A realistic review of maintenance practices for synthetic turf fields

Synthetic Turf Maintenance

Presented By Mark Lucas

UC Davis Sports Turf Manager


10


AGGIE STADIUM
Coca-Cola
30
10

First and Foremost study your field maintenance manual

“Maintenance Guidelines Are Not Followed Carefully Enough. The Consequence is That The Playing Conditions are Worsened and the Field will suffer early aging and/or damage if you neglect your regular maintenance”

Field Use Maintenance Calculation

- Maximum hours per year
- Hours of use between grooming
- Formula for use hours based on type of play
- If flat-soled shoes are used on field then Hours of play should be increased by 20% per hour (marching bands)
- Number of players is a factor


Field
Grooming

Don’t groom when your field is dry and hot


KUBOTA


AGGIE STADIUM


JOHN DEERE


124
JOHN DEERE
GATOR


119
120
JOHN DEERE
GATOR

Field Sweeping


Parker
SUBURBANITE

Less Invasive Surface Blowing

Debris Collection from Surface Blowing with Vacuum Sweeper


TORO.
PRO FORCE


UC DAVIS FOOTBALL
BRUCE EDWARDS CLUB ROOM
122
123
124
JOHN DEERE
GATOR


1
TORO


AGGIE
PRIDE
OUTLET


101
636 hi-speed green machine

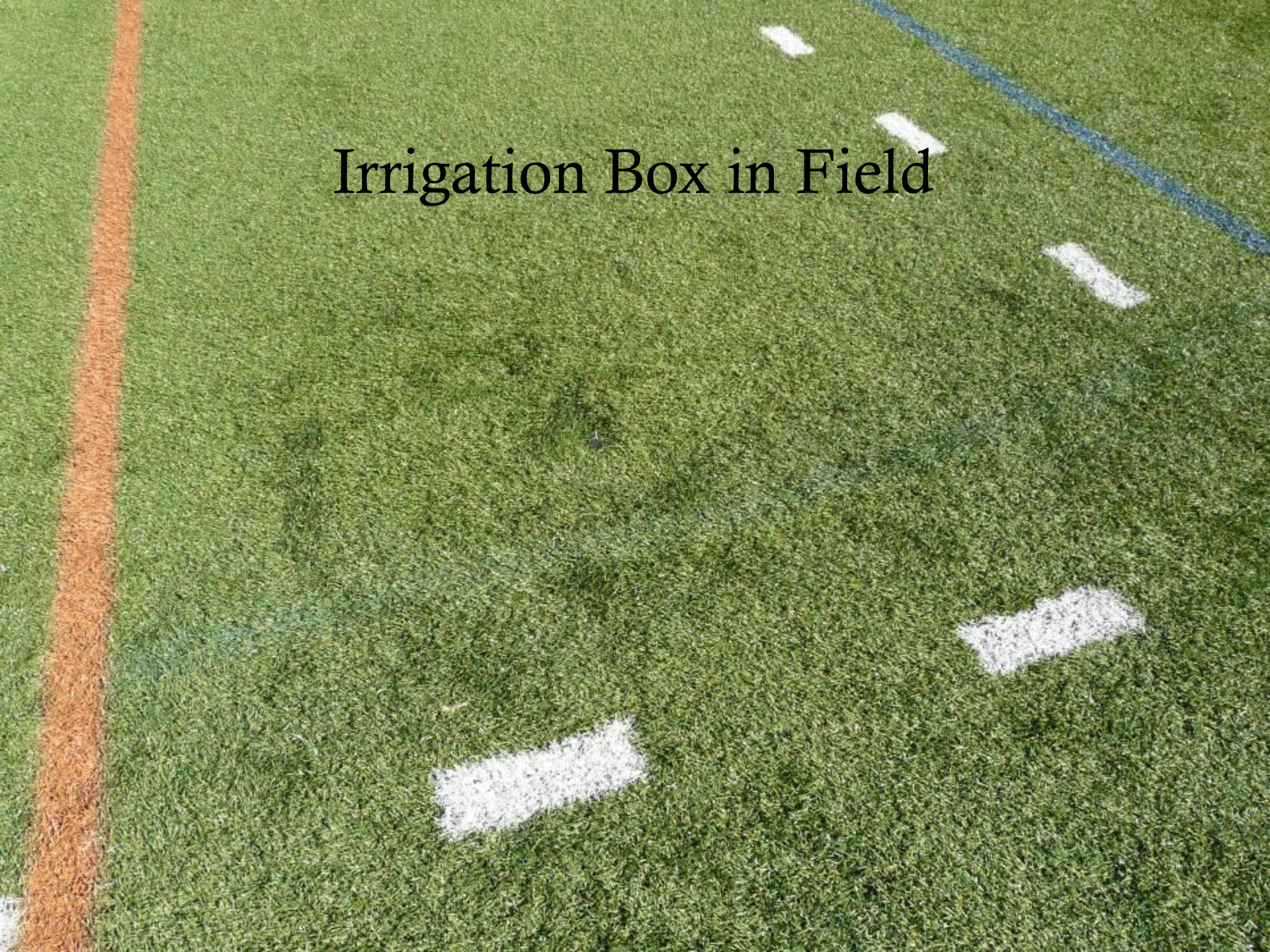

