



ALBA VENTURA SRL





CARRARA MARBLE QUARRY OWNER





Carrara city is the Capital of marble



Since 1825 we have been involved in the quarrying of white marble which is well known abroads as «White Imperial Building» or as «Marmo bianco a grana fine - fine grained White Marble».

The reasons why our Cattani white marble is so highly valued lies in its exceptionally high resistance to all kinds of weather, cleasing agents, grease and oil due to its natural and unique granulometry which has been the subject of many careful laboratory test. They have unanimously described it as being a «**granitically**» resistant white marble.

Our organization is composed of several quarries, beyond **Cattani White Marble**, including one of **Black Marble** and one of **Bardiglio** all located in the marble basin of the «**Colonnata - Carrara**» **QUARRY n° 133**.





QUARRIES





In our basin we excavate three different marbles:

- **MARMO BIANCO CATTANI** (CATTANI white marble)
- **NERO COLONNATA** (Black of Colonnata)
This type of marble is one of three most famous historical marble still in excavation.
- **BARDIGLIO**

































TEST REPORT





MARMO BIANCO CATTANI (CATTANI white marble)

We can guarantee a high output of the same kind of material of a constant quality. The material extracted is included in the category of Carrara ordinary white. The exceptionally high corrosion resistance compared to other Carrara ordinary whites, makes Cattani White Marble particularly suitable for staircases, paving and cladding both indoor and outdoors.

- EN TEST REPORT

- A.S.T.M TEST REPORT





EN TEST





REPORT

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Date 2016-09-12 Reference 6P00238-3

Page 1 (2)

Alba Ventura srl
Mr. Ludovico Vernazza
Viale XX Settembre, 177/B
54033 Carrara MS
ITALY

Testing of Natural stone

(4 enclosures)

Commission

Testing and assessment of to be used as outdoor façade panels. The marble is named *BLANCO CATTANI* and comes from Cava Tacca 133, Carrara (MS), Italy.

Samples and testing


Prior to the sampling, Björn Schouenborg, CBI and Bent Grell, Ramböll visited the quarries in Carrara 6-8th April for meetings with quarry owners and to obtain hand specimens for screening of potential marble types.

The subsequent sample preparation and transport to CBI was arranged by the quarry owner. CBI had provided detailed sampling and sample marking information but has no information about the actual sampling procedure. The requested number of specimens were received for discolouration test, laboratory bowing, petrography (AGA-Adjacent Grain Analysis) and flexural strength tests. More information about samples and tests is given in table 1.

Table 1. Overview of samples, tests and date of testing.

Sample-identity	No. of specimens	Tested	Property	Method	Test finalised
Cattani	10	5	Laboratory bow test	EN 16306:2012	2016-08-09
	12	10	Flexural strength	EN 12372:2006	2016-06-15
	5	5	Flexural strength after bow test	EN 12372:2006	2016-08-09
	16	6	Discolouration test	EN 16140:2011	2016-07-18
	1	1	AGA Including petrographic analysis	EN 16306:2012 (Enclosure C) EN 12407:2007	2016-08-10

The Swedish Cement and Concrete Research Institute (CBI)

part of the SP Group 

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Test results

Average test results for the received specimens are given in the table below and detailed results in enclosures below.

Table 2. Test results.

Characteristics	Cattani
Bowing potential (mm/m)	0,27
Flexural strength, reference (MPa), LEV *	15,1
Flexural strength, exposed (MPa), LEV *	12,6
Strength loss in % based on average values	20
Discoloration	T1
AGA	10-11

* Lower expected value (similar to characteristic value)

The Swedish Cement and Concrete Research Institute (CBI) Concrete and Stone

Performed by

Lovise Sjöqvist

Lovise Sjöqvist

MSc Geology

Examined by

Björn Schouenborg

Björn Schouenborg

PhD Mineralogy & Petrology

Enclosures

- 1 Determination of the resistance of marble to thermal and moisture cycling
- 2 Flexural strength of reference specimens and exposed specimens
- 3 Discolouration test
- 4 Petrographic description focussing on the AGA (Adjacent Grain Analysis) test: A quantitative measurement of the microstructure of the marble used as an indicative test of bowing potential and for follow up in quality control



Enclosure 1

Laboratory bow test for marble according to EN 16306:2012

The test was conducted by Lovise Sjöqvist, CBI, in the period between 13th July and 2nd August 2016.

Table 1. Average bowing of Cattani marble.

	Average Bowing (mm/m)	Standard Deviation	Recommended limiting value (mm/m)	No. of Cycles
Cattani	0,27	0,034	0,4	50

Figure 1. Bowing development during the 50 thermal and moisture cycles.

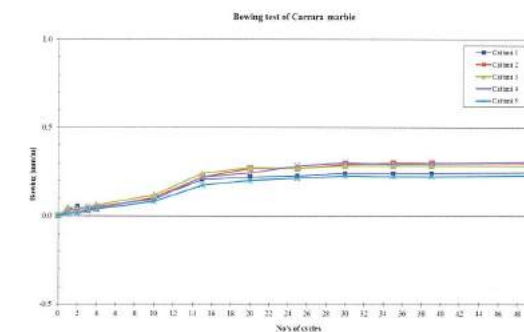
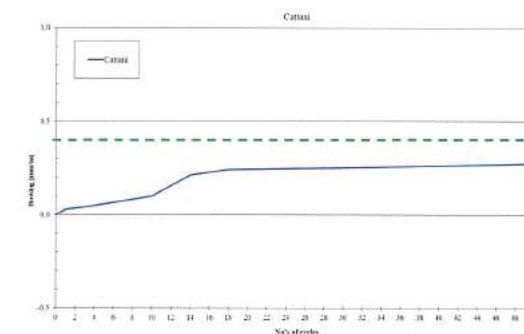


Figure 2. Bowing development during the 50 thermal and moisture cycles. Average values are shown. The recommended limit value is shown in green.





