

ASTM F 1951-14 Surface Testing Report

Standard Specification for Determination of Accessibility of
Surface Systems Under and Around Playground Equipment

SUMMARY OF RESULTS

Beneficial Designs, Inc. received a surfacing sample from **Kafka Granite, LLC** classified as surface stabilizer with the brand name **Wax Polymer Pathway Mix**. This sample of Wax Polymer Pathway Mix **met** the maneuverability performance requirements of ASTM F 1951-14.



Report prepared by:

Peter Axelson, Testing Supervisor

14 October 2020

Date

TEST SPECIMEN

Manufacturer **Kafka Granite, LLC**

Name **Wax Polymer Pathway Mix**

Type surface stabilizer

Source Kafka Granite

Mfr's lot no. Unknown

Date of manufacture Unknown

Thickness 3.5 Inches

TEST DATE

9 October 2020

TESTING CONDITIONS

Surface temperature 75 deg F

Atmospheric temperature 75 deg F

Relative humidity 11 %

INSTALLATION, LEVELING & COMPACTION

Excavate approx. 2 inches of material out of test bed location; slightly wet and compact base with vibratory plate compactor, verified base cross slope is between 1.5 and 2 percent, verified base grade is at 1.5 percent.

Spread polymer-based decomposed granite (PMDG) across the test bed until a thickness of approx. 2 to 3 inches was achieved. Compact the PMDG with a vibratory plate compactor until the entire surface looked uniformly "paved". Fill and spread an additional 2 inches of PMDG across the test bed. Compact the PMDG until the entire surface looked uniformly "paved". Fill low spots and perform final compaction. Final compacted depth of product is 3.5 inches.

TEST WHEELCHAIR & RIDER

Manufacturer Sunrise Medical/Quickie

ID no. none

Model Quickie II

Weight 31.5 lb.

Weight of test wheelchair rider 168 lb.

Front-to-rear weight distribution
of wheelchair-rider system 40% - 60 %

WHEELCHAIR WORK MEASUREMENT METHOD RESULTS

Straight Propulsion on Wax Polymer Pathway Mix

	Work per meter (N*m)	Trial Time (sec)
Trial 1	17.6	7.4
Trial 2	16.8	7.3
Trial 3	17.5	6.8
Trial 4	17.7	7.0
Trial 5	15.9	7.2

Average work per meter (n=3) 17.3 N*m

Turning on Wax Polymer Pathway Mix

	Work per meter (N*m)	Trial Time (sec)
Trial 1	24.6	7.6
Trial 2	24.2	7.4
Trial 3	24.9	7.1
Trial 4	23.4	7.0
Trial 5	25.4	7.3

Average work per meter (n=3) 24.6 N*m

Straight Propulsion on 7.1% Ramp*

	Work per meter (N*m)	Trial Time (sec)
Trial 1	80.0	7.5
Trial 2	77.1	7.4
Trial 3	75.5	7.7
Trial 4	80.2	7.7
Trial 5	75.2	7.8

Average work per meter (n=3) 77.5 N*m

Turning on 7.1% Ramp*

	Work per meter (N*m)	Trial Time (sec)
Trial 1	61.1	7.9
Trial 2	60.0	7.6
Trial 3	61.2	7.9
Trial 4	61.2	7.5
Trial 5	60.2	7.7

Average work per meter (n=3) 60.8 N*m

* Hard smooth surface with grade of 7.1+/-0.2% (1:14)

