Update
Sports Field Managers Association of New Jersey

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Don't Miss – SFMANJ Spring Field Day

Where: Drum Point Sports Complex, Brick NJ
When: April 20, 8am-8:30 registration
Till: 3pm
Box lunch included • Door prizes • No vendor booths

"When it's Built it's too Late." This day promises more than education. Come see a beautiful newly built 60 acre facility in different phases of construction. This is a wonderful park with the same construction problems we face everyday. Learn from Ken Mathis, Parks Director, how to avoid some of these problems and how to build a successful facility. You have the opportunity to see the final changes needed before opening day.

The facility includes 4 softball, 12 soccer and 2 football fields including the beginnings of a skateboard park and bike trail. We will show you how the maintenance building was constructed, how Ken worked with the engineer to get what he wanted. While you are there check out the pesticide storage area. See how to install an internal soil drainage system to combat drainage problems on athletic fields. In between the tour stop at each field and learn how the irrigation system and well work. (Every field is irrigated). We will explain some construction problems and how to develop a playing surface with the existing turf, each field is in a different stage of development. Find out how Ken amended his soil and see the difference between the fields and common areas. Check out the weeds and find what they are and out how to get rid of them. Stop by the skinned infields, see the problems, learn how to correct them. Learn how to analyze the mix and compare it to the ASTM standards as we whip the field into playable quality. Stick around afterwards for door prizes and questions. Watch for the flier with registration coming in the mail soon. **Be the first to fax the enclosed puzzle with the correct answers and win a free admission.** ◆

SFMANJ Business

Next Board of Directors Meeting – March 11, Thurs. 4pm. At Storr Tractor Co., Rt. 22, Somerville.

If you work for a professional facility and are interested in serving on the Board of Directors of SFMANJ fax a resume to 907-730-7770. You must be a member in good standing. ◆

Inside This Issue

This newsletter is the official bi-monthly publication of the Sports Field Managers Association of New Jersey. **For information regarding this newsletter, contact: SFMANJ at 730-7770**

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SFMANJ does not necessarily support the opinions of those reflected in the following articles.

Lip Service, It's All Part of the Game

By Jim Hermann, CSFM

The elevations of the turf perimeter at the point of intersect between the infield skin and the turf is the reference point from which all infield elevations are calculated and or maintained. By maintaining the turf perimeter of the infield at a specific plane and minimizing the accumulation of material known affectionately by sports field managers as the "lip", you help to maintain the integrity of your surface drainage plan. A properly maintained perimeter will always provide for a smooth transition from the infield into the turf area. As this battle goes, so goes the war.

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A common mistake committed by many sports field managers is to add infield mix to compensate for an improperly maintained lip.

Lip build up is caused by many factors and is to a large degree site specific in nature and severity. In this article we will consider some of the causes and controls.

The most obvious cause for lip buildup is the movement of infield mix from the infield into the grass perimeter. Improper grooming technique is the most limiting factor in proper lip management. Both wind and water erosion are also contributing factors. Game play is another obvious factor in particle migration and therefore lip buildup. The buildup caused by game play is most obvious at the turf adjacent to first and third base.

There is clearly no maintenance technique capable of preventing material movement within the confines of the infield skin. However, there are considerations and cultural practices, which can help to minimize this movement and its negative effects on safety and playability. There are in addition, procedures that can manage the lip buildup that does occur.

Most importantly, prior to all other maintenance procedures, the infield turf perimeter should be cleared of any infield mix that has accumulated since the last maintenance. This maintenance is essential prior to rain since rain has the ability to wash the mix down into the thatch layer where removal is much more difficult if not impossible.

Procedures available for this purpose are blowing, power washing and brooming. In more severe circumstances the use of a thatch rake is sometimes effective.

In view of the fact that you can't keep the infield mix from moving to the turf perimeter, it is sometimes beneficial to move the turf perimeter away from areas of concentrated disturbance caused by game play. By cutting out existing turf and increasing the distance from first and third base to the outer perimeter of the infield, the amount of mix that is deposited into the turf can be greatly reduced. There are different designs conducive to this concept. The number of options is limited only by your imagination.