Enclosure 2

Flexural strength according to EN 12372 of reference specimens and exposed specimens**Reference samples****Natural Stone : Flexural strength 3-point load**

Method:	SS-EN 12372
Diameter of the loading device:	20 mm
Distance of the rollers:	350 mm
Load velocity:	0.25 MPa/s
Temperature:	40

Commission no:	6P00238
Sample:	Cattani
Trading name:	Cattani
Stone:	Marble
Date:	2016-06-15
Operator:	Lovise Sjöqvist

Specimen	Length, l (mm)	Width b (mm)	Height, h (mm)	Distance (mm)	Load (kN)	Flexural strength (MPa)
1	400	100,5	31,8	350	4,08	21,1
2	400	100,6	31,3	350	3,21	17,1
3	400	100,7	31,8	350	3,94	20,3
4	400	100,5	31,3	350	3,28	17,5
5	400	100,2	31,8	350	4,14	21,4
6	400	100,3	31,6	350	3,90	20,5
7	400	100,6	31,2	350	3,05	15,3
8	400	100,4	31,8	350	3,33	17,2
9	400	100,1	31,6	350	4,32	22,7
10	400	100,9	31,6	350	4,10	21,5
Mean value	400,0	100,5	31,6		4	19,6
Standard deviation	0,0	0,2	0,2		0,5	2,3
Variation coefficient					12,4	12
Characteristic value K						15,1

Samples exposed to the "eladding bow test"**Natural Stone : Flexural strength 3-point load**

Method:	SS-EN 12372
Diameter of the loading device:	20 mm
Distance of the rollers:	350 mm
Load velocity:	0.25 MPa/s
Temperature:	40

Commission no:	6P00238
Sample:	Cattani
Trading name:	Cattani
Stone:	Marble
Date:	2016-08-17
Operator:	Lovise Sjöqvist

Specimen	Length, l (mm)	Width b (mm)	Height, h (mm)	Distance (mm)	Load (kN)	Flexural strength (MPa)
1	400	100,3	31,4	350	3,01	16,0
2	400	100,2	30,0	350	3,05	17,8
3	400	100,9	29,8	350	2,99	17,5
4	400	100,4	31,5	350	2,99	13,7
5	400	100,3	31,5	350	3,11	16,4
6	400	100,4	31,1	350	2,84	15,3
7	400	100,6	31,7	350	2,80	14,6
8	400	100,3	31,3	350	2,61	14,0
Mean value	400,0	100,4	31,0		3	15,7
Standard deviation	0,0	0,2	0,7		0,2	1,5
Variation coefficient					6,9	10
Characteristic value K						12,6

This means approximately 20 % reduction in flexural strength due to the bow test.



Enclosure 3

Discolouration test for marble according to EN 16140:2011, Annex B

The discolouration test has been found especially useful to assess the potential risk of brownish staining of marble. Given that there is any easily oxidized sulphides in the marble, they will be affected by repeated heating and cooling. The latter in a weak alkaline solution.

Figures a and b illustrate the test specimens before and after exposure to 20 cycles. **N.B!** The colours do not completely match the original, despite white balancing of the photos. The comparison to reference specimens (R1 and R2) are therefore crucial for the assessment!

Figure 1a. Test specimens before the exposure, including two reference specimens.



Figure 1b. Test specimens after the exposure, including two reference specimens that are not exposed.





Petrographic analysis with a focus on microstructure: Adjacent Grain Analysis (AGA) EN 12407:2007 and EN 16306:2012 Enclosure C

Test procedure

The microstructure is quantified using linear traverses for the grain size and the Adjacent Grain Analysis (AGA) for the complexity of the microstructure. Increased complexity is favourable as regards durability. This was done on thin section under a polarising microscope. The principle of the AGA-method is that the amount of adjacent grains is counted around the median-sized minerals/grains in the sample (Fig 1).

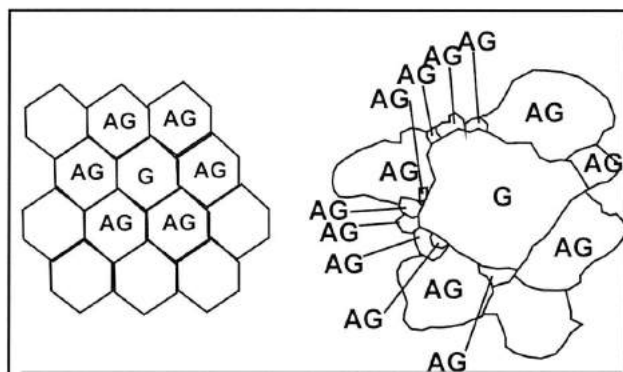


Figure 1. Schematic image of an granoblastic polygonal texture (left), and a seriate interlobate texture (right). The image also shows how the adjacent grains AG are counted.

Calcite crystal belongs to the hexagonal crystal system. In an “ideal” even-grained granoblastic texture, all calcite crystals share grain boundaries with six grains, which are referred to as *adjacent grains* AG (Figure 1). N.B! This is not ideal for the durability aspects! An increasingly irregular grain boundary or a more heterogeneous grain-size distribution will result in an increased number of adjacent grains. In a calcite marble with a heterogeneous grain size distribution, the largest crystals have the highest number of adjacent grains whereas the smallest crystals can have less than six adjacent grains. A larger number of AG occurs also in calcite marble with complex grain boundaries.

Test results

The analysed sample is a fine grained (0,02 – 0,2mm) calcitic marble (Figure 2) with irregular, lobate texture and a heterogeneous grain size (Figure 3), where an large number are calcite crystals, smaller then 0,1 mm due to recrystallization of the marble. For macroscopic images, see Enclosure 3. The median grain size is ~0,14 mm. The total number of adjacent grains are counted to be 10 (median value) and 10.7 as a mean value (Figure 4).

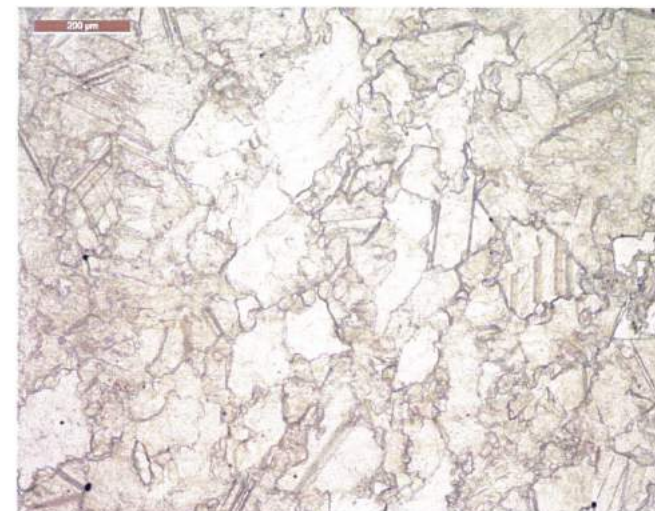


Figure 1. The photograph shows the microstructure of the grains as well as grain size. A large variation in grain size is revealed. Note scale bar at the top left of the photo.





Enclosure 4

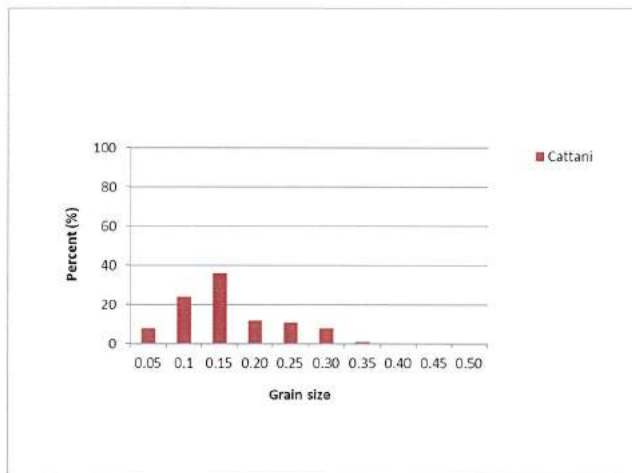


Figure 2. Grain-size distribution of the analysed sample.

