West Linn – Wilsonville Schools

To: Lou Bailey, Principal WLHS
Rob Holstrom, Atheletic Director WLHS
Aaron Downs, Principal WHS
Dennis Burke, Athletic Director WHS
Pat McGough, Facility Manager

From: Tim Woodley, Director of Operations

Date: April 10, 2013

Subject: **Stadium Field Turf**

Our Architect, Dull Olson Weekes/IBI Group, has recently completed a formal assessment of the stadium turf fields at both Wilsonville High and West Linn High. The report will be posted on the District Operations web site.

The report generally confirms that aside from aesthetic judgment, the fields are adequate and safe for use for the next 2-3 years IF certain prescribed repairs are implemented.

During the summer of 2013 those repairs will be made under the direction of Pat McGough.

This determination will benefit the District both in providing safe venues for student activity as well as assist/inform funding solutions for total replacement at an appropriate time.

The report has been reviewed with the School Board and is available for the public.

Department of Operations
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2755 SW Borland Road, Tualatin, Oregon 97062

SYNTHETIC TURF FOOTBALL/SOCCER FIELDS EVALUATION REPORT

West Linn High School & Wilsonville High School

Submitted to West Linn - Wilsonville School District
by Dull Olson Weekes - IBI Group Architects, Inc.

March 19, 2013

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Executive Summary

West Linn High School Football/Soccer Field

The synthetic turf football/soccer field has nearly reached the end of its practical life having served the district for ten (10) seasons. Maintenance costs and appearance of the necessary repairs make this field a candidate for replacement in the near future.

> Recommend maintenance and repairs be made this summer. Then replacement of the turf should be contemplated following up to two (2) seasons. If the appearance with the patches is going to be unacceptable to the school district the turf should be replaced this summer.

Wilsonville High School Football/Soccer Field

The synthetic turf football/soccer field is one season newer than the WLHS field. Although it has had seaming problems in the past, the field is generally in good condition considering its age and usage. Maintenance and repairs will improve the life and performance of the field allowing it to remain in use for other 2 or 3 seasons.

> Recommend maintenance and repairs be made this summer. Then contemplate replacement of the turf following another three (3) seasons with appropriate maintenance.

History

West Linn High School

The synthetic turf field for West Linn High School's football/soccer field was the first synthetic turf field in the district. After careful evaluation and comparison of price, Southwest Recreational Industries' AstroPlay 2000 Synthetic Turf System was selected for installation. The field was found substantially complete on August 15, 2003. The field has seen extensive use since that time and has had some periodic repairs.

Wilsonville High School

The synthetic turf field for Wilsonville High School replaced the football/soccer sand-based field that was not capable of withstanding the demands for use of the field. The natural turf varsity and JV baseball fields were replaced at the same time using product manufactured by SprinTurf. The football field was not completed as scheduled and poor weather complicated the installation, especially the gluing of the seams. The "substantial completion" was issued on August 20, 2004. This field has also seen extensive use since put into service. A greater amount of repairs has been necessary on this field due mostly to seam failure.

Evaluation of Existing Turf

Synthetic Turf Field Inspection—West Linn HS

Date Inspected: 2-21-13
Turf System: Astroplay, 2.5”
Year Installed: 2003
Attended: P. McGough; WLWV SD, R. Holstrom, WLHS; N. Dull, DOWA-IBI
Owner Concerns: Minor settling, field black with rubber, high wear areas, seams

OVERVIEW

The field is in above average condition for fields of a similar age and use. Perimeter anchor and sub base remain good. Turf seams remain mostly intact and field does not exhibit system failure such as failed adhesive or improper installation. White turf has accelerated wear due to poor uv stabilization and will require some replacement. Several high wear areas require replacement. Field is dirty with rubber sitting on top. Requires deep clean for rejuvenation. Infill is slightly low. Adding infill should be discussed. Upon completion of scheduled testing, discuss results to determine scope of remedial work.

Perimeter anchor concrete and field inserts:

Perimeter curb shows minor cracking but no heaving. No loose turf at perimeter. Some areas of moss and grass. Turf inserts missing at goal post.

RECOMMEND – Replace turf inserts at goal posts. Clean perimeter and eradicate grass and moss.

Base planarity:

The sub base does not exhibit signs of serious differential settling or sinking. Buried utility or communications box at East side protrudes up slightly but is outside playing limits. Small low area within field at 12 yd line.

RECOMMEND – Contractor to review areas with owner during turf repair and correct.

Turf fiber analysis:

Turf is highly fibrillated (fibrillated refers to the "grass" slit-film-fiber that is designed to break down into many fine strands. On older fields the fibers continue to fibrillate and begin to fuzz). Shows typical pattern of greater wear down center of field… especially at areas of concentrated play. Lacrosse goal area, soccer penalty kick and goal mouth, and football kickoff x areas show greatest degradation. White lines fiber is shorter than adjacent green fiber due to accelerated UV degradation with highest worn areas at middle of field and high wear areas.

RECOMMEND - Some areas need to be replaced with new turf due to advanced wear. Areas may have insufficient fiber height to hold infill at minimum level required for play. Lacrosse goal area and kicking x areas need replaced and possibly areas of highly degraded white turf areas to meet industry standard for Gmax.

Seam inspection:

The field overall does not show signs of installation or product failure. Most hash marks and numbers are still adhered properly. Most seam failure is located within high wear areas at middle of field on both ends between the soccer arc and goal. Soccer center circle also shows high wear and loose turf sections.