UC DAVIS
Baker

Magnetic Collector

Irrigation Systems

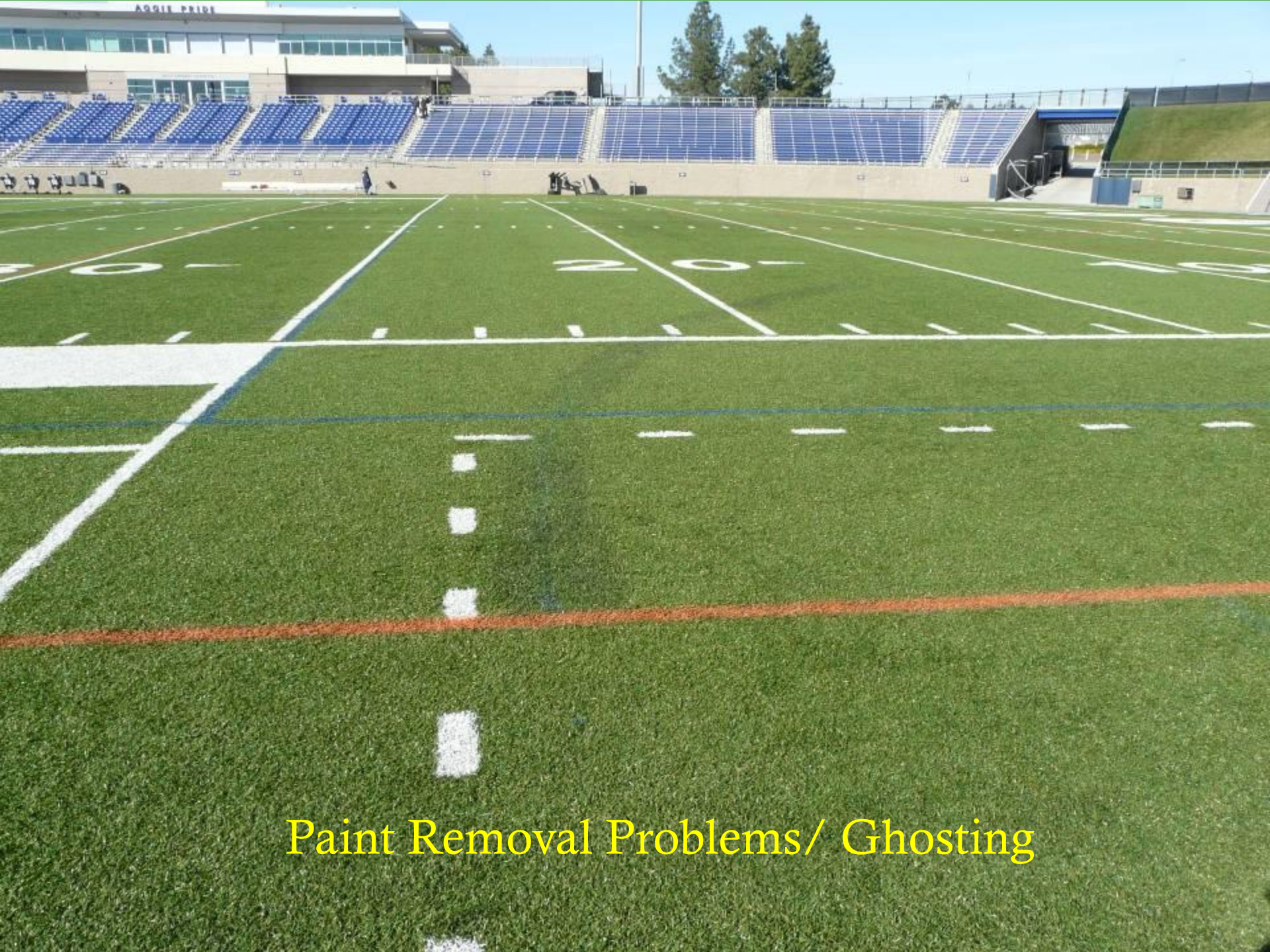
Field Sanitation


HOME
PERIOD
DOWN
YDS TO GO
ROLLIN T. GRIDLEY STADIUM


Irrigation Box in Field

Irrigation Blowout

Field Painting


Paint Removal Problems/ Ghosting


126
429


BOB FOST R TEAM CENTER

Logo Painting

Hydro Extractor


HOME

Top Dressing Infill Material


BOB FOSTER TEAM CENTER
AGGIE
PRIDE
OUTLET
UC DAVIS

Post Top Dressing Grooming


Biannual Deep Cleaning and Leveling
7044


SMG
SportChamp
A B C D
SMG


SMO


SMG


SportChamp


RenoMatic RM1400
Bobcat.
2200


RSC


SandMatic B1505 RC
SMG


40
30
20

Turf Repair


Sub Surface Grade Repair


Higher Levels Of Maintenance

Dirt Removal Using Hydro Extractor


GMAX Testing

Infrared Heat Gun

Wind Speed Indicator


EHS


Infill Depth Measurement


Height of Drop


TRIAX
2000

ABC PLAYGROUND SAFETY
2235 West 243rd, Lomita, CA 90717
Phone: (310) 980-6126 FAX: (310) 325-5028
Email: **info@abcplaygroundsafety.com**
www.abcplaygroundsafety.com

Playing Surface Impact Test Report
Artificial Playing Surface

UC Davis, Davis, Ca.
Football
Sportexe

Test Date: December 5, 2006 **Report Date:** December 5, 2006

Test Methods: ASTM F 355-A: Standard Specification for Shock-Absorbing properties of North American Football Field Playing Systems as Measured in the Field. ASTM F 355: Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. Accelerometer last calibrated February 25, 2003. Tests performed by Jeff Davis.

Surface Description: In-filled artificial turf system in new condition.

Weather Conditions

December 5, 2006	°F
Mean Temperature	46°F
Max Temperature	63°F
Min Temperature	30°F
Wind (mph)	1
Dew Point	33°F
Relative Humidity	68%

Summary of Results

Field Average G max	111.4
Field Max. Avg. G max	110.6
Site maximum G max	117.8
Average Fill Depth (mm)	34.3

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperature(s) reported under the stated test conditions, all points met the requirement of <200 G max when tested n accordance with ASTM F1936

New field avg. 111.4

SPORTS SURFACE IMPACT TEST REPORT

U C Davis

Test date: December 5 , 2006 Report date: December 5 , 2006

Field Description and Condition :
Surface Type: Infilled Synthetic Turf
Football
New

Weather Conditions:
Temperature : 52 °F Humidity : 50%
Clear

Test Method:
ASTM F 1936: Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field.

