

Client: **Ameripolish**
 Project Name: **PO 3653**

CTLGroup Project No.: **395795**
 CTLGroup Project Mgr.: **Joni Jones**
 Analyst: **Phil Brindise**
 Approved by: **J. L. Jones**
 Date Analyzed: **June 4, 2013**
 Date Reported: **June 4, 2013**

Contact: **Carl Cabot**
 Submitter: **Carl Cabot**
 Date Received: **May 21, 2013**

**ASTM C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 Section 7: Cores for Compressive Strength**

Specimen Identification

CTLGroup Identification	3410801-01	3410801-02
Client Identification	18832-A	18832-B
Date Core Obtained from the Field	N/A	N/A
Date end preparation was completed and core was placed in sealed bag	5/30/13	5/30/13
Date Core was Tested	6/4/13 11:00am	6/4/13 11:00am

Concrete Description

Nominal Maximum Aggregate Size, in.	3/8	3/8
Concrete Age at Test	N/A	N/A
Moisture Condition at Test	Bagged	Bagged
Length of Core, As Drilled, in.	3	3
Orientation of Core Axis in Structure	Vertical	Vertical
Cylinder End Preparation	Capped	Capped

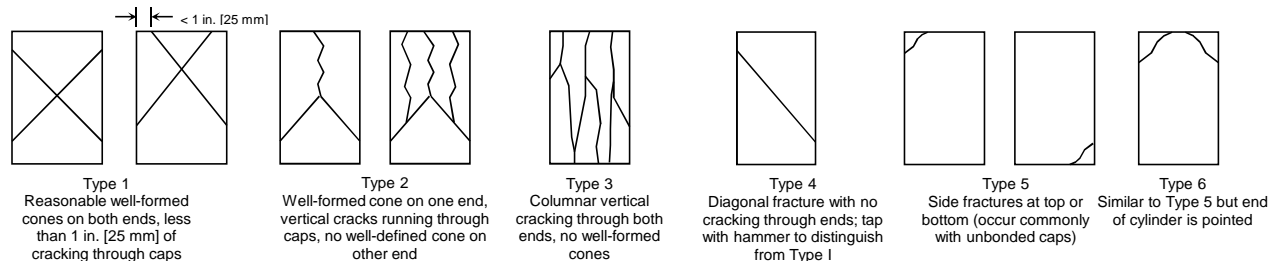
Concrete Dimensions

Diameter 1, in.	1.98	1.98
Diameter 2, in.	1.99	1.98
Average Diameter, in.	1.99	1.98
Cross-Sectional Area, in ²	3.11	3.08
Length Trimmed, in.	2.7	2.7
Length Capped, in.	3.0	2.9
Density, pcf	146	148

Compressive Strength and Fracture Pattern

Maximum Load, lb	21,000	20,800
Uncorrected compressive Strength, psi	6,750	6,750
Ratio of Capped Length to Diameter	1.49	1.49
Corrected Compressive Strength, psi	6,480	6,480
Fracture Pattern	Type 4	Type 4

Schematic of Typical Fracture Patterns



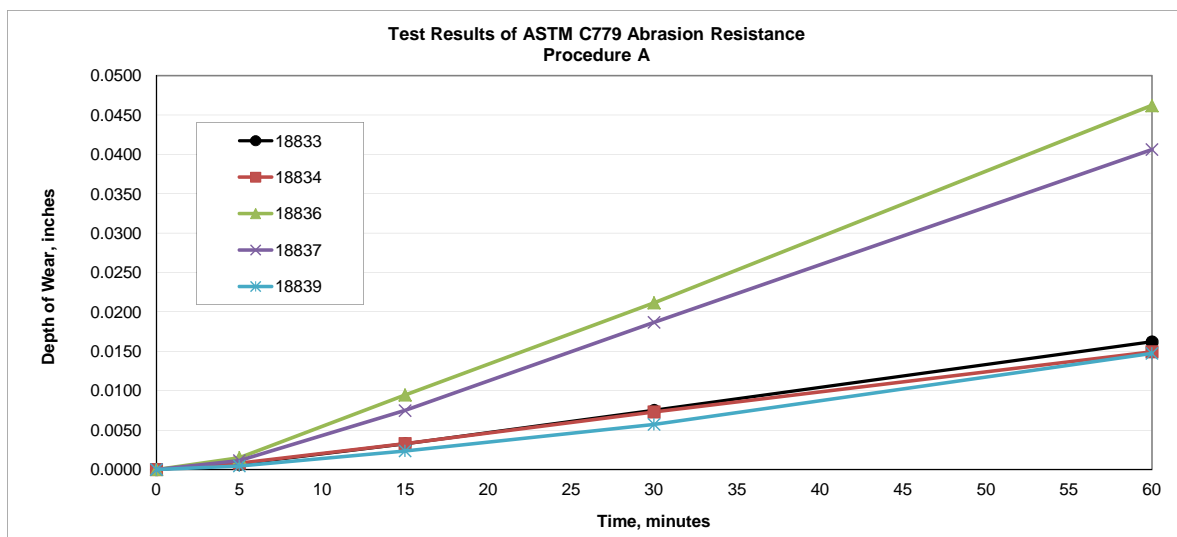
Notes:

1. This report may not be reproduced except in its entirety.
2. Test samples were obtained from 12x12x3-inch concrete slabs.

Test Results of ASTM C779 Abrasion Resistance Procedure A - Revolving Discs

Depth of Wear, inches

<u>Sample ID</u>	<u>0 minutes</u>	<u>5 minutes</u>	<u>15 minutes</u>	<u>30 minutes</u>	<u>60 minutes</u>
18833	0.0000	0.0007	0.0033	0.0075	0.0162
18833 normalized	n/a	0.0000	0.0026	0.0068	0.0155
18834	0.0000	0.0008	0.0033	0.0073	0.0150
18834 normalized	n/a	0.0000	0.0025	0.0065	0.0141
18836	0.0000	0.0015	0.0094	0.0211	0.0462
18836 normalized	n/a	0.0000	0.0080	0.0197	0.0447
18837	0.0000	0.0011	0.0075	0.0187	0.0406
18837 normalized	n/a	0.0000	0.0064	0.0176	0.0395
18839	0.0000	0.0005	0.0023	0.0057	0.0147
18839 normalized	n/a	0.0000	0.0019	0.0053	0.0143



Notes:

1. Concrete slabs arrived at CTLGroup on May 21, 2013 in a dry condition. Testing was performed upon arrival.
2. Mixture proportions, cast date and LA abrasion results were not provided.
3. Normalized results show depth of wear after the initial 5 minutes.
4. The results specifically represent the submitted samples.
5. This report may not be reproduced except in its entirety.



Coefficient of Friction Test

Testing Location:

**American Decorative Concrete
120 Commercial Ave
Lowell, AR 72745**

Prepared at the request of:

**Mr. Carl Cabot
V.P. Product Development**

**Prepared by:
Ben Jones**

Date: August 13, 2013

The Science of Slip Fall Measurement

1. Testing the slip resistance of a walkway surface is a scientific method of gauging how safe the surface is for the average human to navigate. Various factors can contribute to a slippery condition of the floor, the actual floor surface, i.e. the floor finish, the extent of honing to the surface, the products used to maintain the surface, the polish or floor wax being applied and the extent that foreign substances may have contaminated the floor surface. The likelihood that a floor surface has a slippery condition when walked on is greatly increased when a contaminant, something as simple as rainwater or soda, is present. This greatly increases the chances that the 'hydroplaning effect' will accelerate underfoot and change the dynamics of the floor surface making the floor much more slippery when wet and much more difficult to navigate.

1.1 The primary function of performing slip resistance measurements is to determine what extent a surface can contribute to a slip and fall event. Various standards have been written and published that are specifically designed to address many of the guidelines for slip resistant surfaces. ANSI A 1264.2, ASTM C-1028, ANSI-B101.1, and ANSI B101.3, all embrace attributes that will help quantify what could be considered a slippery floor surface.

2. Slip Resistant Measurement Definitions/Standards

2.1 The coefficient of friction is a term which assigns a value of resistance to movement between two surfaces. When the coefficient of friction (COF) is measured from a resting position, it is called the "static coefficient of friction" (SCOF). When the coefficient of friction is measured with two surfaces in relative motion, it is called the "dynamic coefficient of friction" (DCOF). Industry consensus has demonstrated that the dynamic COF value is a more realistic evaluation of the slippery condition of the flooring surface, since the majority of all slip and fall events happen when the individual is in motion.

