.00	20.00	20.00	40.00	4667974.02	398795.90
74+0.00	-4.00	-3.00	3.00	4.00	763.17	763.21	763.27	763.21	763.17	40.00	20.00	20.00	40.00	4667993.93	398794.06
74+20.00	-4.00	-3.00	3.00	4.00	763.12	763.16	763.22	763.16	763.12	40.00	20.00	20.00	40.00	4668013.85	398792.21
74+40.00	-4.00	-3.00	3.00	4.00	763.07	763.11	763.17	763.11	763.07	40.00	20.00	20.00	40.00	4668033.76	398790.37
74+50.00	-4.00	-3.00	3.00	4.00	763.04	763.08	763.14	763.08	763.04	40.00	20.00	20.00	40.00	4668043.71	398789.38
74+60.00	-4.00	-3.00	3.00	4.00	763.01	763.05	763.11	763.05	763.01	40.00	20.00	20.00	40.00	4668053.65	398788.24
74+70.00	-4.00	-3.00	3.00	4.00	762.99	763.03	763.09	763.03	762.99	40.00	20.00	20.00	40.00	4668063.57	398786.96
74+80.00	-4.00	-3.00	3.00	4.00	762.94	762.98	763.04	762.98	762.94	40.00	20.00	20.00	40.00	4668073.47	398785.53
74+90.00	-4.00	-3.00	3.00	4.00	762.86	762.90	762.96	762.90	762.86	40.00	20.00	20.00	40.00	4668083.34	398783.97
75+0.00	-4.00	-3.00	3.00	4.00	762.74	762.78	762.84	762.78	762.74	40.00	20.00	20.00	40.00	4668093.20	398782.26
75+10.00	-4.00	-3.00	3.00	4.00	762.59	762.63	762.69	762.63	762.59	40.00	20.00	20.00	40.00	4668103.02	398780.42

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
75+20.00	-4.00	-3.00	3.00	4.00	762.42	762.46	762.52	762.46	762.42	40.00	20.00	20.00	40.00	4668112.82	398778.43
75+40.00	-4.00	-3.00	3.00	4.00	762.09	762.13	762.19	762.13	762.09	40.00	20.00	20.00	40.00	4668132.39	398774.28
75+60.00	-4.00	-3.00	3.00	4.00	761.83	761.87	761.93	761.87	761.83	40.00	20.00	20.00	40.00	4668151.95	398770.12
75+80.00	-4.00	-3.00	3.00	4.00	761.66	761.70	761.76	761.70	761.66	40.00	20.00	20.00	40.00	4668171.51	398765.96
76+0.00	-4.00	-3.00	3.00	4.00	761.57	761.61	761.67	761.61	761.57	40.00	20.00	20.00	40.00	4668191.08	398761.80
76+20.00	-4.00	-3.00	3.00	4.00	761.55	761.59	761.65	761.59	761.55	40.00	20.00	20.00	40.00	4668210.64	398757.65
76+40.00	-4.00	-3.00	3.00	4.00	761.58	761.62	761.68	761.62	761.58	40.00	20.00	20.00	40.00	4668230.20	398753.49
76+60.00	-4.00	-3.00	3.00	4.00	761.61	761.65	761.71	761.65	761.61	40.00	20.00	20.00	40.00	4668249.77	398749.33
76+78.00	-4.00	-3.00	3.00	4.00	761.64	761.68	761.74	761.68	761.64	40.00	20.00	20.00	40.00	4668267.48	398745.57

VOLUMES OF WORKS FOR RELOCATION OF 0.4 KV POWER LINES
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Quantity	Notes
			Section km 9 – km 16	
			PK 52+43 Right	
1	2	3	4	5
1	Dismantling of 0.4 kw wooden supports (h-7m)	unit	1	
2	Dismantling of 0.4 kw reinforced concrete supports (h-9m)	unit	1	
3	Construction of temporary supports from Ø80 mm re-usable pipes (h -7m)	unit	1	
4	Dismantling of self-bearing insulated conductor (СИП) - 5x16mm^2	L.m	80	
5	Installation of self-bearing insulated conductor (СИП) - 5x16mm^2 on temporary supports from Ø80 mm pipes	L.m	80	
6	Installation of 0.4 kw reinforced concrete supports (h-9m)	unit	1	
7	Dismantling of self-bearing insulated conductor (СИП) - 5x16mm^2 from temporary supports	L.m	80	
8	Installation of self-bearing insulated conductor (СИП) - 5x16mm^2 on reinforced concrete supports (h-9m)	L.m	80	
9	Dismantling of temporary supports (h -7m) from Ø80mm pipes	unit	1	

REMOVAL OF THE EXISTING ASPHALT CONCRETE PAVEMENT

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

Project km	Location		Length of section	Existing pavement		Milling of the existing damaged reinforced concrete pavement $h_{aver.}$-14 cm and disposal to the borrow pit	Notes
	pk+	pk+	m	Average width m	Average thickness cm	m^2 / m^3	
1	2	3	4	5	6	7	8
Section km 1 - km 4							
1	0+00	10+00	1000	6.62	0.14	6620.0 / 927.0	
Total 1 km			**1000**			**6620.0 / 927.0**	
2	10+00	20+00	1000	6.78	0.14	6780.0 / 949.0	
Total 2 km			**1000**			**6780.0 / 949.0**	
3	20+00	30+00	1000	6.96	0.14	6960.0 / 974.0	
Total 3 km			**1000**			**6960.0 / 974.0**	
4	30+00	39+30	931	5.78	0.14	5380.0 / 753.0	
Total 4 km			**931**			**5380.0 / 753.0**	
Grand total			**3931**			**25740.0 / 3603.0**	

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VOLUMES OF WORKS FOR THE CONSTRUCTION OF CONCRETE DITCHES
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Location From PK+ ÷To PK+		Length	Construction length	Removal of existing damaged concrete ditches by jack hammers, loading and disposal to dumpsite	Excavation of soil, loading and disposal to dumpsite		Sand and gravel bed, thickness 10 cm	Cast in situ concrete B22.5 F200 W6		Backfilling of gravel soil delivered from borrow pit 6[b]	Notes
	Left	Right				By excavator 33[g]	Manually 33[g]		Bottom	Body		
			m	m	m^3	m^3	m^3	m^3	m^3	m^3	m^3	
1	2	3	4	5	6	7	8	9	10	11	12	13
Section km 1 – km 4												
1	10+20÷ 12+84	-	264	229	-	190	30	22	41.2	40.2	76	
2	-	10+20÷ 11+68	148	134	-	110	20	13	24.1	23.4	46	
Total			412	363	-	300	50	35	65.3	63.6	122	
Section km 9 – km 16												
3	32+84÷ 41+50	-	866	691	10.5	570	90	65	124.4	120.9	230	
4	42+88÷ 54+70	-	1182	990	7.5	820	130	95	178.2	173.3	330	

1	2	3	4	5	6	7	8	9	10	11	12	13
5	73+40÷ 76+00	-	260	206	-	170	30	20	37.1	36.2	70	
Total			2308	1887	18.0	1560	250	180	339.7	330.4	630	
Grand Total			2720	2250	18.0	1860	300	215	405.0	394.0	752	

Notes: Total width of junctions and yard entrances excluded from the length of project section is adopted as construction length of ditches.

N	Project km	Location PK+	Kind of drainage	Existing structures						Condition of structures	Measures	Project structures							Notes
				Type of structures	Pipes		Bridges and overpasses					Type of structures	Pipes			Bridges and overpasses			
					Opening	Length without inlet and outlet	Opening or scheme	Length	Dimensions				Opening	Length without inlet and outlet	Length with inlet and outlet	Opening or scheme	Length	Dimens.	
					m	m	m	m					m	m	m	m	m		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SECTION KM 1 – KM 4																			
1	1	1+27	Ditch water	Reinforced concrete culvert	Not determined	11.0				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	12.23					
2		4+65	Irrigation water	Steel pipe	d=0.5	8.0				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	12.23					
3	2	10+17	Irritation and ditch water	Reinforced concrete culvert	d=1.0	12.5				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	12.44	14.44				
4		11+67	Irritation and ditch water	Asbestos pipe	d=0.3	11.2				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	12.33	14.39				
5		12+85	Irritation and ditch water	Reinforced concrete culvert	Not determined	9.30				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
6		13+83	Ditch and irritation water	Reinforced concrete culvert	d=1.0	12.3				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	12.23					
7		15+83	Irrigation water	Asbestos pipe	d=0.3	11.6				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
8		19+68	Ditch water	Reinforced concrete culvert	d=1.0	12.5				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
9	3	23+00	Surface water								New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
10		23+84	Surface and ditch water	Reinforced concrete culvert	Not determined	12.3				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
11		24+80	Surface and ditch water	Asbestos pipe	d=0.3	11.9				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12		25+32	Irrigation and ditch water	Asbestos pipe	d=0.3	16.6				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
13		26+88	Irrigation water	Reinforced concrete culvert	d=1.0	13.0				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	14.06					
14	4	30+60	Irrigation water	Asbestos pipe	d=0.3	11.6				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
15		31+40	Surface water								New culvert	Reinforced concrete culvert	1.2x0.7	11.23					
16		36+40	Irrigation water	Reinforced concrete culvert	d=1.0	12.5				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	14.06					
SECTION KM 9 – KM 16																			
1	1	1+03	Irrigation water	Reinforced concrete culvert	3.0x2.0	10.4				Satisfactory	Repair								
2		3+47-3+98	The river Prone	Reinforced concrete bridge			21.6	51.2		Satisfactory	Repair					21.6	51.2	8+2x1.0	
3		6+90	Irrigation water	Steel pipe	d=0.2	17.40				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	18.26					
4	2	14+96	Irrigation water	Reinforced concrete culvert	d=0.75	10.9				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	16.23					
5		16+80	Irrigation canal	Reinforced concrete culvert	d=0.5	14.7				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	16.07	20.47				
6		28+46.2	Surface water	Reinforced concrete culvert	d=0.5	9.2				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	12.05	16.05				
7	3	31+14.7	Ditch water	Reinforced concrete culvert	d=0.5	10.2				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	10.03					
8		32+83.2	Ditch water	Reinforced concrete culvert	d=1.0	9.1				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	11.03					
9		33+40.10	Ditch water	Reinforced concrete culvert	Not determined	11.3				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	10.03					
10		36+62	Ditch and irrigation water	Reinforced concrete culvert	2.0x0.5	11.3				Unsatisfactory	New culvert	Reinforced concrete culvert	2.0x0.7	13.46					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
11		39+19	Ditch and irrigation water	Reinforced concrete culvert	d=1.0	9.3				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	10.03					
12	4	46+04.8	Ditch water	Reinforced concrete culvert	d=0.8	8.0				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	10.03					
13		47+09.4	Irrigation and ditch water	Reinforced concrete culvert	d=1.0	10.2				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	10.04	14.04				
14	5	55+82	Irrigation water	Reinforced concrete culvert	d=1.0	15.0				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	14.06	16.06				
15		58+07	Surface and ditch water								New culvert	Reinforced concrete culvert	d=1.0	10.04	14.34				
16	6	62+57	Surface water	Reinforced concrete culvert	Not determined	17.0				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	16.07	20.07				
17		66+07	Surface water	Reinforced concrete culvert	d=1.0	10.3				Unsatisfactory	New culvert	Reinforced concrete culvert	d=1.0	12.05	14.05				
18		67+84	Surface and ditch water								New culvert	Reinforced concrete culvert	d=1.0	10.04	12.14				
19	7	72+30	Surface and ditch water								New culvert	Reinforced concrete culvert	d=1.0	10.04	12.14				
20		76+19	Ditch water	Reinforced concrete culvert	d=0.75	12.3				Unsatisfactory	New culvert	Reinforced concrete culvert	1.2x0.7	13.23	14.63				