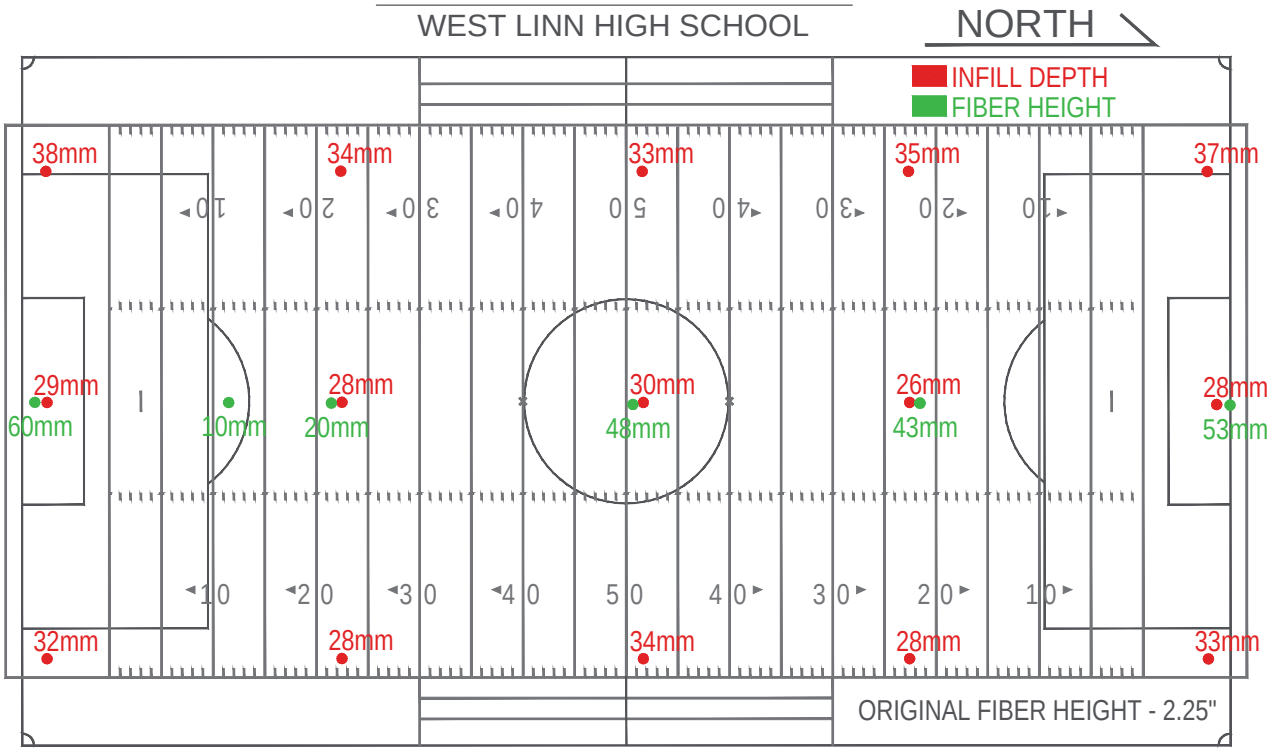
RECOMMEND – Schedule turf repair contractor to identify and repair failed seams and replace turf at lacrosse goal and football x's. Replace additional areas deemed deficient upon Gmax test results.

Infill depth measurements:

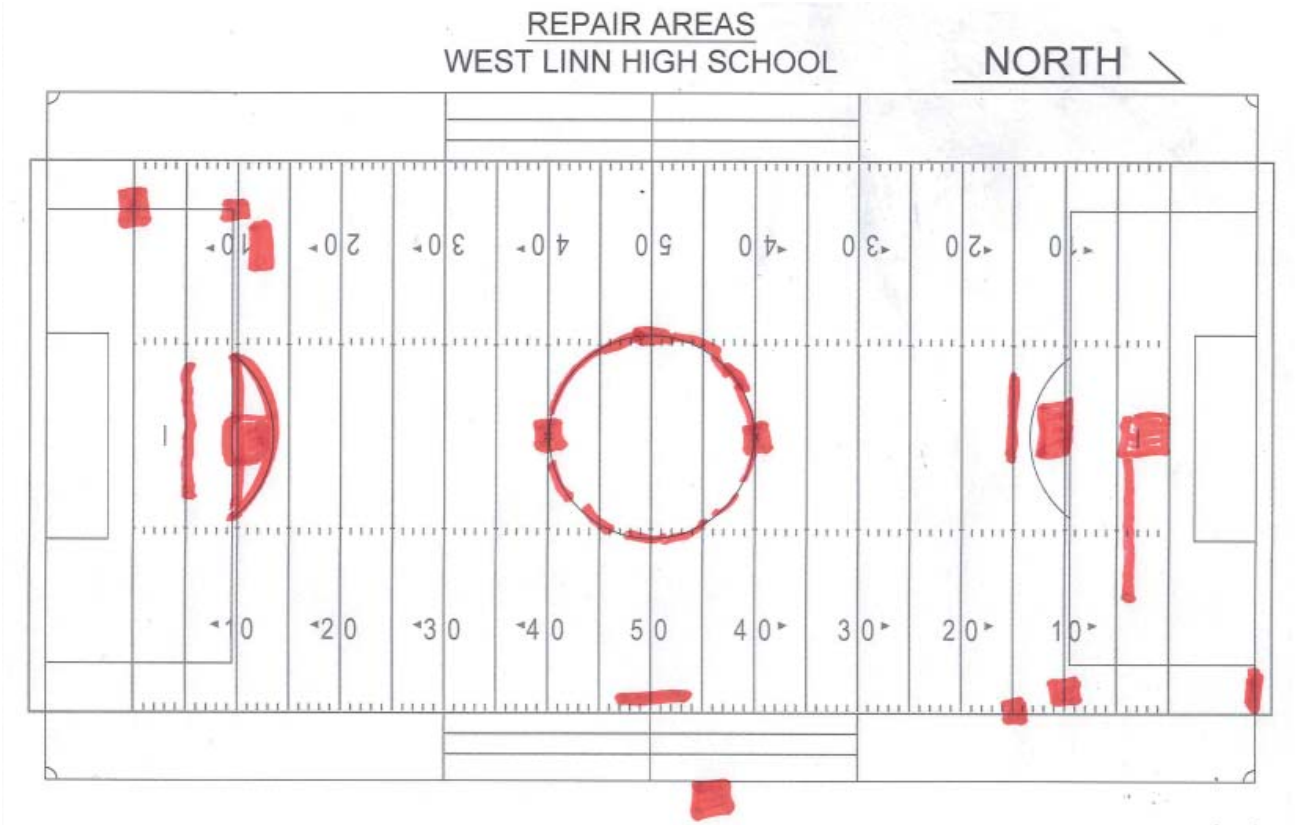
The infill level of the field is slightly low based on typical 5/8" +/- exposed turf fiber above infill level. Also it mirrors the pattern of fiber wear and loss being low down the middle of the field and extremely low in excessive wear areas and worn white turf (see infill depth report attached).