The testing device utilized by Nu-Safe (BOT 3000) has passed the independent Precision and Bias testing protocol and is currently recognized throughout Europe, the US and numerous other countries as a consistently reliable means of measuring both dynamic coefficient of friction and static coefficient of friction testing for wet and dry conditions. It is now recognized as a state of the art instrument for measuring both SCOF and DCOF by The Tile Council of North America, ANSI, ASSE, and ASTM.

Finished Concrete surfaces that do not require a topical coating be applied, such as a floor finish, may utilize an industry standard referenced as the **ASTM C-1028**, or, **ANSI B101.0** for measuring the SCOF value of the floor when wet. Early in 2013 a new ANSI standard for measuring dynamic coefficient of friction was released. That standard is the **ANSI B 101.3**, a test method for measuring wet dynamic coefficient of friction values. Dry surfaces generally reference the **ASTM F-489** Standard, using a leather sensor, as outlined using the James Machine

Since the dynamic coefficient of friction is more recognized as a realistic means to define slip resistance values representative of real world experience, the BOT 3000's highly sensitive and consistent readings are providing documentation for several insurance companies, architects, and floor finish companies in the U.S. to quantify what constitutes a safe floor surface. (www.regansci.com). The COF values presented in this report are representative of both the wet SCOF and DCOF values, unless otherwise noted. Also included in this report is the dry SCOF values.

Scientific Equipment For COF Report

3.1 The BOT 3000 Slip Tester was designed by a German Company in accordance with the German Ceramic Research Association after undertaking detailed research into the action of people's feet on floors while walking. The main conclusion of this work was that the most critical time occurs as the edge of the heel of the shoe contacts the floor. At this point, the heel moves across the floor surface, albeit a very small movement during normal, safe walking. The amount of movement will increase on floors with poor slip resistance properties; possibly to a point when there will not be enough resistance to stop the heel from accelerating. At this point, the walker will lose control and slip in a manner in which it will be extremely difficult to recover and will, therefore, fall. The BOT 3000 is a precision instrument, which reproduces the action of the heel moving across the floor surface. It measures the slip resistance by sliding a leather, rubber or neolite pad across a floor and provides a direct reading of the static, dynamic and even replicates the James Machine coefficient of friction between the pad and the floor.

The BOT 3000 has been accepted by ANSI, ASSE, ASTM and numerous other standard writing agencies as a valid measuring device. OSHA has acknowledged that COF testing is a valuable safety approach as long as the test device can validate an acceptable degree of repeatability and re-productibility. The BOT 3000 completed the **ASTM E-691-99** "Inter-laboratory Study to determine the Precision of a Test Method" with results consistent with the level established by ASTM. It is the only scientific instrument for measuring the COF values that has published the Precision and Bias studies to date.



COF FLOOR EVALUATION

Client		American Decorative Concrete				Technician:		Ben Jones, Nu-Safe Floor Solutions			
Location/Address:		120 Commercial Ave, Lowell, AR 72745				Address/Phone No.:		44 Cummings Drive, Walton, KY 41094			
Date/Time of Tests:		8/8/2013				Serial #:		1107/1049			
Test Method:		Leather				Test Foot		Leather			
Zone Tested	Foot & Test Type	Surface			Floor			Reading 1		Reading 2	Average
		Slope	Material	Finish	Condition	Wet/Dry	North	East			
1. Burnished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.70	0.80		0.75	
2. SR2 Burnished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.85	0.80		0.83	
3. 3DHS Burnished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.83	0.70		0.77	
4. 3DHS/SR2/Burnished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.80	0.86		0.83	
5. 3DHS Burnished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.76	0.68		0.72	
6. 1500 Polished	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.67	0.67		0.67	
7. 3DHS/SR2/1500	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.70	0.67		0.69	
8. 3DHS/1500	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.76	0.60		0.68	
9. 3DHS/1500	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.77	0.74		0.76	
10. SR2-1500	Leather Dry SCOF	Flat	Concrete	None	Clean	Dry	0.69	0.61		0.65	