Summary of Results:

	gmax	tmax ms	HIC
Point 1 — Goal Line, End A, Center Field Football	112.7	7.0	313.5
Point 2 — 10 Yard Line, End A, and 1/4 the distance from side line C to center field Football	116.1	6.6	322.4
Point 3 — 25 Yard Line, End A, and 1/2 the distance from side line C to center field Football	114.7	6.4	319.2
Point 4 — Center field Football	104.9	6.7	283.5
Point 5 — 25 Yard Line, End B, and 1/4 the distance from side line D to center field Football	110.6	7.2	303.1
Point 6 — 12 Yard Line, End B, and Center of Field Football New	109.8	8.0	305.1

Conclusion:
Under the test conditions reported above, all test points met the requirement of < 200 average G max when tested in accordance with specification F1936.

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperature(s) reported.

Jeff Davis
File: Sportexe, UCDavis, 06-12-05.355

Gmax Testing Results

University of California Davis
Football
Davis, CA

Testing Procedure: **ASTM F355-01**: Standard test method for shock-absorbing properties of playing surface systems and materials. **ASTM F1936-07**: Standard specifications for shock-absorbing properties of North American Football Field playing systems as measured in the field. All tests were performed by Tom Collier.

Field Description: Sportexe – Two year old football field. Single tone turf equipped with football markings. Avg. Surf Temp. = 114°F

Weather Conditions: 97°F-102°F, Hot clear afternoon. 0% humidity

Summary
Avg. Field Gmax = 130.5
Max. Field Gmax = 144.0
Max. Site Gmax = 144.0
Avg. Infill Depth = 32.1mm

Avg: 130.5

Test Date: 08-20-08
Tested By: Tom Collier

Gmax Test Results
University of California Davis
Davis, CA

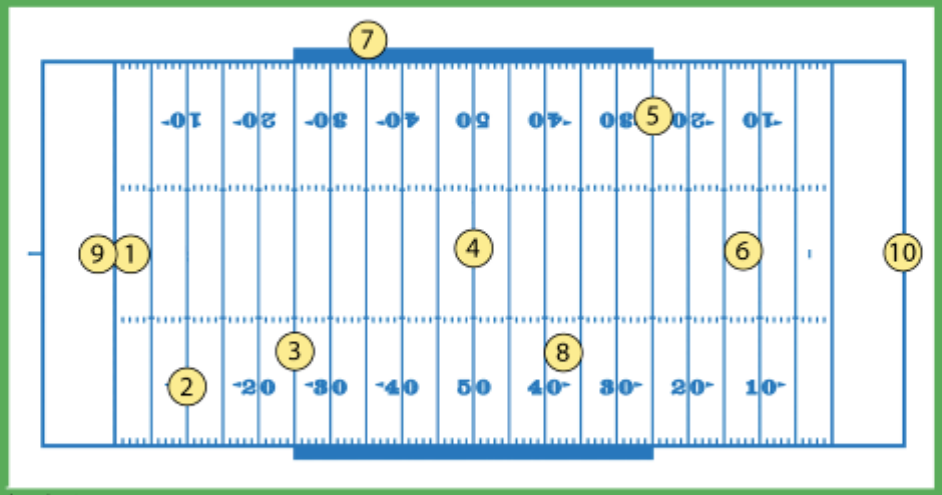
Sportexe:

