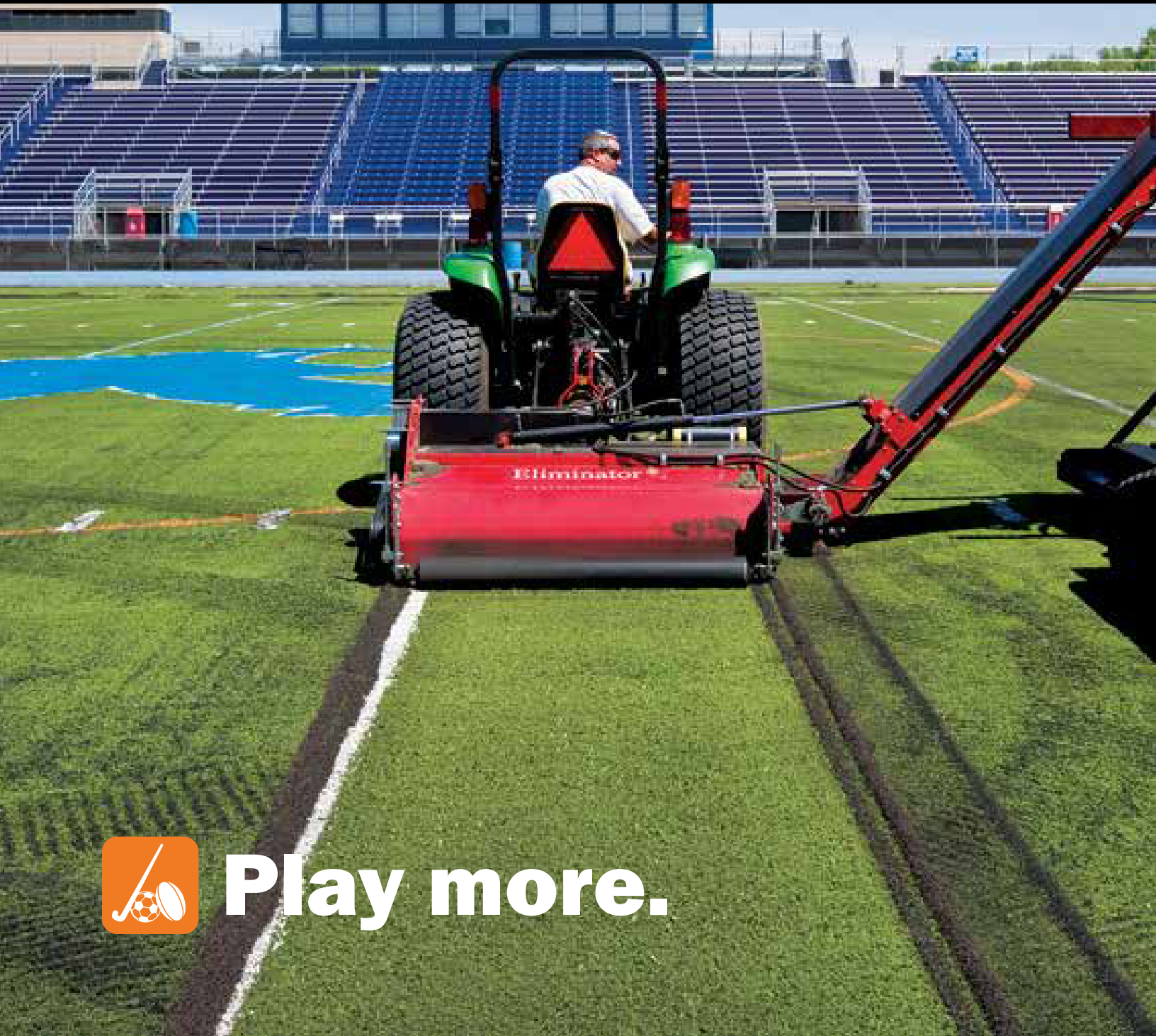




MAINTENANCE
Guidelines



Play more.

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INTRODUCTION

To maximize the investment of an Xtreme Turf field, proper maintenance is essential. Where field owners fail to do the necessary work on a regular basis, fields will start to look ragged, and performance will decline. If fields are not or insufficiently maintained, guarantees will become void and performance criteria may no longer be met. We hope this booklet will give you a clear overview of the general activities required to maintain your Xtreme Turf field. Please note that these instructions do not take into account possible differences due to climatic circumstances and varied intensity of use. Where and if needed, additional instructions will be given individually by our local representative.