Grooming technique is most limiting and therefore first on the list of preventative maintenance considerations. Always rake parallel to the foul lines and turf perimeters. When dragging the infield, always stay 6" from the turf. Vary your dragging pattern. Alternate your starting and stopping point. Never contaminate the turf with infield mix for any reason.

The amount of moisture contained by an infield mix, while being maintained within maximum and minimum limits could be considered the glue that holds an infield together and as such is a factor in lip management. The key is to determine these limits. The limits will vary based on site-specific factors. The most important factor to be considered when addressing moisture management is particle size and distribution of your infield mix. What is the physical analysis of your infield mix? What is the sand, silt and clay particle size analysis? Would your mix be considered a sandy mix or would your mix be considered a clayey mix?

The ASTM Standard Guide for Construction and Maintenance of Skinned Areas on Sports Fields has provided guidelines to help in identifying and classifying your particular mix. In general a mix containing 70%-85% sand size particles and containing 15%-30% clayey mix is considered an acceptable product. The sandier a mix is, typically the less stable it is given the affects of game play. The higher the percentage of sand a infield mix contains, the more difficult it is to maintain moisture at levels sufficient to promote stability.

The more clayey an infield mix is, the more that mix tends to retain moisture and the more effective moisture becomes as a means of stabilization. Let me repeat; this moisture is only beneficial when maintained between site-specific limits. Most all of us are aware that a clayey mix usually takes more time to condition after a heavy rain than a sandy mix. The benefit derived from the ability of a clayey mix to retain moisture is lost in this circumstance because the level of moisture has exceeded the limits of potential benefit.

It should be understood that a mix on the clayey side of the ASTM standard that is allowed to become very dry is somewhat difficult to rewet. Tilling or some other means of cultivation is sometimes necessary as a part of the wetting procedure.

When a level of maintenance is reached which allows for the "scheduled" periodic application of water, a soil amendment such as calcined clay may be beneficial in extending the duration of time between water applications. It must be understood that these products constitute the potential for a double-edged sword.

As was addressed earlier, a sandier mix or a mix with more sand "sized" particles is less stable and is more likely to migrate given the effects game play. If moisture levels are permitted to vary beyond the limits of potential benefit (either too wet or too dry), these products will display characteristics similar in nature to sand. When allowed to dry out, a mix that has been modified with an amendment such as calcined clay will have characteristics similar to a sandier mix, which does not have an amendment added. If allowed to become saturated, a mix amended with a product such as this will move in much the same way as a sandier mix.

For the purposes of this article the characteristics of a dry infield mix are determined almost solely by particle size and nothing more. When discussing the stability of an infield mix, a dry calcined clay particle will differ little from a dry sand particle given the same particle size. If anything, the clay

particle will be more mobile due to being lighter and maintaining a lower bulk density. The benefits of products such as calcined clay are only realized in their ability to absorb moisture and aid in maintaining moisture levels between site-specific maximum and minimum limits.

I have in the past used the following comparison to explain the affects of moisture on a sandy infield mix. When walking along the beech an observation can be made. Up on the beach where the sand is dry the conditions are very unstable. You sink into the sand. As you approach the waterline, the sand has more moisture content and as such gains stability and firmness. As you enter into the water and the sand becomes saturated it again looses stability. The moisture in the sand provides stability only between maximum and minimum saturation levels.

Wind erosion is a subtle culprit that can slowly but surely eat away at the integrity of your infield. It is obviously site specific based on the severity and consistency of the wind. As with any erosion problem (wind or rain) wind erosion impacts on the smaller and or lighter particles. For this reason wind erosion has the potential to erode the silt, clay, fine sand and or added amendments from your infield and deposit this material at the turf perimeter adding to the problem of lip buildup. Along with adding to lip buildup, if allowed to persist, wind or rain erosion will destroy the integrity of a clayey mix and leave you with a sand box.

Controls would include providing a windbreak to minimize wind velocity. This can be incorporated into the permanent perimeter fencing. It can also be provided as snow or silt fence utilized during the off-season. If snow or silt fence is utilized as a windbreak during the off-season, remember to keep it away from the turf on the down wind side of the field. If a windbreak is installed to close to the turf it will cause airborne particles to drop right into the turf. As can be observed by the effective use of snow fence in winter storm management, drifting occurs on the downwind side. Maintaining moisture levels within the mix will increase stability of the mix and also minimize erosion.

