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# FACILITY & OPERATIONS

surface prior to brooming may help to protect it from excessive wear.

Another form of grooming is scarification to prevent and/or remediate compaction. Increased compaction in the field will lead to poor ball bounce, decreased drainage, poor footing and possibly a greater incidence of player injury. Testing has shown that scarification reduces G-max considerably and improves traction. Generally, a sweeper or greens groomer is used for scarifying synthetic turf fields. It is important to minimize compaction from the outset by keeping the field clean so that dirt and other contaminants do not filter into the infill, filling up the voids. Preventive maintenance also should include protecting the field from vehicles not designed for athletic fields such as pick-up trucks, loaders and concert cranes.

## Maintenance equipment

As these fields become more popular, turf managers are discovering new and better

practices and manufacturers are creating specialized equipment for field maintenance. A number of manufacturers make cleaning equipment specifically for use on synthetic turf. These machines may perform one or more cleaning operations and vary in their aggressiveness. It is important to consult the manufacturer of the surfacing system regarding appropriate maintenance equipment.

Machinery used on or near the turf must be well maintained so that it does not leak oil or other fluids onto the surface. It should feature wide soft tires, sometimes called "turf tires," and should be kept moving slowly, making wide turns, so as not to move the aggregate base. Heavy equipment should be prohibited. Bobcats, skid-steers, backhoes and other heavy-duty machinery may cause ruts in the sub-base that will be reflected and visible in the turf. Additionally, this type of machinery may break the glue bond between the turf and an e layer, where present. Maintenance equipment should be stopped or parked off the turf surface.

Heavy equipment should be prohibited. Therefore, when the field is used for alternative events requiring staging or seating on field, set up cranes must work from off field and chairs should be set on plywood, mats or plastic tiles to distribute weight and prevent divots. If they occur, divots must be repaired by cutting out the turf, adding or redistributing base material and replacing the turf. Simply adding additional infill to bring up the level will create a soft spot which players cannot see, constituting a hazard.

At the end of the playing season, inspect all field equipment and order any replacement parts so that the equipment can be repaired during the off season. If new equipment is needed, the end of the season may be a good time to shop for bargains.

## Seam failures and tears

Seams, whether in the field or in permanent markings, should be checked regularly to insure that they remain secure. It is recommended that seam failures be called to the



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attention of the installer for repair. However, if the warranty has expired, a number of specialty companies offer seam repair services.

## Irrigation systems

While synthetic turf fields do not require irrigation, they benefit from watering in several ways. Watering helps to settle the infill, control static electricity, and increase the consistency of ball roll and bounce. Players have stated a preference for fields that have been watered prior to play because they feel it makes the surface slightly firmer. During hot weather, irrigation can help to cool synthetic turf fields, though the effect is temporary.

Ideally, an irrigation system should be included in the field design. Water pressure, water volume, sprinkler radius, friction loss, prevailing winds and other environmental conditions will affect the design of a suitable layout for an irrigation system and the type or types of sprinkler heads to be used, though most commonly large radius sprinkler heads are chosen.

Water lines must supply sufficient volume to each sprinkler head to provide adequate coverage. Galvanized steel, copper, polyethylene or PVC pipe can be used for water lines. In designing any irrigation system, caution should be exercised in determining the location, elevation and type(s) of sprinkler heads to minimize any potential hazard to players.

Irrigation systems can be connected to timers that automatically turn the sprinklers on and off.

Where irrigation has not been included in the field design, water cannons are an option. Six cannons, placed at midfield and at the 30-yard line on each side, will water an entire field. The amount of water required for optimum benefit will vary from field to field.

## Marking

On synthetic turf, field markings can be permanent or temporary. Permanent markings are either tufted in at the factory or cut and inlaid during installation. Where the field will

be used most of the time for a single sport, permanent lines are generally used and represent one of the most obvious benefits, since marking natural grass fields each time they are used is time consuming.

If the field is to be used for multiple sports, permanent lines can be painted over and obscured and/or temporary lines painted on. Typically in high schools, football and soccer markings are permanently tufted or inlaid, while markings for lacrosse are painted on after the final football game in the fall for spring use. Because the markings for boys and girls lacrosse are different, two different colors will be used, often red and blue.

Historically, paints used for this purpose have been difficult to remove. They have stained fibers and infill, and left "ghost" images after cleanup. Paint residue also can cause compaction and increase G-max. Repeated scrubbing is necessary to remove temporary markings has caused increased wear of fibers in those areas. Now however,

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# FACILITY & OPERATIONS

special paints are being developed for this purpose; these new paints break down over time, are easily cleaned and leave no residue.

While field marking should be in accordance with the manufacturer's guidelines, general recommendations for minimizing problems with paint include:

- Choose the right paint for the job. Ask for a recommendation from the manufacturer of your synthetic turf system.
- Use a paint machine that allows for as low a psi as possible.
- Do not drive paint into the infill.
- Prior to cleaning, lightly brush the area so that the fibers are vertical and the infill is loosened.
- When possible, use more water and cleaning agent, less scrubbing.
- Extracting paint and cleaning solutions with a water hog or other extractor will help to minimize paint residue left behind. Chalk lines are sometimes used, but tend to leave a lasting powder spread and are not

recommended. Marking compounds for natural grass should not be used.

Permanent lines require no special attention except that, if cut in as seams, they should be checked regularly.

## Inspection

Where fields are used seasonally, a comprehensive pre- and post-season inspection is recommended. Where fields are used heavily year round, regular inspections at an appropriate interval should be scheduled.

A thorough inspection should include at a minimum:

- Seams. Insure that all seams, whether in the field or in logos or markings, are tight. Every place where one color of turf is inlaid into another area is an opportunity for failure. Loose seams can be a tripping hazard and will continue to deteriorate until corrected.
- Infill. Check rubber depth, especially in areas of wear such a corner kick areas, lacrosse goals, midfield between the hash marks.

Redistribute infill or topdress as necessary.

- Patterns of wear. Wherever possible, the cause of wear should be determined. Is wear caused by inadequate maintenance, infill moving or compaction? Before the problem can be corrected, the cause must be determined.
- Border systems. Depending on the system, border systems can move, crack, heave or simply fail.
- Drainage systems. Perimeter drains, catch basins and retention ponds only function if the water moves. They can become clogged and should be checked.
- Line movement. In training areas or in areas where band practice results in repeated movement in the same direction, lines may move.

## Removing snow and ice

Snow and ice are not harmful and can be permitted to melt through the surface. In fact, if possible, snow removal should be avoided. If

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snow or ice must be removed for scheduled play, consult the manufacturer of your turf system for approved procedures.

Brushes, wooden, rubber or plastic scrapers are sometimes used. Metal shovels or scrapers should not be used, nor should rock salt. Some manufacturers claim that calcium chloride, urea and other chemical ice-melting products are safe for the turf. However, they may be retained in the turf surface and until they rinse away, will burn players who are exposed to them.

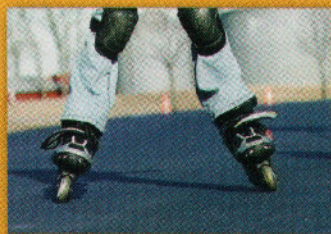
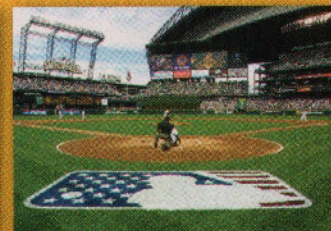
For power snow removal, use a rubber tipped blade set above the turf, a rolled blade or a blade covered by a piece of split PVC pipe on a small Gator-type utility vehicle with turf tires. Do not use ordinary snow removal equipment. It is not necessary to remove all the snow. A layer 1/2" - 1" thick will quickly melt in sunlight.

During freezing rain or freezing temperatures following rain, water within the infill may freeze. The field may be used when frozen, as long as it is not slippery and footing

Daily	Weekly	Monthly	Annually
<p><b>Remove leaves and trash.</b></p> <p><b>Hand pull weeds.</b></p> <p><b>Spot clean spills.</b></p> <p><b>Set up events – marking, moving benches. Setting up goals.</b></p>	<p><b>Check seams and inlaid markings and report any failures to installer.</b></p> <p><b>Brush the surface to redistribute infill and maintain vertical fibers.</b></p>	<p><b>Treat weed infestation, moss, mold or algae.</b></p> <p><b>Check for over-compaction and groom as necessary. Inspect, test.</b></p>	<p><b>Treat moss, mold and algae.</b></p> <p><b>Topdress with infill, as required by O&amp;M manual.</b></p>

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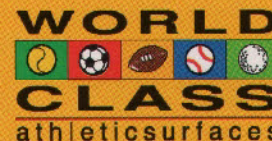
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# FACILITY & OPERATIONS

<b>March</b>	<b>Inspect field. Sweep. Groom.</b>	<b>August</b>	<b>Inspect. Brush lightly. Sweep. Paint for fall sports if not sewn in.</b>
<b>April</b>	<b>Brush lightly. Sweep. Paint for spring sports if not sewn in.</b>	<b>September</b>	<b>Brush lightly. Sweep.</b>
<b>May</b>	<b>Brush lightly. Sweep.</b>	<b>October</b>	<b>Brush lightly. Sweep.</b>
<b>June</b>	<b>Brush heavily. Sweep. Groom.</b>	<b>November</b>	<b>Brush heavily. Sweep. Groom.</b>
<b>July</b>	<b>Sweep. Test.</b>	<b>December</b>	<b>Inspect field.</b>

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- Reduces G-Max
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- Eliminates standing water
- Strong enough for vehicles
- Below entire playing surface
- Air void for heating and cooling
- Allows flushing and sanitizing
- Maintains level playing surface

### Natural Turf Benefits:

- Drains remarkably faster
- Reduces installation time
- Reduces irrigation requirements
- Extends playing season
- Eliminates standing water
- Reduces maintenance costs
- Below entire playing surface
- Superior perched water table
- Greater root mass
- Gas circulation through soil



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is adequate; however, care should be exercised as the fibers will be brittle and more subject to damage and the shock absorption of the surface will be reduced. Player safety should be the primary concern.