VOLUMES OF WORKS FOR THE CONSTRUCTION OF REINFORCED CONCRETE PIPE-CULVERTS d=1.0 m
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Quantity													Grand total	Notes
			Section: km 1 – km 4			**Section: km 9 – km 16**											
			26+88 d=1.0 m L=14 m	36+40 d=1.0 m L=14 m	Total	16+79.66 d=1.0 m L=16 m	28+46.2 d=1.0 m L=12 m	47+09.4 d=1.0 m L=10 m	55+85.4 d=1.0 m L=14 m	58+07 d=1.0 m L=10 m	62+57 d=1.0 m L=16 m	66+07.10 d=1.0 m L=12 m	67+84 d=1.0 m L=10 m	72+30 d=1.0 m L=10 m	Total		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	158	155	313	--	--	--	--	--	--	--	--	--	--	313	33[g]
2	Excavation of soil manually, loading and disposal to dumpsite	m^3	16	15	31	--	--	--	--	--	--	--	--	--	--	31	33[g]
3	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	--	--	--	165	130	120	180	140	230	180	145	150	1440	1440	8[g]
4	Excavation of soil manually, loading and disposal to dumpsite	m^3	--	--	--	16	13	12	18	15	20	18	14	15	141	141	8[g]
5	Uprooting of shrubs manually at the culvert inlet/outlet	m^2	--	--	--	--	--	--	20	--	32	40	--	--	92	92	
6	Water removal during the construction by means of re-usable steel pipe																
	- Installation of re-usable pipe d=0.72 m L=12.0 m by crane, follow up dismantling and disposal to the production base	unit/kg	1/1893.8	1/1893.8	2/3787.6	--	--	1/1893.8	--	--	--	--	--	--	1/1893.8	3/5681.4	Weight of one linear m of pipe 157.81 kg
7	Dismantling of sections d=1.0 m L=1.0 m p=900 kg of reinforced concrete culvert, loading and disposal to dumpsite	unit/m^3	13/4.55	12/4.2	25/8.75	--	--	10/3.5	15/5.25	--	17/5.95	10/3.5	--	--	52/18.2	77/26.95	
8	Dismantling of sections d=0.5 m L=1.0 m p=900 kg of reinforced concrete culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	15/2.25	9/1.35	--	--	--	--	--	--	--	24/3.6	24/3.6	
9	Removal of concrete inlet/outlet of the culvert by jack hammers, loading and disposal to dumpsite	m^3	6.0	6.5	12.5	5.2	8.9	1.0	5.0	--	2.0	5.5	--	--	27.6	40.1	
10	Prefabrication of sections d=1.0m L=2.0 m p=1800 kg of reinforced concrete culvert, transportation and installation by 10-ton capacity crane	unit/m^3	7/4.9	7/4.9	14/9.8	8/5.6	6/4.2	5/3.5	7/4.9	5/3.5	8/5.6	6/4.2	5/3.5	5/3.5	55/38.5	69/48.3	B30 F200W6
	- Gravel bed h=30 cm	m^3	7.8	7.8	15.6	9.0	6.5	5.2	7.8	5.2	9.0	6.5	5.2	5.2	59.6	75.2	
	- Caulking material between culvert sections	kg	3.0	3.0	6.0	3.5	2.5	2.0	3.0	2.0	3.5	2.5	2.0	2.0	23.0	29.0	
	- Bituminous insulation	m^2	53.2	53.2	106.4	60.8	45.6	38.0	53.2	38.0	60.8	45.6	38.0	38.0	418.0	524.4	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	- Protecting painting	m^2	6	6	12	7	5	4	6	4	7	5	4	4	46	58	
11	Construction of portal wall																
	- Gravel bed h=10 cm	m^3	0.5	0.5	1.0	0.5	0.5	0.55	1.1	0.5	0.5	1.25	1.25	1.25	7.4	8.4	
	- Concrete of foundation B22.5F200W6	m^3	5.5	5.5	11	5.5	5.5	5.7	11.75	5.5	5.5	14.2	14.2	14.2	82.05	93.05	
	- Concrete of body B22.5F200W6	m^3	3.8	3.8	7.6	3.6	3.5	4.1	8.0	4.0	3.4	10.5	10.4	11	58.5	66.1	
	- Bituminous insulation	m^2	25	25	50	25	25	26	45.0	25.5	24.5	49	49	50	319.0	369.0	
12	Construction of water intake well:																
	- Gravel bed h=10 cm	m^3	--	--	--	0.5	--	--	--	0.5	--	--	0.5	0.5	2.0	2.0	
	- Concrete of bottom B22.5F200W6	m^3	--	--	--	1.8	--	--	--	1.8	--	--	1.8	1.8	7.2	7.2	
	- Concrete of body B22.5F200W6	m^3	--	--	--	3.4	--	--	--	4.0	--	--	4.0	3.9	15.3	15.3	
	- Bituminous insulation	m^2	--	--	--	13.0	--	--	--	13.1	--	--	13.1	13.0	52.2	52.2	
13	Conjunction of the existing chute with the design well	m^3	--	--	--	2.0	--	--	--	--	--	--	--	--	2.0	2.0	B22.5 F200W6
14	Construction of wings of cast in situ concrete:																
	- Gravel bed h=10 cm	m^3	1.2	1.2	2.4	0.65	1.2	1.0	0.6	0.6	1.2	0.6	--	--	5.85	8.25	
	- Concrete of key B22.5F200W6	m^3	3.2	3.2	6.4	1.6	3.2	1.95	1.6	1.6	3.2	1.6	--	--	14.75	21.15	
	- Concrete of chute B22.5F200W6	m^3	3.0	3.0	6.0	1.65	3.0	2.5	1.5	1.5	3.0	1.5	--	--	14.65	20.65	
	- Concrete of wing B22.5F200W6	m^3	3.1	3.1	6.2	2.1	3.0	2.9	1.6	1.7	3.0	1.55	--	--	15.85	20.05	
	- Bituminous insulation	m^2	29.0	29.0	58	17.0	28.0	27.0	15.0	15.0	29.0	14.5	--	--	145.5	203.5	
15	Stone apron	m^3	16.0	16.0	32.0	16.2	15.6	7.6	12.8	--	16.0	8.0	--	--	76.2	108.2	
16	Construction of gabion apron at the outlet:																
	- Gravel bed h=20 cm	m^3	--	--	--	--	--	--	--	2.5	--	2.5	2.5	2.5	10.0	10.0	
	- Gabion boxes 1x1x2 m	unit/kg	--	--	--	--	--	--	--	7/122.5	--	7/122.5	7/122.5	7/122.5	28/490	28/490	
	- Rubble stone	m^3	--	--	--	--	--	--	--	14	--	14	14	14	56	56	
	- Tying wire	kg	--	--	--	--	--	--	--	16	--	16	16	16	64	64	
17	Cutting of channel at the culvert inlet/outlet by excavator, loading and disposal to dumpsite	m^3	40	45	85	25	20	6	16	--	22	8	8	8	113	198	33[g]
18	Filling of gravel soil delivered from borrow pit behind the culvert walls and on the body, compaction in 0.3 m layers by vibrating roller 4 passes on a track	m^3	115	110	225	115	95	80	130	100	165	140	105	110	1040	1265	6[b]

VOLUMES OF WORKS FOR THE CONSTRUCTION OF REINFORCED CONCRETE CULVERTS 1.2x0.7 m SECTION I

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Quantity															Notes
			Section: km 1 – km 4															
			1+27 1.2x0.7 m L=12.23m	4+65 1.2x0.7 m L=12.23m	10+17 1.2x0.7 m L=12.44m	11+67 1.2x0.7 m L=12.33m	12+85 1.2x0.7 m L=11.23m	13+83 1.2x0.7 m L=12.23m	15+83 1.2x0.7 m L=11.23m	19+68 1.2x0.7 m L=11.23m	23+00 1.2x0.7 m L=11.23m	23+84 1.2x0.7 m L=11.23m	24+80 1.2x0.7 m L=11.23m	25+32 1.2x0.7 m L=11.23m	30+60 1.2x0.7 m L=11.23m	31+40 1.2x0.7 m L=11.23m	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	135	130	138	132	120	135	110	110	110	115	110	115	110	115	1685	33[g]
2	Excavation of soil manually, loading and disposal to dumpsite	m^3	13	13	14	13	12	13	10	10	10	11	10	11	10	11	161	33[g]
3	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8[g]
4	Excavation of soil manually, loading and disposal to dumpsite	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8[g]
5	Removal of concrete inlet/outlet of culvert by jack hammers, loading and disposal to dumpsite	m^3	1.0	1.1	0.7	0.5	0.5	--	--	3.5	--	0.5	--	--	0.5	--	8.3	
6	Dismantling of sections d=1.0 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	11/3.85	--	13/4.55	--	9/3.15	12/4.2	--	13/4.55	--	12/4.2	--	--	--	--	70/24.5	
7	Dismantling of steel pipe d=0.5m, loading and disposal to dumpsite	m/kg	--	8.0/919.3	--	--	--	--	--	--	--	--	--	--	--	--	8.0/919.3	
8	Dismantling of asbestos pipe d=0.3 m, loading and disposal to dumpsite	L.m/kg	--	--	--	11.2/414	--	--	11.6/429	--	--	--	11.9/440	16.6/614	11.6/429	--	62.9/2326	
9	Dismantling of asbestos pipe d=0.2 m, loading and disposal to dumpsite	m/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
10	Dismantling of sections d=0.75 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
11	Dismantling of sections d=0.8 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12	Dismantling of sections d=0.5 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
13	Construction of reinforced concrete culvert:	L.m	12.23	12.23	12.44	12.33	11.23	12.23	11.23	11.23	11.23	11.23	11.23	11.23	11.23	11.23	162.53	
	- Gravel bed h=20 cm	m^3	6.8	6.8	7.0	6.9	6.2	6.8	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	90.1	
	- Concrete bed h=20 cm B22.5 F200 W6	m^3	5.5	5.5	5.6	5.55	4.9	5.5	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	71.75	
	- Reinforced concrete body of culvert																	
	• Concrete B30 F200 W6	m^3	23.4	23.4	23.7	23.6	21.6	23.4	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	311.9	
	• Reinforcement A-III	kg	1298.4	1298.4	1324.4	1312.5	1193.5	1298.4	1193.5	1193.5	1193.5	1193.5	1193.5	1193.5	1193.5	1193.5	17273.6	
	- Caulking material between culvert sections	kg	24	24	25	24.5	24	24	24	24	24	24	24	24	24	24	337.5	
	- Bituminous insulation	m^2	45	45	47	46	41	45	41	41	41	41	41	41	41	41	597	
	- Protecting painting	m^2	2.5	2.5	2.8	2.75	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	35.55	
	- Manufacturing of reinforced concrete cover slabs at the production base dimensions (100x31.5x160) cm, transportation and installation into the design position	unit	12	12	11	10	11	12	11	11	11	11	11	11	11	11	156	
	• Concrete B30 F200 W6	m^3	3.6	3.6	3.52	3.5	3.3	3.6	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	47.52	
	• Reinforcement A-III	kg	1047.6	1047.6	1109.9	1142.0	960.3	1047.6	960.3	960.3	960.3	960.3	960.3	960.3	960.3	960.3	14037.4	
	• Reinforcement A-I	kg	39.6	39.6	36.3	33.0	36.3	39.6	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	514.8	
	- Bituminous insulation	m^2	19.2	19.2	19.6	19.4	17.6	19.2	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	255	
	- Protecting painting	m^2	10	10	10	9.6	9.0	10	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	130.6	
	- Construction of concrete socle B22.5F200W6 at the culvert inlet/outlet on top of reinforced concrete slab	m^3	0.9	0.9	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	12.1	
	- Bituminous insulation	m^2	2.2	2.2	2.8	2.4	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	30.1	
	- Filling of the delivered rocky soil around the culvert body, mechanical compaction in h=30 cm layers	m^3	60	60	62	61	57	60	56	56	56	56	56	56	56	56	808	
14	Construction of water intake well:																	
	- Gravel bed h=20 cm	m^3	-	-	1.0	1.1	-	-	-	-	-	-	-	-	-	-	2.1	
	- Concrete of foundation B22.5F200W6	m^3	-	-	1.8	1.85	-	-	-	-	-	-	-	-	-	-	3.65	
	- Concrete of body B22.5F200W6	m^3	-	-	2.6	2.8	-	-	-	-	-	-	-	-	-	-	5.4	
	- Bituminous insulation	m^2	-	-	9.0	9.5	-	-	-	-	-	-	-	-	-	-	18.5	
15	Construction of cast in situ concrete wings																	
	- Gravel bed h=20 cm	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	- Concrete of key B22.5F200W6	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	- Concrete of chute B22.5F200W6	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	- Concrete of wing B22.5F200W6	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	- Bituminous insulation	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	- Construction of stone apron	m^3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16	Construction of gabion boxes at the culvert inlet/outlet	unit	12	12	6	6	12	12	12	12	12	12	12	12	12	12	156	
	- Gravel bed h=20 cm	m^3	4.8	4.8	2.4	2.4	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	62.4	
	- Gabion boxes 1x1x1.5 m	unit/kg	8/105.6	8/105.6	4/52.8	4/52.8	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	104/1372.8	
	- Gabion boxes 1x1x2 m	unit/kg	4/70	4/70	2/35	2/35	4/70	4/70	4/70	4/70	4/70	4/70	4/70	4/70	4/70	4/70	52/910	
	- Rubble stone	m^3	20	20	10	10	20	20	20	20	20	20	20	20	20	20	260	
	- Tying wire	kg	9.0	9.0	4.5	4.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	117.0	
	- Construction of stone apron	m^3	9.2	8.5	4.0	4.6	8.6	8.6	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	107.5	
17	Filling of gravel soil behind the gabion walls and for the construction of fill, compaction in 0.3 m layers by vibrating roller 4 passes on a track	m^3	35	25	22	20	20	25	15	15	15	15	15	15	15	15	267	6[b]