Test Location	Drop#	G-Max	Tmax ms	HIC	Surf °f
1. Goal Line, End A. center field	1	126.8	6.8	361.1	
	2	144.0	6.8	450.1	
	3	143.9	6.3	444.8	
Avg. Infill Depth = 30mm	**Avg. 2 & 3**	**144.0**	**6.6**	**447.4**	**109**
2. 10 yard line, End A, ¼ the distance from Sideline C to center field	1	112.5	7.4	312.8	
	2	127.1	7.0	382.9	
	3	131.1	7.3	403.1	
Avg. Infill Depth = 33mm	**Avg. 2 &3**	**129.1**	**7.1**	**393.0**	**109**
3. 25 yard line, End A, and ½ the distance from sideline C to center field	1	119.3	8.0	343.3	
	2	133.6	6.7	412.4	
	3	136.0	7.1	423.9	
Avg. Infill Depth = 33mm	**Avg. 2 & 3**	**134.8**	**6.9**	**418.2**	**109**
4. Center Field	1	109.7	7.4	298.8	
	2	118.8	7.0	342.3	
	3	119.7	7.8	345.6	
Avg. Infill Depth = 34mm	**Avg. 2 & 3**	**119.3**	**7.4**	**344.0**	**122**
5. 25 yard line, End B, and ¼ the distance from sideline D to center field	1	112.3	7.8	306.6	
	2	128.0	7.1	384.1	
	3	129.0	8.1	387.3	
Avg. Infill Depth = 32mm	**Avg. 2 & 3**	**128.5**	**7.6**	**385.7**	**118**
6. 12 yard line, End B, and center of field	1	126.8	7.2	369.2	
	2	141.6	6.2	443.8	
	3	143.2	6.3	448.7	
Avg. Infill Depth = 31mm	**Avg. 2 & 3**	**142.4**	**6.2**	**446.3**	**115**
7. Sideline D, Outside of inbounds lines. Inside coach's box	1	113.6	7.4	321.4	
	2	124.6	7.5	373.1	
	3	126.9	5.8	382.6	
Avg. Infill Depth = 31mm	**Avg. 2 & 3**	**125.8**	**6.7**	**377.8**	**113**
8. Sideline D outside of inbounds lines. Outside coach's box	1	106.9	7.8	295.2	
	2	118.9	7.4	351.9	
	3	121.6	8.3	364.3	
Avg. Infill Depth = 33mm	**Avg. 2 & 3**	**120.2**	**7.8**	**358.1**	**115**