RECOMMEND – It is possible to uniformly add infill to the field. Upon completion of Gmax testing discuss results to determine if addition infill is correct action. Also replace turf where fiber is insufficient to contain minimum infill amount.

INFILL DEPTH MEASUREMENTS
WEST LINN HIGH SCHOOL



REPAIR AREAS
WEST LINN HIGH SCHOOL



Synthetic Turf Field Inspection—Wilsonville HS

Date Inspected: 2-22-13
Turf System: Sprinturf, 2.25”
Year Installed: 2003
Attended: P. McGough, WLWV SD; D. Burke, WHS; N. Dull, DOWA-IBI
Owner Concerns: Minor depression at N 33 from settling, turf height difference at soccer box, seams

OVERVIEW

The field is in above average condition for fields of a similar age and use. Perimeter anchor and sub base remain good. Turf seams have required repair on an annual basis since installation. White turf has accelerated wear due to poor uv stabilization. Loose rubber at surface. Field is dirty and should have deep clean for rejuvenation. Upon completion of scheduled testing, discuss results to determine scope of remedial work.

Perimeter anchor concrete and field inserts:

Perimeter curb shows minor cracking but no heaving. No loose turf at perimeter.

Base planarity:

The sub base does not exhibit signs of serious differential settling or sinking. Small low area within field at 33 yd line. Also multiple lows and highs adjacent to seams that appear to have been caused during seam repair operations.

RECOMMEND – Contractor to review areas with owner during turf repair and correct.

Turf fiber analysis:

Turf is highly fibrillated (fibrillated refers to the "grass" slit-film-fiber that is designed to break down into many fine strands. On older fields the fibers continue to fibrillate and begin to fuzz). Shows typical pattern of greater wear down center of field… especially at areas of concentrated play. Lacrosse goal area, soccer penalty kick and goal mouth, and football kickoff x areas show greatest degradation. White lines fiber is shorter than adjacent green fiber due to accelerated UV degradation with highest worn areas at middle of field and high wear areas.

RECOMMEND – Consider replacement of some turf at high wear areas upon completion of testing.

Seam inspection:

The field has had continual issues with seam failure. Moderate seam repair needed. Most hash marks and numbers are still adhered properly. Soccer box that was replaced needs repair and reinstall of infill to more closely match adjacent green turf height.

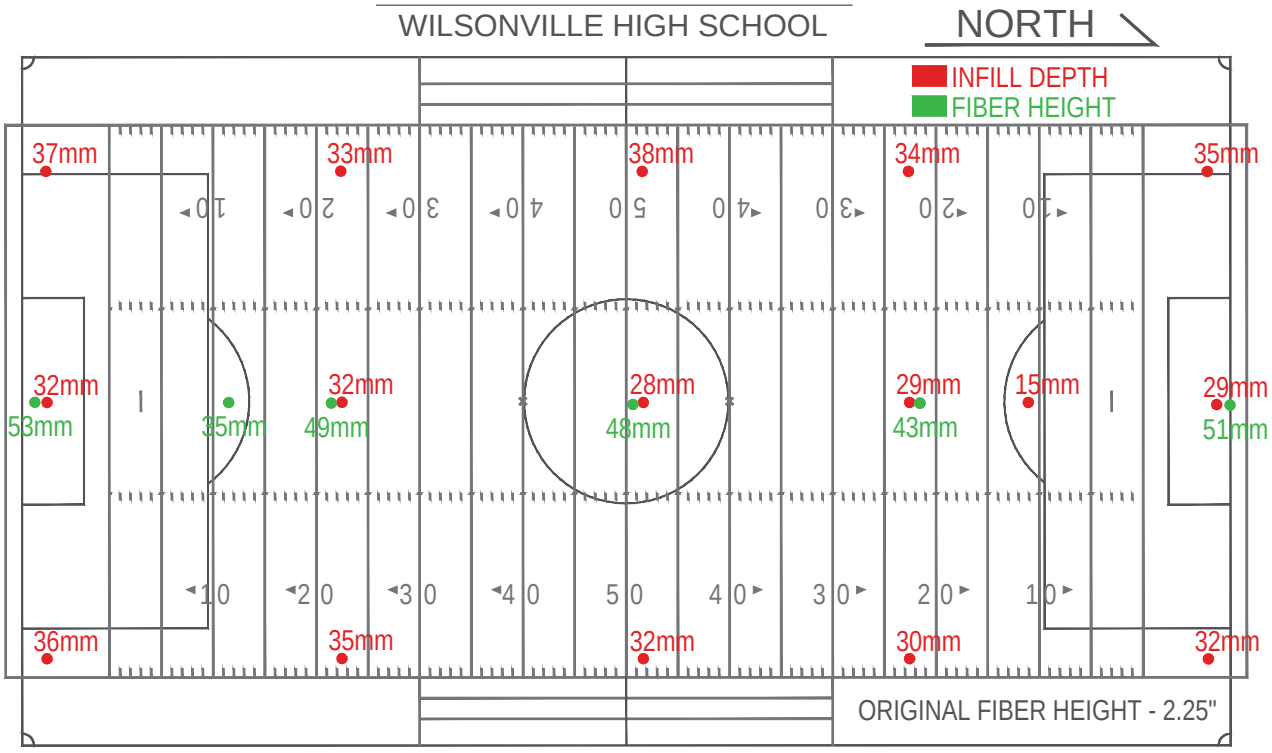
RECOMMEND – Schedule turf repair contractor to identify and repair failed seams and correct turf at soccer boxes.