Safe 0.50 and above
 0.40-0.49
 Unsafe 0.39 and below



COF FLOOR EVALUATION

Client		American Decorative Concrete			Technician:		Ben Jones, Nu-Safe Floor Solutions			
Location/Address:		120 Commercial Ave, Lowell, AR 72745			Address/Phone No.:		44 Cummings Drive, Walton, KY 41094			
Date/Time of Tests:		8/8/2013			Serial #:		1107/1049			
Test Method:		DIN			Test Foot		SBR Rubber			
Zone Tested	Foot & Test Type	Surface		Floor		Reading 1		Reading 2		Average
		Slope	Material	Finish	Condition	Wet/Dry	North	East	Average	
1. Burnished	Rubber	Flat	Concrete	None	Clean	Wet	0.53	0.60	0.54	
	Wet DCOF						0.52	0.43		
2. SR2 Burnished	Rubber	Flat	Concrete	None	Clean	Wet	0.48	0.54	0.50	
	Wet DCOF						0.53	0.56		
3. 3DHSL Burnished	Rubber	Flat	Concrete	None	Clean	Wet	0.47	0.49	0.46	
	Wet DCOF						0.51	0.44		
4. 3DHS/SR2/Burnished	Rubber	Flat	Concrete	None	Clean	Wet	0.46	0.40	0.46	
	Wet DCOF						0.53	0.54		
5. 3DHS Burnished	Rubber	Flat	Concrete	None	Clean	Wet	0.53	0.54	0.50	
	Wet DCOF						0.53	0.54		
6. 1500 Polished	Rubber	Flat	Concrete	None	Clean	Wet	0.43	0.43	0.42	
	Wet DCOF						0.48	0.42		
7. 3DHS/SR2/1500	Rubber	Flat	Concrete	None	Clean	Wet	0.52	0.43	0.49	
	Wet DCOF						0.34	0.34		
	Rubber	Flat	Concrete	None	Clean	Wet	0.46	0.45	0.49	
	Wet DCOF						0.49	0.47		
	Rubber	Flat	Concrete	None	Clean	Wet	0.54	0.54	0.53	
	Wet DCOF						0.55	0.53		
	Rubber	Flat	Concrete	None	Clean	Wet	0.54	0.55	0.53	
	Wet DCOF						0.47	0.51		

TRACTION LEVELS





COF FLOOR EVALUATION

Client		American Decorative Concrete			Technician:		Ben Jones, Nu-Safe Floor Solutions					
Location/Address:		120 Commercial Ave, Lowell, AR 72745			Address/Phone No.:		44 Cummings Drive, Walton, KY 41094					
Date/Time of Tests:					Serial #:							
Test Method:		ANSI B101.3			Test Foot		SBR Rubber					
Zone Tested	Foot & Test Type	Surface		Floor		Wet/Dry		Reading 1		Reading 2		Average
		Slope	Material	Finish	Condition			North	East	North	East	
8. 3DHS/1500	Rubber	Flat	Concrete	None	Clean	Wet	0.57	0.62	0.57	0.62	0.54	
	Wet DCOF						0.50	0.52	0.49	0.55		
9. 3DHS/1500	Rubber	Flat	Concrete	None	Clean	Wet	0.52	0.48	0.47	0.51	0.51	
	Wet DCOF						0.52	0.58	0.52	0.58		
10. SR2-1500	Rubber	Flat	Concrete	None	Clean	Wet	0.41	0.54	0.51	0.57	0.52	
	Wet DCOF						0.54	0.53	0.54	0.53		

TRACTION LEVELS





COF FLOOR EVALUATION

Client		American Decorative Concrete				Technician:				Ben Jones, Nu-Safe Floor Solutions							
Location/Address:		120 Commercial Ave, Lowell, AR 72745				Address/Phone No.:				44 Cummings Drive, Walton, KY 41094							
Date/Time of Tests:		8/8/2013				Serial #:				1107/1049							
Test Method:		ANSI B101.1				Test Foot				Neolite							
Zone Tested	*Risk Class	Foot & Test		Surface		Floor		Floor		Reading 1		Reading 2		Reading 3		Reading 4	
		Type	Neolite	Slope	Floor	Material	Finish	Condition	Wet/Dry	North	East	South	West	Average			
1. Burnished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.84	0.90	0.92	0.86	0.88				
2. SR2 Burnished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.92	0.87	0.93	0.91	0.91				
3. 3DHSL Burnished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.83	0.87	0.80	0.86	0.84				
4. 3DHS/SR2/Burnished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.85	0.87	0.83	0.91	0.87				
5. 3DHS Burnished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.81	0.89	0.75	0.75	0.80				
6. 1500 Polished	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.96	0.94	0.92	0.96	0.95				
7. 3DHS/SR2/1500	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.85	0.76	0.91	0.81	0.83				
8. 3DHS/1500	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.80	0.83	0.81	0.76	0.80				
9. 3DHSL/1500	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.90	0.92	0.83	0.87	0.88				
10. SR2-1500	N/A	Wet SCOF	Neolite	Floor	Concrete	None	Clean	Wet	0.99	0.96	0.95	0.92	0.96				