Test Date: 08-20-08
Tested By: Tom Collier

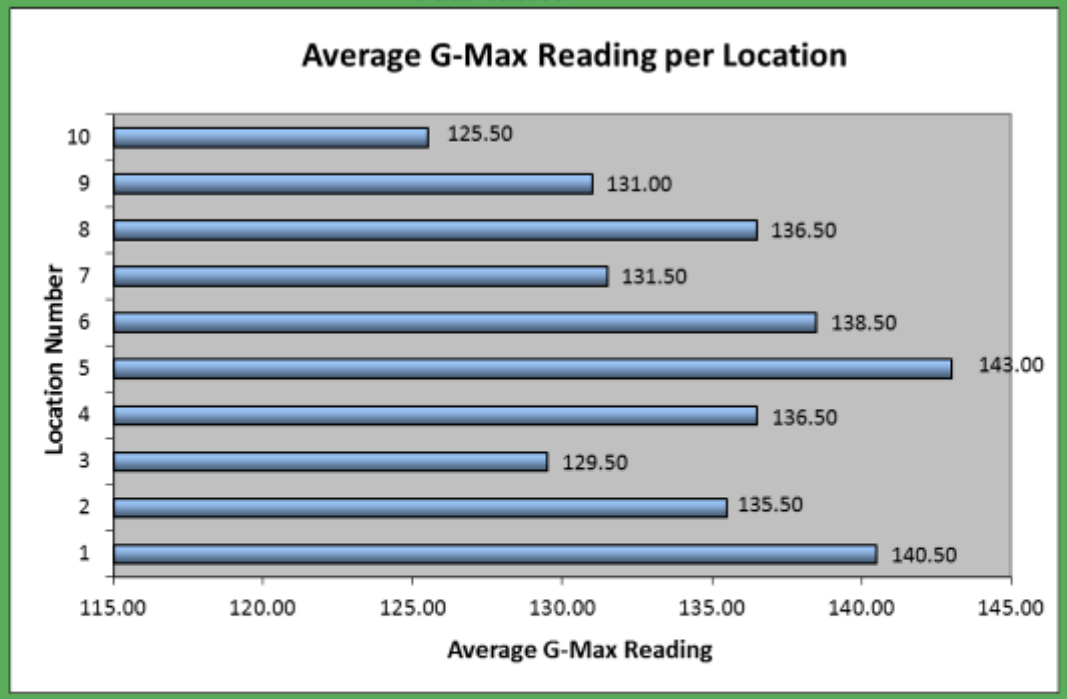
2011

Test Locations

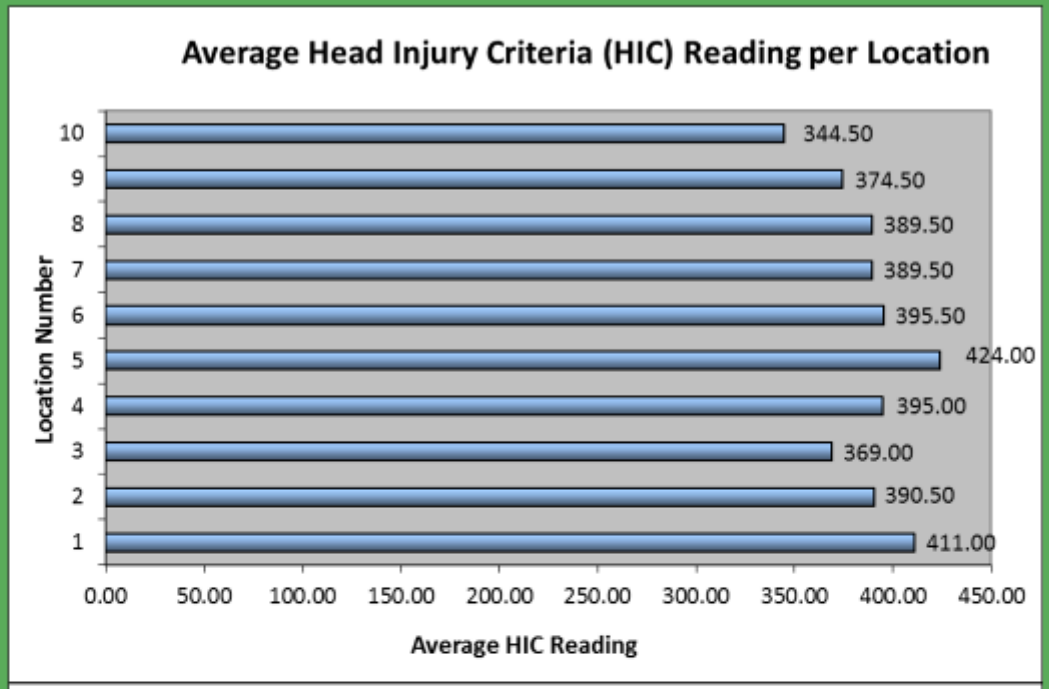


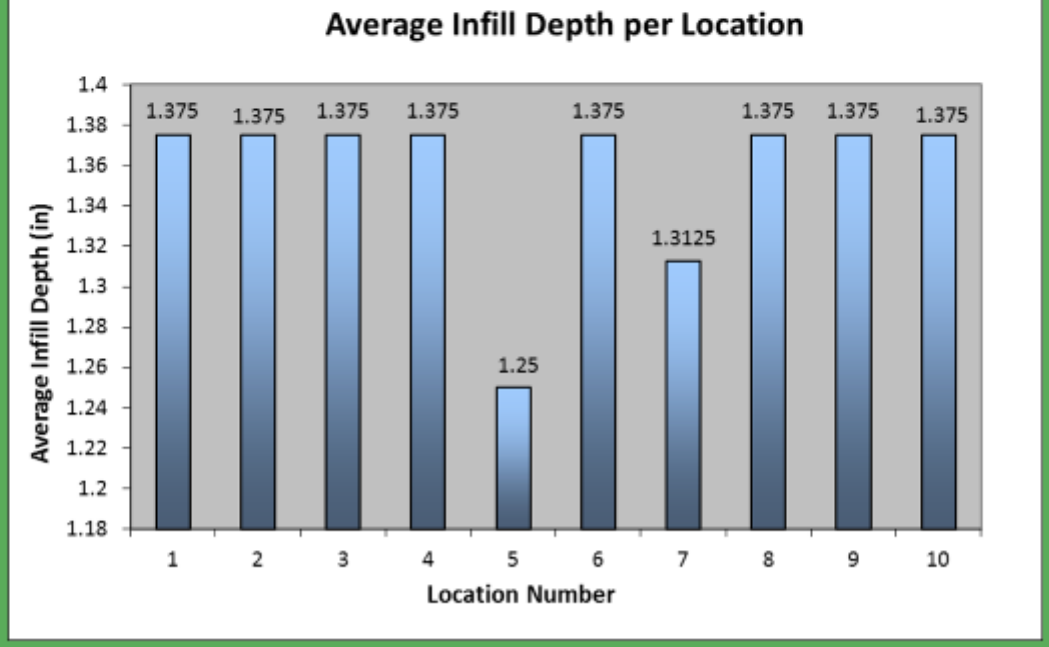
*End A is East

Data Tables



2011


Average Head Injury Criteria (HIC) Reading per Location
Location Number
10
9
8
7
6
5
4
3
2
1
344.50
374.50
389.50
389.50
395.50
424.00
395.00
369.00
390.50
411.00
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
450.00
Average HIC Reading


Average Infill Depth per Location
Average Infill Depth (in)
1.4
1.38
1.36
1.34
1.32
1.3
1.28
1.26
1.24
1.22
1.2
1.18
1.375
1.375
1.375
1.375
1.25
1.375
1.3125
1.375
1.375
1.375
1
2
3
4
5
6
7
8
9
10
Location Number

2011

Avg: 134.8

Loc #	Drop #	Gmax (G)	Velocity (ft/sec)	H.I.C	Loc Description	Gmax Avg (G)	Infill Depth)	HIC Avg (HIC)
1	1	123	11.6	332	Goal Line, End A, field centerline	**140.50**	1.375"	**411.00**
	2	139	11.6	405				
	3	142	11.6	417				
2	1	120	11.6	329	10 Yard Line, End A, 63 ft. from field centerline to the Side C	**135.50**	**1.375"**	**390.50**
	2	136	11.6	393				
	3	135	11.6	388				
3	1	114	11.5	303	25 Yard Line End A, 40 ft. from field centerline to Side C	**129.50**	**1.375"**	**369.00**
