



**St. Lawrence Testing
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July 29, 2020

Mr. Mark Butzer
LW Bray Construction
308 Corduroy Road
Vars, ON
K0A 3H0

**Re: ASTM Tests on Sandstone Cubes –
Russell Quarry – Area 2
Report No. 20C206**

Dear Mr. Butzer:

Further to receipt of cube specimens on July 23, 2020, tests were conducted in our laboratory to the current ASTM C97 and C170. The individual test results are found on the attached sheets.

The tests results indicate that the sandstone samples as submitted meet the requirements of ASTM C616/C616M-15 for ASTM C97 and C170 for Type 1 and Type II Quartzitic sandstone and the job specs.

Respectfully submitted

ST. LAWRENCE TESTING & INSPECTION CO. LTD.

G.G. McIntee, P. Eng.

GGM:jp

Attachments

**SUMMARY OF TEST RESULTS FOR SANDSTONE SPECIMENS -
Rideauview Quarry – Jones Falls Locks**

1) ASTM C97/C97M-18: Absorption and Bulk Specific Gravity

Nominal size: 2 inches by 2 inches by 2 inches, each measured to 0.001 inches

<u>Specimen #</u>	<u>Absorption %</u>	<u>Bulk Specific Gravity – lbs/ft³</u>	
A1	1.82	149.5	2.396 kg/m ³
A2	1.94	149.4	2.394 kg/m ³
A3	1.92	149.8	2.400 kg/m ³
A4	1.88	149.9	2.402 kg/m ³
A5	1.87	149.2	2.391 kg/m ³
Average	1.89	149.6 lbs/ft ³	2.397 kg/m ³

ASTM C616/C616M-15

requirement	8% max.	125lbs/ft ³ min.	2000 kg/m ³	I Sandstone
	3% max	150 lbs/ft ³ min	2400kg/m ³	II Quartzitic Sandstone
	1% max	160lbs/ft ³ min	2560 kg/m ³	III Quartzite
Job spec.	3% max	143.5 lbs/ft ³ min	2300 kg/m ³	

The Absorption and Bulk Specific Gravity of the sample is based on the average of the specimens. The sample meets the requirements of ASTM C616/C616M-15 Absorption and Bulk Specific Gravity as Type I Sandstone material and Type II Quartzitic Sandstone.

2) ASTM C170/C170M-17 Compressive Strength

Nominal Size: 2 inches by 2 inches by 2 inches, each measured to 0.001 inches. The bedding was noted by lines drawn on the cubes.

<u>Specimen # Condition of Test</u>		<u>Compressive Strength</u>	
C1	parallel dry	19153	132.1 MPa
C2	parallel dry	18614	128.3 MPa
C3	parallel dry	19270	132.9 MPa
C4	parallel dry	18189	125.4 MPa
C5	parallel dry	16964	117.0 MPa
Average		18438 p.s.i.	127.1 MPa
C6	parallel wet	19631	135.3 MPa
C7	parallel wet	20694	142.7 MPa
C8	parallel wet	15589	107.5 MPa
C9	parallel wet	18549	127.9 MPa
C10	parallel wet	16552	114.1 MPa
Average		18203 p.s.i.	125.5 MPa

<u>Specimen # Condition of Test</u>		<u>Compressive Strength</u>	
C11	perpendicular dry	18320	126.3 MPa
C12	perpendicular dry	19375	133.6 MPa
C13	perpendicular dry	17440	120.2 MPa
C14	perpendicular dry	17946	123.7 MPa
C15	perpendicular dry	18157	125.2 MPa
Average		18248 p.s.i.	125.8 MPa
C16	perpendicular wet	16970	117.0 MPa
C17	perpendicular wet	18409	126.9 MPa
C18	perpendicular wet	16431	113.3 MPa
C19	perpendicular wet	18285	126.1 MPa
C20	perpendicular wet	16919	116.7 MPa
Average		17403 p.s.i.	120.0 MPa

ASTM C616/C616M-15 Requirement 4,000 p.s.i. min. 28 MPa I Sandstone
10,000 p.s.i. min 69 MPa II Quartzitic Sandstone
20,000 p.s.i. min. 140 MPa III Quartzite

Job Spec. 75 MPa

The Compressive Strength of the sample for each condition of test is based on the average of the specimens for each condition of test. The sample meets the requirements of ASTM C616/C616M-15 for Compressive strength of Type I Sandstone and Type II Quartzitic Sandstone and the Job Spec of 75 MPa.