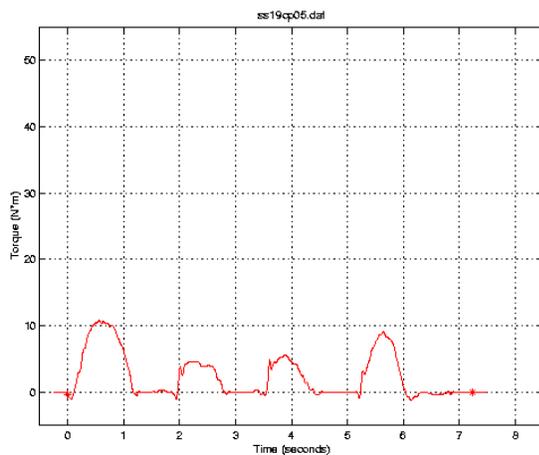
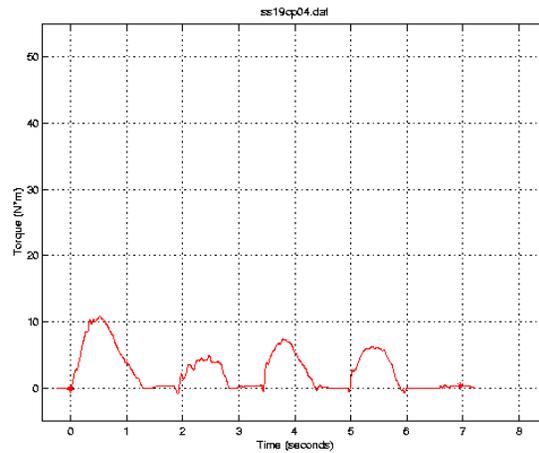
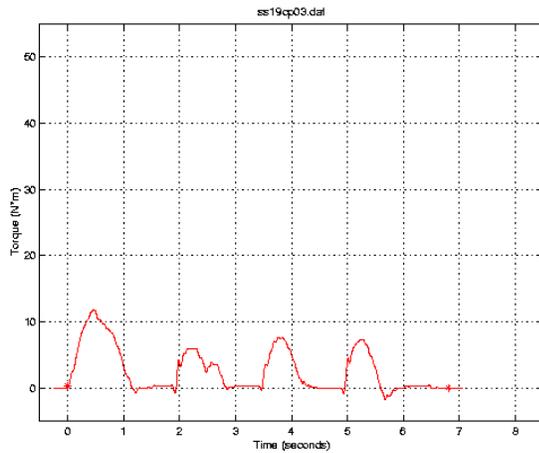
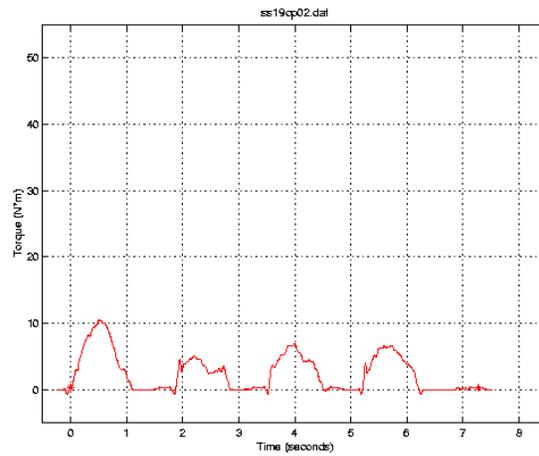
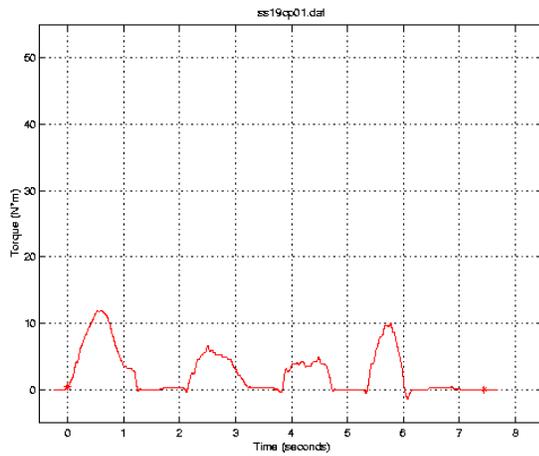
Straight Propulsion Work Ratio 0.223

Turning Work Ratio 0.404

Work ratio = Avg work on surface/Avg work on 7.1% ramp. If both the straight propulsion and turning work ratios are less than 1.00, the surface system meets the performance requirements of F 1951.

