

By Marcus Dean, CSFM



## Building a better pitch at the University of Kentucky

**T**HE FALL OF 2009 in Lexington was the straw that broke the camel's back. The University of Kentucky decided that something had to be done to create a safer, better draining field for our two soccer programs. By no means was it our wettest fall, though Lexington received 16.23 inches of rain during the soccer season (August 1-November 15), which is almost 5 inches above average rain fall for that time. The wettest soccer season was 2006 when we received 21.82 inches of rain, 10.43 inches above our average for that time of year.

Our existing game soccer field was built in 1996 as a modified native soil field. The soil was very inconsistent, some nice growing medium in spots and some native clay in others. You could really spot the inconsistency in the soil, especially when you aerified and pulled cores. The field was crowned with a 1% slope from mid field to each sideline, plus we had internal drain lines. Most of the drain lines were capped off by the native soil as soon as they were installed in 1996.

After the 2006 season, we started to implement a deep tine aerification into our maintenance schedule. We did this hoping to shatter our hard pan that existed about 4 inches below the surface. Deep tining definitely benefited us some, how much I can't really put a figure on. I think it benefited the root system more than promoting drainage. We had a stronger, deeper rooted grass that would wear better but did not improve drainage that dramatically.

The rain fall for the soccer season in Lexington has been feast or famine the past 6 years. Three years we were in drought conditions for the year, two years we were over flowing with rain fall, and only once (yes once) did we come anywhere close to the average rain fall for the soccer season. It should be noted that for the soccer season of 2010 we received 2.8 inches of rain, 8.6 below average. It would only be fitting that once the money was approved for the project the problem went away.

So, we started to discuss all of our options and came up with a plan. We had to build a sand-based soccer field with internal drainage to handle the wettest possible scenarios. The last few field improvement projects at UK had been sand-capped systems and been handled as a "design/build" with the sports field contractors. These new field upgrades have performed very well for us, greatly increasing our drainage and reducing the construction cost compared to a USGA spec sand-based field.

In planning for this renovation we looked back at our most recent field upgrades and highlighted items that we liked and made note of what we didn't like. We knew we had only one shot to get this field right, we didn't have any mulligans. We asked our head coaches for their opinions (better drainage was the only thing they cared about) to get them involved and to make sure they would be happy with the final product. Our next step was to research some new ideas and trends in sports field construction in an attempt to combine our old ideas with the latest and greatest in the athletic field construction business.

The only reason for renovation was to improve drainage. We spent the most time trying to focus all of our attention on improving this. We knew that if we built a field that didn't drain and meet the coaches expectations, our efforts would be a failure. We took our best draining field and copied that design. We

chose to specify a drainage system using 4-inch perforated pipe on 20-foot centers in a herring bone pattern. The sand selected for the project will be supplied by Nugent Sand, a Kentucky company and supplier of the sand used for the practice football fields in 2005. While the available sand is slightly coarser than the sand used for the 2005 project, it not only meets, but also exceeds the infiltration rate we established as a requirement in the RFP.

When we started to layout our irrigation design, we turned to all of our employees for their thoughts. No one knows what needs to be improved like the internal employees. We took every possible suggestion (zone layout, quick couplers, valve placement and depth, valve boxes, etc.) and made that a specification in our Request For Purchase (RFP). Water shortage is not (currently) a problem in Lexington but we knew we needed a system that could maximize our output with as little as possible input. We wanted to be the leader in environmental stewardship and water management for the Bluegrass area.

After much conversation with fellow turf managers and a few irrigation companies, we settled on a Baseline 3200 smart controller system. Baseline offered us the most bang for our buck; easiest to use, ability to expand and include our existing controllers, flow monitoring, history backup, easy secure accessibility, and most importantly reduction in water usage.

The grass selection was a little bit more complicated. We have been growing Tifway 419 bermudagrass in Lexington successfully for the past 6 years. When researching new grasses, we were looking for a grass that wore like 419, greened up early in April, could withstand summer traffic, and be an aggressive grower. There are some newer varieties out there, seeded and vegetative, that promise a lot for the transition zone. To make this decision easier again we consulted with fellow sports turf managers and sod farms. The new varieties got a lot of praise, lots of positives but some negatives too. Knowing we only had one shot to make this right we chose to stick with the Tifway 419 bermuda, the "if it is not broke, don't fix it" mentality.

We chose to specify sod instead of sprigs; we will have an instant field. All we have to do is get the roots established and manage the sod layer. We have previously sprigged 419 here and it took about 10 weeks for it to grow

in. We didn't think we would have 10 weeks to get it established from sprigs, we went with the safest avenue and the grass that would provide us the best playing surface.

Getting all of our thoughts on paper was easy; the hard part was putting it in politically correct format for the University to put the RFP together. It took a couple of drafts before I had everything covered and in the correct language. Working for a public university has a lot of paperwork and hoops to jump through to make sure everything is legal. In October of 2010, we felt the RFP was completed and ready to go out for bid. A requirement of the RFP was that the design/build team includes a sports field designer, agronomist and soil scientist, a Kentucky licensed engineer, an irrigation designer and a sports field contractor with prior soccer field experience. After many meetings, interviews, and revisions we awarded Vescio SportsFields the project. Their design/build team consisted of: Dr. AJ Powell, Chuck Dixon, Bucky Trotter, LandTec and GRW Engineering as well as the Sports Fields staff.

SportsFields used a local excavation contractor to remove the existing surface about 10 inches deep to establish a sub grade. The subcontractor used dozers, excavators, pans, and a road grader to remove all the existing material. Once the sub grade was established, the irrigation work began by trenching in the lines. We were ready to "proof roll" the sub grade to get certification from the geotechnical engineer and ran into some isolated unstable areas on the field (about 9,000 sq. ft. or less than 10% of the entire project).

By the way, we had multiple geotechnical borings pulled from the field in the summer of 2010. Sometimes, no matter how much prevention and prior planning goes into a project, you can't predict all the problems you will run into. Once the stabilization problem was remediated, SportsFields could begin laser grading of the sub base and installation of the drainage system. We currently are finishing the drainage stage and are bringing in sand [July 15, 2011]. If everything goes well, the project will be complete as the article comes hot off of the press.

In fitting fashion, once construction began, we experienced the wettest spring on record in Lexington (we have received 93% of our yearly rainfall in the first 6.25 months of the year). We have all seen evidence of this with the record flooding in the Midwest. This has affected the construction timeline and made securing enough sand difficult. Our sand source, Nugent Sand, has experienced record flooding in their dredging pits. Our sod supplier, Pike Creek Turf, is on the opposite end of the spectrum; experiencing a lack of rainfall.

The entire project process from creating the RFP and interviewing and selecting a design/build contractor through construction has been an interesting one. With careful planning and by performing our due diligence I believe that we have been able to deal with the hiccups of excessively inclement weather and unknown existing conditions and will end up with a game soccer field that will serve us well for years to come. ■

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