Infill depth measurements:

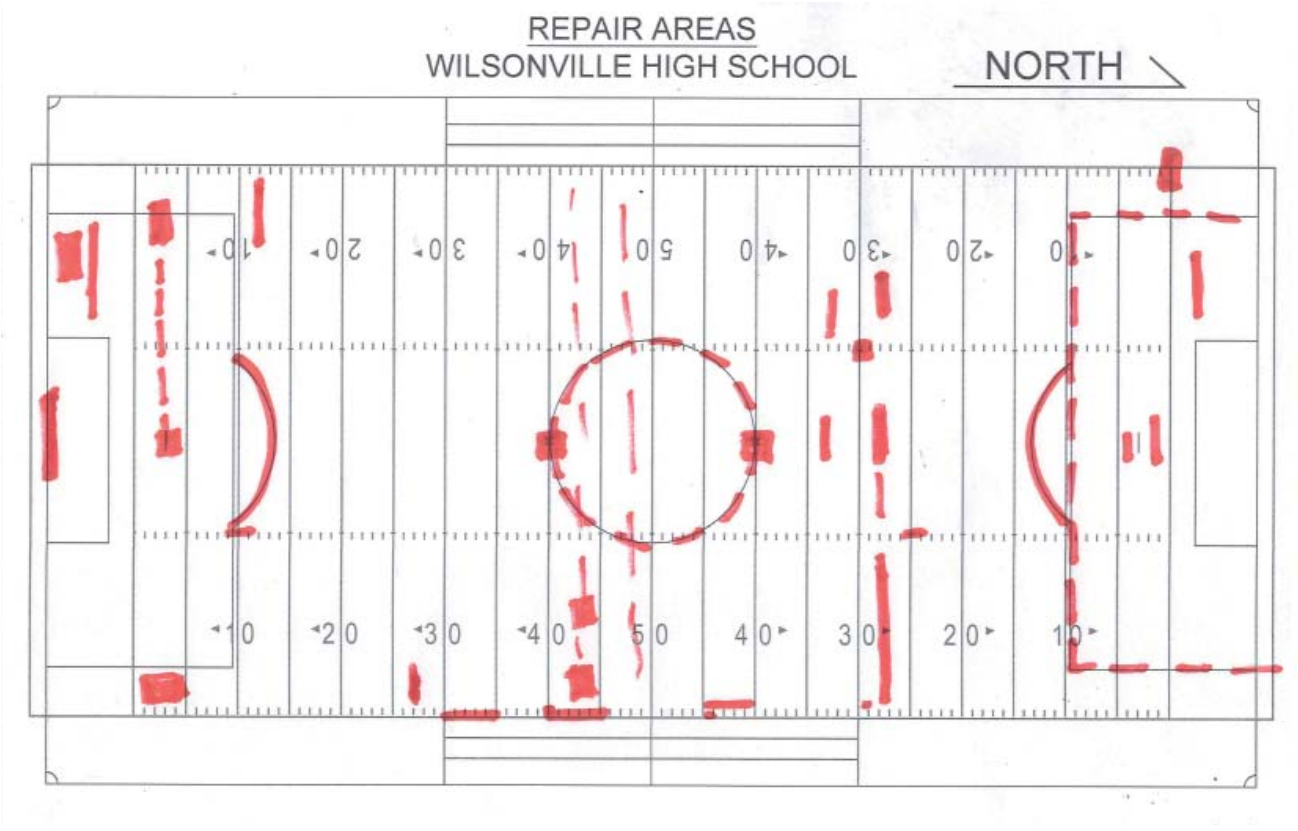
The infill level of the field is just on the edge of being low based on typical 5/8" +/- exposed turf fiber above infill level. Level mirrors the pattern of fiber wear and loss being low down the middle of the field and extremely low in excessive wear areas and worn white turf (see infill depth report attached).

RECOMMEND – Upon completion of Gmax testing discuss results to determine if any action is required.

INFILL DEPTH MEASUREMENTS
WILSONVILLE HIGH SCHOOL



REPAIR AREAS
WILSONVILLE HIGH SCHOOL



West Linn HS & Wilsonville HS Football Fields
Budget Numbers for Projected Remedial Works

SPORTCHAMP DEEP CLEAN (WLHS & WHS)	$ 6,000.00
TURF REPAIR (WLHS)	$ 16,000.00
TURF REPAIR (WHS)	$ 16,000.00
ADD 3mm RUBBER INFILL (PER FIELD IF REQ'D)	$ 15,000.00

NOTE: Budget numbers are stand alone pricing. Actual quote will be sent upon determination of scope of work.

Replacement Costs

The existing synthetic turf fields have no reports of standing or slow draining water. For this reason and from onsite observations during heavy rain we assume the under-field drainage system is still functioning properly.

Cost to remove and dispose of the existing turf and infill: $0.50 to $0.75 per SF.

Allowance to repair/re-grade existing rock base: $10,000.

Allowance for carpet including infill with football and soccer game lines and numbers: $4.50 to $5.50 per SF.

