



**SGS U.S. Testing Company Inc.**

1341 North 108th East Avenue  
Tulsa, OK 74116  
Tel: 918-437-8333  
Fax: 918-437-8487

Report No.: 140007-15  
Date: 5/30/00  
Page 1 of 2

**REPORT OF TEST**

**CLIENT:** H.J. Born Stone Company  
R.R. #3 Box 312  
Arkansas City, KS 67005  
  
Attn: Sharon Born

**SUBJECT:** ASTM C 880 Flexural Strength of Dimension Stone.

**REFERENCE:** Letter.

**SAMPLE ID:** Samples identified as "CW TL" was received from the client on 4/17/00. Samples were received in good condition.

**PROCEDURE:** The material was tested for Flexural Strength in the dry condition in accordance with ASTM C880-96. No revisions to this report will be allowed after 90 days of the report date.

**RESULTS:** See test data and results on the following page.

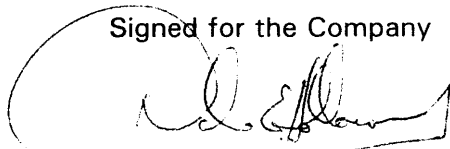
**TEST DATE:** 5/15/00.

**CONCLUSION:** There is no requirement for Flexural Strength Limestone Dimension Stone by ASTM C 568-96, Standard Specification of Limestone Dimension Stone.



Eric Hundley, Engineer  
Engineering & Fire Technology Dept.

Signed for the Company



Dale E. Holloway  
Tulsa Branch Director

Member of the SGS Group

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Client: H.L. Born Stone Co., KS

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**TEST RESULTS:**

**ASTM C 880 – Flexural Strength**

Sample: "CW TL" Cottonwood Top Ledge/Chase County

<u>Specimen</u>	<u>Width (in)</u>	<u>Thickness (in)</u>	<u>Ultimate Load (lbs)</u>	<u>Flexural Strength (Psi)</u>
1	3.916	1.399	929	1092
2	4.017	1.343	821	1021
3	3.996	1.229	790	1179
4	3.963	1.298	826	1113
5	3.999	1.335	680	859
Average	-	-	-	<b>1053 Psi</b>
Average	-	-	-	<b>7.26 Mpa</b>

Requirements: Not Applicable.

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End of Report

**REPORT OF TEST**



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Report No.: 140007-12  
Date: 5/30/00  
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**REPORT OF TEST**

**CLIENT:** H.J. Born Stone Company  
R.R. #3 Box 312  
Arkansas City, KS 67005  
  
Attn: Sharon Born

**SUBJECT:** ASTM C 241 Abrasion Resistance of Dimension Stone.

**REFERENCE:** Letter.

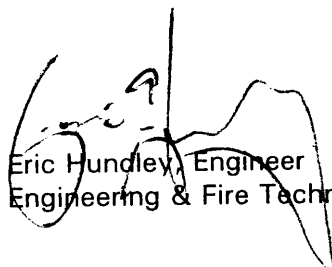
**SAMPLE ID:** Samples identified as "CW TL" were received from the client on 4/17/00. The samples were received in good condition.

**PROCEDURE:** The material was tested for Abrasion Resistance in accordance with ASTM C 241-90. No revisions to this report will be allowed after 90 days of the report date.

**RESULTS:** See test data and results on the following page.

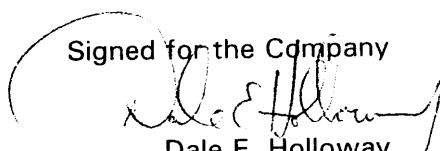
**TEST DATE:** 5/8/00.

**CONCLUSION:** The material tested does not meet the minimum requirements of ASTM C568-96 for Abrasion Resistance of Medium Limestone Dimension Stone.



Eric Hundley, Engineer  
Engineering & Fire Technology Dept.