	2	127	11.5	359				
	3	132	11.6	379				
4	1	122	11.5	330	field centerline	**136.50**	**1.375"**	**395.00**
	2	134	11.6	384				
	3	139	11.6	406				
5	1	128	11.6	392	25 Yard Line, East end, 63 ft. from field centerline to Side D	**143.00**	**1.25"**	**424.00**
	2	142	11.6	420				
	3	144	11.6	428				
6	1	125	11.6	340	12 Yard Line, End B, field centerline	**138.50**	**1.375"**	**395.50**
	2	136	11.7	384				
	3	141	11.7	407				
7	1	119	11.6	328	North Team area, Side D	**131.50**	**1.3125 "**	**389.50**
	2	131	11.6	383				
	3	132	11.6	396				
8	1	122	11.6	328	37 Yard Line, End B, 40 ft. from the field centerline to Side C	**136.50**	**1.375"**	**389.50**
	2	135	11.6	383				
	3	138	11.6	396				
9	1	114	11.5	304	6 ft. from Goal Line to the back of the End Zone, End A, field centerline	**131.00**	**1.375"**	**374.50**
	2	128	11.5	363				
	3	134	11.5	386				
10	1	116	11.6	307	6 ft. from the back of the End Zone to the Goal Line, End B, field centerline	**125.50**	**1.375"**	**344.50**
	2	123	11.6	335				
	3	128	11.6	354				
						134.80	1.356"	**388.30**

AGGIES
UCDAVIS

9 year old field in good shape

Thank You!