VOLUMES OF WORKS FOR THE CONSTRUCTION OF REINFORCED CONCRETE CULVERTS 1.2x0.7 m SECTION II

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Quantity									Grand total	Notes
			Section: km 9 – km 16										
			6+90 1.2x0.7 m L=18.26m	14+95.75 1.2x0.7 m L=16.23m	31+14.7 1.2x0.7 m L=10.23m	32+83.2 1.2x0.7 m L=11.23m	33+40.1 1.2x0.7 m L=10.0m	39+19 1.2x0.7 m L=10.23m	46+04.8 1.2x0.7 m L=10.23m	76+18.80 1.2x0.7 m L=13.23m	Total		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	--	--	--	--	--	--	--	--	--	1685	33[g]
2	Excavation of soil manually, loading and disposal to dumpsite	m^3	--	--	--	--	--	--	--	--	--	161	33[g]
3	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	164	150	100	110	100	100	105	130	959	959	8[g]
4	Excavation of soil manually, loading and disposal to dumpsite	m^3	16	15	10	10	10	10	10	13	94	94	8[g]
5	Removal of concrete inlet/outlet of culvert by jack hammers, loading and disposal to dumpsite	m^3	--	0.7	1.2	0.8	0.7	1.4	1.8	2.5	9.1	17.4	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	Dismantling of sections d=1.0 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	9/3.15	11/3.85	9/3.15	--	--	29/10.15	99/34.65	
7	Dismantling of steel pipe d=0.5m, loading and disposal to dumpsite	m/kg	--	--	--	--	--	--	--	--	--	8.0/919.3	
8	Dismantling of asbestos pipe d=0.3 m, loading and disposal to dumpsite	L.m/kg	--	--	--	--	--	--	--	--	--	62.9/2326	
9	Dismantling of asbestos pipe d=0.2 m, loading and disposal to dumpsite	m/kg	17.4/749	--	--	--	--	--	--	--	17.4/749	17.4/749	
10	Dismantling of sections d=0.75 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	15/3.15	--	--	--	--	--	12/2.52	27/5.67	27/5.67	
11	Dismantling of sections d=0.8 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	--	--	--	--	8/1.8	--	8/1.8	8/1.8	
12	Dismantling of sections d=0.5 m L=1.0 m p=900 kg of reinforced concrete of culvert, loading and disposal to dumpsite	unit/m^3	--	--	10/1.5	--	--	--	--	--	10/1.5	10/1.5	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
13	Construction of reinforced concrete culvert:	L.m	18.26	16.23	10.23	11.23	10.23	10.23	10.23	13.23	99.87	262.4	
	- Gravel bed h=20 cm	m^3	10.1	9.0	5.7	6.2	5.7	5.7	5.8	7.3	55.5	145.6	
	- Concrete bed h=20 cm B22.5 F200 W6	m^3	8.6	7.5	4.4	4.9	4.4	4.4	7.2	6.0	47.4	119.15	
	- Reinforced concrete body of culvert												
	• Concrete B30 F200 W6	m^3	33.9	30.2	19.8	21.6	19.8	19.8	20.2	25.1	190.4	502.3	
	• Reinforcement A-III	kg	1954.1	1734.5	1085.3	1193.5	1085.3	1085.3	1085.3	1409.9	10633.2	27906.8	
	- Caulking material between culvert sections	kg	48	24	24	24	24	24	24	24	216	553.5	
	- Bituminous insulation	m^2	82.1	56.0	38.0	41	38.0	38.0	39.5	38.0	370.6	967.6	
	- Protecting painting	m^2	5.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	22.5	58.05	
	- Manufacturing of reinforced concrete cover slabs at the production base dimensions (100x31.5x160) cm, transportation and installation into the design position	unit	18	16	10	11	10	10	10	13	98	254	
	• Concrete B30 F200 W6	m^3	5.4	4.8	3.0	3.3	3.0	3.0	3.0	3.9	29.4	76.92	
	• Reinforcement A-III	kg	1571.4	1396.8	873.0	960.3	873.0	873.0	873.0	1134.9	8555.4	22592.8	
	• Reinforcement A-I	kg	59.4	52.8	33.0	36.3	33.0	33.0	33.0	42.9	323.4	838.2	
	- Bituminous insulation	m^2	28.8	25.6	16.0	17.6	16.0	16.0	16.0	20.8	156.8	411.8	
	- Protecting painting	m^2	15.2	14.2	8.1	9.0	8.1	8.1	8.1	11.3	82.1	212.7	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	- Construction of concrete socle B22.5F200W6 at the culvert inlet/outlet on top of reinforced concrete slab	m^3	0.8	0.8	0.8	1.0	0.8	1.0	1.1	0.8	7.1	19.2	
	- Bituminous insulation	m^2	2.0	2.0	2.0	2.5	2.0	2.5	2.7	2.0	17.7	47.8	
	- Filling of the delivered rocky soil around the culvert body, mechanical compaction in h=30 cm layers	m^3	90.2	80.2	50.6	56	50.6	50.6	50.6	65.4	494.2	1302.2	
14	Construction of water intake well:												
	- Gravel bed h=20 cm	m^3	-	-	-	-	-	-	-	-	-	2.1	
	- Concrete of foundation B22.5F200W6	m^3	-	-	-	-	-	-	-	-	-	3.65	
	- Concrete of body B22.5F200W6	m^3	-	-	-	-	-	-	-	-	-	5.4	
	- Bituminous insulation	m^2	-	-	-	-	-	-	-	-	-	18.5	
15	Construction of cast in situ concrete wings												
	- Gravel bed h=20 cm	m^3	-	-	-	-	-	-	-	0.8	0.8	0.8	
	- Concrete of key B22.5F200W6	m^3	-	-	-	-	-	-	-	0.8	0.8	0.8	
	- Concrete of chute B22.5F200W6	m^3	-	-	-	-	-	-	-	1.3	1.3	1.3	
	- Concrete of wing B22.5F200W6	m^3	-	-	-	-	-	-	-	1.4	1.4	1.4	
	- Bituminous insulation	m^2	-	-	-	-	-	-	-	9.2	9.2	9.2	
	- Construction of stone apron	m^3	-	-	-	-	-	-	-	4.0	4.0	4.0	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
16	Construction of gabion boxes at the culvert inlet/outlet	unit	12	12	12	12	12	12	12	6	90	246	
	- Gravel bed h=20 cm	m^3	4.8	4.8	4.8	4.8	4.8	4.8	4.8	2.4	36	98.4	
	- Gabion boxes 1x1x1.5 m	unit/kg	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	8/105.6	4/52.8	60/792	164/2164.8	
	- Gabion boxes 1x1x2 m	unit/kg	4/70	4/70	4/70	4/70	4/70	4/70	4/70	2/35	30/525	82/1435	
	- Rubble stone	m^3	20	20	20	20	20	20	20	10	150	410	
	- Tying wire	kg	9.0	9.0	9.0	9.0	9.0	9.0	9.0	4.5	67.5	184.5	
	- Construction of stone apron	m^3	9.0	9.5	7.4	5.5	7.4	6.7	7.0	3.0	55.5	163	
17	Filling of gravel soil behind the gabion walls and for the construction of fill, compaction in 0.3 m layers by vibrating roller 4 passes on a track	m^3	30	35	15	20	15	15	40	20	190	457	6[b]

VOLUMES OF WORKS FOR THE CONSTRUCTION OF REINFORCED CONCRETE CULVERT 2.0X0.7 M L=12.2 m AT PK 36+61.2

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16
SECTION: KM 9 – KM 16

N	Names of works	Meas. unit	Quantity	Total	Notes
1	2	3	4	5	6
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	160		8^g
2	Excavation of soil manually, loading and disposal to dumpsite	m^3	16		8^g
3	Dismantling of reinforced concrete slabs of the existing culvert, loading and disposal to dumpsite	unit/m^3	11/5.8		
4	Removal of concrete inlet/outlet by jack hammers, loading and disposal to dumpsite	m^3	2		
5	Removal of reinforced concrete body of the existing culvert by excavator mounted hydro-hammers, loading and disposal to dumpsite	m^3	16.8		
6	Construction of reinforced concrete culvert:	L.m	12.20		
	- Gravel bed h=20 cm	m^3	10.0		
	• Concrete bed h=20 cm B22.5 F200 W6	m^3	7.5		
	- Body of reinforced concrete culvert				
	• Concrete B30 F200 W6	m^3	46.4		
	• Reinforcement A-III	kg	2337.6		
	- Caulking material between culvert sections	kg	35		
	- Bituminous insulation	m^2	68		
	- Protecting painting	m^2	3.8		
	- Manufacturing of reinforced concrete cover slabs dimensions (100x38.5x397) cm at the production base, transportation and installation into the design position	unit	8		
	• Concrete B30 F200 W6	m^3	6.32		
	• Reinforcement A-III	kg	1932.8		
	• Reinforcement A-I	kg	26.4		
	- Bituminous insulation	m^2	25.6		
	- Protecting painting	m^2	13.0		

1	2	3	4	5	6
7	Construction of water intake well on the culvert body:				
	- Concrete of well's socle B30 F200 W6	m^3	2.2		
	- Reinforcement A-III of well's socle	kg	166.3		
	- Bituminous insulation	m^2	4.8		
	- Embedded detail				
	• Steel angle ∟70x45x5	l.m/kg	5.3/23.8		
	• Reinforcement A-III	kg	19.8		
	- Manufacturing of steel cover slab and installation by 10-ton capacity crane	unit/kg	2/233.6		Strip steel δ=20mm
8	Construction of concrete socle B22.5F200W6 at the culvert inlet/outlet on top of reinforced concrete slab	m^3	2.0		
	- Bituminous insulation	m^2	4.0		
9	Filling of the delivered rocky soil around the culvert body, mechanical compaction in h=30 cm layers	m^3	80		
10	Construction of gabion boxes at the culvert inlet/outlet	unit			
	- Gravel bed h=20 cm	m^3	4.8		
	- Gabion boxes 1x1x1.5 m	unit/kg	8/105.6		
	- Gabion boxes 1x1x2 m	unit/kg	4/70		
	- Rubble stone	m^3	20		
	- Tying wire	kg	9.0		
	- Construction of stone apron	m^3	18		
11	Filling of gravel soil behind the gabion walls and for the construction of fill, compaction in 0.3 m layers by vibrating roller 4 passes on a track	m^3	16		6^b

VOLUMES OF WORKS FOR THE REPAIR OF THE EXISTING REINFORCED CONCRETE CULVERT 3.0x2.0 m AT PK1+03

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16
SECTION: KM 9 – KM 16

N	Names of works	Meas. unit	Quantity	Notes
1	2	3	4	5
1	Uprooting of shrubs manually at the culvert inlet/outlet	m^2	50	
2	Manual cleaning of culvert from soil, loading and disposal to dumpsite	m^3	3	8^g
3	Restoration of concrete protecting layer of the cover slabs and inlet/outlet of the existing culvert			
	- Cleaning of the surface by compressed air	m^2	48	
	- Plastering with sand-cement mortar h=3 cm	m^2	48	M-200

N	Names of works	Meas. unit	Quantity	Notes
1	2	3	4	5
	I. PREPARATORY WORKS			
1	Removal of the existing reinforced concrete bridge railing and parapets by jack hammers, loading and disposal to dumpsite	m^3	5	
2	Dismantling of reinforced concrete sidewalk blocks, loading and disposal to dumpsite	m^3	16.5	
3	Removal of the existing pavement of the bridge deck by jack hammers, loading and disposal to dumpsite	m^3	115	Removal of concrete layer up to the span beam
4	Removal of expansion joint	unit/L.m	3/30	
5	Removal of longitudinal edge and middle monolithic zones of superstructure by jack hammers, loading and disposal to dumpsite	m^3	18.4	
6	Partial removal of butt ends of beam slabs by jack hammers for the construction of expansion joints, loading and disposal to dumpsite	m^3	2.4	
7	Manual cleaning of pads, double handling	m^2/m^3	34.6/1.0	
8	Excavation of soil at the abutments for the construction of transition slabs, loading and disposal to dumpsite - By excavator - Manually	 m^3 m^3	 150 15	 8^g 8^g
9	Removal of damaged reinforced concrete transition slabs by excavator-mounted hydro hammers, loading and disposal to dumpsite	m^3	15.5	
	II. CONSTRUCTION OF BRIDGE DECK			
1	Construction of longitudinal edge and middle monolithic zones of superstructure - Straightening and cleaning by sand blasting device of free lengths of reinforcing bars of beams - Reinforcement A-III - Concrete B35F200W6	unit m^2 kg m^3	12 35 4034.4 18.4	

1	2	3	4	5
2	Restoration of butt ends of beam slabs at the expansion joints:			On all the 3 abutments and
	- Reinforcement A-III	kg	342.3	pier
	- Concrete B35 F200 W6	m^3	3.0	
	- Rolled steel L 160x100x10	kg	613.5	
	- Welding with the existing reinforcement of beam slab	kg	2	
3	Restoration of concrete protecting layer of superstructure beams			
	- Cleaning of surface by compressed air	m^2	50	
	- Plastering by sand-cement mortar h=2.0 cm	m^2	50	M-200
4	Cleaning of superstructure surface by compressed air	m^2	445	
5	Construction of water removing triangle $h_{average}$=6.5 cm on the superstructure	m^2	424.0	Excluding expansion joints
	- Concrete B30 F200 W6	m^3	27.6	
6	Construction of protective painting	m^2	465	
7	Construction of protecting layer h=4 cm	m^2	418.0	Excluding expansion joints
	- Concrete B30 F200 W6	m^3	16.8	
8	Construction of enclosed-type expansion joint	unit/L.m	3/24	Width 8 m
	- Drilling of holes d=14mm L=12 cm by manual drilling device for the installation of dowels	unit/L.m	198/23.8	
	- Sand and cement mortar thickness 1 cm	m^2	7.2	M-200
	- Installation of brass compensator K-1 790x1.2 Л 63 L=2000 mm	unit/kg	15/154.8	Element weight 10.32 kg
	- Steel sheet 5x40x2000mm	unit/kg	24/75.4	
	- Installation of dowels	unit/kg	198/7.425	
	- Self-tapping screw	unit/kg	198/19.8	
	- Porous fill	kg	30.24	
	- Hermetic	kg	37.3	
	- Basalt fibre fabric opening 30x30 mm			
	• Width 1.0 m	m^2	24	
	• Width 1.3 m	m^2	31.2	
	• Width 1.6 m	m^2	38.4	
	• Construction of fine-grained asphalt concrete, thickness of $h_{average}$=10.5 cm	m^2	31.2	
9	Application of bitumen emulsion on the surface of the protecting layer	m^2/t	325/0.325	Width 8 m
10	Manufacturing of new sidewalk blocks:			