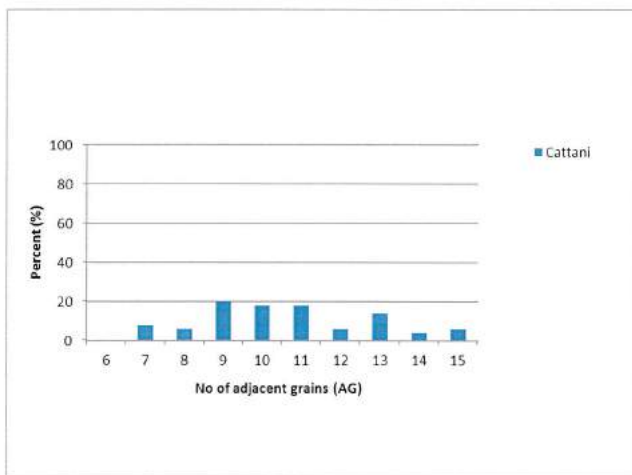


Figure 3. The results of the adjacent grain analysis (AGA)



Enclosure 4

Comments to the results

According to results from bowing measurements on marble claddings in the laboratory and from facades, the marble types with a granoblastic microstructures (low AGA numbers) have the highest bowing potentials. The normal range of AG in calcite marbles are between 6 and 10, where the marbles with 6 AG show the greatest bowing potential. This sample has 10-11 AG. In comparison with earlier results, it is our experience that it should not have a potential to bow if used as a façade cladding, or it will be minimal.

CBI Swedish Cement and Concrete Research Institute

Materials, Borås

Magnus Döse
MSc. Geology





A.S.T.M. TEST



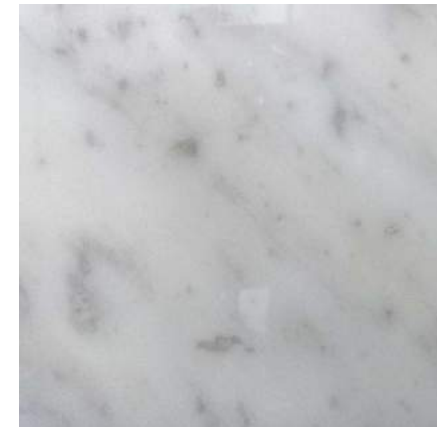


TEST REPORT No. 141

MATERIAL NAME: Carrara White Marble “Cattani – Quarry No.133”

CLIENT: *Alba Ventura S.r.l.*

STONELAB BY IMM TECHNOLOGICAL LABORATORY FOR TESTING ON STONES



PERFORMED TESTS:

- | | |
|--|---------|
| 1. Water Absorption & Bulk Specific Gravity (ASTM C97M-15) | Table 1 |
| 2. Modulus of Rupture (ASTM C99M-15) | Table 2 |
| 3. Compressive Strength (ASTM C170M-16) | Table 3 |
| 4. Flexural Strength (ASTM C880M-15) | Table 4 |
| 5. Abrasion Resistance (ASTM C1353M-15a) | Table 5 |

The Test Report No. 141 consists of 13 pages including this one.

Technological Laboratory Dr. Geol. Marco Mazzoni		DATE: March 23 rd , 2017
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IMM Carrara SpA - Stonelab
 V.le G.Galilei, 133 - 54033 – Marina di Carrara (MS-Italy)
 E-mail : m.mazzoni@immcarrara.it

Test Report No.141 – Page 1 of 13





Table 1

STONELAB by IMM Technological Laboratory Viale G.Galilei, 133 - 54033 M. di Carrara - Italy Tel. +39 0585 1812410 - Fax. +39 0585 787602 E-mail: m.mazzoni@immcarrara.it A.S.T.M. MEMBER No. 1741518	TEST REPORT No. 141 RESULTS SUMMARY TABLES
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Natural Stone Test STONE LAB CARRARA ASTM MEMBER NO. 1741518	Water Absorption and Bulk Specific Gravity (ASTM C97M-15)	Client: Alba Ventura S.r.l.
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By request of **ALBA VENTURA S.R.L.**, the under listed Tests have been performed on specimens of the material named by **ALBA VENTURA S.R.L.**, "Carrara White Marble – Cattani - Quarry No.133", quarried in Carrara (MS) - Italy.

The relevant results have been reported in the tables enclosed to this document. The specimens under testing have been consigned to this laboratory by **ALBA VENTURA S.R.L.** in date March 17th, 2017. No further information about the geological setting of this rock was given.

NOTE: the standard deviation and the coefficient of variation of mechanical tests have been indicated inside the tables enclosed to this test report.

Material: Carrara White Marble "Cattani-Quarry No.133" Test Report No.: 141	Block No.: unknown Test Standard: ASTM C97M-15
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Type of Test	Ref. Std.	Units	Conditioning (Load applying dir.)	Average values	Std. Dev.
Water Absorption (Table 1)	ASTM C97-15	%	-	0.05	-
Bulk Specific Gravity (Table 1)	ASTM C97-15	Kg/m ³	-	2715.85	-
		lb/ft ³	-	169.55	-
Modulus of Rupture (Table 2)	ASTM C99-15	MPa	DRY	17.92	2.50
		Psi		2598.9	362.8
Modulus of Rupture (Table 2)	ASTM C99-15	MPa	WET	21.97	2.70
		Psi		3186.5	391.4
Compressive Strength (Table 3)	ASTM C170-16	MPa	DRY	140.94	11.73
		Psi		20441.9	1701.5
Compressive Strength (Table 3)	ASTM C170-16	MPa	WET	133.08	32.53
		Psi		19301.3	4717.8
Flexural Strength (Table 4)	ASTM C880-15	MPa	DRY	14.36	0.99
		Psi		2082.1	143.3
Flexural Strength (Table 4)	ASTM C880-15	MPa	WET	15.90	1.67
		Psi		2306.6	242.0
Abrasion Resistance (Table 5)	ASTM C1353-15a	Ha	Dry	25.70	-