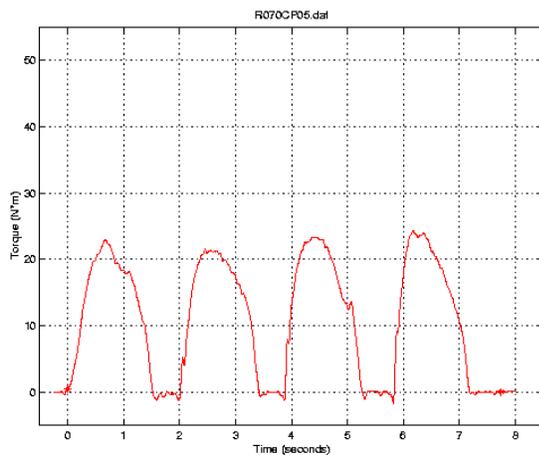
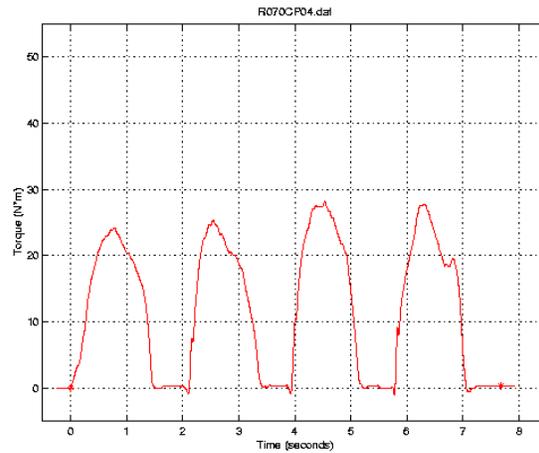
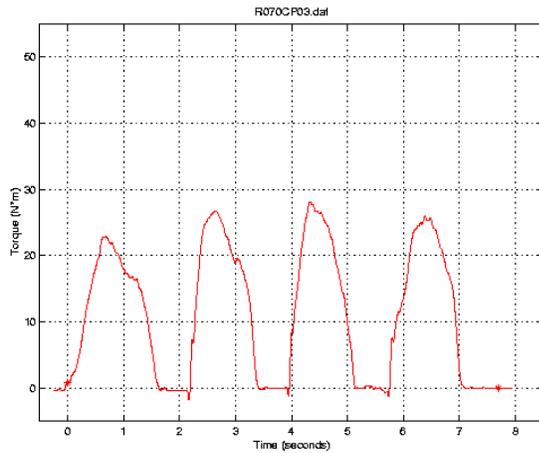
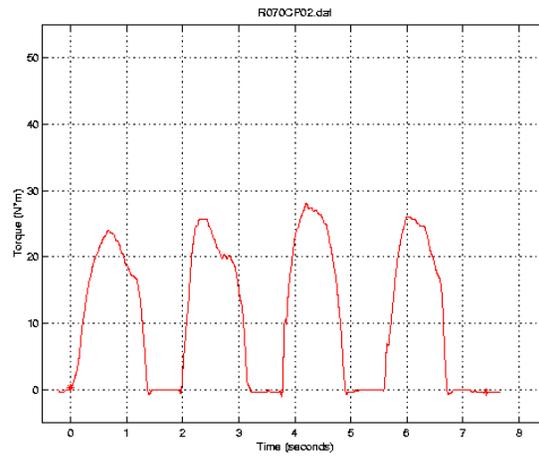
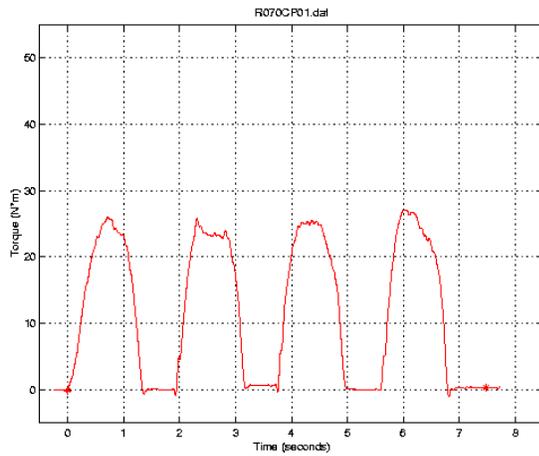
ASTM F1951 – 08 Part 6: Wheelchair Work Measurement Method – Straight Propulsion

