

Advice for maintaining non-turf surfaces



» JAMES CORNELIUS, CSFM

IN TODAY'S WORLD of turf management the object of responsibility under one's feet has gone full circle. Long before the turf manager (as known and respected today) evolved, playing surfaces were typically the responsibility of the maintenance department, facility manager, owner, highway department and sometimes the custodial department (with the exception of the golf industry) and many fields were left in a state of despair.

Early in the evolution of today's turf manager their main responsibility was natural turf, with a few exceptions for artificial turf; these modern day turf managers, many from the golf industry, were regarded as leaders in the industry and they were challenged with a true learning curve. Not only did the ball change but the amount of feet on a square foot of turf became astronomical. With the onslaught of the new generation infill turf, the manager's responsibility and continues to grow with no end in sight.

Today our responsibilities range far and wide, from those who manage one or two playing surfaces to those having a multitude of trades to manage and yet we hardly look at what is below our feet. You will find those who are responsible for the turf are also responsible for the tennis courts, driveways, walkways, trails of all sorts, playgrounds, planting beds, retention basins and ponds, and some even building roofs, and a variety of indoor flooring materials from terrazzo to carpet, wood to vinyl and more. The knowledge or lack of

how each of these surfaces is constructed, maintained, affected and reacts is mind boggling and very broad much like natural turf depending on the climate. What may work or is available in the South may or may not work in the North, etc.

Dealing with the responsibilities of a manmade hard surface is not much different than a natural turf field, yet there are huge differences that make a difference. In natural turf we attempt to reduce compaction at all levels from construction to the end use, in manmade hard surfaces we want as much compaction that is possible and then some. Natural turf is a living environment, manmade hard surfaces are not. We paint natural turf for events as we do with some manmade hard surfaces. All surfaces require maintenance and care to survive the expected life span, although a good well designed, constructed natural turf field can last multiple generations or centuries manmade hard surfaces will not survive near as long.

Here is some advice about maintaining some different surfaces from my more than 30 years in business:

TENNIS COURTS

The typical foundation of most hard surface (not clay or grass) tennis courts is an asphalt base with sports surface applied and the systems available are far and wide as are the colors. They are multi layered, single component, compound component, etc. Like most things the uneducated users and the environment are the worst enemies; in cold regions the frost can lift net bases, and expansion/contraction, if not considered, will tear the sports surface. The surface needs to be compatible with the base system that allows water to infiltrate the layers; any separations, splits, holes, etc. need to be addressed immediately to prevent further damage.

Water lying on the courts (aka "bird baths") can discolor the surface or worst get between the base and top surface creating bubbles and/or wear areas that are not easily repaired. Once bird bathing occurs it requires more extensive costly repairs un-

less caught during construction. The surface will need to be recoated or refreshed depending on the wear and the environment.

Maintenance procedures should involve removing puddles and/or ponds of water as soon as possible, keeping the surface free of trash, leaves, food residues and all sport drinks and sodas as most of these will mark, bleach or stain the playing surface. In areas where cold weather and frost are persistent net tension should be released to prevent stress on the net posts, this will reduce the effects of frost heave.

Fencing around the courts if not maintained securely will begin to bow and stretch due to athletes leaning, striking and running into it. Most tennis courts have wind screening attached to the fencing and this should be done with breakaway ties (allows wind screen to break loose of fence) to prevent high wind damage by the added wind shear load from the added wind screens. Fence rails and gates are notorious places for yellow jackets to build nests and will need to be treated, removed or prevented to protect the users from stings. Gates should be installed to swing out to prevent damage to the playing surface, hinges should be adjusted annually or as needed and gate latches should be aligned and kept in good working order.

Cost estimate: One complete "new" court with fence, asphalt, concrete, nets and playing surface, \$27,300-\$34,100. Renovation of one court surface with no fencing or netting \$39.00-\$45.70 per square yard

WOODEN BASKETBALL FLOORS

These come in a variety of materials from natural maple tongue and groove, oak (yellow and white) tongue and groove to the newer engineered wood fiber materials. Most of these floors are installed on sleepers over concrete some having ventilation between the layers and some without. Natural wood floors are typically finished with an oil base epoxy or the newer latex based single and dual part epoxy finishes.

