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**Index and Compressive
Strength Testing of
Clipsham Limestone**

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6 April 2005

Test report number 222 496

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Date 6th April 2005
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1 Introduction Full Test Results

BRE received of samples of Clipsham limestone (Stretton Quarry) on the 23rd March 2004 for Index and Compressive strength testing. These tests were completed on the 7th April 2005.

2 Details of tests carried out

The following tests were carried out:

- Porosity to BR141 on 6 samples 40mm³
- Saturation Coefficient to BR141 on 6 samples 40mm³
- Water Absorption to BR141 on 6 samples 40mm³
- Apparent Density to BR141 on 6 samples 40mm³
- Compressive Strength normal to planes of anisotropy (bedding) to BSEN:1926 Natural stone test methods. Determination of compressive strength on 10 samples 50mm³

3 Test results

A summary of the results is shown below in Table 1. Full test results can be found overleaf in the Appendix.

	Porosity (% by Vol.)	Saturation Coefficient	Water Absorption (% by weight)	Apparent Density (Kgm-3)	Compressive Strength (MPa)
Clipsham Limestone	12.82	0.89	4.84	2349	51.9

Table 1 Summary of Test results.

These results are consistent with typical published data for a creamy brown Clipsham Limestone and should be durable in all but the most exposed locations, e.g. paving and steps.

4 Appendix: Full Test Results.

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Report Number: 222496/05/R1
MLS Reference: 222496/05
Date of Issue: 05/04/05
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Porosity, Saturation Coefficient, Water Absorption and Apparent Density of Natural Stone

Sample Description

Petrographic nature: Limestone
Commercial name: Clipsham
Country of origin: UK
Name of supplier: Stretton Quarry
Anisotropic features: Bedding not Visible

Sampled by: Data not Supplied
Project reference: Data not Supplied

Testing

Tested by: Ian Rance, Stone Testing Laboratory
Test standard/method: BRE Specific Procedure SP8/01/J
Date samples received: 23/03/05
Date tested: 29/02/05 – 01/04/05
Number of specimens tested: 6
Specimen dimensions (mm): 40 x 40 x 40
Preparation/conditioning: Prepared to SP8/01/J (BRE 141)

Results

Client specimen number	Clipsham	Clipsham	Clipsham	Clipsham	Clipsham	Clipsham
MLS specimen number	222496/05/11	222496/05/12	222496/05/13	222496/05/14	222496/05/15	222496/05/16
Porosity (% by volume)	12.07	12.95	13.27	13.45	11.85	13.33
Saturation coefficient	0.89	0.89	0.89	0.89	0.87	0.89
Water absorption (% by weight)	4.50	4.91	5.03	5.15	4.35	5.07
Apparent density (kgm ⁻³)	2369	2344	2337	2331	2377	2335

The calculation of apparent density assumes the density of water to be 998 kgm⁻³ at 20°C.

Porosity (Mean % by volume): 12.82%
Saturation Coefficient (Mean): 0.89
Water Absorption (Mean % by weight): 4.84%
Apparent Density (Mean): 2349Kg^m-3

Final approval by: G. Ashall

Date: 6/4/05.

Name: Geoff Ashall

Position: Principal Consultant



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Report Number: 222496/05/R2
MLS Reference: 222496/05
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Compressive Strength of Natural Stone

Sample Description

Petrographic nature: Limestone
Commercial name: Clipsham
Country of origin: UK
Name of supplier: Stretton Quarry
Anisotropic features: Bedding not Visible

Sampled by: Data not Supplied
Project reference: Data not Supplied

Testing

Tested by: Les White, Concrete Laboratory
Checked by: Les White, Concrete Laboratory
Test standard/method: BS EN 1926:1999
Date samples received: 23/03/05
Date tested: 07/04/05
Number of specimens tested: 10
Preparation/conditioning: Prepared to BS EN 1926:1999

Results Summary

Detailed results given on pages 2

Mean Compressive Strength (Dry/Perpendicular):

51.9MPa

Standard deviation

10MPa

Variation Coefficient

0.2

Final approval by: *G. Ashall*

Date: 7/4/05

Name: Geoff Ashall

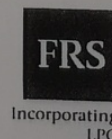
Position: Principle Consultant

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Results

Dry/Perpendicular

Client specimen number	Clipsham	Clipsham	Clipsham	Clipsham	Clipsham
MLS specimen number	222496/05/171	222496/05/172	222496/05/173	222496/05/174	222496/05/175
Dimensions (mm)	49.6 50.7 51.5	50.5 50.0 51.5	51.2 50.5 49.7	50.8 50.8 49.9	50.6 50.8 49.6
Loading orientation to bedding (rift)	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular
Condition at test	Dry	Dry	Dry	Dry	Dry
Failure load (kN)	112.2	98.8	153.9	143.6	164.4
Compressive strength (MPa)	44.5	39.1	59.5	55.7	63.9

Wet/Perpendicular

Client specimen number	Clipsham	Clipsham	Clipsham	Clipsham	Clipsham
MLS specimen number	222496/05/176	222496/05/177	222496/05/178	222496/05/179	222496/05/180
Dimensions (mm)	50.1 50.7 49.8	51.4 50.7 49.8	50.5 49.5 51.1	49.6 50.6 50.8	50.6 49.9 51.2
Loading orientation to bedding (rift)	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular
Condition at test	Dry	Dry	Dry	Dry	Dry
Failure load (kN)	156.8	157.5	101.8	106.4	103.8
Compressive strength (MPa)	61.7	60.5	40.8	42.3	41.1

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