

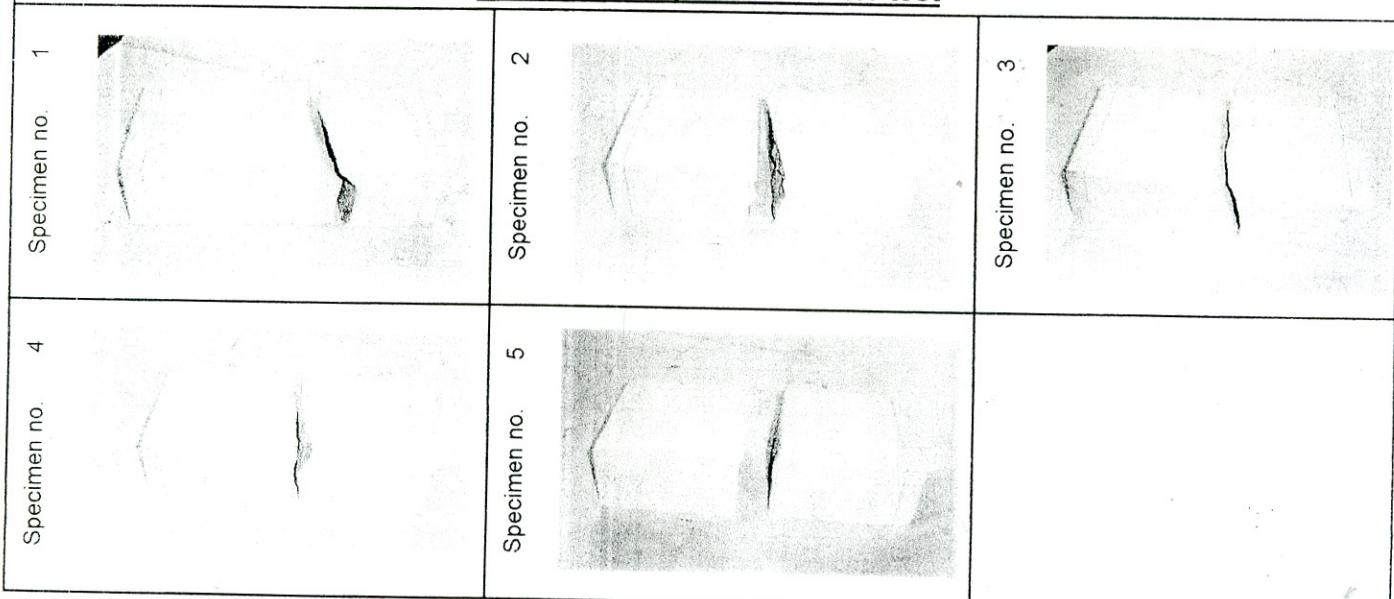
**Modulus of Rupture of Dimension Stone**

LOCATION	Kutaisi's Quarry	Job ref.	ERENPORT
SOIL DESCRIPTION:	Borehole/Pit no.	-	
Limestone	Sample no.	1	
	Depth, m	-	

TEST METHOD: **ASTM C 170-06** Date **27.03.2008**

Specimen initially details						
Specimens no.		1	2	3	4	5
Specimens shapes		prism	prism	prism	prism	prism
	width, <i>b</i>	103.7	104.6	106.0	104.8	104.7
	length, <i>l</i>	177.8	177.8	177.8	177.8	177.8
Specimens dimensions, mm:	thickness, <i>d</i>	59.5	60.0	58.5	59.4	59.7
		59.6	60.0	59.5	59.4	59.6
	Average thickness	59.6	58.5	59.0	57.6	58.2
		59.6	59.5	59.0	58.8	59.2

Compression Test Results					
Test condition	dry	dry	dry	dry	dry
Breaking load, <b>W (N)</b>	9394.8	8345.5	9806.7	12876.1	11032.5
Modulus of Rupture, $R = 3Wl/2bd^2$ (MPa)	7	6	7	9	8
Average of Modulus of Rupture , <b>R (MPa)</b>				7	