Installation of these floors requires that

moisture be non-existent in the concrete and use of a vapor barrier is recommended before installing the sleeper system on which you mount the floor. Once installation of the floors is complete and sanded smooth lines required for the end users are typically painted with a material to match the future finish. To obtain the best results the flooring must be dust free before applying the finish. Multiple coats will be required to protect the natural wood from liquid spills, cleaning practices and the daily usage.

It is crucial that during construction of the sleepers that adequate support be built in for the retractable bleacher sections if being installed or are already present.

The new pre-engineered wood floors are installed using the same techniques but have a higher tolerance for moisture between it and the concrete.

Maintenance procedures include daily dry mopping to remove trash, dust and debris. Wet or damp mopping (some finish manufacturers require or recommend that no water be used and will supply one of their water free cleaners) as needed to clean up spills and liquids, during heavy use times a disinfectant would be recommended using daily.

Annual screening (abrasive screens typically used under pads of a scrubbing machine) to remove the top layer of finish and provide a scuffed layer for new layers of finish to be applied.

Sanding off all the finish is rarely needed unless there is damage repairs done to the existing flooring or if new lines are required due to rules changes, mascot design changes, etc.

Cost estimate: Depending on the type of floor Polyethylene rolls begin around \$4.29 per square foot to the ½-inch thick wooden maple floor at approximately \$10.10 per square foot.

ASPHALT DRIVEWAYS

Asphalt driveways and parking lots are the second most used surfacing in the world, even though they vary in color or materials used to produce it they are typically stone, shells, and tar epoxy mixture that requires a lot of attention. If the sub soils and stone base are not properly com-

pacted and constructed the finish material will not survive the torture that today's vehicles and end users. Vehicles get heavier, their numbers are increasing daily and most are not constructed to help balance the weight and distribute it evenly across the wheels. These surfaces are susceptible to all of the weather from sun, rain, snow, sleet, freeze and thaw that Mother Nature dishes out.

Line painting is typically done with either a latex or petroleum based paint and can be very time consuming and labor intensive and like the asphalt is susceptible to all the weather even during the installation process, too hot and the paint dries too fast, too cold and it doesn't adhere, moisture or high humidity present and the drying time increases or worst yet a quick storm moves in and washes it off (if using latex paint)

Then there is the aesthetics' that have to be dealt with, when asphalt is first installed it typically has a rich color mostly black (some areas of the country it is red or brown) and as it ages the color wears off the top surface, this aging/wear process is natural since it is next to impossible to keep the stone coated with the binding agent that is used. Most people drive across the roads unaware of the color, and yet many demand that their driveways and parking lots be re-coated unaware that this is only a temporary fix to the discoloring. Recoating only minimally repairs the fine cracks which will come back each year and get bigger as each year passes, these cracks are typical of the expansion and contraction that the asphalt goes through each year and in many areas this occurs several times a day every day of the year.

Maintenance procedures. Although there is little to no daily or monthly maintenance there are tasks that need to be done from time to time. For example, line painting when needed or requested; recoating to give an aesthetically pleasing appearance; patching heavily alligator areas by removing the wearing course, sometimes the base and compacting new material back in.

Cost estimate: Typical driveway construction of a 6-inch stone base, 2-inch binder course with a 1-inch topping or wearing course will average approximately \$2.04 per square foot.

CONCRETE WALKWAYS

Concrete walks can be costly to install properly and yet easy to maintain, the biggest problem with them is found in the cold regions where frost heave and road salt plays havoc on the structural integrity of them. Without a proper stone base and good drainage the walks will lift during the winter season and sometimes they don't settle back or they settle too deep causing tripping hazards for those who use them.

Road salt will eat at the surface and cause pitting and spalding creating an unsightly surface as well as an uneven one. Many architects today require that all joints be sealed with a caulk and this can cause problems as well. When joints are sealed (typically with a butyl caulk) it traps moisture and does not allow for release when the concrete begins to heat up, this in turn creates a condensate that during the winter freeze can cause fracturing of the concrete slabs from the underneath side.

In the South many owners and contractors paint or stain the concrete with decorative designs and if improper materials are used this can cause the surfaces to become slippery when wet. The painted or stained designs also become problematic when it is time to repair the concrete or if the design becomes damaged.