1	2	3	4	5
	- Size of block 269x207x91	unit	32	
	- Concrete B30 F200 W6	m^3	28.8	
	- Reinforcement			
	• A-I	kg	131.2	
	• A-III	kg	4832.0	
	- Embedded detail			
	• Sheet steel	kg	227.2	
	• Reinforcement A-III	kg	64	
11	Installation of sidewalk blocks by 10-ton capacity crane:	unit/m^3	32/28.8	1 unit – 2.3 t
	- Removal of protecting layer from the slab of reinforced concrete beam to expose the reinforcement, loading and disposal to dumpsite	m^3	1.8	
	- Welding of free lengths of reinforcing bars of sidewalk blocks with the beam's slab reinforcement	kg	3	
12	Construction of expansion joint on sidewalk:			
	- Construction of expansion joint between sidewalk blocks	unit/m	6 / 9.0	
	• Installation of brass compensator K-1 500x1.2 Л 63 L=1500 mm	unit/kg	6 / 29.4	Element weight 4.9 kg
	• Hermetic	kg	40	
	• Driving of nails	unit/kg	84 / 0.75	
13	Manufacturing of steel railing, painting, transportation and installation by 10-ton capacity crane	unit/kg	32 / 5456	
14	Construction of pavement on the sidewalk:			
	- Application of bitumen emulsion	m^2/t	86.4 / 0.864	
	- Construction of fine-grained asphalt h=3cm	m^2/m^3	86.4 / 2.6	
15	Installation of cast rion drain pipes:	Sets	16	
	- Construction of openings 0.2X0.2 m in the superstructure beam slabs by manual perforator	unit/m^3	16/0.15	
	- Weight of set	kg	52.5	
	- Total weight	kg	840	
	- Filling of voids around the pipe with cement mortar	m^3	0.1	M-200
16	Construction of fine-grained asphalt concrete pavement h=5 cm on the carriageway	m^2	320.2	

1	2	3	4	5
17	Painting of guardrails by perchlorovinyl paint	m^2	160	
	III REPAIR OF THE ABUTMENTS AND PIERS			
1	Repair of backwall of the abutment for the construction of transition slabs			
	- Drilling of backwall by manual drilling device d=18mm L=200mm	unit/L.m	84 / 16.8	
	- Installation of reinforcement bars on cement mortar into drilled holes	unit/kg	42 / 72.4	
	- Cement mortar M-200	m^3	0.005	
	- Reinforcement A-III	kg	158.6	
	- Concrete B30 F200 W6	m^3	2.0	
	- Bituminous insulation	m^2	65	
2	Filling of delivered gravel soil behind the abutments compaction in 0.3 m layers by vibrating roller 4 passes on a track	m^3	75	6^b
3	Construction of crushed aggregates bed under the transition slabs	m^3	65	
4	Manufacturing of transition slabs:	unit	16	
	- Reinforcement A-I	kg	200	
	- Reinforcement A-III	kg	2876.4	
	- Concrete B30 F200 W6	m^3	15.2	
5	Installation of transition slabs:			
	- Installation of slabs by 16-ton capacity crane	unit/m^3	16 / 15.2	
	- Monolithing of transition slabs			
	• Reinforcement A-III	kg	480.4	
	• Concrete B30 F200 W6	m^3	3.4	
6	Construction of concrete leveling layer δ=3cm on transition slabs	m^2/m^3	64 / 1.92	B30 F200 W6
7	Construction of protective painting	m^2	64	
8	Construction of concrete protecting layer δ=4 cm	m^2/m^3	64 / 2.6	B30 F200 W6
9	Construction of cast in situ reinforced concrete parapets and guardrails within the abutments:	unit	4	
	- Crushed aggregates bed h =0.1 m	m^3	1.0	
	- Drilling of backwall and wings by manual drilling device d=14mm L=400mm	unit/L.m	192 / 76.8	
	- Installation of reinforcement bars on cement mortar into drilled holes	unit/kg	192 / 86	
	- Cement mortar	m^3	0.015	M-200

1	2	3	4	5
	- Concrete B30 F200 W6	m^3	9.6	
	- Reinforcement A-I	kg	19.2	
	- Reinforcement A-III	kg	1390.4	
10	Construction of sidewalk pavement within the abutments			
	- Application of bitumen emulsion	m^2/t	16 /0.16	
	- Construction fine-grained asphalt h=3 cm	m^2	16	
11	Cleaning of pad, backwall and wings of abutments by sand blasting device and shotcreting, thickness h=3.0 cm	m^2	52	B30 F200 W6
12	Cleaning of bearing parts of abutments and piers by metal brush, painting	m^2	2.4	
13	Restoration of fill cones by the abutments by the delivered gravel soil, compaction in 0.3 m layers by vibrating rollers 4 passes on a track	m^3	45	6^b
14	Painting of guardrails and parapets by perchlorovinyl paint	m^2	71.2	
	IV REPAIR OF REGULATION WALLS AND BODY OF ABUTMENTS			
1	Cutting of channel by bulldozer, displacement to 50 m for the construction of temporary dam ($h_{average}$=1.5 m) on the right bank of the river	m^3	160	6^g
2	Removal of temporary protecting dam upon the completion of the repair of regulation walls on the right bank and displacement by bulldozer to 50 m for the construction of protecting dam ($h_{average}$=1.5 m) on the left bank of the river	m^3	150	6^g
3	Removal of weathered upper part of regulation walls $h_{average}$=30 cm by jack hammers, loading and disposal to dumpsite	$L.m/m^3$	60 / 9	
4	Construction of reinforced concrete belt of regulaion wall			
	- Drilling of wall by manual drilling device d=14mm L=400mm	unit/L.m	600 / 240	
	- Installation of reinforcement bars on cement mortar into drilled holes	unit/kg	600 / 612	
	- Cement mortar M-200	m^3	0.04	
	- Reinforcement A-III	kg	486	
	- Concrete B30 F200 W6	m^3	21.6	

1	2	3	4	5
5	Construction of reinforced concrete casing on the body of regulation walls and abutments			
	- Cleaning of surface by sand blasting device	m^2	210	
	- Drilling of wall by manual drilling device d=14mm L=400mm	unit/L.m	1680 / 672	
	- Installation of reinforcement bars on cement mortar into drilled holes	unit/kg	1680 / 861	
	- Cement mortar M-200	m^3	0.105	
	- Reinforcement A-III	kg	1302	
	- Construction of reinforced concrete casing	m^3	16.8	Concrete B30 F200W6
	- Construction of bituminous insulation on the available rear part of regulation walls	m^2	68	2 layers
6	Construction of stone riprap from the delivered large fragmental boulders d>0.7m, wedging	m^3	290	
7	Filling of soil behind the riprap on the left bank in the upstream:			
	- Removal of temporary protecting dam, displacement to 50 m by bulldozer and filling by excavator	m^3	140	6^g

VOLUMES OF WORKS FOR THE CONSTRUCTION OF LOWER CONCRETE RETAINING WALLS
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM

N	Names of works	Meas. unit	Quantity					Notes
			PK32+18÷ PK32+60 Right	PK43+01÷ PK43+22 Right	PK47+32÷ PK47+73 Right	PK52+30÷ PK52+65 Right	Total	
1	2	3	4	5	6	7	8	9
Section km 9 - km 16								
1	Construction length	m	42	21	37	35	135	
2	Dismantling and installation of steel fence	L.m/t	42/2.9	21/1.2	-	35/1.9	98/6	
3	Dismantling and installation of wooden fence	m^2	-	-	62	-	62	
4	Dismantling of damaged concrete wall by excavator mounted hydro hammers, loading and disposal to dumpsite	m^3	17	28	26	29	100	
5	Excavation of pit by excavator, loading and disposal to dumpsite	m^3	100	50	170	180	500	8^g
6	Excavation of pit manually, loading and disposal to dumpsite	m^3	30	20	30	30	110	8^g
7	Construction of cast in situ concrete wall:							
	- Sand and gravel bed thickness 20 cm	m^3	14	8	15	15	52	
	- Concrete of base	m^3	41.2	30.2	61.0	71.6	204.0	B22.5 F200 W6
	- Concrete of body	m^3	32.8	25.2	55.0	65.0	178.0	B22.5 F200 W6
	- Bituminous insulation on wall surface 2 layers	m^2	130	80	150	160	520	

1	2	3	4	5	6	7	8	9
8	Construction of longitudinal drainage behind the wall:							
	- Clay screen 20 cm	m^3	7	4	7	7	25	
	- Stone riprap thickness 30 cm	m^3	13	7	12	12	44	
	- Plastic drainage pipes d-10 cm	unit/L.m	20/16	9/9	16/18	16/21	61/64	
9	Backfilling of gravel soil from borrow pit behind the wall by excavator	m^3	55	28	72	92	247	6[b]
10	Construction of concrete socle of fence	m^3	-	4.2	-	-	4.2	B22.5 F200 W6

Notes: PK47+32÷PK47+73 construction length is adopted as width of yard entrances deducted from the length of the section.

VOLUMES OF WORKS FOR THE CONSTRUCTION OF LOWER GABION WALLS
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM

N	Names of works	Meas. unit	Quantity			Notes
			Section km 1 – km 4	Section km 9 – km 16	Total	
			PK 8+34÷ PK 8+64.5 Left L- 30.5 m	PK 45+14÷ PK 45+28 Right L- 14 m		
1	2	3	4	5	6	7
1	Manual dismantling and installation of wire fence	L.m/ m^2	-	14/21	**14/21**	
2	Excavation of pit by excavator, loading and disposal to dumpsite	m^3	130	-	**130**	33[g]
			-	30	**30**	8[g]
3	Excavation of pit manually, loading and disposal to dumpsite	m^3	25	-	**25**	33[g]
			-	10	**10**	8[g]
4	Gravel bed thickness 20 cm	m^3	15.5	4.5	**20**	
5	Gabion boxes size 2x1x1m wire d=2.7mm	unit/kg	24/420	7/122.5	**31/542.5**	
6	Gabion boxes size 1.5x1x1m wire d=2.7mm	unit/kg	31/409.2	-	**31/409.2**	
7	Tying wire d=2.2mm	kg	42	6	**48**	
8	Placing of rubble stone in gabions manually	m^3	94.5	14	**108.5**	
9	Backfilling of gravel soil delivered from borrow pit behind the wall by excavator	m^3	67	12	**79**	6[b]

VOLUMES OF EARTHWORKS ACCORDING TO STATIONING

Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

PK+	Leveling layer - sand and gravel mix m^3	Embankment m^3	Cut m^3	Ditch m^3	Construction of steps m^3	Shoulders m^3
1	2	3	4	5	6	7
Section km 1 - km 4						
0+00						
	86	0	28 (1)	0	0	65
1+00						
	87	0	19 (1)	0	0	66
2+00						
	89	0	46 (1)	0	0	65
3+00						
	88	0	19 (1)	0	0	66
4+00						
	83	0	22 (1)	0	0	65
5+00						
	84	0	19 (1)	0	0	65
6+00						
	105	0	3 (1)	0	0	62
7+00						
	77	0	34 (1)	0	0	66
8+00						
	54	5	120 (1)	0	5 (1)	48
9+00						
	37	0	165 (1)	52 (1)	0	64
10+00						
Total km 1	790	5	475 (1)	52 (1)	5 (1)	632
10+00						
	125	0	24 (1)	5 (1)	0	60
11+00						
	86	0	45 (1)	0	0	64
12+00						
	105	0	21 (1)	10 (1)	0	65
13+00						
	184	0	5 (1)	53 (1)	0	63
14+00						
	97	0	17 (1)	44 (1)	0	66
15+00						
	131	0	2 (1)	23 (1)	0	67
16+00						
	77	0	11 (1)	0	0	65
17+00						
	122	0	2 (1)	0	0	66
18+00						
	223	6	3 (1)	0	6 (1)	67
19+00						
	136	45	12 (1)	27	45 (1)	66
20+00						
Total km 2	1286	51	142 (1)	162 (1)	51 (1)	649

1	2	3	4	5	6	7
20+00						
	122	62	4 (1)	55 (1)	62 (1)	66
21+00						
	107	18	5 (1)	49 (1)	18 (1)	66
22+00						
	77	0	13 (1)	58 (1)	0	65
23+00						
	85	0	25 (1)	54 (1)	0	67
24+00						
	87	0	13 (1)	55 (1)	0	66
25+00						
	83	0	13 (1)	35 (1)	0	65
26+00						
	109	0	6 (1)	0	0	64
27+00						
	127	0	3 (1)	0	0	66
28+00						
	104	63	4 (1)	0	63 (1)	65
29+00						
	82	98	10 (1)	0	98 (1)	60
30+00						
Total km 3	983	241	96 (1)	306 (1)	241 (1)	650
30+00						
	121	20	15 (1)	0	20 (1)	59
31+00						
	79	0	27 (1)	0	0	66
32+00						
	79	0	38 (1)	0	0	66
33+00						
	83	25	33 (1)	0	25 (1)	63
34+00						
	85	0	25 (1)	0	0	65
35+00						
	87	0	14 (1)	0	0	66
36+00						
	75	0	31 (1)	0	0	65
37+00						
	84	0	33 (1)	0	0	66
38+00						
	78	0	33 (1)	0	0	66
39+00						
	23	0	23 (1)	0	0	28
39+31						
Total km 4	794	45	272 (1)	0	45 (1)	610
Sum km1-km4	**3853**	**342**	**985 (1)**	**520 (1)**	**342 (1)**	**2541**