**Photo of the specimens after test**

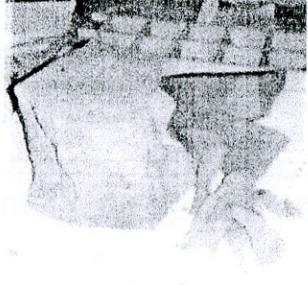
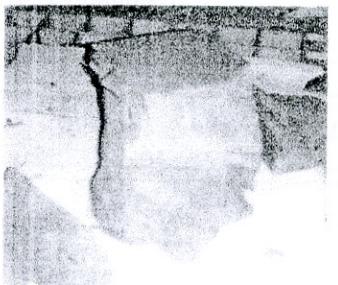
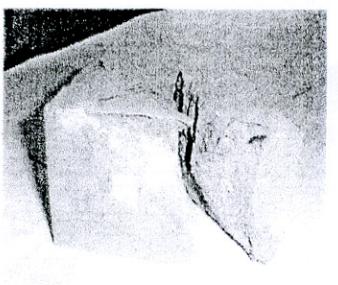
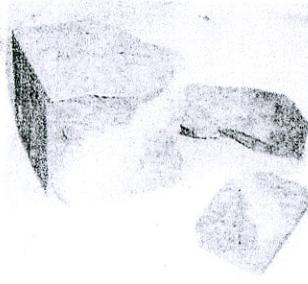
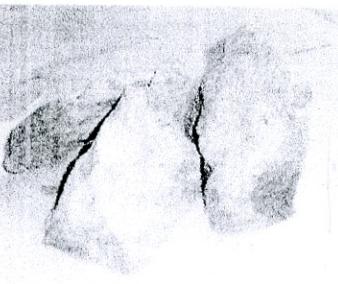
	Operator	Checked	Approved
	G. Baliashvili	B. Khatiashvili	G. Natsvlishvili

## Compressive Strength of Dimension Stone

LOCATION	Kutaisi's Quarry	Job ref.	ERENPORT
SOIL DESCRIPTION:	Borehole/Pit no.	-	
Limestone	Sample no.	1	
	Depth, m	-	
TEST METHOD:	ASTM C 170-06		15.03.2008

Specimen initially details						
Specimens no.	1	2	3	4	5	6
Specimens shapes	cube	cube	cube	cube	cube	
Specimens dimensions, mm:	width a	56.0	60.0	61.9	61.4	59.8
	length b	61.5	60.5	60.5	59.9	59.6
	height h	60.0	60.5	63.8	62.5	60.3
Area of the bearing surface, A mm <sup>2</sup>	3444	3630	3745	3678	3564	
Ratio, K=h/((a+b)/2)	1	1	1	1	1	

Compression Test Results					
Test condition	wet	wet	wet	wet	wet
Total load on the specimen at failure, W (N)	137293.1	91937.3	89730.8	123809.0	82130.7
Compressive strength of the specimen, C = W/A (MPa)	40	25	24	34	23
Average of compressive strength , C (MPa)				29	

Photo of the specimens after test					
1 Specimen no.		2 Specimen no.		3 Specimen no.	
4 Specimen no.		5 Specimen no.			

	Operator	Checked	Approved
	G. Baliashvili	B. Khatiashvili	G. Natsvlishvili



## Compressive Strength of Dimension Stone

Location: Kutaisi's Quarry	Job ref.	ERENPORT
Specimen lithologic description: Limestone	Borehole ref.	-
	Sample no:	1
	Depth, m	-
	Date of sampling	-
	Date of testing	15.03.2008

Test method:	ASTM C 170-06
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Preparation procedure in accordance with	Practice D 4543
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Shape of specimen:	Cube
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<u>Specimen initially details</u>			<u>Compression Test Results</u>	
Lateral dimension, mm	Wide, a	56.0	Total load on the specimen at failure, W (N)	137293.1
	Length, b	61.5	Type of fracture:	Columnar
Height, h mm	60.0	Equation:		
Area, A, mm <sup>2</sup>	3444.0	$C = W/A$		
Ratio h/((a+b)/2)	1.0	Compressive strength of the specimen, C (MPa)		
<u>Photo of the specimen after test</u>		<u>Sketch of fracture</u>		

	Operator	Checked	Approved
	G. Baliashvili	B. Khatiashvili	G. Natsvlishvili

## Determine Level of Water Absorption and Bulk Specific Gravity

LOCATION		Job ref.	ERENPORT
Kutaisi's Quarry			
SOIL DESCRIPTION:	Borehole/Pit no.		
Limestone	Sample no.	1-5	
TEST METHOD:	Depth, m		
	ASTM C 97-02	Date	13.03.2008