Specim No.	Specimens' weight					B.S.G. [kg/m ³] [lb/ft ³]	Water Absorption (%)	Specimen Dimension (mm)
	After Dry conditioning (>48 hrs. / 60°C)		After Wet conditioning (>48 hrs. / 20°C)					
	Date	g (m _d)	Date	g (m _s)	g (m _h)			
01	03/20/17	337.75	03/22/17	337.88	213.89	2724.01 170.05	0.04	50.5x49.8x49.6
02	03/20/17	336.40	03/22/17	336.52	212.56	2713.78 169.42	0.04	50.5x49.7x49.6
03	03/20/17	333.92	03/22/17	334.05	211.03	2714.36 169.45	0.04	50.8x49.2x49.2
04	03/20/17	339.23	03/22/17	339.47	214.50	2714.49 169.46	0.07	50.5x49.8x49.9
05	03/20/17	329.72	03/22/17	329.96	208.41	2712.63 169.34	0.07	49.8x49.7x49.5

	Min.	Avg.	Max.
Apparent Density ρ_b [kg/m³] [lb/ft³]	2712.63 169.34	2715.85 169.55	2724.01 170.05
Water Absorption [%]	0.04	0.05	0.07

Technological Laboratory Dr. Geol. Marco Mazzoni		DATE: March 23 rd , 2017
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Technological Laboratory Dr. Geol. Marco Mazzoni		Date: March 23 rd , 2017
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Table 2


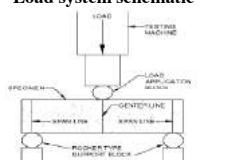
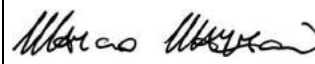
 Natural Stone Test ASTM MEMBER No. 1741518		Modulus of Rupture (ASTM C99M-15) - R -		Client: Alba Ventura S.r.l.					
Material: Carrara White Marble "Cattani-Quarry No.133"			Block No.: unknown						
Test Report No.: 141			Test Standard: ASTM C99M-15						
Specimen No.	Dimensions [mm] a x b x h	Conditioning	Actual Values						Notes
			Dry >48hrs/60°C	Fmax [kN]	R [MPa]	R [Psi]	R _{avd} [MPa]	R _{avd} [Psi]	
01 D	200x100.0x59.2	Dry	19.04	14.67	2127.1			0.14	
02 D	200x100.0x59.3	Dry	23.83	18.30	2654.0			0.14	
03 D	200x100.8x59.7	Dry	26.25	19.73	2861.5	17.92	2598.9	0.15	
04 D	200x100.5x59.8	Dry	27.60	20.74	3007.4			0.14	
05 D	200x100.8x59.8	Dry	21.58	16.16	2344.2			0.14	
Average M.O.R. (Dry), R_{avd} = 17.92 MPa ⇒ (R_{avd} = 2598.9 Psi) Standard deviation (Dry), s_d = 2.50 MPa ⇒ (s_d = 362.8 Psi) Coefficient of Variation (Dry) = 13.96 %									
Specimen No.	Dimensions [mm] a x b x h	Conditioning	Actual Values						Notes
			Wet >48hrs/20°C	Fmax [kN]	R [MPa]	R [Psi]	R _{avw} [MPa]	R _{avw} [Psi]	
01 W	200x100.6x59.9	Wet	34.15	25.55	3705.1			0.17	
02 W	200x100.0x59.8	Wet	29.78	22.48	3260.8			0.15	
03 W	200x100.6x60.0	Wet	26.45	19.72	2860.5	21.97	3186.5	0.17	
04 W	200x100.2x59.8	Wet	25.07	18.89	2739.6			0.18	
05 W	200x100.6x59.9	Wet	31.03	23.21	3366.4			0.16	
Average M.O.R. (Wet), R_{avw} = 21.97 MPa ⇒ (R_{avw} = 3186.5 Psi) Standard deviation (Wet), s_w = 2.70 MPa ⇒ (s_w = 391.4 Psi) Coefficient of Variation (Wet) = 12.28 %									
Load system schematic 		Technological Laboratory Dr.Geol. Marco Mazzoni		Date: March 23 rd , 2017					
									

Table 3


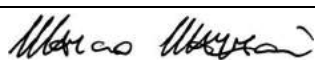
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Material: Carrara White Marble "Cattani-Quarry No.133"			Block No.: unknown						
Test Report No.: 141			Test Standard: ASTM C170M-16						
Specimen No.	Dimensions [mm] a x b x h	Conditioning	Actual Values						Notes
			Dry >48hrs/60°C	Fmax [kN]	C [MPa]	C [Psi]	C _{avd} [MPa]	C _{avd} [Psi]	
01 D	50.1x48.9x49.5	Dry	365.13	149.04	21616.8			0.380	
02 D	50.2x48.6x49.4	Dry	322.65	132.25	19181.5			0.316	
03 D	50.3x48.6x49.5	Dry	305.33	124.90	18115.5	140.94	20441.9	0.477	
04 D	50.5x49.8x49.5	Dry	381.96	151.88	22028.7			0.337	
05 D	50.2x48.3x49.4	Dry	355.53	146.63	21267.2			0.396	
Avg. Compressive Strength (Dry), C_{avd} = 140.94 MPa ⇒ (C_{avd} = 20441.9 Psi) Standard deviation (Dry), s_d = 11.73 MPa ⇒ (s_d = 1701.5 Psi) Coefficient of Variation (Dry) = 8.32 %									
Specim. No.	Dimensions [mm] a x b x h	Conditioning	Actual Values						Notes
			Wet >48hrs/60°C	Fmax [kN]	C [MPa]	C [Psi]	C _{avw} [MPa]	C _{avw} [Psi]	
01 W	50.1x48.9x49.4	Wet	369.39	150.78	21869.1			0.356	
02 W	50.5x49.6x49.6	Wet	385.24	153.80	22307.2			0.343	
03 W	49.7x49.2x49.5	Wet	327.03	133.74	19397.6	133.08	19301.3	0.378	
04 W	50.4x49.6x49.6	Wet	376.08	150.44	21819.8			0.397	
05 W	50.4x49.9x49.8	Wet	192.70	76.62	11113.0			0.418	
Avg. Compressive Strength (Wet), C_{avw} = 133.08 MPa ⇒ (C_{avw} = 19301.3 Psi) Standard deviation (Wet), s_w = 32.53 MPa ⇒ (s_w = 4717.8 Psi) Coefficient of Variation (Wet) = 24.44 %									
Technological Laboratory Dr.Geol. Marco Mazzoni		Date: March 23 rd , 2017							
									