PROTECTING YOUR FIELD

- Do not perform any maintenance or other activity that may invalidate the warranty. Make sure in advance any maintenance equipment, personnel, techniques, repairs and materials comply.
 - Budget approximately one hour of inspection and maintenance for every 10 hours of playing time.
 - Monitor the performance of your field throughout its useful life with periodic field testing and frequent inspections.
 - The following may damage the Xtreme Turf: accidents, vandalism, spiked shoes, animals, wire brushes, fires, fireworks, floods, lightning strikes, chemical reactions, the use of dry cleaning fluids or improper cleaning methods, high pressure sprays exceeding 500 psi, storage of heavy materials on the field, non-approved infill materials, and non-approved artificial lights.
 - Certain activities may damage the Xtreme Turf such as bicycle traffic, track and field events, golf activities, concerts, etc. You may consider consulting with a company that sells field protection.
- Suitable footwear should always be used. Metal spikes should be prohibited. For long-pile infilled 3G surfaces, moulded or screw in cleats/studs are preferred. Blades and flat-soled shoes should be avoided as they greatly intensify the wear and tear on synthetic turf. For sand-based 2G surfaces, flat-soled shoes or purpose built dimpled soles will deliver the best experience.
 - Perform routine inspections, repairs and maintenance, and more extensive field rejuvenation, on an as needed basis.
 - Evenly distribute usage and resulting wear across the pitch to prevent accelerated wear in certain areas. (This applies mainly to fields with cross-field play).

WHY MAINTENANCE IS A MUST

**Keep your Xtreme Turf field
in good condition**

**Avoid degradation of heavily
used playing areas and
compaction of the infill**

**Live up to your field's
warranty requirements**

**Maximize the appearance,
playability and longevity of
the Xtreme Turf system**



ROUTINE MAINTENANCE

The basic components of effective, routine maintenance include the following. These should be performed on a daily, weekly and/or monthly basis, depending on the level of use.

- Inspections and minor repairs to avoid playing hazards.
- Keep the playing surface clean and free of debris and contaminants.
- Groom the surface to preserve appearance, keep grass fibers upright, and maintain recommended and even infill levels.
- Maintain a detailed maintenance and activity log.

INSPECTIONS & MINOR REPAIRS

It is imperative to report any field damage immediately, and repair quickly to avoid an escalating problem.

Safety Hazards

To avoid permanent damage or safety hazards, check regularly for and address such critical items as foreign debris, low infill levels, open seams, deteriorating grass fiber, drainage concerns, etc.

High Use Areas

Pay special attention to the most heavily used areas (goal mouths, corner areas, etc.) and add new infill or redistribute infill to the recommended depth.

Seams and Joints

Check seams and joints where panels or field markings are joined together. Open joints can create a tripping hazard and should be immediately repaired. An open joint of 12 inches in length or less may not be an indication of seam failure—discuss with your field builder in advance for self-repair techniques and if self-repairs are recommended. Note that open joints of greater than 12 inches in length should be reported to and reviewed with your field builder.

KEEP THE SURFACE CLEAN

Remove all waste items, organic materials and contaminants on a regular basis. Every loose foreign object, no matter how small, can damage your Xtreme Turf by abrading the fibers and/or contaminating the infill. Leaves and other debris can eventually migrate into the system, inhibiting drainage and causing infill compaction. Animal waste can encourage the growth of algae, weed or moss growth. Brushing will help deter organic growth, as will the use of approved fungicides and antibacterial treatments.

Food and Beverage

Don't allow food, drink, chewing gum or tobacco products on the field, and encourage drinks to be consumed away from the play area. Provide ample litter containers on site.

Chemicals and other liquids

Do not use cleaning chemicals containing alcohol or acetone solvents. Take care to avoid spilling any petroleum-based liquids including fuel onto the surface.

- Post signage and rules for the use of the field to avoid contamination and damage.
- If the field is in a flood plain, cover it at the threat of flooding with a tarp designed to limit silt and debris from contaminating the field surface.
- Route field access traffic in such a way as to minimize the tracking of mud and dirt onto the field.

GROOM THE SURFACE & MAINTAIN INFILL LEVELS

Regular brushing (done early in the morning when the fibers are cool) helps to maintain uniform infill levels, keep the grass fibers upright, remove debris, and improve the field appearance and long-term performance.