Refererences:
Technical Advice and Photography

- Craig Edwards with Shaw Sportexe
- Dave DiGeronimo with Shaw Sportexe
- Alan Krausen with Turf Authority
- Tim Pellegrino with The Perfect Field
- Jeff Fisher with Eco Temp-Line
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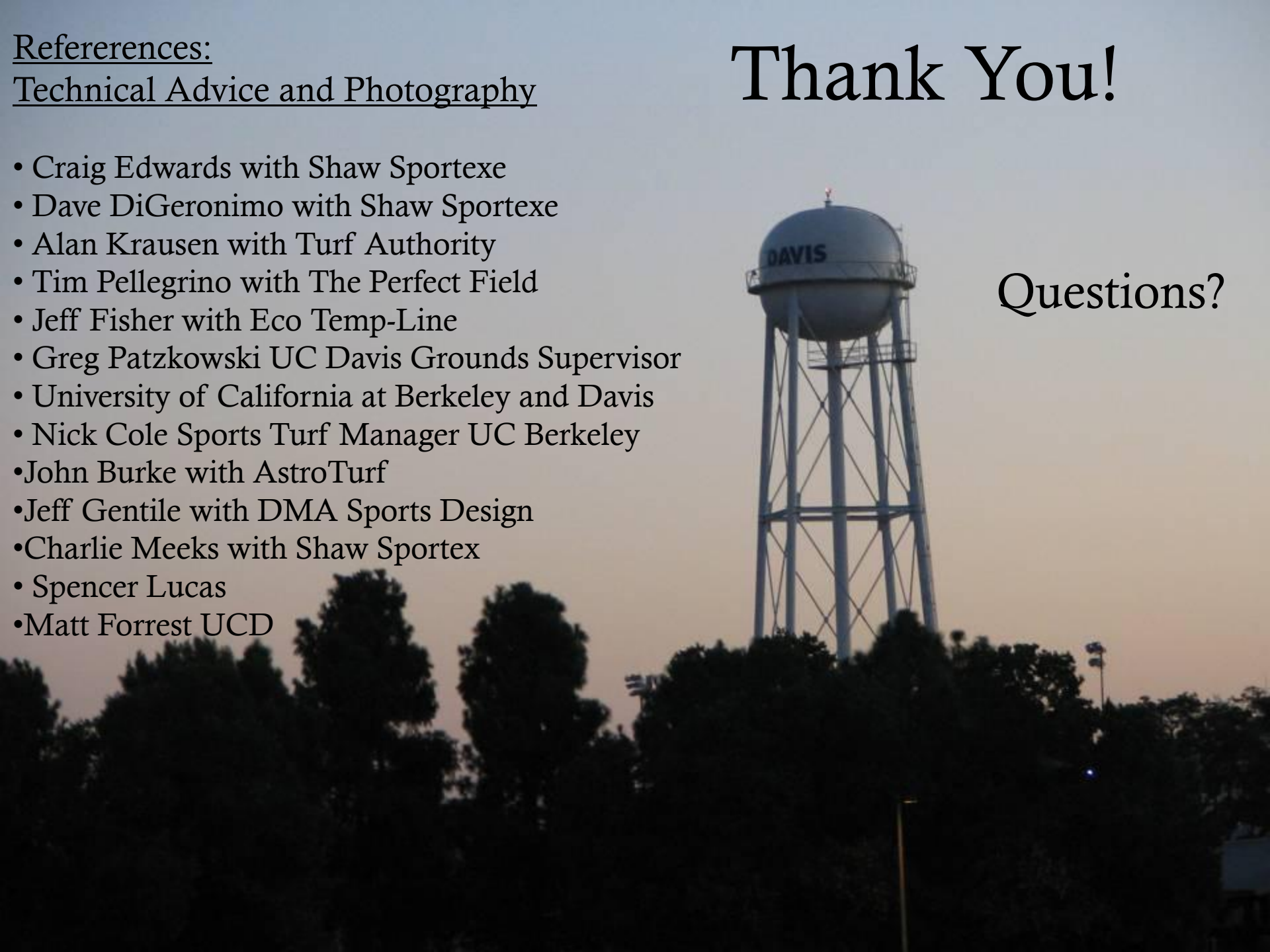
- University of California at Berkeley and Davis
- Nick Cole Sports Turf Manager UC Berkeley
- John Burke with AstroTurf
- Jeff Gentile with DMA Sports Design
- Charlie Meeks with Shaw Sportex
- Spencer Lucas
- Matt Forrest UCD



Questions?