Signed for the Company



Dale E. Holloway  
Tulsa Branch Director

Member of the SGS Group

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**TEST RESULTS:**

**ASTM C 241- Abrasion Resistance**

Samples: "CW TL" Cottonwood Top Ledge/Chase County

<u>Specimen</u>	<u>Bulk Specific Gravity</u>	<u>Average Weight (g)</u>	<u>Weight Loss (g)</u>	<u>Abrasion Index (H<sub>a,b</sub>)</u>
1	2.166	145.55	4.776	4.85
2	2.164	137.36	4.511	5.12
3	2.165	143.82	4.438	5.22
Average	2.165			<b>5.06</b>

Requirements:

ASTM C 568-96, Medium Density Limestone Dimension Stone

Abrasion Resistance: 10.0 H<sub>a,b</sub> minimum

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End of Report

REPORT OF TEST



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Report No.: 140007-9  
Date: 5/30/00  
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REPORT OF TEST

**CLIENT:** H.J. Born Stone Company  
R.R. #3 Box 312  
Arkansas City, KS 67005  
  
Attn: Sharon Born

**SUBJECT:** ASTM C 170 Compressive Strength of Dimension Stone.

**REFERENCE:** Letter.

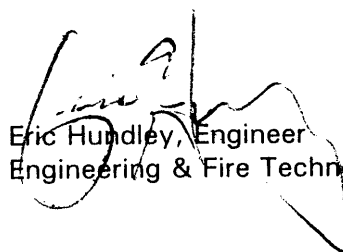
**SAMPLE ID:** Samples identified as "CW TL" were received from the client on 4/17/00. The samples were received in good condition.

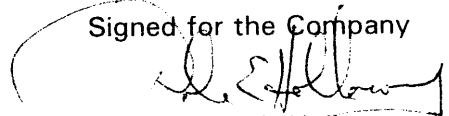
**PROCEDURE:** The material was tested for Compressive Strength in accordance with ASTM C 170-90. No revisions to this report will be allowed 90 days after the report date.

**RESULTS:** See test data and results on the following page.

**TEST DATE:** 5/8/00.

**CONCLUSION:** The material tested meets the minimum requirements of ASTM C 568-96 for Compressive Strength of Medium Density Limestone Dimension Stone.

  
Eric Hundley, Engineer  
Engineering & Fire Technology Dept.

Signed for the Company  
  
Dale E. Holloway  
Tulsa Branch Director

Client: H.L. Born Stone Co., KS

**TEST RESULTS:**

**ASTM C 170 – Compressive Strength**

Samples: "CW TL" Cottonwood Top Ledge/Chase County

<u>Specimen</u>	<u>Width (in)</u>	<u>Length (in)</u>	<u>Ultimate Load (lbs)</u>	<u>Compressive Strength (Psi)</u>
1	2.019	1.986	25987	6484
2	2.004	2.009	24051	5975
3	2.028	1.996	22167	5478
4	2.014	1.934	20910	5371
5	1.936	2.028	20099	5121
Average	-	-	-	<b>5686 Psi</b>
Average	-	-	-	<b>39.20 MPa</b>

Requirements:

ASTM C568-96, Medium Density Limestone Dimension Stone

Compressive Strength: 4000 Psi, minimum.

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End of Report

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Report No.: 140007-6  
Date: 5/30/00  
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REPORT OF TEST

**CLIENT:** H.J. Born Stone Company  
R.R. #3 Box 312  
Arkansas City, KS 67005

Attn: Sharon Born

**SUBJECT:** ASTM C 99 Modulus of Rupture of Dimension Stone.

**REFERENCE:** Letter.

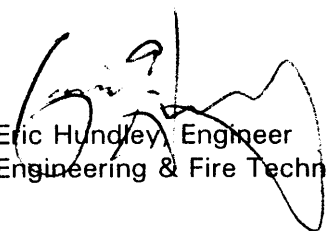
**SAMPLE ID:** Samples identified as "CW TL" was received from the client on 4/17/00. The samples were received in good condition.