Table 4


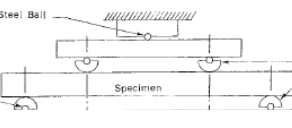



 Natural Stone Test STONE LAB FURNACE CARRARA ASTM MEMBER No. 1741518		Flexural Strength (ASTM C880M-15) - σ -		Client: Alba Ventura S.r.l.				
Material: Carrara White Marble "Cattani-Quarry No.133"			Block No.: unknown					
Test Report No.: 141			Test Standard: ASTM C880M-15					
Specimen No.	Dimensions [mm] a x b x h	Conditioning	Actual Values					Notes
			Dry >48hrs/60°C	Fmax [kN]	σ [MPa]	σ [Psi]	σ _{avd} [MPa]	
01 D	350x100.8x31.3	Dry	6.62	15.07	2186.3			0.22
02 D	350x100.0x30.9	Dry	5.42	12.77	1852.1			0.21
03 D	350x99.9x30.5	Dry	6.31	15.28	2215.5	14.36	2082.1	0.22
04 D	350x100.8x31.9	Dry	6.59	14.45	2095.8			0.21
05 D	350x99.5x30.3	Dry	5.77	14.21	2060.8			0.22
Avg. Flex. Strength (Dry), σ_{avd} = 14.36 MPa ⇒ (σ_{avd} = 2082.1 Psi) Standard deviation (Dry), s_d = 0.99 MPa ⇒ (s_d = 143.3 Psi) Coefficient of Variation (Dry) = 6.88 %								
Specimen No.	Dimensions [mm] a x b x h	Conditioning	Actual Values					Notes
			Wet >48hrs/20°C	Fmax [kN]	σ [MPa]	σ [Psi]	σ _{avw} [MPa]	
01 W	350x99.2x30.3	Wet	5.79	14.31	2074.9			0.20
02 W	350x100.7x29.9	Wet	7.19	17.98	2607.5			0.25
03 W	350x100.2x29.8	Wet	6.87	17.38	2520.8	15.90	2306.6	0.24
04 W	350x100.6x31.2	Wet	6.63	15.24	2210.0			0.20
05 W	350x99.9x30.4	Wet	6.00	14.62	2119.9			0.20
Avg. Flex. Strength (Wet), σ_{avw} = 15.90 MPa ⇒ (σ_{avw} = 2306.6 Psi) Standard deviation (Wet), s_w = 1.67 MPa ⇒ (s_w = 242.0 Psi) Coefficient of Variation (Wet) = 10.49 %								
Load system schematic 		Technological Laboratory Dr.Geol. Marco Mazzoni 		Date: March 23 rd , 2017				

Table 5

 Natural Stone Test STONE LAB FURNACE CARRARA ASTM MEMBER No. 1741518		Abrasion resistance of Dimension Stone Subjected to Foot Traffic (ASTM C1353M-15a)		Client: Alba Ventura S.r.l.		
Material name: Carrara White Marble "Cattani-Quarry No.133"			Specimens' surface under testing: honed			
Test Report No.: 141			Test Standard: ASTM C1353M-15a			
Specimen No.	Specimen Weight				Ha	Specimen dimensions [mm]
	Before Testing natural T=20°C	After Testing natural T=20°C	B.S.G (G) g/cm ³	Wa=(A-B) [g]		
	g (A)	g (B)				
01	147.58	143.76	2.72	3.82	26.17	100.6x99.3x5.6
02	150.92	146.80	2.72	4.12	24.26	100.3x100.0x5.5
03	151.38	147.63	2.72	3.75	26.66	100.4x99.3x5.7

Min.	Average Ha	Max.
24.26	25.70	26.66

Notes:
 B.S.G. = Bulk Specific Gravity
 Wa = Loss of Weight during grinding operation
 Ha = Abrasive hardness value

Technological Laboratory Dr.Geol. Marco Mazzoni 	Date: March 23 rd , 2017
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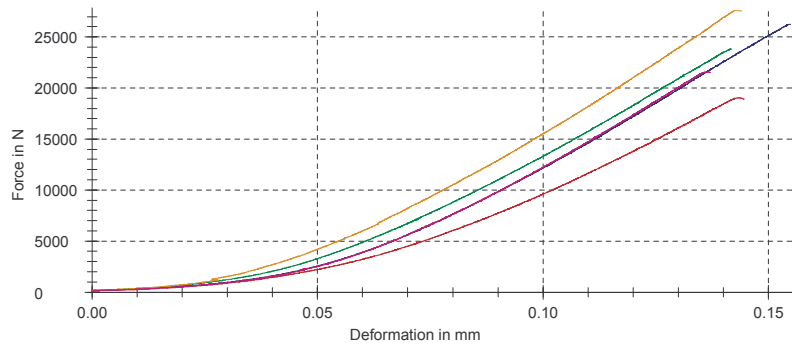
Test Report No.141

Client : Alba Ventura S.r.l.
Ref. Norm : ASTM C99M-15
Material name : Carrara White Marble "Cattani - Quarry No.133"- Dry-honed
Test Device data : Zwick Z250 - testXpert II
Pre-load : 50 N
Test speed : 80 N/s

Test results:

Legenda	No.	Specim.No.	Date	M.O.R. MPa	F.max N	Def. at Fmax mm	Span mm	Spec.Thk mm	Specim.Width mm
1	01D	21/03/2017	14,67	19036,54	0,14	180	59,2	100,0	
2	02D	21/03/2017	18,30	23832,47	0,14	180	59,3	100,0	
3	03D	21/03/2017	19,73	26252,13	0,15	180	59,7	100,8	
4	04D	21/03/2017	20,74	27600,40	0,14	180	59,8	100,5	
5	05D	21/03/2017	16,16	21577,96	0,14	180	59,8	100,8	

Load/Strain Graphs:



Statistics:

Alba Ventura S.r.l. n = 5	M.O.R. MPa	F.max N	Def. at Fmax mm	Span mm	Spec.Thk mm	Specim.Width mm
\bar{x}	17,92	23659,90	0,14	180	59,6	100,4
s	2,50	3463,63	0,01	0,00	0,29	0,40
v	13,96	14,64	4,68	0,00	0,48	0,40

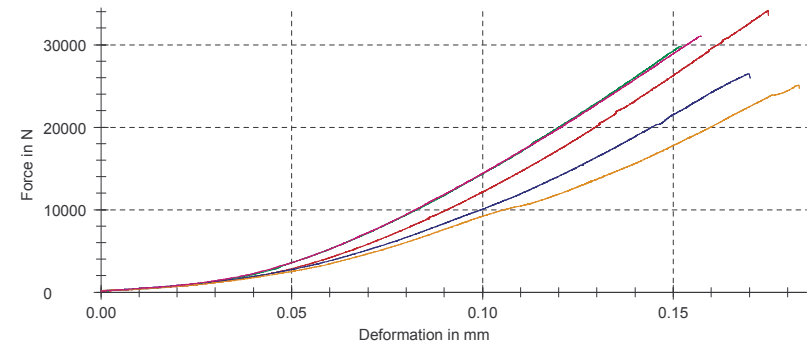
Test Report No.141

Client : Alba Ventura S.r.l.
Ref. Norm : ASTM C99M-15
Material name : Carrara White Marble "Cattani - Quarry No.133"- Wet-honed
Test Device data : Zwick Z250 - testXpert II
Pre-load : 50 N
Test speed : 80 N/s