Total Cost for removal, repair/regrade and carpet: $5.00 to $6.25 per SF + $10,000.

Alternates could include:

- Center field logo similar to new WLHS basketball court logo: $10,000
- End zone letters: $1,000 each (West Linn Lions = 13 letters or $13,000, Wilsonville Wildcats = 19 letters or $19,000)
- Lacrosse lines would be additional

West Linn High School

Approximate square footage: 83,176

Total Cost to Replace the Field = $426,000 to $530,000 (not including alternates or "soft costs")

Wilsonville High School

Approximate square footage: 81,730

Total Cost to Replace the Field = $419,000 to $520,000 (not including alternates or "soft costs")

Total Project Cost for replacing both fields at today's costs including soft costs at 20% = $1,014,000 to $1,260,000 (not including alternates noted above).

Recommendations

West Linn High School Football/Soccer Field

It was expected when the fields were installed that they would serve the needs of the school district for at least eight (8) seasons. The field has been in place since the fall of 2003 and will have served the district for ten (10) seasons by the end of this summer. It has reached a point that repair by replacing portions of the field and deep cleaning is recommended. This will create a less than ideal appearance but a usable field. The school district can get up to two (2) more seasons of use before replacing the field but will need to invest in maintenance and live with the less than pristine appearance and minor playability issues.

During testing an area was shown to exceed the recommended Gmax (test of resilience or hardness). This area in particular needs to be replaced. A replacement field will likely cost around $575,000. The synthetic field cost per year equates to $57,500 per year of service to this point. Stretching another two (2) years out of the field with the estimated repair cost of around $35,000 seems to be a good investment if the district finds the visual result of the patches acceptable. Otherwise, it is time to replace the turf.

Wilsonville High School Football/Soccer Field

This field was installed in 2004 so it has had nine (9) seasons of play. It has seen seaming issues since the original installation. Some lines have been replaced but the work was not done well. The repairs needed on this field are rather limited and the playability and appearance should remain acceptable for a few more seasons.

This field seems to be holding up remarkably well. With recommended repairs at a cost in the neighborhood of $25,000 the field should remain serviceable for several more years. We recommend having the repairs made and monitoring the field over the next few seasons. Replacement should be contemplated after two (2) or three (3) more seasons.

Testing

The following test reports were performed by Thomas Testing Inc. which includes:

West Linn High School Stadium Field

The "true" drop locations on this field did not have any Gmax values over 200. Additional testing was performed at two extra drop locations on this field. These extra results were not included in the Field Average calculations but photos were included in the report.

Extra #11 - This is the "original" turf area at the boys lax goal crease area (the same as the replaced area on the other end). The Gmax here was 330. A "patch" here is recommended.

Extra #12 - The new turf area on the north end is not a true drop location. The Gmax here was 183 and it had less than an inch of infill.

Wilsonville High School Stadium Field

The Gmax value is at a safe level and is good considering its age.

Supplemental

The following test reports were performed by Thomas Testing Inc. which includes:

West Linn High School Baseball Field

The Gmax exceeded the suggested maximum of 200 in at least one location.

It is suggested that remedial work be done to improve the resilience of the field in the identified location.

Wilsonville High School Baseball Field (south)

The Gmax exceeded the suggested maximum of 200 in at least one location (1 yard off of the first base).

It is suggested that remedial work be done to improve the resilience of the fields.

Wilsonville High School Baseball Field (south)

The Gmax exceeded the suggested maximum of 200 in each of the base test points. The infill didn't show to be low but it is mostly sand/dirt in those areas, no rubber left.

It is suggested that remedial work be done to improve the resilience of the fields.

Thomas Testing Inc.

Sports Surface Impact Test Report

West Linn High School

Stadium Field

West Linn, OR

Test Date: March 14, 2013 Report Date: March 17, 2013

Test Methods- **ASTM F 355:** Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. **ASTM F 1936:** Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field. Accelerometer last calibrated April 2012. Tests performed by Sabrina Thomas.

Surface Description: **SRI -** slit-film fiber, sand/rubber infilled, artificial turf system mutli-sport field. Field is inlaid with football and soccer, other sports painted only. North end boys lacrosse goal crease, center, has been replaced. Field is approximately 10 years old.

Field Average Gmax is for 10 total drop locations.

Weather Conditions: Partly cloudy, warm

Max Temp.	60 degrees F
Min Temp.	58 degrees F
Humidity	55%

Summary of Results

Field Average Gmax	**150.8**
Field Max Gmax	165.6
Average Infill Depth "	1 1/4"

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperatures reported. Under the stated test conditions, all points met the requirement of < 200 Gmax when tested in accordance with ASTM F1936.

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Synthetic Turf Council STC CERTIFIED IND. TEST LAB

Thomas Testing Inc.