REMOVAL OF

Foreign Objects & Contaminants

Chewing gum can best be removed by using either ice or an aerosol to freeze the gum, which can then be chipped or broken off the turf fibers.

If gum has been smeared across fibers, peanut butter will soften the gum so that it can be wiped off.



Sunflower seeds, peanut shells, pistachio shells, etc. should be removed by using a hand held or back pack blower.

To minimize the movement of infill, do not point nozzle directly into the turf. Use minimal throttle to decrease the volume of air.



Metal objects should be picked up by a magnet that is attached to grooming and brushing equipment.



Moss, mold, or algae may appear in underutilized areas of the synthetic turf, particularly if it is in shade and damp. Specialty products are available. Weeds are easily removed by hand if the infestation has not become too excessive. Treatments are also available.

Keep In Mind:

- Infill should be 15mm below the fiber tips (for 3G surfaces.)
- Improper infill levels or compacted infill can lead to low shock absorption and cause safety concerns.
- High use areas are prone to greater infill displacement.
- Brushing, drag mats and proper rakes can help redistribute infill evenly.
- Infill may accumulate at the edges of a field. If so, clean the material prior to brushing back into the main field.
- Using an infill depth gauge or a nail and tape measure on a grid pattern is the preferred way to measure infill depth and consistency.

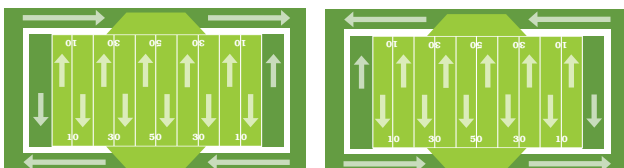
Equipment

Use a static brush for general infill leveling and to stand up the grass fibers. A mechanical sweeper or other specialty synthetic turf cleaning equipment should be used to remove surface debris. Do not use maintenance equipment before receiving proper use and safety training. Use only synthetic fiber bristles, not metal or wire bristles. Do not use 6-wheel vehicles.



Method & Direction

Using an average all-purpose vehicle, keep speed low and avoid sharp turns. It is most effective to brush the surface when it is dry.



The surface should be brushed in a number of directions, alternating the direction in consecutive activities, but generally in the direction of the individual panels to avoid crossing over the main seams. On different days, start at different locations so as to alternate the brushing direction for each panel.

Brush Height Setting

The optimum brush height setting will depend on the model and type of equipment, but will generally work best when the brush barely touches the tips of the turf. Do not set the brush so low that it digs into the turf pile or backing.

Frequencies

In general, the frequency will be related to the intensity of use; however, excessive brushing can cause fiber damage which over time will compromise the field's performance characteristics and longevity. (See *maintenance schedule on following page.*)

MAINTENANCE ACTIVITY LOG

Keep a maintenance activity log containing the following information:

- Type of activity that takes place on the field
- Estimated number of hours the field is used per week
- Average number of participants per hour
- Type of maintenance activity performed
- Remarks/Notes
- Signature of maintenance supervisor

SEMI-ANNUAL, ANNUAL & AS NEEDED Situations Requiring Comprehensive Maintenance

Over time, the following situations may arise which will require the need for more comprehensive maintenance:

- Grass fibers become significantly bent, creased and flat.
- The playing surface becomes hard and compacted. While common to infilled systems, this impacts the players and also can create drainage issues.
- Dirt, debris and metal accumulate on or within the

Suggested Maintenance	Playing hours per week:				Reason:
	< 10 hrs	10-20 hrs	20-30 hrs	30-40 hrs	
Litter removal	daily	daily	daily	daily	Avoid damage by paper, bottles, chewing gum, athletic tape and such.
Refilling heavily used areas	weekly	weekly	daily	daily	Keep infill even and at the right level.
Brushing heavily used areas	weekly	weekly	weekly	daily	Keep fibres in the optimum upright position.
Total surface brushing	every 2 weeks	every 2 weeks	weekly	weekly	Keep surface in perfect condition.
Leaves, twigs, moss, weed removal	weekly	weekly	weekly	weekly	Avoid pollution and beginning compaction.
Seams inspection	monthly	monthly	monthly	monthly	Avoid field damage by faulty seams.
Specialist maintenance (or as needed)	yearly	yearly	every 6 months	every 6 months	Maintain playing properties and performance.

The above maintenance schedule is meant to assist in clarifying how the number of playing hours influences maintenance needs.

- system despite routine maintenance.
- Seams become loose or panels shift creating a safety hazard.
- Infill levels become uneven, particularly in high wear areas, such as in front of soccer goals.