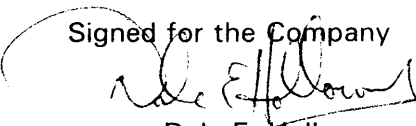
**PROCEDURE:** The material was tested for Modulus of Rupture in accordance with ASTM C 99-97. No revisions to this report will be allowed after 90 days of the report date.

**RESULTS:** See test data and results on the following page.

**TEST DATE:** 5/8/00.

**CONCLUSION:** The material tested meets the minimum requirements of ASTM C 568-96 for Modulus of Rupture of Limestone Dimension Stone.

  
Eric Hundley, Engineer  
Engineering & Fire Technology Dept.

Signed for the Company  
  
Dale E. Holloway  
Tulsa Branch Director

Member of the SGS Group

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**TEST RESULTS:**

**ASTM C 99 Modulus of Rupture**

Samples: "CW TL" Cottonwood Top Ledge/Chase County

<u>Specimen</u>	<u>Width of Material (in)</u>	<u>Thickness of Material (in)</u>	<u>Ultimate Load (lbs)</u>	<u>Modulus of Rupture (Psi)</u>
1	3.975	2.527	2198	909
2	3.977	2.566	2143	860
3	3.997	2.485	1929	821
4	3.971	2.438	2039	907
5	3.976	2.485	2146	918
Average	-	-	-	<b>883 Psi</b>
Average	-	-	-	<b>6.09 MPa</b>

Requirements:

ASTM C 568-96, Medium Density Limestone Dimension Stone

Modulus of Rupture: 500 Psi, minimum

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End of Report

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Report No. 140007-3  
Date: 5/30/00  
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REPORT OF TEST

**CLIENT:** H.J. Born Stone Company  
R.R. #3 Box 312  
Arkansas City, KS 67005

Attn: Sharon Born

**SUBJECT:** ASTM C 97 Water Absorption and Specific Gravity of Dimension Stone.

**REFERENCE:** Letter.

**SAMPLE ID:** Samples identified as "CW TL" was received from the client on 4/17/00. The samples were received in good condition.

**PROCEDURE:** The material was tested for Water Absorption, Density, and Specific Gravity in accordance with ASTM C 97-96. No revisions to this report will be allowed after 90 days of the report date.

**RESULTS:** See test data and results on the following page.

**TEST DATE:** 5/8/00.

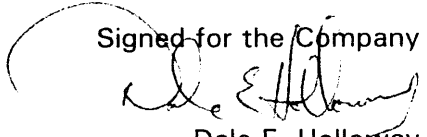
**CONCLUSION:** The material tested meets the minimum requirements of ASTM C 568-96 for Water Absorption of Medium Density Limestone Dimension Stone.

The material tested meets the minimum requirements of ASTM C 568-96 for Medium Density of Limestone Dimension Stone.



Eric Hundley, Engineer  
Engineering & Fire Technology Dept.

Signed for the Company



Dale E. Holloway  
Tulsa Branch Manager

Member of the SGS Group

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Client: H.J. Born Stone Company, KS

Report No. 140007-3

Date: 5/30/00

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TEST RESULTS:

**ASTM C 97 - Absorption and Specific Gravity**

Samples: "CW TL" Cottonwood Top Ledge/Chase County

<u>Specimen</u>	<u>Wet Weight (g)</u>	<u>Dry Weight (g)</u>	<u>Volume (cm<sup>3</sup>)</u>	<u>Density (lb/ft<sup>3</sup>)</u>	<u>Specific Gravity</u>	<u>Absorption (%)</u>
1	300.14	281.32	129.80	135.25	2.167	6.69
2	303.83	285.40	130.96	135.99	2.179	6.46
3	300.54	282.49	130.02	135.58	2.173	6.39
Average	-	-	-	<b>135.61</b>	<b>2.173</b>	<b>6.51</b>

Requirements:

ASTM C 568-96, Medium Density Limestone Dimension Stone

Absorption: 7.5%, maximum

Density: 135 lb/ft<sup>3</sup>, minimum

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End of Report

REPORT OF TEST