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CLIENT:	X-Grass	REPORT NUMBER:	54525A
	PO Box 579	LAB TEST NUMBER:	2418-1485
	Rocky Face, GA 30740	DATE:	March 12, 2012

SAMPLE ID:

Material Identification
Bonded Rubber Mulch

INTRODUCTION: Testing Services Inc was instructed by the client, to perform ADA wheelchair accessibility for the above described material being used under and around playground equipment.

TEST METHOD: *ASTM F1951-09: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment*

REQUIREMENT: A surface in place shall have average work per foot (work per meter) values for straight propulsion and for turning *less* than the average work per foot (work per meter) values for straight propulsion and for turning, respectively, on a hard, smooth, surface with a grade of 1:14 (7.1 %).

PROCEDURE: **Test Surface Preparation:** Tests were conducted on 2/21/12 indoors at TSi Laboratories in an environment of 63°F and 40% R.H. The test material measured 44"W x 117"L x 5" Thick.

Wheelchair/Operator: The wheelchair used in these tests was manufactured by *Invcare*, Model Action Xtra, serial Number 98J84142. This wheelchair is totally adjustable, a necessity for these tests. The pneumatic tires were inflated to 60 psi on the rear and 32 psi on the front. The weight of the wheelchair was 24.25 pounds and the operator's weight was 165 pounds for a total of 189 pounds. The operator's distribution was adjusted to 60% on the rear wheels and 40 % on the front.

Torque Measuring System: A certified *Dillon Electronic Force Gauge*, Model BFG 500N, S/N 98-2277-07 was used as an interface between a *Dell Laptop* and a certified *Dillon Smart Torque Wrench*, S/N 97-0085-01. Software, also from Dillon, logged the load vs. time and integrated the area under the resulting curves. The adapters and accessories needed to attach the instrumentation were fabricated locally. This total package added 10 pounds to the total weight bringing the total to 199 pounds.

TEST RESULTS:

Baseline Straight (Average Work/ft-Force)	Bonded Rubber Mulch (Average Work/ft-Force)
13.67 lbs	5.40 lbs

Baseline Turning (Average Work/ft-Force)	Bonded Rubber Mulch (Average Work/ft-Force)
9.55 lbs	4.31 lbs

CONCLUSION: The above listed material *meets/exceeds* both the straight line and turning propulsion requirements set forth in this test method and therefore, passes the standard.

Approved By:

 Erle Miles, Jr VP
 Testing Services Inc