Sports Turf Solutions
Athletic Field Testing and Consulting Services

November 10, 2013

Maria Alpha Gumboc, Customer Service Clerk
FieldTurf USA
7445 Cote-de-Liesse Road, Suite 200
Montreal, Quebec, Canada H4T1G2

Re: Impact Test Results – South Sunset Playground

Dear Alpha,

On November 8th I conducted impact attenuation tests on the synthetic turf athletic field at South Sunset Playground, in San Francisco, CA. The tests were conducted in accordance with ASTM test method F355-A and test specification F1936-10. Section 8.3 of test specification F1936-10 was adapted for use on a previously tested field lined for soccer and softball. Detailed test results are attached.

The test results reported herein reflect the performance of the points tested, at the time of testing and at the temperatures reported. As recorded in the attached results, **test point #4 failed to meet ASTM's requirement of <200 average *g*-max**, when tested in accordance with the above listed method and specification. (It should be noted that these results do not imply that an impact-related injury cannot occur if the surface system complies with ASTM's *g*-max requirement.)

Thank you for the opportunity to be of service. Please call if you have questions or comments about the report.

Sincerely,

Parker Wood
Sports Turf Solutions

Encl: Impact Test Data

29001 Falcon Ridge Rd.
www.turftest.com Salinas, CA 93908 pwood@turftest.com
Phone: (831) 484-2138 *Assessing and Improving Safety and Playability* Fax: (831) 484-2139

Impact Test Data

Field Location: **South Sunset Playground**
Date(s) of Test: **11/8/2013**

Field Description and Condition:

Field Layout:	Soccer and softball
Surface Type:	Infilled synthetic turf
Manufacturer:	FieldTurf USA
Date Installed:	5/13/2008
Condition:	Clean and dry
Orientation:	End A is West

Test Method/Specification: ASTM F1936-10
Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field

Weather Conditions

General:	Clear; light breeze
Temp. (F):	66 °F (avg.)
Humidity:	60% Relative

Primary Contact:

Name	Erin Anderson
Phone #	(415) 831-6840

Test Performed By:
Parker Wood, Sports Turf Solutions

Summary of Test Results

Location	Vo (m/s)	h (m)	Avg ***g*-max**	SI	HIC	Temperatures				Depths		
						Air (°C)	Air (°F)	Turf (°C)	Turf (°F)	Pile (mm)	Infill (mm)	Turf (mm)
Test Point 1	3.51	0.63	**188**	766.1	660.6	19	66	24	75	33	23	10
Test Point 2	3.54	0.64	**196**	811.6	698.3	19	66	24	75	31	20	11
Test Point 3	3.48	0.62	**176**	706.9	608.7	19	66	21	70	36	25	11
Test Point 4	3.49	0.62	**202**	849.0	732.1	19	66	22	72	32	22	10
Test Point 5	3.50	0.63	**169**	622.7	536.4	19	66	23	73	32	22	10
Test Point 6	3.51	0.63	**198**	805.1	692.1	19	66	21	70	32	24	8
Test Point 7	3.51	0.63	**176**	716.6	620.7	18	64	16	61	38	28	10
Test Point 8	3.50	0.63	**199**	802.9	691.0	19	66	24	75	31	22	9
Test Point 9	3.52	0.63	**177**	690.3	592.9	18	64	22	72	38	24	14
Test Point 10	3.53	0.63	**188**	760.4	654.4	18	64	20	68	35	23	12

Range of *g*-max averages:	
Highest average reading	202
Lowest average reading	169
Average of the averages	187

Exceptions / Comments:

Section 8.3 of ASTM Specification F1936-10 was modified for use on a previously tested field lined for soccer and softball. Test points #7 and #8 were selected in accordance with current ASTM guidelines.
No site abnormalities were noted, and there were no deviations from standard test procedures.
All tests met data integrity requirements.