When discussing erosion of a specific infield mix caused by water (rain), two major factors contribute to the severity of the problem. These two factors are water volume and velocity. The more water there is and the faster it travels, the more severely it impacts on the stability of the infield mix.

First, consider water volume. The volume of water is the amount of water you are dealing with. Although you cannot control the amount of rain you receive, there are a number of ways to control the volume of water that travels within the confines of an Infield.

1. Cover the infield when it rains. For most of us this is an impossibility

2. As water travels along a linear path it increases in volume. Limit the distance the water travels before exiting the infield and you limit the accumulated volume. By properly grading the infield, you can direct water the shortest distance to the perimeter thereby limiting the volume of water. An example of one such grading plan would be to maintain the pitchers area as the high point of the infield and slope the infield to the perimeter with all bases being approximately level to one another.

3. Limit the concentration of water in specific areas when exiting the field. An example of the very worst grading design which encompasses the very worst of examples #2, #3 and #4 would be a skinned infield with home plate as the low point of the entire infield. As

water is funneled to a central location potential volume is increased and therefore the potential severity of erosion is increased. This problem is also magnified due to the distance the water has traveled in order to exit the infield.

4. Eliminate the potential for water to enter the infield from other areas during episodes of rain. If the outfield or foul territory is higher than the infield, water should be channeled away from the infield by some means.

The second player in this game of erosion is velocity or the speed of the water. Water increases in speed or "velocity" with an increase in slope. By minimizing slope you minimize velocity and therefore minimize erosion. Professional fields I have read about maintain around ½ % slope. This equates to approximately 5 ½ inches of fall from the area at the base of the pitchers mound to the turf radius assuming a 90' radius. I prefer to maintain a slope of between ¾ % and 1½ % on the infields I take care of. I believe, at less than ¾ % there is too much potential for ponding and above 1½ % there is too much potential for erosion. These tolerances become more critical as the distance to exit increases. Remember, volume and velocity increase with distance as long as the supply (rain) remains constant

The last factor that contributes to the development of a lip that I stumbled on (literally) by accident is the combined affects of freezing and thawing along with the increased development of a thatch layer at the turf perimeter.

In November of last year I returned to an infield I had recently renovated to admire my work. I had completely resodded the perimeters of the infield and for that reason I was certain there was no lip. To my dismay a defined lip had developed within a period of days. The freezing and heaving of the very edge of the sod caused the lip. I believe this honeycombed soil structure provides an avenue for the inwashing of material from the infield. In addition to increasing the volume of soil within the lip, this modified root zone coupled with increased moisture supply at the perimeter of the infield promotes a localized environment conducive to the development of a concentrated root system. With this proliferation of root development comes an increase in thatch layer and therefore an increase in elevation contributing to a lip.

Depending upon the severity of the lip, there are a number of ways to deal with it after it has established. The most aggressive procedure would be to use a sod cutter and remove the entire area of turf that rises above the desired elevation. The excess material that has accumulated below the sod is removed and the area is either resodded using the existing sod or new sod is brought in for the procedure.

A less aggressive approach to the problem is to dig a shallow trench adjacent to the turf lip and roll the lip into the trench. This procedure is most effective if the lip is very narrow and defined in relation to the desired elevation.

* A procedure that fills the gap between the least invasive (trench and roll) and most invasive (sod cut) procedures is to aggressively core aerate the area of lip, remove the cores and then roll the lip to the desired elevation. There must be enough volume of material removed through the aeration process to allow for the movement of remaining material without increasing compaction. The aeration procedure must penetrate deep enough to provide compaction relief 2" to 3" below the desired finish grade. There must be sufficient soil moisture available so as to allow for movement in the soil but not so much moisture so as to allow for smearing of the soil, which is in fact damaging to the soil structure.

*This idea was contributed by Brian Meola of Washington Township Parks & Recreation (Morris County).◆

Did You Know?

Phosphorous is the least soluble of the major turf nutrients and as such moves very slowly through most native soil root zones. For this reason much of the phosphorous applied, is not available to the turf roots in the year of application. In new construction, if soil test results report phosphorous as "low" availability, it is advisable to incorporate half of the recommended phosphorous into the root zone prior to seeding and topdress the balance. ◆