Sports Surface Impact Test

West Linn High School

Stadium Field

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
	1	156.2	5.3		
1 - Football goal Line, End A, Center of field	2	164.9	4.2		
- also girls lax goal crease	3	166.2	4.4		
(scoreboard end) **Avg 2 & 3**		**165.6**	**4.3**	**1 1/8"**	**58**
	1	129.4	4.8		
2 - 10 yd line, End A, 1/4 way in from	2	141.1	4.4		
sideline C	3	143	4.2		
Avg 2 & 3		**142**	**4.3**	**1 7/16"**	**58**
	1	129.9	5.4		
3 - 25 yd line, End A, 1/2 way in from	2	139.7	5.3		
sideline C	3	138.5	4.4		
Avg 2 & 3		**139.1**	**4.8**	**1 7/16"**	**58**
	1	138.1	4.9		
4 - Center field	2	146.8	5.6		
	3	149.9	4.7		
Avg 2 & 3		**148.3**	**5.1**	**1 3/8"**	**58**
	1	134.3	5.6		
5 - 25 yd line, End B, 1/4 way in from	2	145.7	5.2		
sideline D	3	149.1	5		
Avg 2 & 3		**147.4**	**5.1**	**1 3/8"**	**58**
	1	145.2	4.2		
6 - 12 yd line, End B, Center of field	2	163.1	4.9		
	3	160.6	4		
(not on new turf) **Avg 2 & 3**		**161.8**	**4.5**	**1 1/8"**	**58**
	1	138.6	4.9		
7 - 20 yd line, End A, 1/2 way between	2	145	4.5		
football/soccer Sideline D	3	149.6	4.8		
Avg 2 & 3		**147.3**	**4.6**	**1 5/16"**	**58**
	1	131.9	5.7		
8 - 20 yd line, End B, 1/2 way between	2	137.9	5.4		
football/soccer Sideline C	3	136.9	4.6		
Avg 2 & 3		**137.4**	**5**	**1 5/16"**	**58**
	1	145.6	5.2		
9 - 6' from Goal line to back of End zone,	2	153.2	4.6		
End A, Center field	3	157.8	4.4		
Avg 2 & 3		**155.5**	**4.5**	**1 3/16"**	**58**
	1	153.6	4.1		
10 - 6' from back of End zone to Goal	2	162.7	4.7		
line, End B, Center field	3	163.4	4.1		
(soccer goal) **Avg 2 & 3**		**163.1**	**4.4**	**1 1/8"**	**58**

SRI

End A - South end
Sideline C - East side
Sideline D - West Side
End B - North end

Test Date: 3/14/2013
Report Date: 3/17/2013

Thomas Testing Inc.

Sports Surface Impact Test

West Linn High School

Stadium Field

(extra drop locations)

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
11 - 11 yd line, South end, End A, center of field, Boys Lax goal crease (scoreboard end)	1	302.5	3.7		
	2	323.5	3.2		
	3	336.8	2.4		
	Avg 2 & 3	**330.2**	**2.8**	**1/2"**	**58**
12 - North end , End B, boys lax goal crease, center of field - in new turf area	1	172	5		
	2	183.8	4.8		
	3	183.6	3.9		
	Avg 2 & 3	**183.7**	**4.4**	**11/16"**	**58**

Drop area #11

Drop area #12

End A - South end
Sideline C - East side
Sideline D - West Side
End B - North end

Test Date: 3/14/2013
Report Date: 3/17/2013

Thomas Testing Inc.

Sports Surface Impact Test Report

Wilsonville High School

Stadium Field

Wilsonville, OR

Test Date: March 14, 2013 Report Date: March 17, 2013

Test Methods- **ASTM F 355:** Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. **ASTM F 1936:** Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field. Accelerometer last calibrated April 2012. Tests performed by Sabrina Thomas.

Surface Description: **Sprinturf - LSR -** sand/rubber infilled, artificial turf system multi-sports field. Field is inlaid with football and new soccer lines, with no logos (other sports paint only). Field is approximately 9 years old.
Field Average Gmax is for 10 total drop locations.

Weather Conditions: Cloudy, cool

Max Temp.	49 degrees F
Min Temp.	49 degrees F
Humidity	65%

Summary of Results

Field Average Gmax	**144.2**
Field Max Gmax	160.3
Average Infill Depth "	1 7/16"

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperatures reported. Under the stated test conditions, all points met the requirement of < 200 Gmax when tested in accordance with ASTM F1936.

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Thomas Testing Inc.

Sports Surface Impact Test

Wilsonville High School

Stadium Field

Sprinturf

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
1 - Goal Line, End A, Center of field	1	142.1	5.2		
	2	156.4	4.3		
	3	164.1	3.5		
	Avg 2 & 3	**160.3**	**3.9**	**1 5/16"**	**48**
2 - 10 yd line, End A, 1/4 way in from sideline C	1	129.5	5.2		
	2	139.2	4.6		
	3	146.3	4.8		
	Avg 2 & 3	**142.8**	**4.7**	**1 1/2"**	**48**
3 - 25 yd line, End A, 1/2 way in from sideline C	1	124.5	6.4		
	2	130.9	5.3		
	3	137.9	5.2		
	Avg 2 & 3	**134.4**	**5.3**	**1 1/2"**	**48**
4 - Center field	1	136	5		
	2	149.5	4.4		
	3	152.9	4.8		
	Avg 2 & 3	**151.2**	**4.6**	**1 1/4"**	**48**
5 - 25 yd line, End B, 1/4 way in from sideline D	1	125	6.3		
	2	129.7	4.8		
	3	140.1	5.1		
	Avg 2 & 3	**134.9**	**4.9**	**1 7/16"**	**48**
6 - 12 yd line, End B, Center of field	1	145	5.3		
	2	156	5		
	3	160.6	4.4		
(scoreboard end)	**Avg 2 & 3**	**158.3**	**4.7**	**1 1/4"**	**48**
7 - 20 yd line, End A, 1/2 way between football/soccer Sideline D	1	112	5.9		
	2	124.4	5.7		
	3	124.4	6.1		
	Avg 2 & 3	**124.4**	**5.9**	**1 7/16"**	**48**
8 - 20 yd line, End B, 1/2 way between football/soccer Sideline C	1	130.5	5		
	2	140.4	4.8		
	3	138.4	5.1		
	Avg 2 & 3	**139.4**	**5**	**1 3/8"**	**48**
9 - 6' from Goal line to back of End zone, End A, Center field	1	127	5.7		
	2	140.7	5.1		
	3	141.9	4.6		
	Avg 2 & 3	**141.3**	**4.8**	**1 7/16"**	**48**
10 - 6' from back of End zone to Goal line, End B, Center field (soccer goal)	1	145.7	5.3		
	2	151.8	4.8		
	3	157.9	4.4		
	Avg 2 & 3	**154.9**	**4.6**	**1 1/4"**	**48**

End A - South end
Sideline C - East side
Sideline D - West Side
End B - North end

Test Date: 3/14/2013
Report Date: 3/17/2013

Thomas Testing Inc.