1	2	3	4	5	6	7
Section km 9 - km 16						
0+00						
	39	0	42 (2)	20 (2)	0 (2)	47
1+00						
2+00	67	14	20 (2)	0	14 (2)	49
	47	16	144 (2)	0	16 (2)	48
3+00						
	2	0	192 (2)	0	0	25
4+00						
	20	0	472 (2)	0	0	49
5+00						
	37	15	243 (2)	0	15 (2)	47
6+00						
	236	0	0	0	0	51
7+00						
	139	0	20 (2)	0	0	63
8+00						
	151	10	2 (2)	0	10 (2)	67
9+00						
	177	35	4 (2)	0	35 (2)	65
10+00						
Total km 1	915	90	1139 (2)	20	90 (2)	511
10+00						
	105	0	17 (2)	0	0	66
11+00						
	157	0	20 (2)	0	0	65
12+00						
	130	0	6 (2)	0	0	65
13+00						
	176	0	1 (2)	0	0	66
14+00						
	203	0	7 (2)	0	0	65
15+00						
	94	0	5 (2)	0	0	66
16+00						
	91	0	15 (2)	16 (2)	0	62
17+00						
	37	0	36 (2)	49 (2)	0	66
18+00						
	210	30	66 (2)	67 (2)	30 (2)	67
19+00						
	47	0	54 (2)	68 (2)	0	55
20+00						
Total km 2	1250	30	227 (2)	200 (2)	30 (2)	643

1	2	3	4	5	6	7
20+00						
	242	11	23 (2)	64 (2)	11 (2)	66
21+00						
	115	0	2 (2)	63 (2)	0	65
22+00						
	137	0	15 (2)	78 (2)	0	66
23+00						
	46	0	39 (2)	127 (2)	0	66
24+00						
	251	0	9 (2)	98 (2)	0	65
25+00						
	229	0	7 (2)	64 (2)	0	65
26+00						
	209	0	5 (2)	51 (2)	0	66
27+00						
	88	0	25 (2)	0	0	65
28+00						
	182	44	30 (2)	21 (2)	44 (2)	64
29+00						
	38	0	30 (2)	59 (2)	0	61
30+00						
Total km 3	1537	55	185 (2)	625 (2)	55 (2)	649
30+00						
	19	12	50 (2)	38 (2)	12 (2)	46
31+00						
	140	0	5 (2)	41 (2)	0	46
32+00						
	52	25	44 (2)	0	25 (2)	48
33+00						
	49	0	28 (2)	0	0	47
34+00						
	11	8	57 (2)	0	8	46
35+00						
	53	0	21 (2)	0	0	47
36+00						
	38	0	23 (2)	0	0	48
37+00						
	93	15	17 (2)	0	15 (2)	48
38+00						
	91	0	14 (2)	0	0	49
39+00						
	74	0	28 (2)	0	0	48
40+00						
Total km 3	620	60	287 (2)	79 (2)	60 (2)	473

1	2	3	4	5	6	7
40+00						
	62	0	17 (2)	0	0	47
41+00						
	34	15	84 (2)	0	15 (2)	47
42+00						
	80	0	83 (2)	0	0	46
43+00						
	15	0	49 (2)	0	0	46
44+00						
	73	0	15 (2)	0	0	45
45+00						
	59	0	43 (2)	0	0	46
46+00						
	58	0	24 (2)	0	0	47
47+00						
	84	9	8 (2)	0	9 (2)	48
48+00						
	12	0	79 (2)	0	0	45
49+00						
	49	11	53 (2)	0	11 (2)	46
50+00						
Total km 5	526	35	455 (2)	0	35 (2)	463
50+00						
	55	36	20 (2)	0	36 (2)	47
51+00						
	17	0	50 (2)	0	0	45
52+00						
	49	0	21 (2)	0	0	46
53+00						
	4	0	70 (2)	0	0	46
54+00						
	40	0	27 (2)	17 (2)	0	47
55+00						
	128	0	13 (2)	60 (2)	0	62
56+00						
	33	0	100 (2)	42 (2)	0	65
57+00						
	54	0	143 (2)	44 (2)	0	65
58+00						
	82	0	28 (2)	58 (2)	0	66
59+00						
	77	0	39 (2)	66 (2)	0	65
60+00						
Total km 6	539	36	511 (2)	287 (2)	36 (2)	554

1	2	3	4	5	6	7
60+00						
	176	18	10 (2)	67 (2)	18 (2)	62
61+00						
	19	0	81 (2)	46 (2)	0	65
62+00						
	82	12	4 (2)	9 (2)	12 (2)	52
63+00						
	16	0	95 (2)	31 (2)	0	48
64+00						
	176	0	23 (2)	47 (2)	0	49
65+00						
	28	0	142 (2)	27 (2)	0	48
66+00						
	42	0	29 (2)	31 (2)	0	46
67+00						
	28	0	374 (2)	31 (2)	0	48
68+00						
	86	0	130 (2)	29 (2)	0	47
69+00						
	54	0	64 (2)	34 (2)	0	47
70+00						
Total km 7	707	30	952 (2)	352 (2)	30 (2)	512
70+00						
	64	22	61 (2)	33 (2)	22 (2)	45
71+00						
	30	0	276 (2)	23 (2)	0	46
72+00						
	43	5	114 (2)	37 (2)	5 (2)	45
73+00						
	13	0	32 (2)	16 (2)	0	46
74+00						
	28	0	21 (2)	0	0	46
75+00						
	16	0	38 (2)	0 (2)	0	46
76+00						
	8	0	85 (2)	12 (2)	0	39
76+78						
Total km 8	202	27	627 (2)	121 (2)	27	313
Sum km9-km16	**6296**	**363**	**4383 (2)**	**1684 (2)**	**363 (2)**	**4118**
Grand total	**10149**	**705**	**5368** **985 (1)** **4383 (2)**	**2204** **520 (1)** **1684 (2)**	**705** **342 (1)** **363 (2)**	**6659**

Classification of soil

(1) - 33g
(2) - 8g

Notes: Volumes of leveling layer and shoulders
are specified in the Summary Volumes of Works considering compaction coefficient

Location			Length of section without bridges	Type of pavement	Pavement		Base course			Leveling layer	Shoulders	Notes
Project kilometer	From PK+	To PK+			Width	Sand and gravel mix	Width	Crushed aggregates fraction 0-40 mm (h-8 cm) and asphalt concrete granulate (h-10 cm), stabilized by cold recycling with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm	Crushed aggregates fraction 0-40 mm, stabilized by cold recycling with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm	Sand and gravel mix	Sand and gravel mix	
					Area including widening							
			m		m	m^2	m	m^2	m^2	m^3	m^3	
1	2	3	4	5	6	7	8	9	10	11	12	13
Section km 1 – km 4												
1	0+00	10+00	960	I	7.0	6876	7.78	7625	-	965	771	Bridge L-40m
km 1			**960**			**6876**		**7625**	-	**965**	**771**	
2	10+00	20+00	1000	I	7.0	7118	7.78	7898	-	1569	792	
km 2			**1000**			**7118**		**7898**	-	**1569**	**792**	
3	20+00	30+00	1000	I	7.0	7000	7.78	7780	-	1199	793	
km 3			**1000**			**7000**		**7780**	-	**1199**	**793**	
4	30+00	39+31	931	I	7.0	6578	7.78	7304	-	968	744	
km 4			**931**			**6578**		**7304**	-	**968**	**744**	
Total			**3891**			**27572**		**30607**	-	**4701**	**3100**	
Section km 9 – km 16												
1	0+00	10+00	956.8	II	7.0	6893	7.78	-	7639	1116	623	Bridge L-43.2m
km 1			**956.8**			**6893**		-	**7639**	**1116**	**623**	
2	10+00	15+00	500	II	7.0	3500	7.78		3890	941	400	
	15+00	20+00	500	II	6.0	3083	6.78	-	3473	584	385	
km 2			**1000**			**6583**		-	**7363**	**1525**	**785**	
3	20+00	30+00	1000	II	6.0	6062	6.78	-	6842	1875	792	
km 3			**1000**			**6062**		-	**6842**	**1875**	**792**	
4	30+00	40+00	1000	II	6.0	6303	6.78	-	7083	756	577	
km 4			**1000**			**6303**		-	**7083**	**756**	**577**	
5	40+00	50+00	1000	II	6.0	6245	6.78	-	7025	642	565	
km 5			**1000**			**6245**		-	**7025**	**642**	**565**	

1	2	3	4	5	6	7	8	9	10	11	12	13
6	50+00	60+00	1000	II	6.0	6136	6.78	-	6916	658	676	
km 6			**1000**			**6136**		**-**	**6916**	**658**	**676**	
7	60+00	70+00	1000	II	6.0	6271	6.78	-	7051	863	625	
km 7			**1000**			**6271**		**-**	**7051**	**863**	**625**	
8	70+00	76+78	678	II	6.0	4070	6.78	-	4599	246	381	
km 8			**678**			**4070**		**-**	**4599**	**246**	**381**	
Total			**7634.8**			**48563**		**-**	**54518**	**7681**	**5024**	
Grand total			**11525.8**			**76135**		**30607**	**54518**	**12382**	**8124**	
Including	**Type I**		**3891**			**27572**		**30607**	**-**	**4701**	**3100**	
	Type II		**7634.8**			**48563**		**-**	**54518**	**7681**	**5024**	

Notes: Volume of leveling layer and shoulders is given including compaction coefficient.

LOCATION AND TECHNICAL CHARACTERISTICS OF JUNCTIONS

Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

N	Location PK+		Angle junction a	Radius R_1/R_2 m	Width B/b m	Length L m	Notes
	Left	Right					
1	2	3	4	5	6	7	8
Section km 1 - km 4							
1	0+00			25 / 15	-		
2	-	1+20	90	5 / 5	6.5 / 4.5	15	
3	1+32	-	90	5 / 5	6.5 / 4.5	15	
4	1+83	-	90	5 / 5	6.5 / 4.5	15	
5	-	2+31	80	3 / 5	6.5 / 4.5	15	
6	2+70	-	90	5 / 5	6.5 / 4.5	15	
7	-	4+17	60	3 / 10	6.5 / 4.5	15	
8	4+40	-	90	5 / 5	6.5 / 4.5	15	
9	-	4+78	90	5 / 5	6.5 / 4.5	15	
10	6+01	-	80	5 / 10	6.5 / 4.5	15	
11	-	6+15	90	5 / 5	6.5 / 4.5	15	
12	6+55	-	100	5 / 5	6.5 / 4.5	15	
13	-	7+14	90	5 / 5	6.5 / 4.5	15	
14	8+00	-	90	5 / 5	6 / 6	15	
15	-	8+27	90	5 / 5	6.5 / 4.5	15	
16	-	10+09	105	5 / 3	6.5 / 4.5	15	
17	10+10	-	100	5 / 3	6.5 / 4.5	15	
18	-	10+68	105	5 / 3	6.5 / 4.5	15	Pipe
19	10+92	-	130	5 / 3	6.5 / 4.5	15	Pipe
20	11+66	-	130	5 / 3	6.5 / 4.5	15	Pipe
21	-	11+73	115	5 / 3	6.5 / 4.5	15	
22	12+94	-	70	3 / 5	6.5 / 4.5	15	Pipe
23	-	13+25	20	1 / 50	6.5 / 4.5	15	
24	-	13+85	90	5 / 5	6 / 6	15	Pipe
25	13+96	-	90	5 / 3	6.5 / 4.5	15	
26	-	15+78	90	5 / 5	6 / 6	15	Pipe
27	-	19+60	90	5 / 5	6 / 6	15	Pipe
28	-	22+25	90	5 / 5	6 / 6	15	Pipe
29	-	24+90	90	5 / 5	6 / 6	15	Pipe
30	-	26+64	90	5 / 5	6 / 6	15	
31	-	30+64	120	10 / 3	6 / 6	15	
32	32+40	-	60	5 / 10	7 / 5	15	

1	2	3	4	5	6	7	8
33	-	34+54	95	20 / 15	8 / 6	15	
34	-	37+70	110	10 / 5	6 / 6	15	
Section km 9 - km 16							
35	1+10	-	80	3 / 5	6.5 / 4.5	15	
36	-	2+83	150	30 / 1	6.5 / 4.5	15	
37	3+34	-	90	5 / 5	7 / 5	15	
38	-	4+48	90	5 / 5	7 / 5	15	
39	-	6+70	90	5 / 5	6 / 6	15	Pipe
40	-	10+70	90	5 / 5	6 / 6	15	Pipe
41	14+83	-	140	30 / 3	10 / 7	15	
42	-	14+95	90	5 / 5	6 / 6	15	Pipe
43	22+70	-	90	5 / 5	6 / 6	15	
44	-	26+75	50	2 / 5	6 / 4	15	
45	-	27+72	55	2 / 5	6 / 6	15	
46	28+55	-	50	2 / 5	6 / 6	15	
47	29+52	-	90	5 / 5	6.5 / 4.5	15	Pipe
48	-	31+02	90	5 / 5	6.5 / 4.5	15	
49	32+03	-	70	5 / 10	6.5 / 4.5	15	
50	-	32+96	45	3 / 10	7 / 5	15	
51	-	34+44	70	5 / 10	7 / 5	20	
52	34+53	-	90	2 / 2	6.5 / 4.5	15	Pipe
53	-	35+12	120	3 / 2	6.5 / 4.5	15	
54	35+52	-	100	3 / 3	6.5 / 4.5	15	Pipe
55	-	36+33	90	3 / 3	6.5 / 4.5	15	Pipe
56	36+57	-	130	5 / 2	6.5 / 4.5	15	
57	-	37+30	140	40 / 5	6.5 / 4.5	15	
58	38+40	-	75	3 / 5	6.5 / 4.5	15	Pipe
59	39+64	-	90	2 / 2	4.5 / 4.5	15	Pipe
60	-	43+28	80	2 / 2	4.5 / 4.5	15	
61	43+38	-	100	2 / 2	4.5 / 4.5	15	Pipe
62	-	47+05	125	20 / 5	7 / 5	15	
63	47+11	-	90	2 / 2	4.5 / 4.5	15	Pipe
64	49+24	-	40	2 / 20	6.5 / 4.5	15	Pipe
65	50+20	-	70	3 / 5	6.5 / 4.5	15	Pipe
66	50+45	-	130	5 / 3	6.5 / 4.5	15	Pipe
67	51+31	-	120	20 / 5	7 / 5	15	Pipe
68	-	52+26	90	3 / 3	6.5 / 4.5	15	
69	54+22	-	95	3 / 3	6.5 / 4.5	15	Pipe