COMPREHENSIVE MAINTENANCE

Comprehensive maintenance may include the use of specialty maintenance equipment by trained professionals. Depending upon the situation, the following actions may be performed:

Professional Field Inspection & Corrective Action

Assess the field surface, identify weak or loose seams and inlays, and repair the damage. Sport performance testing may also be desirable.

Decompaction Of Infill

Infill decompaction is important for improving shock

absorption and synthetic turf drainage. Use only equipment specially designed for this purpose.

Restore Infill levels

Infill levels may decrease due to a variety of reasons—wind, storms, or may leave the field on players clothing or shoes—and over time the levels may need to be replenished. Replacement infill should meet the field’s specifications.

Metal Removal

Use a magnet attached to your maintenance equipment to remove ferrous metal objects from the field.

Weed & Pest Treatment

Treat with herbicides or pesticides, as required.

FIELD REJUVENATION

Field rejuvenation is a deep compaction and deep cleaning of your field’s infill, and should be performed on an as needed basis. As fields mature, the accumula-

tion of unwanted or foreign contaminants is inevitable, especially deep within the infill layer. Events, such as flooding or dust storms, may introduce extreme levels of contamination. When a field begins to show signs of deep compaction, such as high g-max readings or significant drainage issues, full field rejuvenation may be desired. These maintenance services are performed using specialized field rejuvenation equipment and personnel and may include:

- Removal of the vast majority of dirty and contaminated infill to get rid of embedded foreign matter that has contaminated the infill system
- Untangling matted and compacted fibers
- A combination of cleaning of the original infill and/or re-installation of new infill
- Removal of dust, debris and application of a disinfectant to treat for bacteria, if the original infill will be processed and cleaned
- Use special equipment that combines mechanical brushing, suction, and an infill return system to remove surface debris and embedded contaminants.

SPECIAL CONSIDERATIONS

Field Markings

Temporary paints can be used if formulated specifically for synthetic turf. Ideally, paint should be applied only to the turf fibers, and not into the infill; although this will not be possible if infill levels are too high. Remove and reapply paint after a maximum of four applications to avoid build-up. Service companies with specialized equipment are available that can paint and remove lines, logos, end zones, graphics, etc.

Heavy Rain

If significant ponding occurs after heavy rainfall, it may be an indication of a variety of factors, such as clogged or damaged underground drain pipes or discharge outlets, base unevenness, debris in the infill, or infill surface tension. For infill surface tension, a surfactant

or laundry fabric softener can be used to break the surface tension allowing the turf to drain.

Snow & Ice

Generally snow and ice should be left to melt and drain off the system without assistance. If the sun is out and the ice or frost is not excessive, it tends to melt rapidly, especially when players are on the field.

At times, however, it is necessary to remove snow or ice to make the field playable for a scheduled event. The working principle for removing snow is to do so as near game time as possible. Use only pneumatic tires on equipment used for the removal of snow and ice. If a snow plow is used, make sure the blade is guarded with PVC pipe and corner elbows or rubber tips, and the height is adjusted to leave $\frac{1}{4}$ - $\frac{1}{2}$ " inch of snow on the surface. The remaining snow should be left to melt in the sunlight as brushing the remaining snow may also remove the infill. Avoid using a tarp on the field during freezing weather. Tarps, unless vinyl or poly-coated, can freeze to the surface, and will be very difficult to remove.

In some cases it may be necessary to use a weighted lawn roller over the field to break up ice. The broken ice can then be swept off the field.

Static Electricity

Surfactants like liquid laundry fabric softeners can reduce static electricity.

Stain Removal

Most stains can be removed easily with a solution of hot, but not boiling, water and a mild household detergent. Brush the stain with a stiff bristle brush, scrub the area with soap and water, rinse with clean water, and pat dry.

Equipment Leaks or Spills

Prevent leaks or spills by checking equipment and its components thoroughly before use on turf; do not fill fuels, oils, fluids while equipment is on the field. Wipe any excess grease from any/all fittings.

HYDRAULIC FLUID & MOTOR OIL: Petroleum-based spills can damage the synthetic turf. Use only the newer biodegradable fluids, if available for your equipment—don't use petroleum-based fluids. If a leak occurs when using petroleum-based fluids, use spill leak towels to soak up the majority of the fluid. Vacuum out the infill in the affected area, use a solution of household dishwashing liquid and water to break down and clean any remaining fluid from the turf. Once the turf is clean, you will need to install new infill.