Test results:

Legenda	No.	Specim.No.	Date	M.O.R. MPa	F.max N	Def. at Fmax mm	Span mm	Spec.Thk mm	Specim.Width mm
1	01W	22/03/2017	25,55	34151,16	0,17	180	59,9	100,6	
2	02W	22/03/2017	22,48	29777,49	0,15	180	59,8	100,0	
3	03W	22/03/2017	19,72	26454,02	0,17	180	60,0	100,6	
4	04W	22/03/2017	18,89	25067,39	0,18	180	59,8	100,2	
5	05W	22/03/2017	23,21	31029,47	0,16	180	59,9	100,6	

Load/Strain Graphs:



Statistics:

Alba Ventura S.r.l. n = 5	M.O.R. MPa	F.max N	Def. at Fmax mm	Span mm	Spec.Thk mm	Specim.Width mm
\bar{x}	21,97	29295,91	0,17	180	59,9	100,4
s	2,70	3632,06	0,01	0,00	0,08	0,28
v	12,28	12,40	7,58	0,00	0,14	0,28





TEST REPORT NO.141

Date: 03/21/17

Ref. Norm.: ASTM C170M-16

Client: Alba Ventura S.r.l

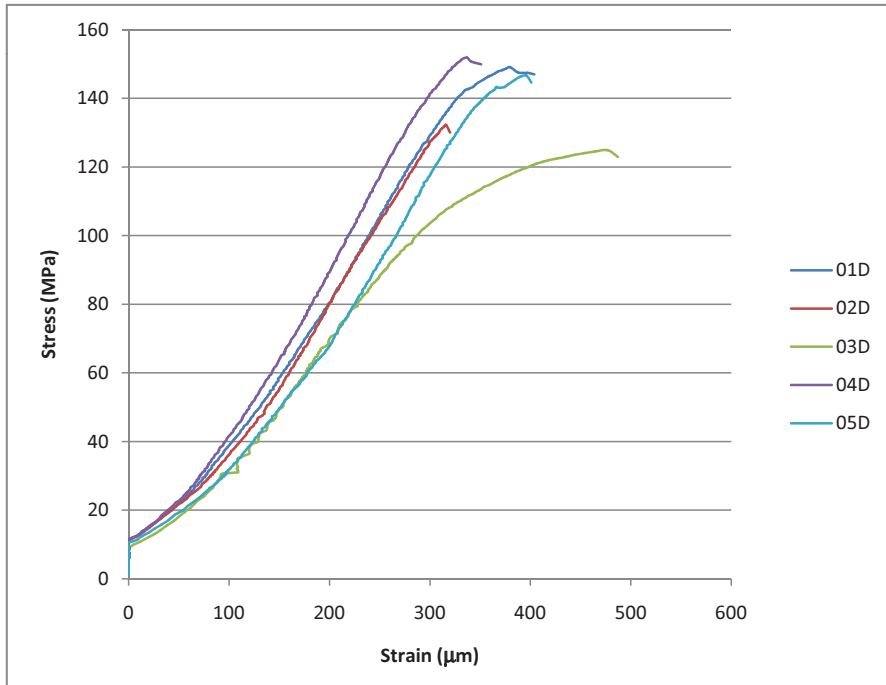
Material:
Carrara White Marble-Cattani Quarry 133
Test Speed: 0,5 MPa/sec

Test Device: Controls Mod.C56Z00

Condition: Dry

Specim.No	a (mm)	b (mm)	c (mm)	Area (mm ²)	Force (kN)	Compr. Strength (MPa)	Strain at Fmax (μm)
01D	50,1	48,9	49,5	2449,89	365,13	149,04	380
02D	50,2	48,6	49,4	2439,72	322,65	132,25	316
03D	50,3	48,6	49,5	2444,58	305,33	124,90	477
04D	50,5	49,8	49,5	2514,90	381,96	151,88	337
05D	50,2	48,3	49,4	2424,66	355,53	146,63	396

Average Compr. Strength : 140,94 MPa
Standard deviation : 11,73 MPa



TEST REPORT NO.141

Date: 03/21/17

Ref. Norm.: ASTM C170M-16

Client: Alba Ventura S.r.l

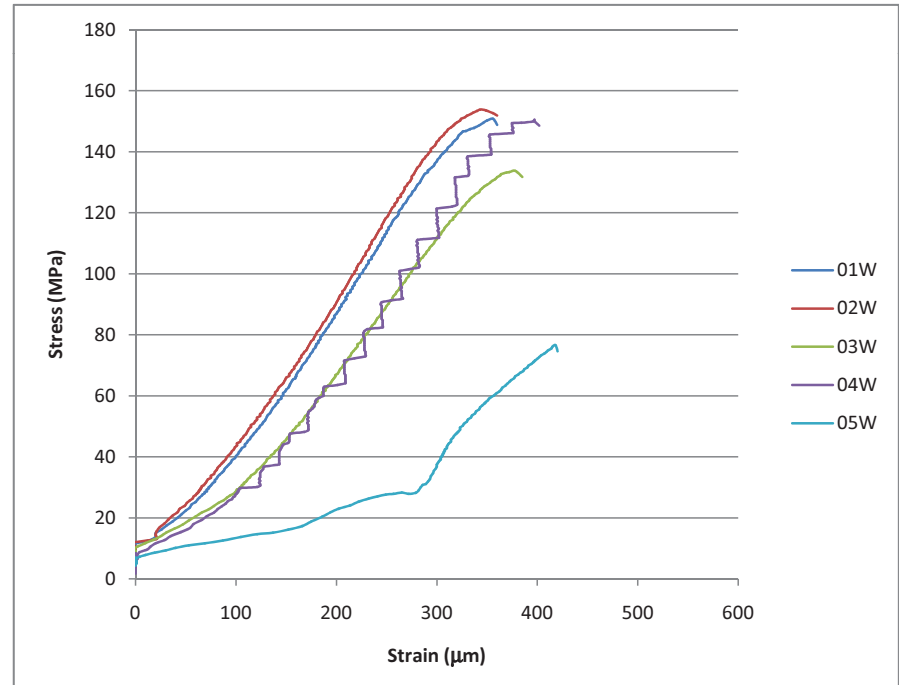
Material:
Carrara White Marble-Cattani Quarry 133
Test Speed: 0,5 MPa/sec

Test Device: Controls Mod.C56Z00

Condition: Wet

Specim.No	a (mm)	b (mm)	c (mm)	Area (mm ²)	Force (kN)	Compr. Strength (MPa)	Strain at Fmax (μm)
01W	50,1	48,9	49,4	2449,89	369,39	150,78	356
02W	50,5	49,6	49,6	2504,80	385,24	153,80	343
03W	49,7	49,2	49,5	2445,24	327,03	133,74	378
04W	50,4	49,6	49,6	2499,84	376,08	150,44	397
05W	50,4	49,9	49,8	2514,96	192,70	76,62	418

