





PREPARED FOR

GREELY SAND AND GRAVEL, INC 1971 OLD PRESCOTT ROAD GREELY, ON, K49 1N6

> ATTENTION TARA HALL

PO# 2018-WC02

REPORT DATE FEBRUARY 27, 2018

TÜV SÜD America, Inc.

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Report Number: 72135670 February 27, 2018

REPORTED / APPROVED BY:

TÜV SÜD America, Inc.

Reported by: Raymond Majszak, Project Coordinator CERTIFICATION TEST PROGRAMS

Timothy Fourlier

Approved by:

Timothy Fouchia, Project Coordinator CERTIFICATION TEST PROGRAMS

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PURPOSE

The purpose of this test report is to present the test results obtained during the performance of a test program. This report includes a brief description of the samples presented for test, a list of the documents presented as test instructions, and a summary of the testing performed and the results obtained. Applicable requirements and conclusions are based on the criteria provided by our client, or as specified in the reference document(s).

WORK REQUESTED / REFERENCE DOCUMENT(s)

Perform testing in accordance with ASTM F1951-14, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

TEST SEQUENCE

- 1. Wheelchair work measurement method straight propulsion with no material on a flat surface with a grade of 7.1%.
- 2. Wheelchair work measurement method straight propulsion with material and no grade.
- 3. Wheelchair work measurement method turning 90° with no material on a flat surface with a grade of 7.1%.
- 4. Wheelchair work measurement method turning 90° with material and no grade.

Testing was performed February 27, 2018

SAMPLE DESCRIPTION

Greely Sand & Gravel, Inc., submitted approximately 60 cubic feet of engineered wood fiber playground surfacing material, identified as Adventure Playground Mulch.



TESTING PERFORMED

ACCESSIBILITY OF SURFACE SYSTEMS

Procedure

Sample material, Adventure Playground Mulch, was installed in four-inch layers, and tamped using a pneumatic pogo-stick style tamper until a depth of twelve inches was achieved. The sample material was tested, propelling the wheelchair with four even propulsion strokes, per trial, across the material 5.56 feet, within eight seconds. This process was repeated five times for each test, (straight and 90° turn).

Per ASTM F1951-14, section 5.1, no additional modification occurred between propulsion trials. Installation instructions were not provided by the manufacturer.

Results

The average work force over one foot, in pound force-inch values, for straight propulsion and for turning with material surface in place, shall be less than the average work per foot values for straight propulsion and for turning, respectively, on a hard, smooth, surface with a grade of $7.1\% \pm 2\%$ (1:14).

Discard the high and low work per foot values and average the remaining three trials to determine the average work per foot required to negotiate the test surface and the hard, smooth surface with a grade of $7.1\% \pm 2\%$ (1:14).

Conclusion

The average work force over one foot, in pound force-inch values, measured **lower** when propelling the wheelchair over the Adventure Playground Mulch, than when propelling the wheelchair over a flat surface with a grade of 7.1%.

The material **met** the requirements of ASTM F1951-14.

Sample Disposition

The sample material will be retained by TÜV SÜD America, Inc., for fifteen (15) days, then disposed of at the discretion of TÜV SÜD America, Inc., unless otherwise requested by Greely Sand & Gravel, Inc.

TÜV SÜD America, Inc.

Test Report



TEST EQUIPMENT

TÜV SÜD America, Inc.'s calibration system meets the requirements of ISO 17025.

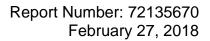
| TÜV ID | Description | Manufacturer | Model | Calibration Due |
|-----------|--------------------------|-----------------------|------------|-----------------|
| PLYP00043 | Signal Conditioner | Daytronics | 3370 | 03/18 |
| PLYP00047 | Reaction Torque Sensor | Lebow | 2110220500 | 03/18 |
| PLYP00015 | Digital Protractor | Mitutoyo | Pro 360 | 05/18 |
| PLYP00151 | Wheelchair | Quickie | Q2 | NCR |
| PLYP00175 | Penetration Thermocouple | Omega | 88311E | 01/19 |
| PLYP00143 | Digital Thermometer | Fluke | 51-2 | 01/19 |
| PLYP00152 | Accessibility Fixture | DTL | N/A | NCR |
| PLYP00136 | Balance | Toledo Scale | 4181 | 09/18 |
| PLYP00145 | Air Pressure Gauge | Westward | 2HKX9 | 04/18 |
| PLYP00071 | Hygro-thermometer | Extech Instruments | 445702 | 04/18 |
| PLYP00078 | Tape Measure | Craftsman | 39678 | 09/18 |

NCR – No Calibration Required

REMARKS

- Per ASTM F1951-14, section 7.1.2 Test Wheelchair Rider; a 165 + 11, -4.4lbs., test wheelchair rider shall propel the wheelchair during testing. The rider's weight was measured at 174 pounds prior to testing.
 - The wheelchair rider weight was 174 pounds, which combined with the wheelchair for a total of 222.7 pounds.

Per section 7.1.3 Weight of Total System - The total weight of the wheelchair Rider System, including any distance measurement or data acquisition equipment residing on the wheelchair shall be a minimum of 187.2 lbs. and a maximum of 255 lbs.





Appendix A – Test Data

Test Date: 2/27/2018

Surface Temperature: 19.1°C

Project No.: 72135670

Customer: Greely Sand and Gravel, Inc.

Ambient Temperature: 21.2°C

Ambient Humidity:23%

Product Brand Name: Adventure Playground Mulch

| Run # | No Material (work per foot) (lbf-in) | With Material (work per foot) (Ibf-in) |
|-----------------|---|---|
| Straight Run 1: | 132.068 | 110.097 |
| Straight Run 2: | 121.476 | 106.587 |
| Straight Run 3: | 123.177 | 105.083 |
| Straight Run 4: | 128.202 | 95.9114 |
| Straight Run 5: | 128.816 | 98.3891 |
| Average: | 126.731 | 103.353 |
| | | |
| Tum Run 1: | 173.101 | 169.698 |
| Turn Run 2: | 161.36 | 147.184 |
| Turn Run 3: | 165.444 | 142.112 |
| Turn Run 4: | 165.741 | 139.923 |
| Turn Run 5: | 167.145 | 145.403 |
| Average: | 166.11 | 144.9 |

Wheelchair Rider Weight: 174lbs.

Wheelchair tire pressures checked/confirmed:

Results are specific to the samples described above.

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Greely Sand & Gravel, Inc