1	2	3	4	5	6	7	8
70	-	54+44	85	3 / 3	6.5 / 4.5	15	
71	55+27	-	85	3 / 3	6.5 / 4.5	15	Pipe
72	55+91	-	115	5 / 3	6.5 / 4.5	15	Pipe
73	56+20	-	155	30 / 1	6.5 / 4.5	15	Pipe
74	-	56+80	90	5 / 5	6.5 / 4.5	15	
75	-	61+33	140	5 / 1	6 / 6	15	
76	61+42	-	115	5 / 3	6 / 6	15	Pipe
77	-	70+08	90	5 / 5	7 / 5	15	
78	70+34	-	135	5 / 2	6 / 6	15	Pipe
79	-	74+01	85	5 / 5	6.5 / 4.5	15	
80	74+12	-	90	5 / 5	6.5 / 4.5	15	Pipe
81	75+60	-	100	3 / 3	6.5 / 4.5	15	Pipe
82	75+90	-	100	3 / 3	6.5 / 4.5	15	Pipe
83	-	76+25	70	5 / 5	6.5 / 4.5	15	
84	76+73	-	100	5 / 3	7 / 5	15	

VOLUMES OF WORKS FOR THE REPAIR OF JUNCTIONS

Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

N	Location PK +		Construction of pipe	Reshaping of road bed mechanically	Road pavement								Construction of shoulders from sand and gravel mix	Notes
					Construction of fill from gravel soil	Construction of leveling layer from sand and gravel mix	Crushed aggregates fraction 0-40 mm (h-8 cm) and asphalt concrete granulate (h-10cm), stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%) thickness 18 cm	Base course-crushed aggregates fraction 0-40 mm thickness 15 cm	Application of bitumen emuslion	Pavement				
										Fine-grained dense asphalt concrete hot mix type Б class II thickness		Sand and gravel mix thickness h-20 cm		
	Left	Right								4 cm	5 cm			
			L.m	m^2	m^3	m^3	m^2	m^2	t	m^2	m^2	m^2	m^3	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Section km 1 - km 4														
1	0+00		-	-	-	25	280	-	0.17	-	270.0	-	-	Type II
2	-	1+20	-	120	-	14	-	81.0	0.05	-	78.0	-	9.0	Type II
3	1+32	-	-	120	-	14	-	81.0	0.05	-	78.0	-	9.0	Type II
4	1+83	-	-	120	-	25	-	81.0	0.05	-	78.0	-	9.0	Type II
5	-	2+31	-	110	-	11	-	76.0	0.04	-	74.0	-	8.0	Type II
6	2+70	-	-	120	-	14		81.0	0.05	-	78.0	-	9.0	Type II
7	-	4+17	-	120	-	8	-	82.0	0.05	-	79.0	-	9.0	Type II
8	4+40	-	-	120	-	8	-	81.0	0.05	-	78.0	-	9.0	Type II
9	-	4+78	-	120	-	14	-	81.0	0.05	-	78.0	-	9.0	Type II

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	6+01	-	-	-	-	14	-	93.0	0.05	-	90.0	-	3.0	Type II
11	-	6+15	-	120	-	-	-	81.0	0.05	-	78.0	-	9.0	Type II
12	6+55	-	-	-	-	13	-	82.0	0.05	-	79.0	-	4.0	Type II
13	-	7+14	-	120	-	-	-	81.0	0.05	-	78.0	-	9.0	Type II
14	8+00	-	-	110	-	-	-	-	-	-	-	101.0	0.0	Type III
15	-	8+27	-	120	15	-	-	81.0	0.05	-	78.0	-	9.0	Type II
16	-	10+09	-	-	-	-	-	-	0.02	74.0	-	-	8.0	Type I
17	10+10	-	-	110	-	13	-	76.0	0.04	-	74.0	-	8.0	Type II
18	-	10+68	11	110	-	13	-	76.0	0.04	-	74.0	-	8.0	Type II
19	10+92	-	13	110	-	13	-	80.0	0.05	-	77.0	-	8.0	Type II
20	11+66	-	10	110	-	13	-	80.0	0.05	-	77.0	-	8.0	Type II
21	-	11+73	-	110	-	13	-	76.0	0.04	-	74.0	-	8.0	Type II
22	12+94	-	10	110	-	13	-	76.0	0.04	-	74.0	-	8.0	Type II
23	-	13+25	-	120	-	10	-	82.0	0.05	-	79.0	-	9.0	Type II
24	-	13+85	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
25	13+96	-	-	110	-	13	-	78.0	0.05	-	75.0	-	9.0	Type II
26	-	15+78	7	110	-	-	-	-	-	-	-	101.0	0.0	Type III
27	-	19+60	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
28	-	22+25	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
29	-	24+90	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
30	-	26+64	-	110	-	-	-	-	-	-	-	101.0	0.0	Type III
31	-	30+64	-	110	-	-	-	-	-	-	-	102.0	0.0	Type III

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
32	32+40	-	-	140	-	16	-	100.0	0.06	-	97.0	-	9.0	Type II
33	-	34+54	-	270	-	49	-	224.0	0.13	-	219.0	-	12.0	Type II
34	-	37+70	-	120	-	-	-	-	-	-	-	111.0	0.0	Type III
Total			**83**	**3610**	**15**	**326**	**280**	**2010**	**1.38**	**74**	**2214**	**920**	**200**	
Section km 9 - km 16														
35	1+10	-	-	110	-	20	-	76.0	0.04	-	74.0	-	8.0	Type II
36	-	2+83	-	120	-	20	-	78.0	0.05	-	75.0	-	9.0	Type II
37	3+34	-	-	130	-	22	-	89.0	0.05	-	86.0	-	9.0	Type II
38	-	4+48	-	130	30	22	-	89.0	0.05	-	86.0	-	9.0	Type II
39	-	6+70	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
40	-	10+70	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
41	14+83	-	-	200	-	35	-	135.0	0.08	-	132.0	-	15.0	Type II
42	-	14+95	8	110	-	-	-	-	-	-	-	101.0	0.0	Type III
43	22+70	-	-	110	-	-	-	-	-	-	-	101.0	0.0	Type III
44	-	26+75	-	100	-	18	-	67.0	0.04	-	65.0	-	8.0	Type II
45	-	27+72	-	100	-	-	-	-	-	-	-	94.0	0.0	Type III
46	28+55	-	-	100	-	-	-	-	-	-	-	95.0	0.0	Type III
47	29+52	-	9	120	-	21	-	81.0	0.05	-	78.0	-	9.0	Type II
48	-	31+02	-	120	-	21	-	81.0	0.05	-	78.0	-	9.0	Type II
49	32+03	-	-	130	-	23	-	91.0	0.05	-	88.0	-	9.0	Type II
50	-	32+96	-	130	-	22	-	91.0	0.05	-	88.0	-	8.0	Type II

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
51	-	34+44	-	170	-	31	-	125.0	0.07	-	121.0	-	12.0	Type II
52	34+53	-	7	110	-	18	-	71.0	0.04	-	69.0	-	8.0	Type II
53	-	35+12	-	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
54	35+52	-	8	110	-	19	-	74.0	0.04	-	72.0	-	8.0	Type II
55	-	36+33	9	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
56	36+57	-	-	110	-	19	-	74.0	0.04	-	72.0	-	8.0	Type II
57	-	37+30	-	180	-	31	-	133.0	0.08	-	129.0	-	10.0	Type II
58	38+40	-	9	110	-	20	-	76.0	0.04	-	74.0	-	8.0	Type II
59	39+64	-	5	70	-	13	-	71.0	0.04	-	69.0	-	0.0	Type II
60	-	43+28	-	70	-	13	-	71.0	0.04	-	69.0	-	0.0	Type II
61	43+38	-	5	70	-	13	-	71.0	0.04	-	69.0	-	0.0	Type II
62	-	47+05	-	160	-	28	-	115.0	0.07	-	112.0	-	10.0	Type II
63	47+11	-	5	70	-	13	-	71.0	0.04	-	69.0	-	0.0	Type II
64	49+24	-	11	120	-	21	-	83.0	0.05	-	80.0	-	9.0	Type II
65	50+20	-	8	110	-	20	-	76.0	0.04	-	74.0	-	8.0	Type II
66	50+45	-	8	110	-	20	-	80.0	0.05	-	77.0	-	8.0	Type II
67	51+31	-	11	160	-	28	-	117.0	0.07	-	114.0	-	10.0	Type II
68	-	52+26	-	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
69	54+22	-	8	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
70	-	54+44	-	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
71	55+27	-	8	110	-	19	-	73.0	0.04	-	71.0	-	8.0	Type II
72	55+91	-	8	110	-	20	-	76.0	0.04	-	74.0	-	8.0	Type II

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
73	56+20	-	6	110	-	20	-	76.0	0.04	-	74.0	-	9.0	Type II
74	-	56+80	-	120	-	21	-	81.0	0.05	-	78.0	-	9.0	Type II
75	-	61+33	-	100	-	-	-	-	-	-	-	92.0	0.0	Type III
76	61+42	-	9	100	-	-	-	-	-	-	-	97.0	0.0	Type III
77	-	70+08	-	130	-	22	-	89.0	0.05	-	86.0	-	9.0	Type II
78	70+34	-	9	100	-	-	-	-	-	-	-	95.0	0.0	Type III
79	-	74+01	-	120	-	21	-	81.0	0.05	-	78.0	-	9.0	Type II
80	74+12	-	8	120	-	21	-	81.0	0.05	-	78.0	-	9.0	Type II
81	75+60	-	8	110	-	19	-	74.0	0.04	-	72.0	-	8.0	Type II
82	75+90	-	8	110	-	19	-	74.0	0.04	-	72.0	-	8.0	Type II
83	-	76+25	-	120	-	21	-	84.0	0.05	-	81.0	-	9.0	Type II
84	76+73	-	-	120	-	21	-	83.0	0.05	-	81.0	-	8.0	Type II
Total			**191**	**5760**	**30**	**844**	**-**	**3397**	**1.95**	**-**	**3295**	**877**	**323**	
Grand-total			**274**	**9400**	**45**	**1176**	**280**	**5433**	**3.34**	**74**	**5534**	**1797**	**526**	

Note: Volumes of works for the construction of pipes on junctions are given in a separate Table.

VOLUMES OF WORKS FOR THE CONSTRUCTION OF STEEL PIPES ON JUNCTIONS AND CLEANING OF THE EXISTING PIPES
Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

N	Location PK +		Dismantling of the existing pipe mechanically and disposal to dumpsite		Dismantling of the existing concrete ditch by jack hammers loading manually and disposal to dumpsite	Excavation of soil and disposal to dumpsite		Cleaning of the existing pipes manually loading and disposal to dumpsite	Sand and gravel bed h=10 cm	Steel pipe d-630 mm thickness of wall 9 mm	Bituminous insulation 2 layers	Filling of trench with gravel soil delivered from borrow pit
	Left	Right	Asbestos cement pipe d-0.2 - d-0.3 m	Reinforce concrete culverts d-1.0 m		By excavator	Manually					
						33[g]	33[g]	33[g]				6[b]
			L.m/t	L.m/m^3	m^3	m^3	m^3	m^3	m^3	L.m/t	m^2	m^3
1	2	3	4	5	6	7	8	9	10	11	12	13
Section km 1 - km 4												
1	-	10+68	-	-	-	10	2	-	1.0	11 / 1.5	22	6
2	10+92	-	-	-	-	11	3	-	1.2	13 / 1.8	26	7
3	11+66	-	-	-	-	9	2	-	0.9	10 / 1.4	20	5
4	12+94	-	7 / 0.20	-	-	9	2	-	0.9	10 / 1.4	20	5
5	-	13+85	3 / 0.08	-	-	7	2	-	0.7	8 / 1.1	16	4
6	13+96	-	-	-	-	-	-	1	-	-	-	-
7	-	15+78	4 / 0.06	-	-	6	2	-	0.6	7 / 1	14	4

1	2	3	4	5	6	7	8	9	10	11	12	13
8	-	19+60	-	-	-	7	2	-	0.7	8 / 1.1	16	4
9	-	22+25	4 / 0.11	-	-	7	2	-	0.7	8 / 1.1	16	4
10	-	24+90	4 / 0.11	-	-	7	2	-	0.7	8 / 1.1	16	4
Total			22 / 0.56	-	-	73	19	1	7	83 / 11.5	166	43
Section km 9 - km 16												
11	-	4+48	-	-	-	-	-	1	-	-	-	-
12	-	6+70	-	-	-	7	2	-	0.7	8 / 1.1	16	4
13	-	10+70	-	-	-	7	2	-	0.7	8 / 1.1	16	4
14	-	14+95	-	-	-	7	2	-	0.7	8 / 1.1	16	4
15	29+52	-	-	-	-	8	2	-	0.8	9 / 1.3	18	5
16	34+53	-	-	-	-	6	2	-	0.6	7 / 1	14	4
17	35+52	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
18	-	36+33	-	6 / 2.1	-	8	2	-	0.8	9 / 1.3	18	5
19	38+40	-	-	-	-	8	2	-	0.8	9 / 1.3	18	5
20	39+64	-	-	-	-	4	1	-	0.5	5 / 0.7	10	3
21	43+38	-	-	-	-	4	1	-	0.5	5 / 0.7	10	3
22	47+11	-	-	-	2.4	4	1	-	0.5	5 / 0.7	10	3
23	49+24	-	-	-	3.8	10	2	-	1.0	11 / 1.5	22	6
24	50+20	-	-	-	3.8	7	2	-	0.7	8 / 1.1	16	4
25	50+45	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
26	51+31	-	-	-	-	10	2	-	1.0	11 / 1.5	22	6
27	54+22	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
28	55+27	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
29	55+91	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
30	56+20	-	-	-	-	5	1	-	0.5	6 / 0.8	12	3