Average Compr. Strength : 133,08 MPa
Standard deviation : 32,53 MPa





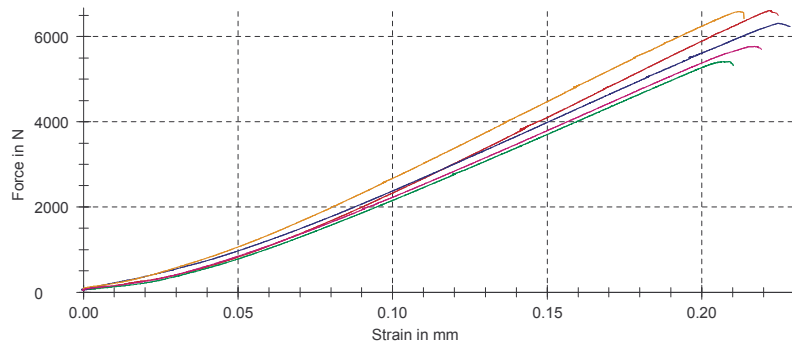
Test Report No.141

Client : Alba Ventura S.r.l.
Test Standard : ASTM C880-15
Material name : Carrara White Marble "Cattani - Quarry No.133" - Dry - honed
Test Device data : Zwick Z250 - testXpert II
Pre-load : 44 N
Test Speed : 0,069 MPa/s

Test results:

Legenda	No.	Specimen No.	Date	F _{max} N	Strain at Fmax mm	Flex. Strength MPa	Span mm	Thickness mm	Width mm
1	01D	21/03/2017	6620	0,22	15,07	300	31,3	100,8	
2	02D	21/03/2017	5420	0,21	12,77	300	30,9	100,0	
3	03D	21/03/2017	6310	0,22	15,28	300	30,5	99,9	
4	04D	21/03/2017	6590	0,21	14,45	300	31,9	100,8	
5	05D	21/03/2017	5770	0,22	14,21	300	30,3	99,5	

Load/Strain Graphs:



Statistics:

Alba Ventura S.r.l.	F _{max} N	Strain at Fmax mm	Flex. Strength MPa	Span mm	Thickness mm	Width mm
n = 5						
\bar{x}	6140	0,22	14,36	300	31,0	100,2
s	528	0,01	0,99	0,00	0,64	0,58
v	8,59	3,06	6,88	0,00	2,07	0,58

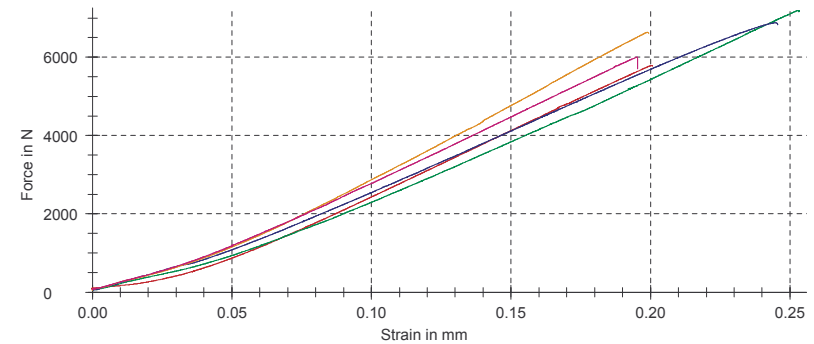
Test Report No.141

Client : Alba Ventura S.r.l.
Test Standard : ASTM C880-15
Material name : Carrara White Marble "Cattani - Quarry No.133" - Wet- honed
Test Device data : Zwick Z250 - testXpert II
Pre-load : 44 N
Test Speed : 0,069 MPa/s

Test results:

Legenda	No.	Specimen No.	Date	F _{max} N	Strain at Fmax mm	Flex. Strength MPa	Span mm	Thickness mm	Width mm
1	01W	21/03/2017	5790	0,20	14,31	300	30,3	99,2	
2	02W	21/03/2017	7190	0,25	17,98	300	29,9	100,7	
3	03W	21/03/2017	6870	0,24	17,38	300	29,8	100,2	
4	04W	21/03/2017	6630	0,20	15,24	300	31,2	100,6	
5	05W	21/03/2017	6000	0,20	14,62	300	30,4	99,9	

Load/Strain Graphs:



Statistics:

Alba Ventura S.r.l.	F _{max} N	Strain at Fmax mm	Flex. Strength MPa	Span mm	Thickness mm	Width mm
n = 5						
\bar{x}	6500	0,22	15,90	300	30,3	100,1
s	590	0,03	1,67	0,00	0,55	0,61
v	9,08	12,81	10,49	0,00	1,83	0,61





PROJECTS





From the production in our quarry basin, it is possible to obtain the following materials:

- blocks of decorative marble;
- blocks for sea-breakers;
- slices for calcium carbonate

Superior quality square blocks Medium quality square blocks Irregular shaped blocks	40.000 Tons/year
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As regards the specific case of the supply of marble slabs, we can guarantee from the extraction of blocks directly from our quarry basin in Carrara (Italy) and we can also provide the anchoring system for stone cladding with the collaboration of another company.

We will follow all the processing of slabs together with specialised laboratories of which we have highest consideration and we ensure the quality of the cut to size final panels.

FREE MARBLE SAMPLES AVAILABLE







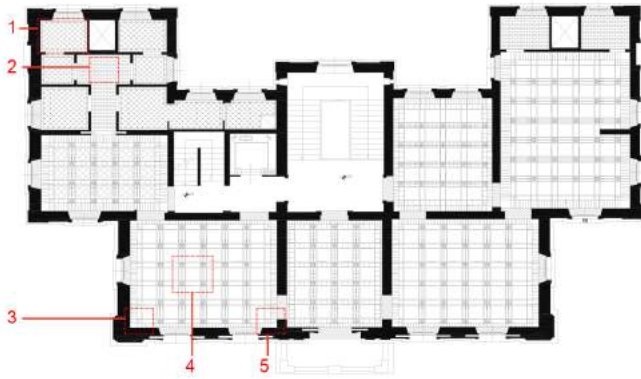
MICHELANGELO MUSEUM, CARRARA (MS)



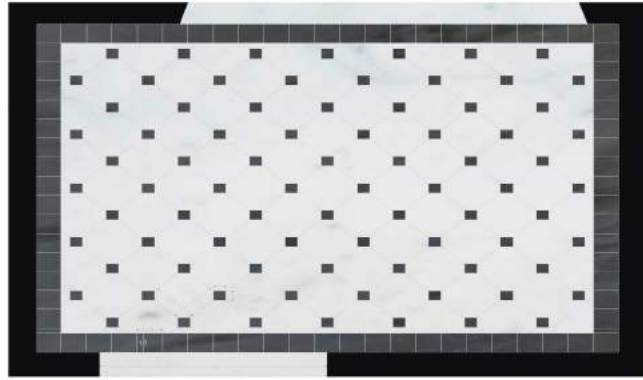
The Renovation of Villa Fabbricotti, in Carrara, is a work in progress. San Colombano Costruzioni SpA is working on this project in the construction and Alba Ventura Srl is supplying marble for the paving and cladding.