GASOLINE AND DIESEL: Don't fill equipment while it is on the turf. Do not overfill. Use a catch pan while filling to prevent accidental spillage.

GREASE: Use grease sparingly and wipe any excess off of all fittings, bearings, chains, etc.

VEHICLES

- Do not park vehicles on the field, especially in the heat of the day, or leave vehicles on a wet or hot field for long periods of time.
- Engine exhausts should not be faced down toward the playing field, and a hot muffler or exhaust pipe should not touch the surface.
- Use lighter vehicles with LGP (Low Ground Pressure) tires with round edges to prevent rutting. Do not use cleated or traction tires.
- Heavy vehicles (over 300 pounds) should have a maximum tire pressure of 35 psi.
- Make wide, not sharp, turns, and only when the vehicle is in motion. All vehicles should move at slow speeds. Avoid abrupt and sudden braking, as well as sudden acceleration or spinning of the wheels, especially on wet surfaces.
- All vehicles must be checked before use on the field to determine if they are leaking oil or gas. If so, they should be repaired before entry onto the field.



Concentrated Heavy Use Projection Stages and Special Events

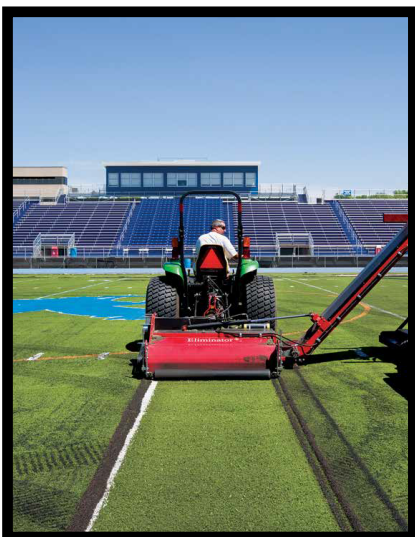
Stage or other set-ups for special events or activities, such as graduations, are normal. Proper field protection of the synthetic turf must be provided to prevent damaging it. Use plywood, interlocking plastic panels or similar weight distributing materials under all chairs and tables—consult the field builder or a field protection company. Use field protection that does not have a dimensional profile, e.g., corrugation, because the profile will transfer onto the turf and require heavy grooming to remove. No anchoring spikes, posts or footing should be driven into the turf. Once the field protection is removed, the area should be groomed and swept with a magnet to remove any misplaced or dropped nails, screws, etc.

Helicopter Landings

Helicopter landings may be necessary to remove an injured player, for example and the rotor wash will likely cause infill to be displaced. As soon as possible evaluate the area and groom or brush as needed.

Protecting During Renovations

Protect the synthetic turf as needed with approved tarps when nearby renovations, e.g., running track recoats or installations, cleaning or painting of bleachers, construction or repairs to lighting, renovations of adjacent natural turf fields, etc., may cause harm to the synthetic turf. Contact the field builder for a protection recommendation. Improper plastic protection will cause heat damage.



TURF MAINTENANCE LOG

DATE	DESCRIPTION/NOTES	FIELD GROOMING	GMAX TEST REPORT	30 MINUTE MAINTENANCE TRAINING SEMINAR	MAINTENANCE EQUIPMENT INSPECTION	20 POINT FIELD SAFETY INSPECTION	MAINTENANCE CERTIFICATE ISSUED	GENERAL CLEAN AND MINOR STAIN REMOVAL	24 HOUR EMERGENCY REPAIR SERVICE	FIELD INFILL CARIFICATION	FIELD SPRAY TREATMENT	FIELD INFILL REMOVAL	PRINT NAME	INITIALS

20 POINT FIELD SAFETY INSPECTION	
01	20 point infill depth check
02	Inspection of all seams
03	Inspection of hash marks
04	Inspection of numbers
05	Inspection of Arrows
06	Inspection of Logos
07	Inspection of endzone lettering
08	Inspection of five yard lines
09	Inspection of perimeter lines
10	Inspection of sideline areas
11	Inspection of secondary sports lines
12	Inspection of crease and goal areas
13	Inspection of entrance attachments
14	Inspection of surface area drains
15	Inspection of field insets
16	Inspection of field surface perimeter attachment
17	Inspect all lines for straightness
18	Inspect infill depth along field surface perimeter
19	Visual planarity inspection
20	Inspect entire area for irregularities and non-uniform areas