By Dr. Grady Miller, Environmental Horticulture Dept., University of Florida

Designing a field over a landfill

We have a soccer/baseball field we are constructing over a closed municipal solid waste landfill (the soccer field is in the baseball outfield). Because of predicted differential settlements, we are considering a design grade of 1.5% from one side of the soccer field across to the other side. Based on my research, this, although not ideal, is an acceptable grade and configuration for the soccer field. Would you agree?

Also we anticipate that we will have particular difficulty in one corner of the soccer field (the corner that forms the right field corner of the baseball field). We are considering raising this portion to 2%. Any comments in this regard from a soccer "playability" perspective?

Note we have concluded that these grades are likely "acceptable" based on the fact that a crowned field design would have a net change in grade of 2% at the center. The above field will have a uniform grade of 1.5% with a net change in grade of only 0.5% in the area of major concern.

Leo Overmann
Hong Kong

After a Q&A on field slopes a few months back, I have had several questions e-mailed to me concerning alternative designs. I am hearing how much the area surrounding the construction site for a field dictates alternative designs. Side-to-side sloped fields seem to be more popular than I ever imagined. The conditions under which you were given to build your field provides a few twists that make it even more interesting from a drainage design perspective.

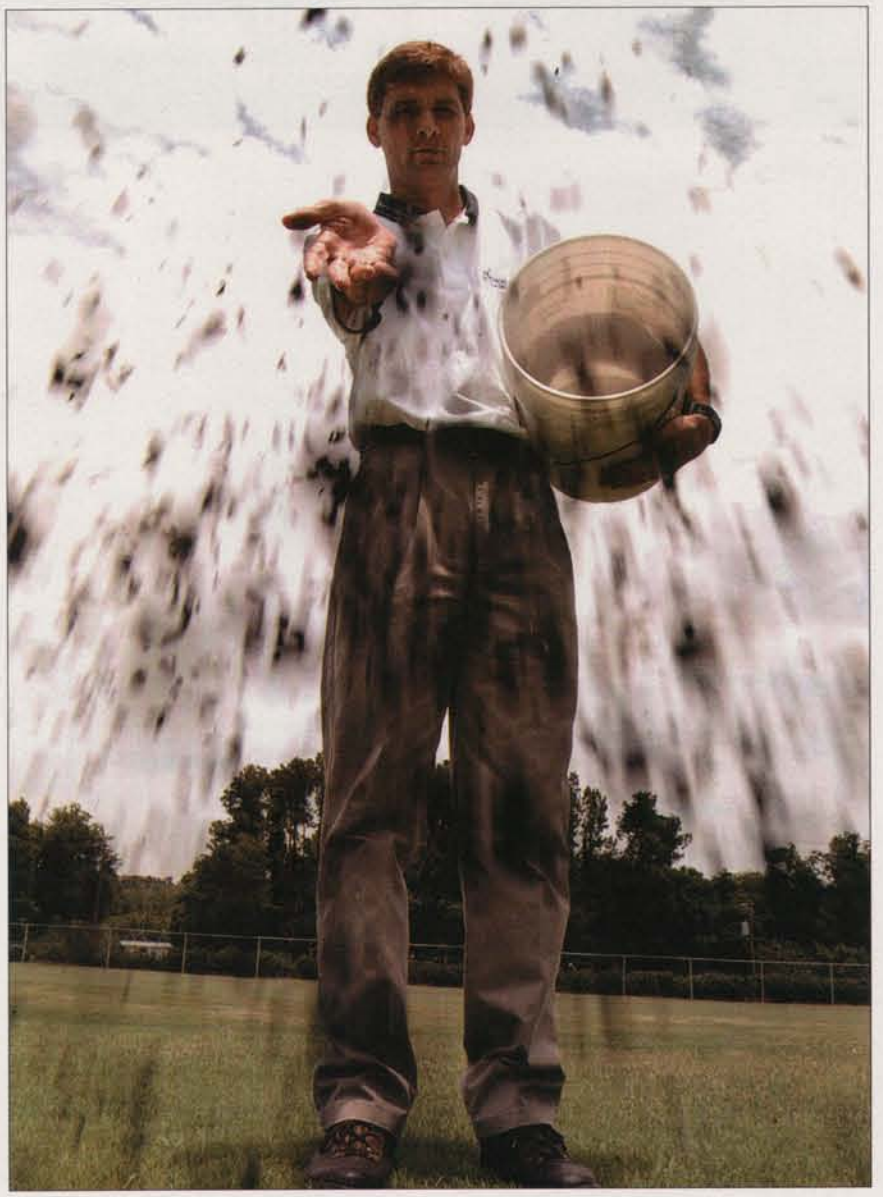
Having recently become involved in designing a golf course on a closed municipal waste landfill, I am quickly learning the construction limitations an open, relatively flat surface can cause. In this project settling is a concern, but a significant limitation is the inability to trench for drainage, so as to not disturb the clay cap that was put over the landfill. Everything must be built up from that grade.

Obviously the need to maximize space and include a dual purpose field (soccer/baseball) will further complicate your drainage design criteria. Normal baseball field contours do not fit very well into the normal contour plan of a soccer field. Also, depending upon their respective size, the fields do not always overlap very well and the skinned base paths may be in play on the soccer field.

A 1.5% grade from side to side, while certainly not ideal, is acceptable for a soccer field. When the entire field is uniformly sloped, the field looks pretty flat to players. I have a hard time envisioning how this will fit into the grade and configuration of the baseball field. You will probably need to carefully consider the grading plan for the area just outside the soccer field, but in play on the baseball field.

The area of major concern is also my area of major concern. If you increase the grade on one corner of the soccer field (even by 0.5%), then you are diverting a lot of surface runoff into that corner. The lower end of the field almost invariably will become muddy as the water flows across the field to the lower end. I think soccer playability will suffer. A wet spot on the field can literally stop a soccer ball dead. There is also potential awkwardness in corner kicks from that corner. Consider that over the width of a soccer field (approximately 180 feet), the 0.5% difference is about 11 inches of (additional) fall. I would prefer no more than a 1.5% grade on a soccer field because I have measured how much a minor difference in a field's slope can influence ball roll on a closely mowed surface. I feel that a uniform slope (side-to-side) is much better from a field management and playability standpoint.

Certainly, there are times when the demands of the terrain or situation will give you no practical options. If this is the case, I would suggest that you install internal drainage, at least in the lower half of the field to prevent that lower portion of the field from becoming too wet. Depending upon the baseball field's design, you may also want to consider additional drainage around the entire upper side of the field. ST



Have Questions?

Send them to Grady Miller at the University of Florida, PO Box 110670, Gainesville, FL 32611, or email gmiller@mail.ifas.ufl.edu. Or, send them to Dave Minner at Iowa State University, 106 Horticulture Hall, Ames, IA 50011, or email dminner@iastate.edu.