



May 6, 2009

Mr. Jody Wall  
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Subject: **Freezing and Thawing Test Results – ASTM C 666-03 (Procedure A)**  
**TEC Services Project No: TEC 06-0514**  
**TEC Services Laboratory ID: 08-231**

Dear Mr. Wall:

Testing, Engineering and Consulting, Inc. (TEC Services) has completed laboratory rapid freezing and thawing testing on the samples made from the mix design provided by Carolina Stalite. Four beams were fabricated from the provided mix design which is reported in Table 1. Two of the samples were tested as cast and two of the samples were saw cut on each of the faces to expose the coarse aggregate (photo 1). Testing was performed in accordance with ASTM C 666-03 *Resistance of Concrete to Rapid Freezing and Thawing – Procedure A (freezing and thawing in water)*. The results of our testing are reported in Table 2.

**Table 1 – Mix Proportions**

<b>Material</b>	<b>Supplier</b>	<b>Quantity (pcy)</b>
Cement	Cementos de Caribe	572
Fly Ash	Sefa - Georgetown Type F	172
Coarse Aggregate	Carolina Stalite 3/4"	935
Fine Aggregate	R & J Bushogging Willis Neck Mine	1117
Water	Lawrenceville	280
w/c ratio	NA	0.38
Admixture	BASF Micro Air	1.882 oz/cwt
Slump (in)		3.00
Air Content (%)		5.0
Unit Weight (pcf)		114.3

**Table 2 – Test Results – Control Beams**

<b>Beam #1</b>		
<b>Completed Cycles</b>	<b>Fundamental Transverse Frequency (kHz)</b>	<b>Relative Dynamic Modulus (%)</b>
0	1.914	100
30	1.934	102
55	1.934	102
95	1.934	102
138	1.934	102
179	1.914	100
209	1.914	100
240	1.914	100
280	1.934	102
<b>307</b>	<b>1.934</b>	<b>102</b>
<b>Beam #2</b>		
<b>Completed Cycles</b>	<b>Fundamental Transverse Frequency (kHz)</b>	<b>Relative Dynamic Modulus (%)</b>
0	1.895	100
30	1.895	100
55	1.895	100
95	1.914	102
138	1.914	102
179	1.914	102
209	1.895	100
240	1.895	100
280	1.914	102
<b>307</b>	<b>1.914</b>	<b>102</b>


**Table 2 – Test Beams – Saw Cut Faces**

<b>Beam #3 - Saw Cut Faces</b>		
<b>Completed Cycles</b>	<b>Fundamental Transverse Frequency (kHz)</b>	<b>Relative Dynamic Modulus (%)</b>
0	1.934	100
30	1.934	100
55	1.934	100
95	1.934	100
138	1.953	102
179	1.934	100
209	1.934	100
240	1.934	100
280	1.934	100
<b>307</b>	<b>1.934</b>	<b>100</b>
<b>Beam #4 - Saw Cut Faces</b>		
<b>Completed Cycles</b>	<b>Fundamental Transverse Frequency (kHz)</b>	<b>Relative Dynamic Modulus (%)</b>
0	1.934	100
30	1.914	98
55	1.914	98
95	1.914	98
138	1.914	98
179	1.914	98
209	1.914	98
240	1.914	98
280	1.914	98
<b>307</b>	<b>1.914</b>	<b>98</b>

We appreciate the opportunity of providing our services to you. If you have any questions pertaining to this report or need any additional information, please do not hesitate to call us.

Sincerely,

**Testing, Engineering & Consulting Services, Inc.**



James G. McCants III  
 Chemist



Anne M. Miller  
 Chemical Engineer

Attachments: Photo 1

**Photo 1 – Saw Cut Faces of Beams**