TRACTION LEVELS

High	0.60 and above
Acceptable	0.40-0.59
Low	0.39 and below

*A: Walkway normally dry & free of contaminants

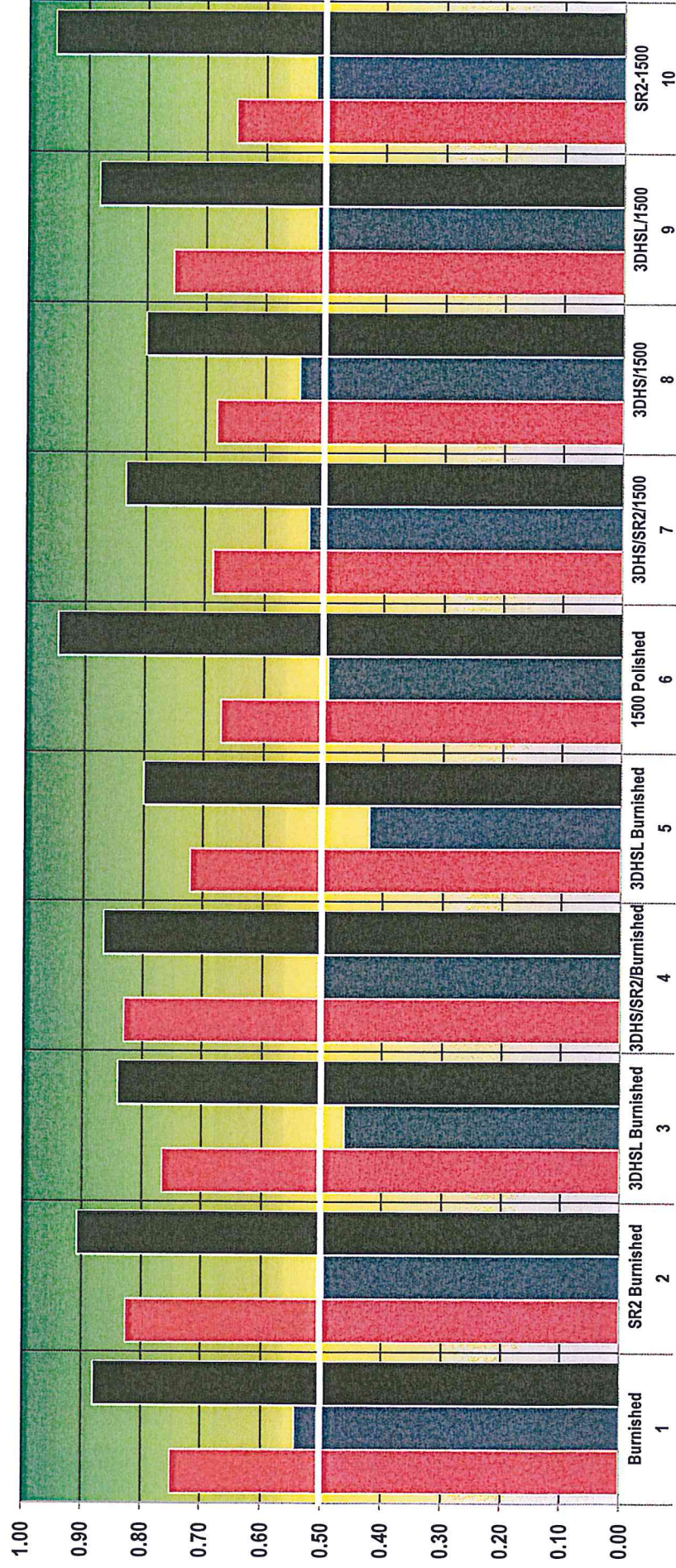
*B: Walkway areas occasionally contaminated

*C: Floors intended for use in wet areas



American Decorative Concrete

8/8/13



■ SCOF Dry James Leather

■ DCOF Wet Rubber

■ SCOF Wet Neolite