The Villa Fabbricotti will be a new museum in the Carrara City dedicated to one of the most famous artist in the Reinnasance.





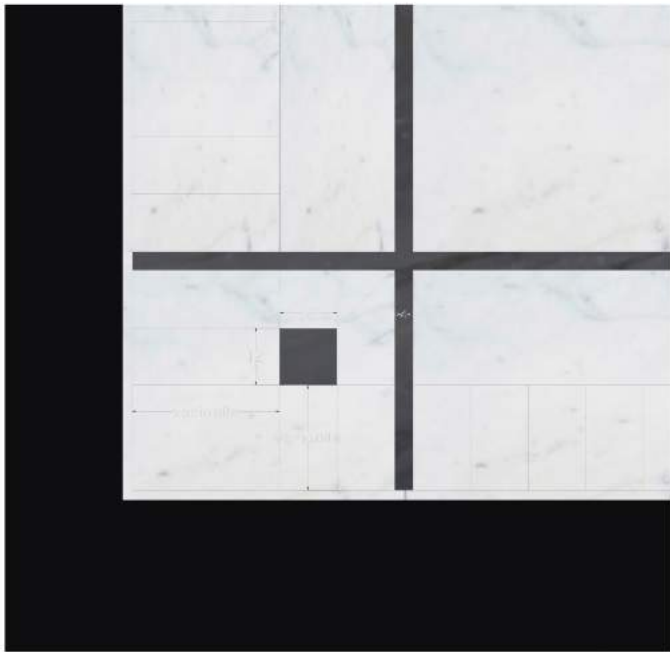
First floor plan, options paving



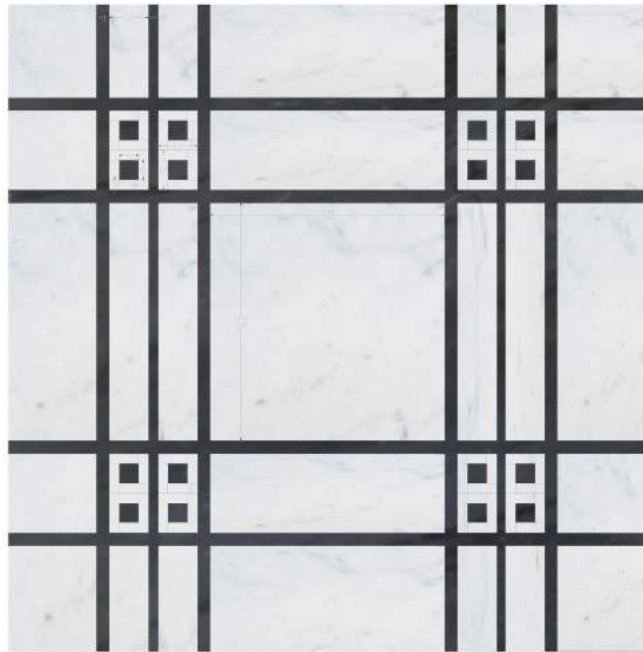
1- Paving in White Cattani Carrara marble cm. 20x20 and tile in Nero Colonnata marble cm. 5x5.



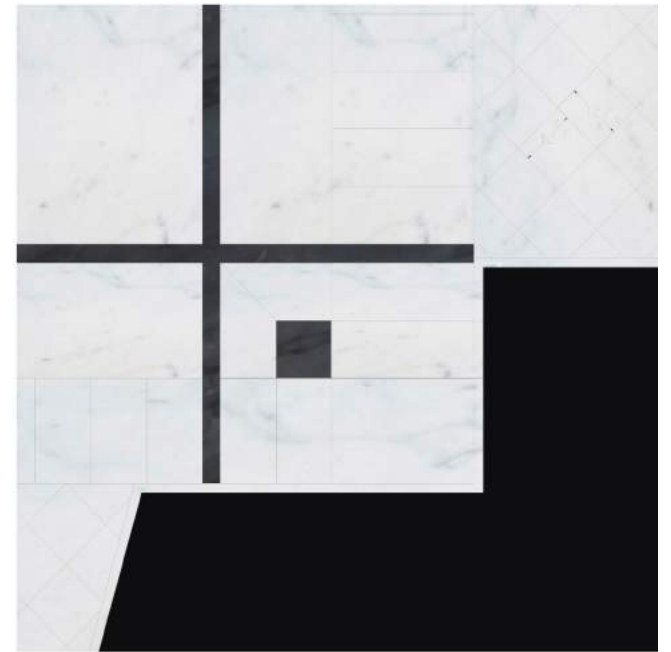
2- Paving in White Cattani Carrara marble cm. 12 x 24.



3- Corner detail



4- Central detail



5- Corner detail













RE-CLADDING NATIONAL LIBRARY OF AUSTRALIA



The Re-cladding of the National Library of Australia in Canberra is a work in progress.

After the evaluation test of our Cattani White marble, it has been chosen for its unique properties unlike the others ordinary white marble in Carrara.

It's a work in progress with the collaboration both EUROMARBLE srl of Carrara and the PACIFIC STONE in Canberra, Australia.

More than 5.000 square meters of Cattani White Marble slabs.
April 2017 - present











CAPITAL ONE CENTER, Tysons, Virginia.



The future Capital One Center designed by HGA, is part of Capital One's 24.5-acre, mixed-use urban redevelopment in Fairfax County, Virginia.

Plans for the event center include a 1,500-seat auditorium, 300-seat black-box theater, conference rooms, and foyer that will be available for corporate use, community, arts, education and civic events.

It was chosen only the CATTANI White marble for this Project.

It's a work in progress with the collaboration of CAMPOLONGHI SpA, Carrara.

More than 4.000 square meters of CATTANI White Marble slabs.

May 2018 - present







CLADDING RESIDENTIAL BUILDING, SWEDEN



Cattani White marble, it has been chosen for its unique properties unlike the others ordinary white marble in Carrara.

300 square meters of Cattani White Marble cut to size panels.

October 2018 - November 2018





QUARRY OWNER COMPANY

www.albaventura.it



marblecarrara



Marmo Bianco Cattani

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Carrara blocks and slabs warehouse: Via Lottizzazione, 6 - 54100 Massa (MS)
Company data: Fully paid-up share capital: € 951.891,00 • **VAT:** IT 01095390454