



TESTING SERVICES, INC.
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TEST REPORT

CLIENT:	Robertson Industries	REPORT NUMBER:	47832
	4401 E. Baseline Road Suite 105	LAB TEST NUMBER:	2143-2018
	Phoenix, AZ 85042	DATE:	April 23, 2010
		PAGE:	1 of 2

Product Description: 2.0" TT Classic

Tested Dimension: 18" x 18" X 2"

Sub Base: Concrete

Impact Location: Center of Test Material

Date of Receipt: March 15, 2010

Testing Period: 4/6/2010-4/14/2010

Authorization: Steve Scaturro

Test Procedure: The submitted sample was evaluated for Shock Absorbing Properties in Accordance with the procedures outlined in ASTM F 1292-09; Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment

Missile: Hemispherical (Triaxial Accelerometer): Total Drop Assembly Weight (46g) 10 lbs

Test Equipment: Triax 2000 Surface Impactor
 Date of Last Calibration: 3/24/2010 by Alpha Automation

Sample Pre-Condition: 50±10 RH, 7sF±5F for a minimum of 24 hrs prior to testing

Sample Conditioning: 8 hrs @ each reference temperatures prior to testing

Temperature: Maximum Drop Height That Gives a Gmax of 200 or Less and A HIC of 1000 or less

Ambient, 72°F (23°C) 4'

Hot, 120°F (49°C) 4'

Cold, 25°F (-6°C) 5'

Critical Fall Height (CFH):	4'
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Reference Gmax Curves Included

Prepared and signed by:

 Erle Miles, Jr. VP
 Testing Services Inc.



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AMBIENT Sample Condition: Dry Temperature: 70°F (23°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	14.1	4	3'	3.09	109	391
	2	14.1	4	3'	3.09	115	424
	3	14.2	6	3'	3.13	117	437
	Average			Drops 2, 3		116	431
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	16.2	4	4'	4.08	145	673
	2	16.3	3	4'	4.13	151	714
	3	16.3	4	4'	4.13	156	742
	Average			Drops 2, 3		154	728
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	18.1	4	5'	5.09	171	1041
2	18.1	3	5'	5.09	180	1111	
3	18.1	4	5'	5.09	179	1113	
Average			Drops 2, 3		180	1112	

HOT Sample Condition: Dry Temperature: 120°F (49°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	14.2	9	3'	3.13	114	429
	2	14.3	5	3'	3.18	117	443
	3	14.3	6	3'	3.18	120	459
	Average			Drops 2, 3		119	451
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	16.2	6	4'	4.08	150	718
	2	16.2	5	4'	4.08	158	774
	3	16.3	7	4'	4.13	156	768
	Average			Drops 2, 3		157	771
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	18.1	6	5'	5.09	185	1215
2	18.1	4	5'	5.09	185	1201	
3	18.1	3	5'	5.09	186	1205	
Average			Drops 2, 3		186	1203	

COLD Sample Condition: Dry Temperature: 25°F (-6°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	16.2	2	4'	4.08	124	516
	2	16.3	5	4'	4.13	133	586
	3	16.3	4	4'	4.13	133	572
	Average			Drops 2, 3		133	579
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	17.9	2	5'	4.98	152	772
	2	18.0	1	5'	5.04	166	884
	3	18.1	4	5'	5.09	166	887
	Average			Drops 2, 3		166	886
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC
	1	19.7	0	6'	6.03	200	1407
2	19.8	1	6'	6.09	216	1535	
3	19.8	2	6'	6.09	211	1515	
Average			Drops 2, 3		214	1525	