
The Fundamentals of Project Management

Introduction

Your organization has decided to build a new sports field, determined what field type is needed, completed the design phase, and is ready to begin construction. Whether your organization is using a construction manager, in-house staff, or an owner's representative to oversee the project, the Certified Sports Field Manager (CSFM) or sports turf manager is integral to the overall management of the project.

As the sports turf manager, you are responsible for the quality of the playing surface long after the field is built. Good project management will provide a comprehensive process to help insure a successful outcome.

The Sports Turf Managers Association (STMA) has developed a series of advisory bulletins. The bulletins are sequenced to provide information and resources throughout the process of selecting and building a new sports field. This fourth bulletin concludes this series. The fundamentals included are applicable for synthetic and natural turf projects.

For more information, contact the STMA, ph. 800-323-3875. For specific information on project management, contact the Project Management Institute at www.pmi.org, PSMJ Resources at www.psmj.com, and Carnegie Mellon University, <http://www.ce.cmu.edu/pmbook/>, Project Management for Construction. Information from these sources is utilized in this bulletin. Other contributors to this bulletin include STMA members Abby McNeal, CSFM, Don Savard, CSFM, David Schlotthauer, Tony Strickland, CSFM, and Jay Warnick, CSFM.

Overview

In today's global marketplace, complexity and speed are certainties. In such an environment, project management becomes:

- Do it.
- Do it right.
- Do it right now.

Overseeing the construction of a sports field, facility or complex requires effective management to achieve a quality outcome. Solid project management fundamentals must be in place and skilled CSFMs and sports turf managers engaged to manage the project.

Although project management elements may vary based on the scope of work and project complexity, the overall fundamentals are intrinsic to every project. This information will provide a general guide to help you take your project from start to completion and beyond.

Key Elements of Project Management

Projects are defined by time, budget and performance (referred to as 'Triple Constraints'). The highest priority constraint often drives the project.

Following is a sequential outline of the project management process.

- Planning
- Execution
- Risk Management
- Final Close Out & Beyond

The content of this bulletin is intended for informational purposes and is not intended as a substitute for specific professional consultation.

Planning

Setting Goals and Defining Objectives

A problem creates a need. In order to solve a problem or fulfill a need, a goal or an objective must be defined and set. Once a goal is set, a strategy to meet the goal can be developed. A project is a strategy to meet a goal.

What is the problem?

- Listen to the issues, the needs and the wants of the stakeholders and end-users to gain an understanding of the problem and discover what questions need answers.
- Ask “why?” helps to clarify goals and find the real reason behind a problem. What people want and need may not always be possible, but we might uncover what people want vs. what can be done.

Determine the problem’s owner and identify the Stakeholders.

- Who owns the problem?
- Is the owner seeking a solution?
- Is the owner willing to commit valuable resources (time, money and people) to solving the problem or improving an outcome? Without the support of the owner, the project is doomed from the start.
- Make a list of the stakeholders. Stakeholders are all of the parties that are directly and indirectly affected by the success or failure of the project. If the owner supports the project, the project can move to the next phase.

Define the objectives.

- Create a list of “deliverables”. Deliverables might include:
 - Tangible and measurable result, outcome or product
 - Specific due dates and milestones
 - Specific quality criteria
 - Cost limits

For objectives to be effective, all stakeholders must agree to them. This might take some time and negotiation, but defining these objectives early will save time later.

Identify the project assumptions.

These would include:

- Cooperation from other projects or departments, if your project depends on them
- Resource availability and usage (who controls people, materials, equipment)
- Task duration (time to complete each task)
- Project costs (for tasks, resources, budget)
- Available time
- Deliverables

Ask questions and get good answers.

Misunderstandings will erode credibility and threaten the success of the project. Do keep track of the assumptions.

Identify project constraints and their priority.

- Time limits
- Cost or budget
- Performance or quality (how good is good enough?)
- Resources (people, materials, equipment, support)
- Scope of the project

Any change in one will affect the project later. At this point, try to negotiate any tradeoffs or concessions. Scope management determines how extensive or big the project will become.

The plan:

- Is a combination of all project objectives, tasks, and work to be accomplished
- Is a document of how scope will be managed, and how changes are integrated and managed
- Addresses contingencies

Look at the big picture and benchmark against similar projects. Continue to ask questions of the stakeholders and end users. Focus the stakeholders on a target, and create agreement, commitment and energy on the project goal. