

Laboratory Test Report

Bonded Rubber System 4"

Job No.	102030/12204
Client Information	The Surfacing Group 544 Chestnut St. Chattanooga, TN 37402
Test Type	Performance Evaluation
Sample Arrival Date	5/28/2026
Test Date(s)	6/22/2026-6/25/2026
Report Date	7/2/2026
Report Status	Final

Prepared by Adam Kalil
Laboratory Manager

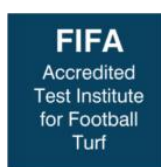


Checked by Megan Illsley
Laboratory Director



Notes:

1. This report has been prepared by Firefly Sports Testing with all reasonable skill, care and diligence within the terms of the contract with the Client and within the limitations of the resources devoted to it.
2. This report is confidential to the Client and Firefly Sports Testing accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.
3. This report shall not be used for engineering or contractual purposes unless signed by the Author and the Checker and unless the report status is "Final."



Summary

Firefly Sports Testing was commissioned to perform laboratory testing per the standards listed below.

Test Type	Test Method	Test Description
Wheelchair Accessibility	ASTM F1951-21	Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

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General Information

Laboratory Conditions

Air Temperature (°F)	72	Surface Temperature (°F)	79
Humidity (%)	44	Technician	AC, KS, HC

Sample Description

Sample Name	Bonded Rubber System 4"		
Thickness (in)	4	Sub-Base	3.5" Aggregate



Results Summary

System	Average Straight Propulsion Work/Ft	Average Work Ratio Straight Propulsion	Straight Propulsion Pass/Fail	Average Turning Propulsion Work/Ft	Average Work Ratio Turning Propulsion	Turning Propulsion Pass/Fail
7.1% Control	10.06	--	--	13.68	--	--
Bonded Rubber System 4"	9.60	0.95	Pass	12.23	0.89	Pass

Note: Per ASTM F1951-21, an Average Work Ratio <1 is considered passing

ASTM F1951 Wheelchair Accessibility

Wheelchair Make	Tracer SX5	Wheelchair Weight (lbs)	48
Wheelchair Model	TRSX5RC8P	Wheelchair Rider Weight (lbs)	170
Wheelchair Serial Number	14BM014949	Weight Distribution	40% - 60% Front-to-Rear

Statement of Specificity

The results reported herein reflect the performance of the described samples at the time of testing. The results are specific to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently.

7.1 Degree Control

7.1% Grade Baseline Straight Propulsion					
Parameter	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Time (s)	8	8	8	8	8
Distance (in)	79	78	80	80	80
Distance (ft)	6.58	6.50	6.67	6.67	6.67
Total Work (ft lbs)	68.80	64.00	65.80	69.80	64.20
Work/ft (lbs)	10.45	9.85	9.87	10.47	9.63
Average Work/ft (lbs) (n=3)	10.06				

7.1% Grade Baseline Turning Propulsion					
Parameter	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Time (s)	8	8	8	8	8
Angle Traveled (degrees)	90	95	100	95	92
Total Work (ft lbs)	50.00	54.60	41.10	41.40	40.60
Work/ft (lbs)	15.92	16.46	11.77	12.48	12.64
Average Work/ft (lbs)	13.68				

LABORATORY TESTING PERFORMANCE EVALUATION

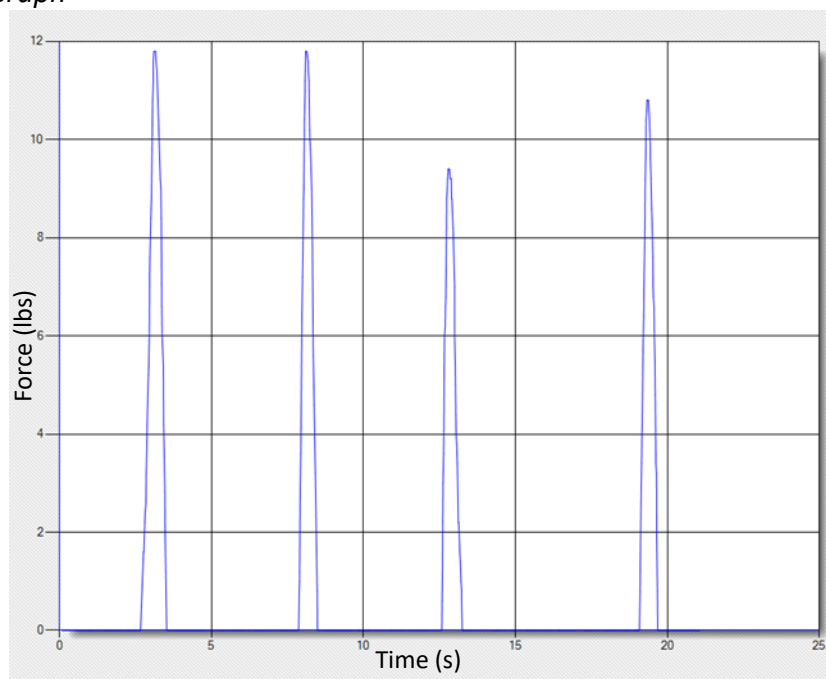


Bonded Rubber System 4" Results

Bonded Rubber System 4" Straight Propulsion					
Parameter	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Time (s)	8	8	8	8	8
Distance (in)	82.0	78.0	78.0	79.0	77.0
Distance (ft)	6.83	6.50	6.50	6.58	6.42
Total Work (ft lbs)	62.40	65.00	60.00	63.00	66.80
Work/ft (lbs)	9.13	10.00	9.23	9.57	10.41
Average Work/ft (lbs) (n=3)	9.60				

Bonded Rubber System 4" Turning Propulsion					
Parameter	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Time (s)	8	8	8	8	8
Angle Traveled (degrees)	90	92	92	90	90
Total Work (ft lbs)	38.60	38.80	39.60	31.80	39.60
Work/ft (lbs)	12.29	12.08	12.33	10.12	12.61
Average Work/ft (lbs)	12.23				

Example Results Graph



End of Report



Unit D5 • 78 Londonderry Tpk • Hooksett • New Hampshire • 03106
Telephone: (603) 715-5453 • E-Mail: contact@fireflysportstesting.com