Maintenance procedures, typically reduced or ignored in average work place; sweeping or blowing debris from them is usually only when needed. Removal of chewing gum and other debris quickly can help to preserve aesthetics. Repairing or replacing sections when the surface becomes pitted, deteriorated, or panels/sections have heaved or sunk will prevent tripping hazards

Cost estimate: Costs vary depending on amount of crushed stone, type of wire, amount of expansion material and the final finish of the product. Ranging from \$3.58-\$9.05 per square foot.

TRAILS

Trails can vary in types of materials from natural earth, concrete, blacktop, stone/screenings, wood chips, rubber, wood and asphalt shingle leftovers. The most important to remember when constructing and maintaining trails is the objective, the setting and who will be the end users. There

are too many different scenarios to list and explain and is best left to the engineers/architects/designers that designs them, in the case where they are built in house keep in mind that if trails are to be ADA compliant the construction and maintenance should be designed around or with ADA regulations and laws in mind.

Maintenance varies as much as the materials that can be used to make the trails, and yet with all trails (unless true nature trails) some items of concern are removing any/all trash in a timely manner, eliminating, preventing or repairing issues such as pot holes, washouts from storms, fallen trees, branches, and other obstacles that can cause hazards to the users. If the trails are considered ADA compliant then the maintenance may be increased depending on the materials used to construct the trails.

Construction costs as well as maintenance costs vary greatly depending on what materials are used, readily available, and labor that is needed to construct them.

PLAYGROUNDS

From a single sliding board, a couple swings and maybe a homemade see saw most playgrounds are becoming small cities of intricate and elaborate sections that seem to have no end in sight. With most manufacturers working with professionals to understand how a child develops mentally, physically and socially the equipment has taken on new meaning and new looks. The playgrounds of today are unlike anything that the older generations ever remember, today's equipment has something for everyone and no one is left out, whether the child is an aspiring major league athlete, physically or mentally challenged or bound the equipment today speaks to all.

The construction of these complex structures can be comprised of powder coated metals, recycled plastic lumber, wood, chain, rubber, and a multitude of miscellaneous other materials that make them fun to play on and fun to look at. Whether they are installed by professional,

volunteers or those responsible for maintaining them it is most important to follow the manufacturer's instructions and understand the importance of safety guidelines when combining equipment. All construction projects should be inspected by a certified National Playground Safety Inspector (NPSI) prior to being used. In many cases the equipment manufacturer has at least one if not several staff members with NPSI certification who should be able to help with initial layout to prevent unforeseen costs if not properly installed. All installations should be done in accordance with the most current CPSC and ASTM regulations and guidelines.

The protective safety surfacing used in the fall zone of these systems is almost as broad as the configurations of the units, from stone, sand, wood chips, engineered wood fibers, chipped rubber, shredded rubber, safety matting, rolled matting, poured in place vinyl/rubber matting, and now syn-

Continued on page 45

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Continued from page 19

thetic turf with crumb rubber infill they all require maintenance and special care.

The following is a brief description and all maintenance should be done in accordance with the manufacturer's recommendations and guidelines.

Daily inspections of the playground area is advised as after hour users can leave an array of debris (bottles, cans, trash, etc.) that can become hazardous to identified user. This is also a good time to correct any damages or movement of the surfacing if it a loose-fill material that moves with usage of the equipment (under swings, bottom of slides, etc.)

Monthly inspections for excessive wear, loose hardware, cracked plastics, swing

chain wear, "S" hook openings is recommended by almost all manufacturers and should be done by a competent individual who has been shown what to look for.

Annual inspections should be done similar to the monthly inspections but in more detail. This is a great time to take care of touch up painting, replenishing the safety surfacing (loose-fill if organic material), replacement of swing chains if required, etc.

Cost estimate: The cost of equipment is reflected in the size of the pieces and the complexity of the unit. Equipment costs can range from a couple hundred dollars to thousands of dollars with installation costing anywhere from 50% - 100% of the equipment costs.

Operating or maintenance costs is purely represented by what materials are used for both the equipment and the safety fall zone, wooden structures with loose-fill surfacing will demand more maintenance weekly, monthly and annually then a powder coated steel structure installed over a pour-n-place or rigid surfacing (tiles, synthetic turf, matting, etc.).

Cost estimate prices were obtained from the 2006 RSMeans Building Construction Cost Data within the Philadelphia region and should in no way be considered current or used for budgeting purposes. ■

James Cornelius, CSFM, now works for Fisher and Son, Coatesville, PA after a long career with the West Chester School District.