Sports Surface Impact Test Report

West Linn High School

Baseball Field

West Linn, OR

Test Date: March 14, 2013 Report Date: March 17, 2013

Test Methods- **ASTM F 355:** Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. **ASTM F 1936:** Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field. Accelerometer last calibrated April 2012. Tests performed by Sabrina Thomas.

Surface Description: **Sportexe -** slit-film fiber, sand/rubber infilled, artificial turf system baseball field. Field is inlaid with baseball. Homeplate and batters box area have new turf. Field is approximately 9 years old.

Field Average Gmax is for 10 total drop locations.

Weather Conditions: Partly cloudy, warm

Max Temp.	57 degrees F
Min Temp.	56 degrees F
Humidity	60%

Summary of Results

Field Average Gmax	**149.8**
Field Max Gmax	212.6
Average Infill Depth"	1 7/16"

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperatures reported. Under the stated test conditions, some points did **not** meet the requirement of < 200 Gmax when tested in accordance with ASTM 1936.

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Thomas Testing Inc.

Sports Surface Impact Test

West Linn High School

Baseball Field

Sportexe

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
1 - 15' in front of Home plate, to Pitcher's mound	1	132.7	4.9		
	2	146.9	4.2		
	3	149.2	4.2		
	Avg 2 & 3	**148.1**	**4.2**	**1 3/8"**	**60**
2 - 1 yd from 1st base to 2nd base	1	205.2	3.5		
	2	212.5	2.7		
	3	212.7	2.8		
	Avg 2 & 3	**212.6**	**2.8**	**1 5/16"**	**60**
3 - 1 yd from 2nd base to 1st base	1	153.4	4.1		
	2	169.6	3.8		
	3	173.6	3.5		
	Avg 2 & 3	**171.6**	**3.7**	**1 7/16"**	**60**
4 - 1 yd from 3rd base to 2nd base	1	155.1	4.7		
	2	169.1	4.3		
	3	174	4.4		
	Avg 2 & 3	**171.5**	**4.4**	**1 1/4"**	**60**
5 - 1/2 way between 2nd and 3rd base, 1/2 way between baseline and fence line	1	127.1	5.1		
	2	137.8	4.7		
	3	141	4.4		
	Avg 2 & 3	**139.4**	**4.6**	**1 9/16"**	**60**
6 - 1/2 way between 2nd base to back fence, Center field	1	120.8	5.3		
	2	127.1	4.6		
	3	134.9	5.3		
	Avg 2 & 3	**131**	**4.9**	**1 5/8"**	**60**
7 - 1/2 way between 1st and 2nd base, 1/2 way between baseline and fence line	1	111.2	5.7		
	2	120.3	4.9		
	3	123.6	5.3		
	Avg 2 & 3	**122**	**5.1**	**1 5/8"**	**60**
8 - 20' from back fence, in Left field, in line with 2nd base	1	128	5.2		
	2	137.9	4.6		
	3	133.5	4.2		
	Avg 2 & 3	**135.7**	**4.4**	**1 5/8"**	**60**
9 - 35 yds behind 3rd base, 2 yds outside of 3rd baseline	1	126.7	4.8		
	2	133.4	4.3		
	3	139.3	4.2		
	Avg 2 & 3	**136.4**	**4.2**	**1 1/2"**	**60**
10 - RH batter's box, center	1	114.3	5.5		
	2	127.9	4.6		
	3	131.3	5.3		
(inside new turf)	**Avg 2 & 3**	**129.6**	**4.9**	**1 5/16"**	**60**

Test Date: 3/14/2013
Report Date: 3/17/2013

Sports Surface Impact Test Report

Wilsonville High School

Baseball Field # 2

Wilsonville, OR

Test Date: March 14, 2013 Report Date: March 17, 2013

Test Methods- **ASTM F 355:** Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. **ASTM F 1936:** Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field. Accelerometer last calibrated April 2012. Tests performed by Sabrina Thomas.

Surface Description: **Sprinturf - LSR -** sand/rubber infilled, artificial turf system baseball field. Field is inlaid with baseball and other painted sports in outfield. Homeplate and batters box area has new turf. Field is approximately 9 years old. **Field Average Gmax** is for 10 total drop locations.

Weather Conditions: Cloudy, cool

Max Temp.	52 degrees F
Min Temp.	52 degrees F
Humidity	62%

Summary of Results

Field Average Gmax	**187.2**
Field Max Gmax	248.12
Average Infill Depth "	1 1/4"

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperatures reported. Under the stated test conditions, some points did **not** meet the requirement of < 200 Gmax when tested in accordance with ASTM 1936.

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Thomas Testing Inc.