Kafka Granite – Wax Polymer Pathway Mix

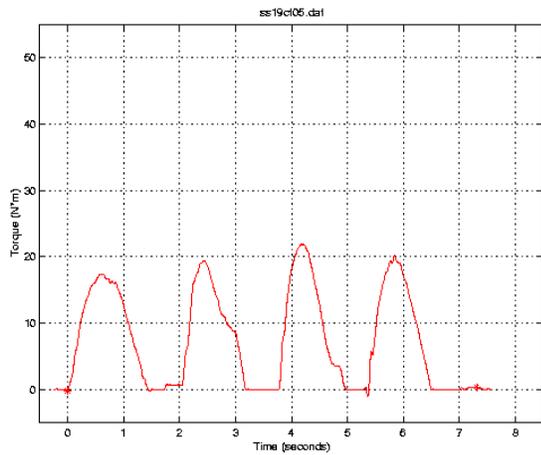
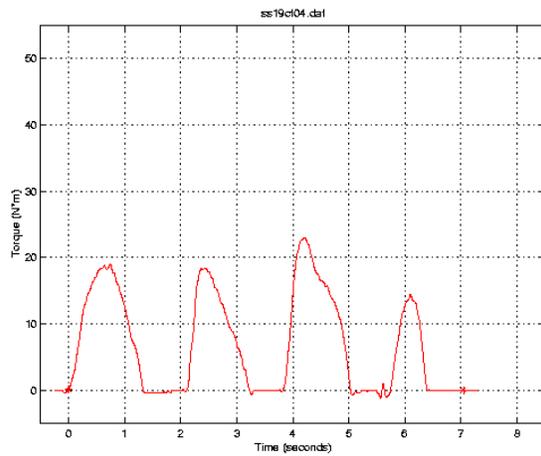
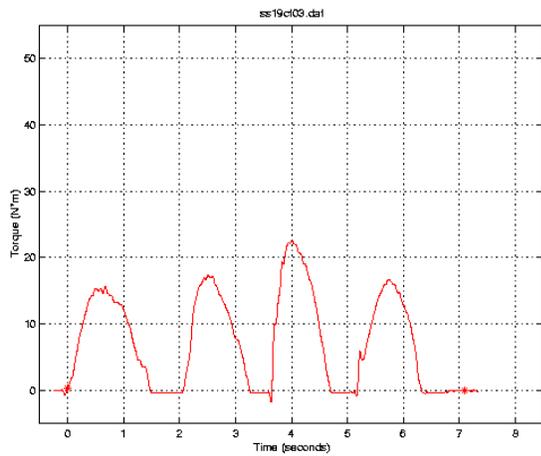
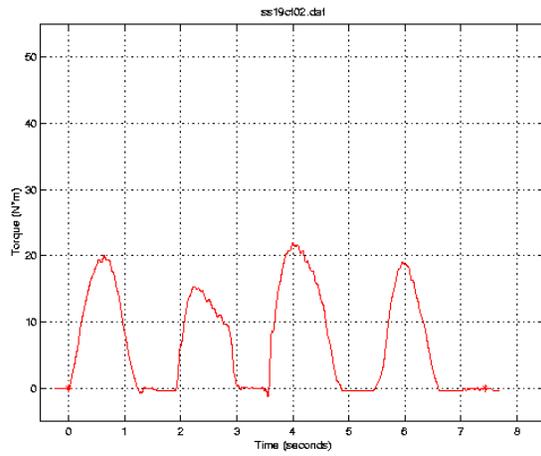
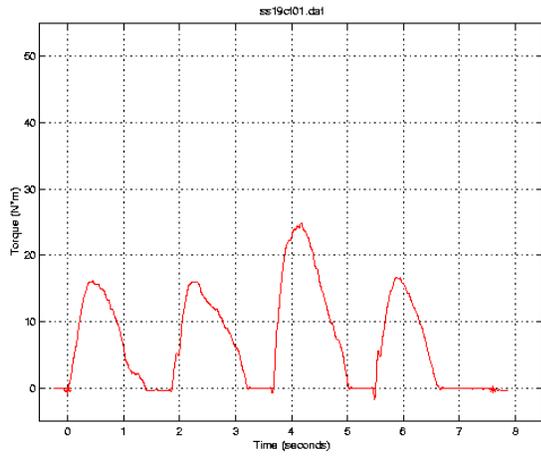


ASTM F1951 – 08 Part 6: Wheelchair Work Measurement Method – Straight Propulsion

Hard, smooth surface with a grade of $7.1 \pm 0.2\%$ (1:14)



ASTM F1951 – 08 Part 7: Wheelchair Work Measurement Method – Turning Kafka Granite – Wax Polymer Pathway Mix



ASTM F1951 – 08 Part 7: Wheelchair Work Measurement Method – Turning Hard, smooth surface with a grade of $7.1 \pm 0.2\%$ (1:14)

