

Athletic fields: renovation or reconstruction?

■ All too often, the blast of an official's whistle at the start of a sporting event brings two opposing teams together on a barren field speckled with ragged tufts of green. Many of these tufts are the sad remnants of a once-proud turfgrass cover, intermingled with coarse, aggressive weeds.

In dry weather, the playing surface is hard from compaction, rough from previous activities, and dusty from a lack of turf cover. If it rains a week before the event—or worse, during the event—the surface is slippery, muddy and soft, with virtually no traction.

Such conditions give natural turf playing surfaces a bad reputation. However, criticism of natural turf fields should be aimed at weaknesses in construction or maintenance, not the limitations of natural turf.

Success in providing superior natural turf playing surfaces often means overcoming or correcting errors in construction. Neglect, for even a relatively short period of time, jeopardizes previous investments.

Though turf appearance is undoubtedly important, durability to intensive use under a wide range of conditions is more critical.

Though athletic field renovation may seem successful, an improperly constructed field will rapidly decline again.

by Henry W. Indyk, Ph.D.

Costly mistakes—Successful athletic fields are based upon similar principles in design, planning, construction and maintenance. Failure of these surfaces also is based upon a set of similar mistakes:

● **Drainage considerations:** Poor drainage not only affects playability, but negatively influences turfgrass growth and increases maintenance costs. (See sidebar.)

● **Improper specifications:** Too often, in the original construction of an athletic field, standard specifications are used. Each site should be evaluated critically before formulating accurate specifications to avoid a field with “built-in” problems that are difficult or impossible to correct, even with excellent maintenance procedures.

● **Lack of specification enforcement:** The best of specifications are of little or no value unless construction procedures adhere to them.

● **Maintenance deficiencies:** A well-planned maintenance program should include equipment, materials, personnel, and an adequate budget. The supervisor should be conscientious and knowledgeable in turfgrass management principles and techniques.

The single most important factor: drainage

■ The single most influential factor in the failure of natural turf fields is improper drainage.

Perhaps the most important reason for overlooking drainage as a critical factor in athletic field construction is not understanding or appreciating its importance. Unfortunately, in many instances, adequate drainage is negatively affected by cost-cutters who do not realize the future cost of improper drainage.

In some cases, efforts to improve drainage are to no avail. Such failures most likely can be attributed to improper specifications and/or other deficiencies in construction. Some of the common faults of ineffective performance of drainage systems include:

● **Provision for surface drainage only.** A crowned or turtle-backed field with a few catch basins on the sidelines can facilitate removal of surface run-off, but will do little for improving internal drainage.

● **Improper design** of the drainage system involving pipe spacing, depth, grade and outlet.

● **Improper grade** for installation of drainage pipe.

● **Heavy-textured material in backfill** that restricts percolation of water to the drainage pipes.

● **Improper physical properties of topsoil** above the drainage system. Soils containing too much silt, clay and very fine sand as the growing medium for the turf tend to restrict proper drainage due to slow percolation of water. Consequently, during rainy conditions, such soils tend to be soft and soggy in spite of a properly installed drainage system. These soils compact readily when subjected to traffic. Air porosity is reduced by both moisture saturation and compaction, resulting in a less favorable environment. This is reflected by a shallow root system, weakened top growth, reduced wear tolerance and turf deterioration.

—Dr. Indyk



Somebody made a big mistake with this newly-constructed field when they did not allow for proper drainage.



An athletic field after stripping and stockpiling of topsoil shows promise for the future.

● **Abuse in field use:** There are limits to how much you can use turf—even good turf. Damage will be most serious where proper construction procedures have been bypassed, particularly with excessive soil moisture.

● **Inadequate facility-to-use ratio:** The surging interest in outdoor athletic activities has increased pressure on existing facilities. Because money or space is not always available to add fields, the use of existing facilities is intensified. Improperly constructed fields are less able to accommodate more intensive use without serious deterioration of the turf cover.

Temporary renovation—Near miraculous results can be achieved by temporarily restoring improperly constructed or maintained fields. Superior varieties of turfgrasses (particularly among the Kentucky bluegrasses, turf-type tall fescues and turf-type perennial ryegrasses adapted for athletic fields) can be effectively established in existing fields by

- a) core aeration to relieve compaction and
- b) verti-grooving to prepare a seedbed without destruction of grade or established turfgrasses.

The new seedlings introduced during renovation can be nurtured to a mature, dense turf with adequate provision for proper pH, nutrients, supplemental irrigation, mowing and restrictions on use.

To fully restore a field in this way, you

must restrict use for six months, at the least. If this amount of time cannot be sacrificed, restoration with a high quality sod can provide instant results.

As impressive and effective as a successful renovation effort may seem, an improperly constructed field will rapidly decline again. Repeated renovation efforts will follow the same costly and discouraging pattern until inherent construction problems are corrected.

Reconstruction—For a successful natural turf field, essential planning, design, construction, maintenance and use principles must be followed.

Experts in field reconstruction, such as Turfcon/GSI Consultants of the Greenway Group based in Horsham, Pa., evaluate each field. Their planning and design, coupled with overseeing all reconstruction processes, and establishing a sound maintenance program, can convert problem-laden fields to high quality natural turf.

Natural grass has been, and will continue to be, the best playing surface for a wide variety of outdoor sports and playground activities. Its characteristic resiliency and cushion not only contribute to the enjoyment of a specific sport, but also provide superior footing and reduction in sports surface-related injuries. These advantages, combined with aesthetic and economic considerations, make natural turf and its management high priorities for sports in coming years.

What field consultants offer:

✓ On-site inspection for specific deficiencies in:

- grade,
- drainage,
- soil characteristics,
- turfgrass conditions and
- any other factors conducive to athletic field problems.

✓ Topsoil and subsoil samples are taken for physical and chemical analyses.

✓ Individual site-specific specifications for each field. They may include:

- provision for stripping, stockpiling, and processing of existing topsoil, for use in the rootzone mix;
- selection of the sand used in the modification process;
- the quality of sod; and
- the characteristics of the soil in which the sod is grown.



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