A synthetic turf field can be prevented from freezing or from accumulating snow with a subsurface heating system, composed of miles of tubing filled with water and glycol. While a significant cost, the inclusion of a heating system may significantly increase the number of days the field can be used in extreme climates and may reduce maintenance and extend the life of the field.

## What to expect of a new surface

It may take up to twelve months for the infill to settle completely into the fiber of the synthetic turf surface. Regular grooming will assist with settlement. New rubber will generate static electricity. Rubber will stick to players' skin (sweat attracts crumb rubber), clothing, even mouth guards, and will collect in their shoes. Over time, rain generally solves the problem and pre-game watering helps, but turf manufacturers recommend anti-static products to minimize loss of rubber and the inconvenience. Many grounds managers spray their new fields with diluted fabric softener prior to play but not right before a game as the wet solution may make the surface slippery. Please note that this is outside the product's labeled and intended use, though it appears to be effective. Crumb rubber is an eye irritant, as well. Trainers should keep a first aid kit including eyewash on hand.

Until the field settles and the fibers fibrillate, expect some movement of infill. Rubber particles may accumulate in corners or the bleachers or any other area that traps them.

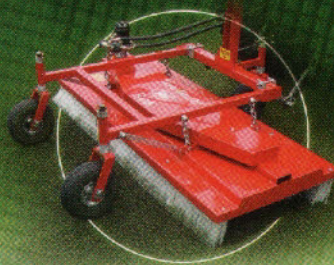
## Topdressing

The owner's maintenance guidelines may suggest topdressing the surface with additional infill during its lifetime to retain performance characteristics and to extend the life of the field. Over time, infill will move, settle and leave the field on shoes, uniforms and maintenance equipment. Restoring lost infill will help to maintain the G-max rating, along with consistent ball roll, bounce and other performance characteristics.

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# FACILITY & OPERATIONS

will cover the field to a depth of 1/4". Various equipment can be used for this purpose - either topdressing equipment designed for use on natural turf (golf courses may have this equipment) or newer equipment specially made for use on synthetic turf. Once the infill material is spread, it must be brushed into the fibers.

Ideally the identical material, whether rubber or rubber/sand mix, from the same source as used in initial construction should be used for topdressing. Consult your installer to locate infill for topdressing.

## Removing and replacing infill

Some manufacturers and/or turf managers suggest that removing and replacing all the infill can significantly prolong the useful life of the field. One question that arises is what to do with the used infill material that is removed. Because of the proliferation of synthetic turf fields at all levels, many companies are working on this problem.

## Testing

All fields should be tested when they are installed and at regular intervals of not more than one year during use. Testing should be performed during the season when play actually occurs, not during the off season, if any. Testing should be done by an independent testing laboratory and should include the center of the field, the hashes and the sidelines at a minimum.

Most attention has focused on G-max testing. Industry-wide accepted values for G-max safety call for a newly installed field to yield an average of 100 Gs at an ambient temperature of 70 degrees F and G-max measurements should not exceed 200 Gs at any time during the useful life of the field.

## Drainage maintenance

Proper drainage helps to remove water from the surface and redirects water that may flow over or under the turf from surrounding areas. Incorporating proper drainage alone is not

sufficient to prevent problems. Drainage must be maintained.

Swales, French drains and catch basins can become clogged by vegetation and silt. Keeping vegetation properly trimmed, neutralizing roots or using root barriers, and/or occasionally cleaning systems with a pressure hose may help to keep the water flowing. Including cleanouts in system design facilitates regular maintenance.

If clogs cannot be cleared with a hose, it may be necessary to locate them and repair them by excavation. Most obstructions occur where there is a change in direction or elevation. Identifying those areas on a drainage plan will be important should a problem occur.

## Fence maintenance

Regularly check the fence fabric for damage. Touch up nicks and scratches in vinyl or other coatings. Ensure that all sharp edges and protruding wires are bent back or removed to pre-

*Continued on page 32*

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Sunbird	5.1
Transcontinental	5.1
Princess 77	5.1
Lapaloma	4.9
Mohawk	4.5
Arizona Common	4.3

LSD Value 0.3

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