Sports Surface Impact Test

Wilsonville High School

Baseball Field # 2

Sprinturf

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
1 - 15' in front of Home plate, to Pitcher's mound	1	186.6	3.7		
	2	199.6	3.3		
	3	214.8	3		
	Avg 2 & 3	**207.2**	**3.1**	**1 1/4"**	**50**
2 - 2 yds from 1st base to 2nd base	1	220	3.7		
	2	247.3	3		
	3	249.1	3.3		
(2' off of new turf)	**Avg 2 & 3**	**248.2**	**3.2**	**1 1/8"**	**50**
3 - 1 yd from 2nd base to 1st base	1	216.4	4.1		
	2	241	3.5		
	3	237.4	3.2		
	Avg 2 & 3	**239.2**	**3.3**	**1 3/16"**	**50**
4 - 1 yd from 3rd base to 2nd base	1	194.5	4		
	2	210.5	3.5		
	3	215.4	3.8		
	Avg 2 & 3	**212.9**	**3.7**	**1 3/16"**	**50**
5 - 1/2 way between 2nd and 3rd base, 1/2 way between baseline and fence line	1	150.8	5.3		
	2	170.4	4.4		
	3	177.3	4.6		
	Avg 2 & 3	**173.9**	**4.5**	**1 5/16"**	**50**
6 - 1/2 way between 2nd base to back fence, Center field	1	149.5	4.9		
	2	160.8	4.7		
	3	166.4	4.8		
	Avg 2 & 3	**163.6**	**4.8**	**1 1/4"**	**50**
7 - 1/2 way between 1st and 2nd base, 1/2 way between baseline and fence line (1/2 way soccer hash & top of penalty box)	1	151.9	5.5		
	2	171.6	4.3		
	3	173.5	4.3		
	Avg 2 & 3	**172.6**	**4.3**	**1 3/16"**	**50**
8 - 20' from back fence, in Left field, in line with 2nd base	1	143.2	5.3		
	2	156.4	4.6		
	3	161.3	4.3		
	Avg 2 & 3	**158.9**	**4.5**	**1 7/16"**	**50**
9 - 35 yds behind 3rd base, 2 yds outside of 3rd baseline	1	146.4	4.9		
	2	159.9	3.8		
	3	163.7	4.7		
	Avg 2 & 3	**161.8**	**4.3**	**1 5/16"**	**50**
10 - RH batter's box area, center	1	119.6	5.4		
	2	129.7	3.8		
	3	136.9	4.1		
(inside new turf area)	**Avg 2 & 3**	**133.3**	**4**	**1 7/16"**	**50**

Test Date: 3/14/2013
Report Date: 3/17/2013

Thomas Testing Inc.

Sports Surface Impact Test Report

Wilsonville High School

Baseball Field # 3

Wilsonville, OR

Test Date: March 14, 2013 Report Date: March 17, 2013

Test Methods- **ASTM F 355:** Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A. **ASTM F 1936:** Standard Specification for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field. Accelerometer last calibrated April 2012. Tests performed by Sabrina Thomas.

Surface Description: **Sprinturf - LSR -** sand/rubber infilled, artificial turf system baseball field. Field is inlaid with baseball and other painted sports in outfield. Homeplate and batters box area and 1st base have new turf. Field is approximately 9 years old.

Field Average Gmax is for 10 total drop locations.

Weather Conditions: Mostly cloudy, cool

Max Temp.	54 degrees F
Min Temp.	53 degrees F
Humidity	62%

Summary of Results

Field Average Gmax	**167.2**
Field Max Gmax	205.1
Average Infill Depth "	1 5/16"

Test results reported herein reflect the conditions of the tested field at the time of testing and at the temperatures reported. Under the stated test conditions, some points did **not** meet the requirement of < 200 Gmax when tested in accordance with ASTM 1936.

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Synthetic Turf Council STC CERTIFIED IND. TEST LAB

Thomas Testing Inc.

Sports Surface Impact Test

Wilsonville High School

Baseball Field # 3

Sprinturf

Test Point - Test Description (ASTM F355/F1936-10)	Drop #	GMAX	tmax ms	Infill Depth "	Surf ºF
1 - 15' in front of Home plate, to Pitcher's mound	1	172.4	4.2		
	2	186.8	4.1		
	3	191.6	3.8		
	Avg 2 & 3	**189.2**	**4**	**1 1/8"**	**50**
2 - 1 yds from 1st base to 2nd base	1	178.5	4.5		
	2	203	3.8		
	3	207.2	3.5		
	Avg 2 & 3	**205.1**	**3.7**	**1 1/8"**	**50**
3 - 1 yd from 2nd base to 1st base	1	178.5	4		
	2	191	4.4		
	3	194.9	4		
	Avg 2 & 3	**193**	**4.2**	**1 3/16"**	**50**
4 - 1 yd from 3rd base to 2nd base	1	177.7	4.2		
	2	194	4.1		
	3	188.2	3.4		
	Avg 2 & 3	**191.1**	**3.8**	**1 5/16"**	**50**
5 - 1/2 way between 2nd and 3rd base, 1/2 way between baseline and fence line	1	124.6	5.4		
	2	143.1	5.7		
	3	147.2	5.1		
	Avg 2 & 3	**145.2**	**5.4**	**1 5/16"**	**50**
6 - 16 yds behind 2nd base infield to back fence, Center field (also girls lax center circle, center)	1	142	4.8		
	2	158.7	4.3		
	3	164.8	4.5		
	Avg 2 & 3	**161.7**	**4.4**	**1 5/16"**	**50**
7 - 1/2 way between 1st and 2nd base, 1/2 way between baseline and fence line	1	122.6	5.9		
	2	136.1	5.5		
	3	142.1	4.7		
	Avg 2 & 3	**139.1**	**5.1**	**1 3/8"**	**50**
8 - 22' from back fence, in Left field, in line with 2nd base (also girls lax goal crease center)	1	137	5.8		
	2	151.8	5.1		
	3	155.9	4.8		
	Avg 2 & 3	**153.8**	**4.9**	**1 7/16"**	**50**
9 - 35 yds behind 3rd base, 2 yds outside of 3rd baseline	1	140.6	5.2		
	2	150.1	4.2		
	3	161.4	4.2		
	Avg 2 & 3	**155.7**	**4.2**	**1 7/16"**	**50**
10 - RH batter's box , center (new turf in homeplate - batter's box area)	1	121.5	5.6		
	2	136.2	4.8		
	3	139.9	4.9		
	Avg 2 & 3	**138.1**	**4.9**	**1 5/16"**	**50**

Test Date: 3/14/2013
Report Date: 3/17/2013

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