Specimens shapes:	cubes					
Specimens no.	1	2	3	4	5	6
Specimens dimensions, mm:	width	61.8	60.8	60.4	59.8	60.3
	length	63.0	61.8	61.1	60.0	60.7
	height	60.0	60.3	60.0	60.3	61.3
Surface area of specimens, S mm <sup>2</sup>	22763	22300	21961	21624	22155	
Volume of specimens, V mm <sup>3</sup>	233604	226574	221426	216356	224371	
Ratio of volume to surface area, K=V/S	10	10	10	10	10	

### Weight of the dried specimen, (A) g

13.03.2008 14:25	491.72	457.98	479.35	446.48	481.10	
15.03.2008 12:25	478.73	445.21	465.04	433.42	469.57	
15.03.2008 13:25	478.68	445.21	465.03	443.43	469.54	
15.03.2008 14:25	478.68	445.21	465.04	443.43	469.56	

### Weight of the soaked and surface-dried specimen in air, (B) g

15.03.2008 15:20	478.68	445.21	465.03	433.42	469.54	
17.03.2008 15:20	518.22	484.64	500.42	470.31	507.48	
Percentage water absorption by weight, % WAW=(B-A)/A*100	8.26	8.86	7.61	8.51	8.08	
Mean water absorption of sample, %				8.26		

### Weight of the soaked specimen in water, (C) g

17.03.2008 15:20	287.63	267.03	272.56	255.37	279.14	
Bulk Specific Gravity, g/cm <sup>3</sup> BSG=A/(B-C)	2.08	2.05	2.04	2.06	2.06	

Mean Bulk Specific Gravity 2.06

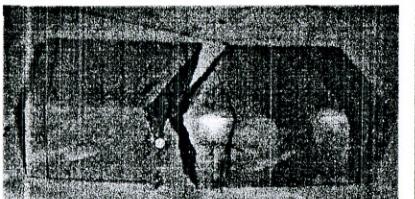
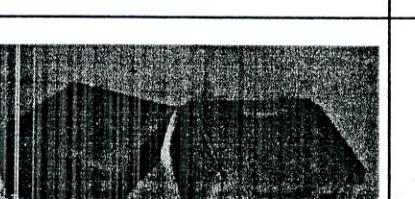
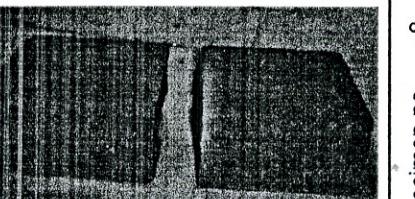
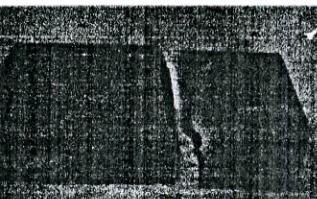
	Operator	Checked	Approved
	Baliashvili	Khatiashvili	Natsvlishvili

# **Modulus of Rupture of Dimension Stone**

LOCATION <b>Kutaisi's Quarry</b>	Job ref.	ERENPORT
SOIL DESCRIPTION: <b>Limestone</b>	Borehole/Pit no.	-
	Sample no.	1
	Depth, m	-
TEST METHOD:	<b>ASTM C 170-06</b>	Date <b>27.03.2008</b>

Specimen initially details						
Specimens no.		6	7	8	9	10
Specimens shapes		prism	prism	prism	prism	prism
Specimens dimensions, mm:	width, <i>b</i>	105.3	104.5	103.3	103.0	103.0
	length, <i>l</i>	177.8	177.8	177.8	177.8	177.8
	thickness, <i>d</i>	59.3	59.6	56.8	60.9	59.0
		59.3	59.7	57.2	59.0	58.2
		59.2	59.0	57.4	59.4	57.4
	Average thickness	59.3	59.4	57.1	59.8	58.2

Compression Test Results						
Test condition	wet	wet	wet	wet	wet	
Breaking load, <b>W (N)</b>	4295.3	6129.2	6737.2	10424.5	6129.2	
Modulus of Rupture, <b>R = 3WL / 2bd<sup>2</sup></b> (MPa)	3	4	5	8	5	
Average of Modulus of Rupture , <b>R (MPa)</b>				5		

Photo of the specimens after test					
	Specimen no.	6			
Specimen no.	9				
Specimen no.	10				
	Specimen no.	7			
	Specimen no.	8			

Note:	Specimen no. 1 was broken at existing crack (faulty specimen)	Operator	Checked	Approved
		G. Baliashvili	B. Khatiashvili	G. Natsvlishvili

