

# Writing Technical Specifications for Athletic Fields

By Sean Connell

Well-written technical specifications for an athletic field construction project are necessary for the successful completion of the project. All contracting, both public and private, is based on technical specifications. The specifications are used to qualify contractors, choose specific materials, specify agronomics, establish construction procedures, specify equipment, and set quality standards for the project. The specifications can be used for any and all reasons. Notably, the specifications need to clearly state your instructions so that all bidding contractors and procurement or purchasing officers understand them and that the bid-winning contractor understands what is required to perform the work.

Being a construction contractor who has completed construction projects in 12 states, I have read hundreds of specifications for all kinds of jobs: some good, some bad and some really bad. I have to read and understand all specifications because of financial liability. When I accept and sign a contract, the sole responsibility of that project is mine;

so, it is critical that I completely understand the technical specifications. From my experience, most specifications are written poorly and not thoroughly researched resulting in unaddressed issues. This is where the end user receives incomplete projects or unexpected additional costs. There is the equally unfortunate issue of projects being under-budgeted from the start and owner's rationalization is, "At least we did something." While this is worth noting, the focus of this article is on the authoring of technical specifications.

The process should start with listing all the specifications you have for your project. Considering we are dealing with sports fields, the wording should be industry specific. You will have to integrate purchasing language into the specification to ensure it is enforceable by law. Any public bid has to be advertised publicly with all information disclosed to all potential bidders. This is critical because if all considerations are not met, anybody can challenge the results for the bid.

This often results in no project at all or a watered down version of your project. Either way the end result can be negative.

So, we have to write specifications that attract qualified contractors. Ask for a minimum length of time for construction of similar or like projects. Ask for referrals from the clients of these projects and/or contact information to follow-up. Ask for experience with similar products or installation of products. You want to hire a sports turf construction contractor not a site contractor. For example, you do not have a plumber do electrical work so why would you have road builder build an athletic field? I am not saying a road builder can not do the work; I am saying that they have a lot more examples of why you do not want to hire them in the first place (i.e. most high school fields)

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in America). If site contractor must be employed, at least have a site contractor mass grade and sports field contractor finish grade and grass the field.

A typical athletic field construction project includes removing or demolishing an existing field, stripping and storing topsoil, rough grading the subgrade, replacing topsoil and adding topsoil as needed, amending topsoil based on soil test results, laser grading the finish grade, soil preparation and grassing. This is just an example of a typical renovation of a field. The first step is identifying what needs to be accomplished and how you want it accomplished - of course, the variations are endless. Now that you have identified what services are needed, you will need to explain in technical terms every item in detail.

Field removal or demolition (demo) will need to have a construction entrance/exit to access the work area. A typical installation has 6 inches of soil removed and replaced with a geotextile woven liner and #4 large gravel placed in entrance to clean-off vehicle tires that leave the construction site. Provisions for the removal of the construction entrance should be detailed. The demo should also list how to remove the existing sod and store onsite for future use. It takes about 6 months to break down the organic matter for use as topsoil. Hauling it away

should be a last option considering we are in the green industry. After completion of demo, the next phase is to remove the existing topsoil and store it onsite. Instructions should include stripping the topsoil without contaminating or mixing it with fill soil. Storage should be provided on the construction site. Other instructions could include screening the topsoil for rocks and/or debris.

Rough grading the subgrade is a critical stage because the soil needs to mirror the finish grade. In most applications of reconstructing existing fields, utilizing the existing soil may be sufficient and is the most economical way reconstructing a field. Utilizing the existing soil and avoiding the import or export any soil will reduce costs. Compaction of fill soils in the subgrade is a standard practice - if fill soils are less than 2 feet, usually the subgrade can be compacted with the equipment doing the work. Remember you are reconstructing an athletic field not building a parking lot; over-compaction of soil will make it difficult to grow grass. Keeping equipment on-the-job increases costs; thus, excluding the use of a smooth drum roller could be considered for cost savings. If there is unsuitable soil because it is soft and it will not compact, this should be taken care of in the subgrade by removing and replacing it with dry, firm soil that compacts.

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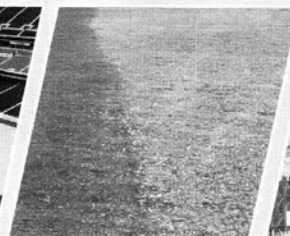
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The soil can also be allowed to dry in-place and then compacted. Last but not least, the surface of the subgrade should be free of rocks and debris down to at least  $\frac{3}{4}$ " in size and be finished graded to mirror the finished grade. The topsoil should be spread at uniform thickness from 4" to 6" which does not need compaction from a roller.

Rough grading can be attained with all sorts of equipment but the final grade needs to be completed with machine-controlled laser equipment to ensure the field will drain and perform properly. Use of bulldozers with machine control is appropriate in a mass grading situation, but when you are performing finish grading, a tractor with machine control is required. This guarantees your level of quality – besides, this is the national standard. After grading is complete, quantities of lime and fertilizer determined by prior soil testing can be applied and tilled and mixed in the soil. This satisfies seedbed preparation by loosening the top couple of inches of soil and mixing amendments. Of course it brings more trash, rocks and debris to the surface so be prepared to pick-up and laser grade lightly at least one more time.

At last you are ready to establish turfgrass on your newly graded field. Considerations need to be taken in choosing your new turfgrass. The National Turfgrass Evaluation Program (NTEP) is always a great resource review all grasses ([www.ntep.org](http://www.ntep.org)). The turfgrass data on this website is generated via nationwide University-based testing. Also,

local references seem to go long way. Noticing what seems to be working successfully "up-the-street" can assist in your decision making. I often read specifications for new field projects that spec turfgrass varieties that were released in the 1950's. We have come a long way since then, so take advantage of the newest information at fingertips. Do your research; it is worth your time and the owner's money.

The realm of technical specifications is a huge, complicated subject that integrates so much information. Navigation of the subject often requires more than one person as it crosses so many topics. Writing technical specifications for athletic fields in public contracting is especially critical because of how the technical specifications are interpreted. However, it can be accomplished. Regardless what is being built, specifications have to be in-place and used to protect all parties involved.

*Sean Connell is Owner and Primary Project Manager,  
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