Impact Test Data

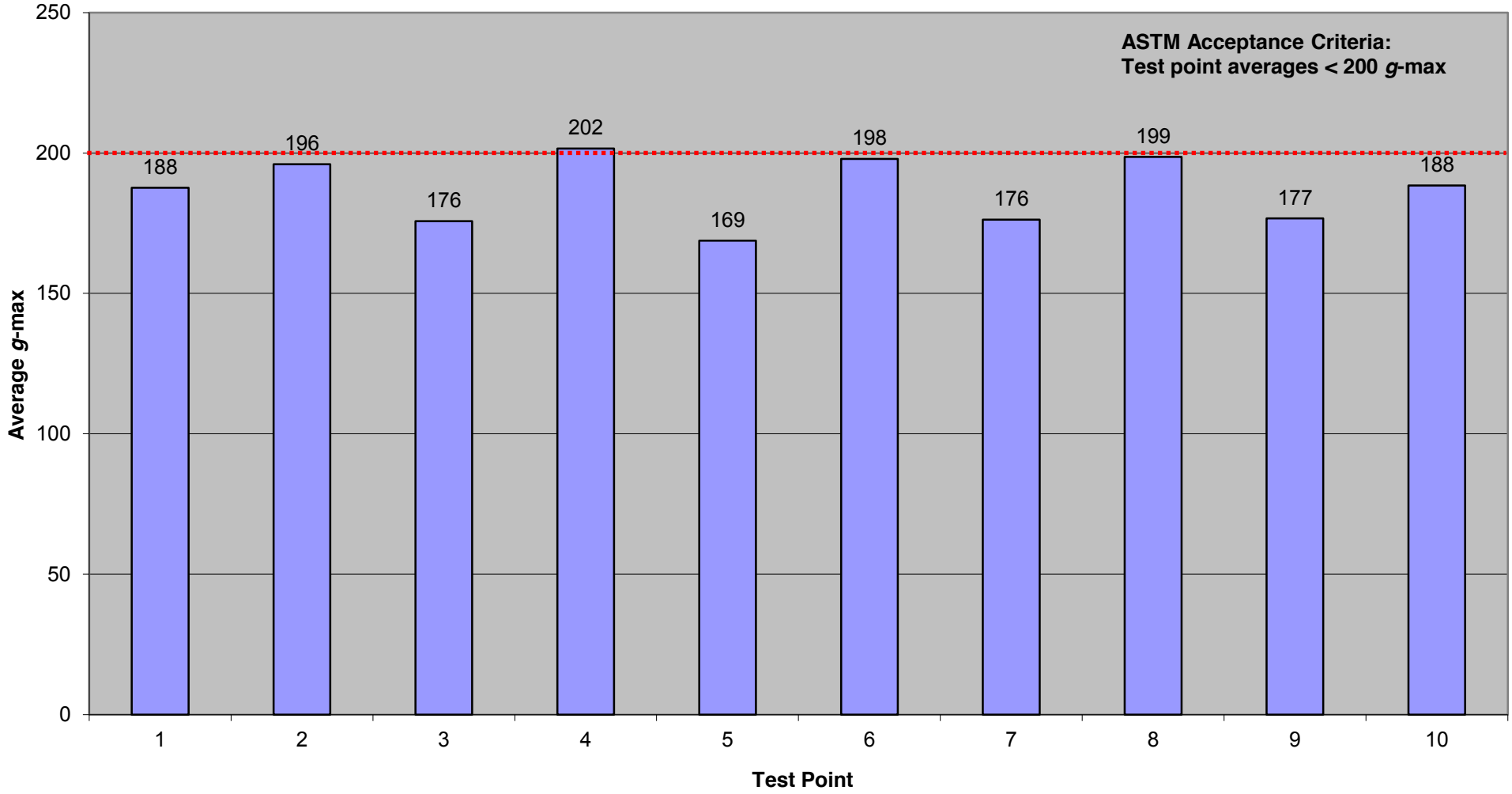
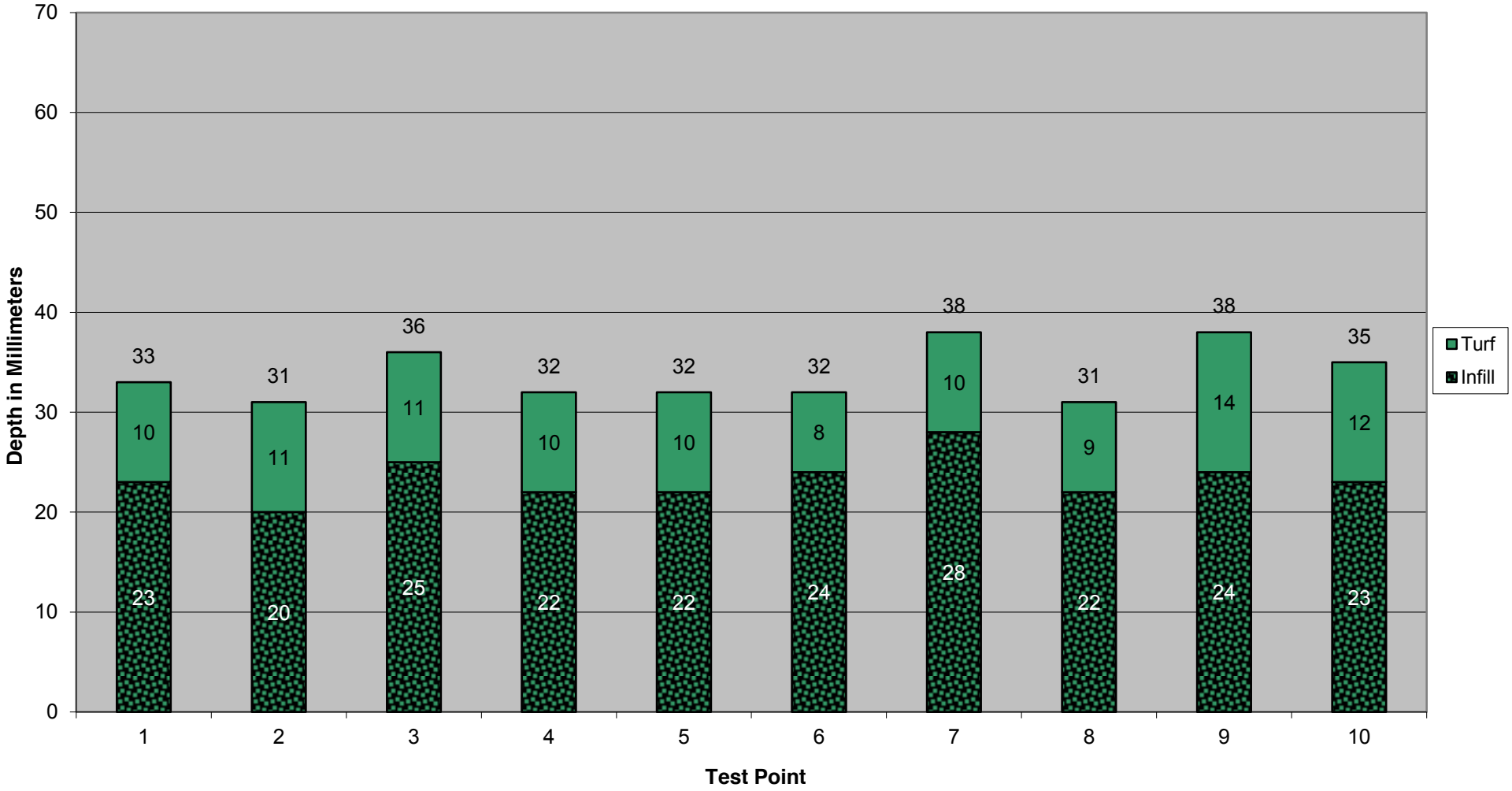
Field Location: **South Sunset Playground**
Date(s) of Test: **11/8/2013**

Detailed Test Results

Location	Drop #	Vo (m/s)	h (m)	***g*-max**	SI	HIC	Temperatures				Depths		
							Air (°C)	Air (°F)	Turf (°C)	Turf (°F)	Pile (mm)	Infill (mm)	Turf (mm)
Test Point 1	1	3.51	0.63	166.9	635.6	549.1							
Pitch 1 - Goal line,	2	3.50	0.62	185.6	754.0	650.5							
End A, on center	3	3.51	0.63	189.7	778.2	670.7							
line (CL)	Avg 2&3	3.51	0.63	**187.6**	766.1	660.6	19	66	24	75	33	23	10
Test Point 2	1	3.53	0.64	179.1	705.1	607.3							
Pitch 1 - Center	2	3.56	0.65	192.5	788.1	678.3							
of the field	3	3.53	0.63	199.5	835.2	718.2							
	Avg 2&3	3.54	0.64	**196.0**	811.6	698.3	19	66	24	75	31	20	11
Test Point 3	1	3.51	0.63	159.8	607.0	523.8							
Pitch 2 - Corner	2	3.49	0.62	174.6	700.3	603.2							
of P-Box, End B,	3	3.47	0.61	176.9	713.5	614.2							
Side D	Avg 2&3	3.48	0.62	**175.8**	706.9	608.7	19	66	21	70	36	25	11
Test Point 4	1	3.51	0.63	181.6	716.6	617.8							
Pitch 2 - Center	2	3.47	0.61	198.8	830.3	716.1							
of the field	3	3.51	0.63	204.4	867.6	748.0							
	Avg 2&3	3.49	0.62	**201.6**	849.0	732.1	19	66	22	72	32	22	10
Test Point 5	1	3.50	0.63	153.5	533.9	460.6							
Pitch 3 - Center	2	3.50	0.63	164.5	595.2	513.1							
of the field	3	3.51	0.63	173.1	650.1	559.8							
	Avg 2&3	3.50	0.63	**168.8**	622.7	536.4	19	66	23	73	32	22	10
Test Point 6	1	3.51	0.63	179.7	689.6	594.8							
Pitch 3 - Goal line,	2	3.50	0.62	192.7	767.4	661.0							
End B, on CL	3	3.51	0.63	203.2	842.9	723.2							
	Avg 2&3	3.51	0.63	**197.9**	805.1	692.1	19	66	21	70	32	24	8
Test Point 7	1	3.52	0.63	162.9	632.7	549.6							
Pitch 3 - 40' from	2	3.51	0.63	175.9	716.0	620.4							
mid-field to End B,	3	3.51	0.63	176.7	717.3	621.1							
5' outside Side C	Avg 2&3	3.51	0.63	**176.3**	716.6	620.7	18	64	16	61	38	28	10
Test Point 8	1	3.49	0.62	181.7	696.7	600.7							
Pitch 2 - Goal line,	2	3.49	0.62	196.9	792.9	682.5							
End A, on CL	3	3.52	0.63	200.4	812.9	699.4							
	Avg 2&3	3.50	0.63	**198.7**	802.9	691.0	19	66	24	75	31	22	9
Test Point 9	1	3.51	0.63	156.4	571.3	491.4							
Field 1 - 4' from	2	3.53	0.64	174.8	679.3	583.4							
3B to 2B (70' base	3	3.51	0.63	178.6	701.4	602.4							
path)	Avg 2&3	3.52	0.63	**176.7**	690.3	592.9	18	64	22	72	38	24	14
Test Point 10	1	3.53	0.64	167.0	622.0	536.4							
Pitch 3 - Corner	2	3.53	0.63	186.4	747.2	643.3							
of End A and Side	3	3.52	0.63	190.5	773.6	665.5							
C	Avg 2&3	3.53	0.63	**188.5**	760.4	654.4	18	64	20	68	35	23	12

Note: The accelerometer used to determine *g*-max values was last calibrated on 9/27/13. The calibration certificate is on file at Sports Turf Solutions. Copies are available upon request.

South Sunset Playground
Average *g*-max Levels



South Sunset Playground
Test Point Profiles