1	2	3	4	5	6	7	8	9	10	11	12	13
31	61+42	-	-	-	-	8	2	-	0.8	9 / 1.3	18	5
32	70+34	-	-	-	-	8	2	-	0.8	9 / 1.3	18	5
33	74+12	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
34	75+60	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
35	75+90	-	-	-	-	7	2	-	0.7	8 / 1.1	16	4
Total			-	6 / 2.1	10.0	167	44	1	17.0	191 / 26.6	382	101
Grand-total			**22 / 0.56**	**6 / 2.1**	**10.0**	**240**	**63**	**2**	**24.4**	**274 / 38.1**	**548**	**144**

LOCATION OF YARD ENTRANCES

Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

N	Location PK+		Length of pipe	Notes
	Left	Right	m	m
1	2	3	4	5
Section km 1 - km 4				
1	0+60	-	-	
2	-	1+46	-	
3	-	1+62	-	
4	-	1+72	-	
5	-	1+90	-	
6	3+22	-	-	
7	3+49	-	-	
8	3+61	-	-	
9	-	3+77	-	
10	-	5+14	-	
11	8+28	-	-	
12	10+69	-	5	
13	-	11+30	5	
14	-	11+70	5	
15	11+97	-	5	
16	12+72	-	5	
17	13+69	-	-	
18	-	19+13	5	
19	-	24+04	5	
Section km 9 - km 16				
20	-	0+14	5	
21	-	0+30	5	
22	0+37	-	-	
23	0+60	-	-	
24	-	0+64	5	
25	0+73	-	-	
26	0+79	-	-	
27	-	0+96	-	
28	2+00	-	-	
29	2+18	-	-	

1	2	3	4	5
30	30+36	-	5	
31	31+08	-	5	
32	-	31+53	-	
33	-	31+86	-	
34	-	32+60	-	
35	33+28	-	5	
36	33+55	-	5	
37	-	33+64	-	
38	33+74	-	5	
39	34+33	-	5	
40	-	34+73	-	
41	34+90	-	5	
42	35+11	-	5	
43	35+24	-	5	
44	35+36	-	5	
45	-	35+60	-	
46	-	35+94	-	
47	-	36+03	-	
48	36+12	-	5	
49	-	36+20	-	
50	36+35	-	5	
51	-	36+85	-	
52	-	37+05	-	
53	37+14	-	5	
54	37+43	-	5	
55	37+80	-	5	
56	-	37+90	-	
57	-	38+05	-	
58	-	38+28	-	
59	-	38+46	-	
60	38+61	-	5	
61	38+72	-	5	
62	-	38+73	-	
63	-	38+81	-	

1	2	3	4	5
64	38+93	-	5	
65	39+08	-	5	
66	39+38	-	5	
67	-	39+70	-	
68	-	39+75	-	
69	40+08	-	5	
70	-	40+12	-	
71	40+18	-	5	
72	40+51	-	5	
73	-	40+52	-	
74	40+57	-	5	
75	-	40+66	-	
76	-	40+75	-	
77	40+91	-	5	
78	40+97	-	5	
79	-	41+02	-	
80	41+09	-	-	
81	41+26	-	-	
82	41+41	-	5	
83	-	41+43	-	
84	-	41+92	-	
85	-	42+12	-	
86	-	42+23	-	
87	-	42+30	-	
88	42+44	-	5	
89	-	42+60	-	
90	42+94	-	5	
91	-	42+95	-	
92	43+18	-	5	
93	-	43+67	-	
94	-	43+82	-	
95	43+87	-	5	
96	-	43+90	-	
97	44+00	-	5	
98	-	44+05	-	
99	-	44+30	-	
100	44+45	-	5	
101	44+64	-	5	
102	-	44+65	-	
103	-	44+80	-	
104	45+06	-	5	
105	-	45+12	-	
106	45+20	-	5	

1	2	3	4	5
107	-	45+42	-	
108	45+46	-	5	
109	45+51	-	5	
110	-	45+64	-	
111	-	45+86	-	
112	45+99	-	5	
113	46+27	-	5	
114	-	46+35	-	
115	-	46+39	-	
116	46+43	-	5	
117	-	46+63	-	
118	46+69	-	5	
119	-	46+72	-	
120	47+33	-	5	
121	47+37	-	5	
122	-	47+57	-	
123	47+62	-	5	
124	47+86	-	5	
125	-	47+98	-	
126	48+26	-	5	
127	48+30	-	5	
128	-	48+43	-	
129	-	48+56	-	
130	-	49+10	-	
131	-	49+64	-	
132	-	50+27	-	
133	-	50+85	-	
134	-	51+19	-	
135	-	51+67	-	
136	51+80	-	5	
137	52+06	-	5	
138	52+25	-	5	
139	52+42	-	5	
140	52+70	-	5	
141	-	52+72	-	
142	52+87	-	5	
143	-	53+10	-	
144	-	53+42	-	
145	53+50	-	5	
146	-	53+60	-	
147	-	53+80	-	
148	-	53+95	-	
149	53+97	-	5	

1	2	3	4	5
150	-	54+25	-	
151	54+78	-	5	
152	-	54+95	-	
153	-	62+97	-	
154	-	63+01	-	
155	63+02	-	5	
156	63+10	-	5	
157	-	63+32	-	
158	73+08	-	5	

1	2	3	4	5
159	73+72	-	5	
160	-	73+74	-	
161	-	74+60	-	
162	74+61	-	5	
163	-	74+75	-	
164	74+88	-	5	
165	75+09	-	5	
166	75+15	-	5	
167	75+51	-	5	

VOLUMES OF WORKS FOR THE REPAIR OF YARD ENTRANCES

Road: AGARA-KORNISI-TSKHINVALI KM 1 -KM 4; KM 9 - KM 16

N	Names of works		Meas. Unit	Quantity			Notes
				Section km 1 - km 4	Section km 9 - km 16	Total	
1	2		3	4	5	6	7
1	Excavation of soil by excavator, loading and disposal to dumpsite		m^3	22.0	_	22.0	33[g]
				_	217	217.0	8[g]
2	Excavation of soil manually, loading and disposal to dumpsite		m^3	9.0	_	9.0	33[g]
				_	93	93.0	8[g]
3	Dismantling of damaged asbestos cement pipes, loading and disposal to dumpsite	d-0.3 m	L.m/t	9 / 0.3	43 / 1.2	52 / 1.5	
	Dismantling of steel pipes, loading and disposal to dumpsite	d-0.2 m - d-0.3 m	L.m/t	–	17 / 0.5	17 / 0.5	
4	Dismantling of existing cover slabs, loading and disposal to dumpsite		m^3	1	9	10	
5	Cleaning of the existing pipes manually, loading and disposal to dumpsite		m^3	1	1	2	

1	2	3	4	5	6	7
6	Sand and gravel bed h=10 cm	m^3	3	28	31	
7	Construction of steel pipes d-530 mm, thickness of wall 5 mm	L.m/t	35 / 2.3	345 / 22.67	380 / 24.97	
8	Bituminous insulation 2 layers	m^2	57	566	623	
9	Backfilling of gravel soil delivered from borrow pit manually	m^3	13	126	139	
10	Construction of leveling layer from sand and gravel mix	m^3	53	217	270	
11	Base course - crushed aggregates fraction 0-40 mm thickness 15	m^2	484	1991	2475	
12	Bituminous insulation	m^2	0.26	1.09	1.35	
13	Pavement - fine grained dense asphalt concrete hot mix type B, Class II thickness 4 cm	m^2	440	1810	2250	

Notes:

1.Design envisages repair of 167 yard entrances.

2. Location of yard entrances is specified in a separate Table.

VOLUMES OF WORKS FOR THE CONSTRUCTION OF SIDEWALK
Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Location PK 34+48 ÷ PK 37+30 Right	Notes
			Section km 9 – km 16	
1	2	3	4	5
1	Construction length	m	240	
2	Excavation of soil manually, loading and disposal to dumpsite	m^3	70	8^g
3	Manual reshaping of surface	m^2	400	8^g
4	Cast in situ concrete of base	m^3	9.1	B20 F200 W6
5	Concrete curb БР 100X30X18	$L.m/m^3$	240/12.7	B30 F200 W6
6	Construction of leveling layer from sand and gravel mix	m^3	70	
7	Base course - crushed aggregates fraction 0-40 mm thickness 10 cm	m^2	380	
8	Prime coat	t	0.23	
9	Pavement - sandy asphalt concrete hot mix thickness 3 cm	m^2	380	

Notes: Total width of junctions and yard entrances deducted from construction length is adopted as construction length of sidewalks.

VOLUMES OF WORKS FOR THE CONSTRUCTION OF BUS STOPS AND SHELTERS

Road: AGARA-KORNISI-TSKHINVALI KM 1 - KM 4; KM 9 - KM 16

N	Names of works	Meas. Unit	Quantity				Total	Notes
			Section km 1 km 4			Section km 9 - km 16		
			PK 0+10 Left	PK 0+20 Right	Total	PK 50+38 Left		
1	2	3	4	5	6	7	8	9
1. Repair of the existing shelter								
1	Cleaning of oil paint from steel roof and ceiling	m^2	44	-	**44**	-	**44**	
2	Cleaning of oil paint from inner and outer walls of steel shelter	m^2	36	-	**36**	-	**36**	
3	Painting of roof and ceiling by oil paint 2 layers	m^2	44	-	**44**	-	**44**	
4	Painting of inner and outer walls by oil paint 2 layers	m^2	36	-	**36**	-	**36**	
5	Painting of steel bench by oil paint 2 layers	m^2	2	-	**2**	-	**2**	
2. Construction works								
1	Dismantling of damaged steel roof manually, loading and disposal to dumpsite	m^2/kg	-	8/23	**8/23**	-	**8/23**	
2	Dismantling of ceiling and walls of steel shelter, loading and disposal to dumpsite	m^2/t	-	48/1.1	**48/1.1**	-	**48/1.1**	

1	2	3	4	5	6	7	8	9
3	Dismantling of reinforced concrete slabs of shelter roof by crane (10 t), loading and disposal to dumpsite	unit/m^3	-	-	-	2/1.76	**2/1.76**	
4	Removal of walls by jack hammers, loading and disposal to dumpsite	m^3	-	-	-	2.7	**2.7**	
5	Construction of cast in situ concrete continuous foundation: - Excavation of trench manually, loading and disposal to dumpsite	m^3	-	8	**8**	8	**16**	
	-Crushed aggregates bed h - 5 cm	m^2/m^3	-	6/0.3	**6/0.3**	6/0.3	**12/0.6**	
	-Concrete	m^3	-	4.5	**4.5**	4.5	**9.0**	B22.5F200W6
6	Construction of brick wall δ-25 cm	m^3	-	11.5	**11.5**	11.5	**23.0**	R-1.3m Radius incl. arch 0.29m^3
7	Construction of cast in situ concrete steps: -Crushed aggregates bed h=5 cm	m^2/m^3	-	10/0.5	**10/0.5**	10/0.5	**20/1.0**	
	-Concrete	m^3	-	2.5	**2.5**	2.5	**5.0**	B22.5F200W6
8	Construction of earth fill under the floor	m^3	-	8.0	**8.0**	8.0	**16.0**	6^g
9	Construction of floor -Crushed aggregates bed h=5 cm	m^2/m^3	-	20/1.2	**20/1.2**	20/1.2	**40/2.4**	
	-Concrete floor h=8 cm	m^3	-	1.6	**1.6**	1.6	**3.2**	B22.5F200W6
8	Construction of roof - Installation of wooden cross-beam	m^3	-	0.37	**0.37**	0.37	**0.74**	
	- Installation of rafter	m^3	-	0.24	**0.24**	0.24	**0.48**	

1	2	3	4	5	6	7	8	9
	- Installation of wooden beams	unit/m^3	-	2/0.14	**2/0.14**	2/0.14	**4/0.28**	
	- Construction of metal roof on wooden planking	m^2	-	30	**30**	30	**60**	k-1.23
	-Wooden planking on the roof	m^2	-	29	**29**	29	**58**	
9	Construction of wooden bench							
	-Steel angle bar	kg	-	60	**60**	60	**120**	45x4
	-Wooden bench	m^2/m^3	-	3.6/0.15	**3.6**	3.6/0.15	**7.2/0.3**	h = 4cm
10	Painting of steel structure with oil paint 2 times	m^2	-	4.0	**4.0**	4.0	**8.0**	
11	Varnishing of bench (2 times)	m^2	-	3.6	**3.6**	3.6	**7.2**	
12	Concrete flooring around the shelter:							
	-Crushed aggregates bed h=5 cm	m^2/m^3	-	8.6/0.43	**8.6/0.43**	8.6/0.43	**17.2/0.86**	
	-Concrete h=10 cm	m^3	-	0.9	**0.9**	0.9	**1.8**	B22.5F200W6
	2. Bus stop							
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	-	-	-	25	**25**	33^g
2	Mechanical reshaping of road bed	m^2	150	90	**240**	80	**320**	33^g
3	Crushed aggregates fraction 0-40 mm (h-8 cm) and asphalt concrete granulate (h-10 cm), stabilized by cold recycling with the addition of bitumen emulsion (2%) and cement (4%),thickness 18 cm	m^2	140	80	220	-	**220**	

1	2	3	4	5	6	7	8	9
4	Crushed aggregates fraction 0-40 mm stabilized by cold recycling with the addition of bitumen emulsion (2%) and cement (4%), thickness 18 cm	m^2	-	-	-	70	**70**	
5	Prime coat	t	0.084	0.048	**0.132**	0.042	**0.174**	
6	Pavement - fine grained dense asphalt concrete hot mix 5 cm type B Class II	m^2	130	72	**202**	65	**267**	
	3. Embussing point							
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	-	5	**5**	5	**10**	33^g
2	Construction of curb base of cast in situ concrete	m^3	-	0.76	**0.76**	0.76	**1.52**	B20F200W6
3	Construction of concrete curb 30X18X100	L.m/ m^3	-	20/1.08	**20/1.06**	20/1.06	**40/2.12**	B30F200W6
4	Construction of leveling layer - sand and gravel mix	m^3	-	4	**4**	4	**8**	
5	Base course - crushed aggregates fraction 0-40mm thickness 15 cm	m^2	-	15	15	15	**30**	
6	Prime coat	t	-	0.01	0.01	0.01	**0.020**	
7	Pavement - sandy asphalt concrete thickness 3 cm	m^2	-	15	15	15	**30**	

SUMMARY VOLUMES OF WORKS

Road: AGARA-KORNISI-TSKHINVALI KM 1 – KM 4; KM 9 – KM 16

N	Names of works	Meas. unit	Quantity			Notes
			Section km 1 – km 4	Section km 9 – km 16	Total	
1	2	3	4	5	6	7
	I. PRELIMINARY WORKS					
1	Reconditioning and fixing of route	km	3.931	7.678	**11.609**	
2	Uprooting of shrubs on shoulders	ha	-	0.5	**0.5**	
3	Relocation of 0.4 kv power lines	unit/L.m	-	1/80	**1/80**	
4	Excavation of soil piled on shoulders by excavator, loading and disposal to dumpsite	m^3	90	310	**400**	33[g]
5	Milling of existing damaged asphalt concrete pavement (average thickness 14 cm) disposal to borrow pit for follow up re-use in the base course	m^2/m^3	25740/3603	-	**25740/3603**	
6	Removal of the existing asphalt concrete fragments by ripper, leveling in situ by grader	m^2/m^3	-	8500/510	**8500/510**	
7	Dismantling of existing road signs of individual design and disposal to dumpsite					
	Plates:					
	– 5.21.2 1500x340	unit/kg	4/16.8	-	**4/16.8**	St.P.16
	– 5.21.2 1000x340	unit/kg	-	3/6.6	**3/6.6**	St.P.16
	– 5.26 1500x510	unit/kg	-	1/5.7	**1/5.7**	St.P.16
	Total:	kg	16.8	12.3	**29.1**	
	Steel posts: St.P-16	unit/kg	8/232	8/232	**16/464**	24 m

1	2	3	4	5	6	7
7	Dismantling of road barriers: - Damaged concrete parapets of special profile (one-sided L-3.0m) by crane and disposal to dumpsite	unit/m^3	-	6/5.0	**6/5.0**	
	II. ROAD BED					
1	Excavation of soil by excavator, loading and disposal to dumpsite	m^3	985	-	**985**	33[g]
		m^3	-	4383	**4383**	8[g]
2	Excavation of soil in ditches by excavator, loading and disposal to dumpsite	m^3	450	-	**450**	33[g]
		m^3	-	1484	**1484**	8[g]
3	Excavation of soil in ditches manually, loading and disposal to dumpsite	m^3	70	-	**70**	33[g]
		m^3	-	200	**200**	8[g]
4	Construction of benches mechanically	m^3	342	-	**342**	33[g]
		m^3	-	363	**363**	8[g]
5	Construction of fill from gravel soil delivered from borrow pit	m^3	342	363	**705**	6[b]
6	Reshaping of roadbed by grader	m^2	-	71600	**71600**	6[b]
7	Construction of concrete ditches	L.m/m^3	363/128.9	1887/670.1	**2250/799**	
	III. ENGINEERING STRUCTURES					
1	Construction of reinforced concrete pipe-culverts d-1.0 m	unit/L.m	2/28	9/110	**11/138**	
2	Construction of reinforced concrete box-culverts cross section 1.2x0.7 m	unit/L.m	14/162.53	8/99.64	**22/262.17**	
3	Construction of reinforced concrete box-culvert cross section 2.0x0.7 m L-12.2 m at PK 36+61.2	L.m/m^3	-	1/46.4	**1/46.4**	
4	Repair of the existing reinforced concrete culvert cross section 3.0x2.0 m at PK 1+03	L.m	-	10.4	**10.4**	

1	2	3	4	5	6	7
5	Repair of the existing bridge over the river Prone at PK 3+71.6	L.m	-	51.2	**51.2**	
6	Construction of lower concrete retaining walls	L.m/m^3	-	135/382.0	**135/382.0**	
7	Construction of lower gabion retaining walls	L.m/m^3	30.5/94.5	14/14	**44.5/108.5**	
	IV. ROAD PAVEMENT					
			Type I	**Type II**		
1	Construction of leveling layer from sand and gravel mix	m^3	4701	7681	**12382**	
2	Base course - Crushed aggregates fraction 0- 40 mm (h-8 cm) and asphalt concrete granulate (h-10 cm), stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%) thickness 18 cm	m^2	30607	-	**30607**	
	- Crushed aggregates fraction 0- 40 mm stabilized by cold recycling method with the addition of bitumen emulsion (2%) and cement (4%) thickness 18 cm	m^2	-	54518	**54518**	
3	Prime coat	t	16.5	29.1	**45.6**	
4	Pavement – fine-grained dense asphalt concrete hot mix Type B Class II, thickness 5 cm	m^2	27572	48563	**76135**	
5	Shoulders from sand and gravel mix	m^3	3100	5024	**8124**	
	V. ROAD FURNITURE AND EQUIPMENT					
1	Construction of junctions	unit	34	50	**84**	
2	Construction of pipes junctions	unit/L.m	10/83	25/191	**35/274**	
3	Repair of yard entrances	unit	19	148	**167**	
4	Construction of sidewalks	L.m/m^2	-	240/380	**240/380**	
5	Construction and repair of bus stops	unit	2	1	**3**	

1	2	3	4	5	6	7
6	Standard light reflecting road signs, I and II typical size, covered with high intensity Class „IV“ sticky film of prism-optical system:					Posts
	Triangular 900x900x900 mm:					
	- Warning road signs	unit	8	23	**31**	St.P.-5
	Triangular 700x700x700 mm:					
	- Priority road signs	unit	35	52	**87**	St.P.-5
	Round 700 mm:					
	- Forbidding road signs	unit	3	15	**18**	St.P.-5
	Rectangular 700x700 mm					
	- Informative road signs	unit	-	16	**16**	St.P.-5
	Rectangular 900x600 mm					
	- Informative road signs	unit	4	2	**6**	St.P.-5
	Rectangular 2250x500 mm					
	- Warning road signs	unit	-	4	**4**	St.P.-8
	Rectangular 615x500 mm					
	- Warning road signs	unit	14	8	**22**	St.P.-5
	Rectangular 200x300 mm:					
	- Informative road signs 5.28	unit	8	14	**22**	St.P.-6
	Rectangular 350x700 mm:					
	- Additional information road signs	unit	1	11	**12**	
	Total	unit	73 (56 sets)	145 (96 sets)	**218** (152 sets)	
7	Bilingual road signs of individual signs, covered with high intensity Class „IV“ sticky film of prism-optical system:					
	5.21.2 3000x800 mm	unit	2	-	**2**	St.P.-16/2posts

1	2	3	4	5	6	7
	2800x1400 mm	unit	1	-	**1**	St.P.-16/2posts
	2000x1400 mm	unit	-	2	**2**	St.P.-16/2posts
	5.22(5.23) 1500x800 mm	unit	-	6	**6**	St.P.-16/2posts
	2000x800 mm	unit	-	8	**8**	St.P.-16/2posts
	2500x800 mm	unit	4	-	**4**	St.P.-16/2posts
	5.26 2000x800 mm	unit	2	2	**4**	St.P.-16/2posts
	Total	unit	9 (7 sets)	18 (11 sets)	**27** (18 sets)	
	Total for signs	unit	82 (63 sets)	163 (107 sets)	**245** (170 sets)	
8	Installation of road signs on steel posts 76-89 mm on concrete foundation B25F200W6					
	Warning, priority, forbidding, directing, informative sign, service on one post:					
	- St.P.-5/2.5m 76 mm	unit/t	7/0.126	4/0.072	**11/0.198**	
	- St.P.-5/3.5m 76 mm	unit/t	43/1.071	62/1.544	**105/2.615**	
	- St.P.-5/4.0m 76 mm	unit/t	1/0.028	14/0.392	**15/0.420**	
	- St.P.-5/4.5m 89 mm	unit/t	1/0.038	5/0.190	**6/0.228**	
	Kilometer mark on one post St.P.-6					
	- St.P.-6/2.75m 76 mm	unit/t	4/0.078	7/0.137	**11/0.215**	
	Directing (informative) on two posts					
	- St.P.-8/2.75m 76 mm	unit/t	-	8/0.157	**8/0.157**	
	Directing (informative) on two posts					
	- St.P.16/3.5m 89 mm	unit/t	11/0.319	11/0.319	**22/0.638**	
	- St.P.16/4.0m 89 mm	unit/t	3/0.101	11/0.319	**14/0.420**	
	Total steel posts	unit/t	70/1.761	122/3.130	**192/4.891**	
	Concrete of base of posts:					
	- For standard road signs 70x70x70 cm	m^3	56/19.2	100/34.3	**156/53.5**	B25F200W6

1	2	3	4	5	6	7
	- For road signs of individual design 70x120x100 cm	m^3	14/11.8	22/18.5	**36/30.3**	B25F200W6
	Total concrete of foundation	m^3	70/31.0	122/52.8	**192/83.8**	
9	Horizontal line marking of carriageway with white nitro enamel paint, improved night visibility light reflecting glass balls size up to 600 micrometer Width of continuous line: - 100 mm (1.1)	$L.m/m^2$	1141/114.1	3835/383.5	**4976/497.6**	
	Continuous line of side marking, width: - 100 mm (1.2)	$L.m/m^2$	7370/737.0	14612/1461.2	**21982/2198.2**	
	Broken lines ratio 1:3: - Width 100 mm (1.5)	$L.m/m^2$	2516/62.9	3025/75.6	**5541/138.5**	
	Broken lines ratio 3:1 - Width 100 mm (1.6)	$L.m/m^2$	250/18.5	400/30.0	**650/48.5**	
	Marking of cross-road - Width 100 mm (1.7)	$L.m/m^2$	789/39.5	1161/58.1	**1950/97.6**	
	- Marking of places where the driver obliged to stop and give way (1.13)	m^2	2.9	-	**2.9**	
	- Marking of pedestrian crossing, width of painted lines 400 mm, length 4.0 m (1.14.1)	m^2	-	19.2	**19.2**	
	- Marking of guide islands, which separates traffic of opposite direction (1.16.1)	m^2	10.8	-	**10.8**	
	Total horizontal marking	m^2	985.7	2027.6	**3013.3**	
10	Vertical marking with perchlorovinyl paint: - design concrete parapets of special profile (one-sided L-3.0 m)	$unit/m^2$	44/163	46/170	**90/333**	

1	2	3	4	5	6	7
11	Vertical marking with nitro enamel: Posts of steel cable barrier СД-6, СД-7, СД-8 (angle bar)	unit/m^2	-	266/166	**266/166**	
12	Plastic guide posts „МВ“	unit	325	549	**874**	Flexible
13	- Construction of design concrete parapets of special profile (one-sided L-3.0m)	unit/m^3	44/33.88	46/35.42	**90/69.3**	B30F200W6
	- Drilling of bottom of concrete parapet of special profile ∅60mm L-3.0m with drilling hand device	unit	176	184	**360**	
	- Concrete of continuous foundation	L.m/ m^3	154/15.7	161/16.4	**315/32.1**	B25F200W6
	- Anchors L-320 ∅32 A-III	unit/t	176/0.356	184/0.372	**360/0.728**	
	- Layer of cement mortar	m^2	92	97	**189**	2 cm
14	Construction of barrier from steel cable 11DO-TM	L.m	-	713	**713**	9 sections
	- Post СД-6, СД-7, СД-8 (angle bar)	unit/t	-	266/11.417	**266/11.417**	
	- Cast in situ concrete of foundation	unit/m^3	-	221/15.5	**221/15.5**	B25 F200 W6
	- Cast in situ concrete of prop	unit/m^3	-	45/4.5	**45/4.5**	B25 F200 W6
	- Filling of posts СД-6, СД-7, СД-8 with cast in situ concrete	m^3	-	6.7	**6.7**	B25 F200 W6
	- Fixing details and compensator from spring steel	t	-	1.74	**1.74**	CT3
	- Steel cable	L.m/t	-	1408/1.985	**1408/1.985**	KH∅19.5mm
	- Bituminous insulation of posts 2 times	m^2	-	170	**170**	
	- Light reflecting element	unit	-	352	**352**	
15	Rumble strip „Sleeping policeman“	unit/L.m	-	4/24.0	4/24.0	
	Start element fastening bolt	unit/kg	-	8/27.2	8/27.2	600x300x45 mm
	Middle element fastening bolt	unit/kg	-	44/396	44/396	600x500x45 mm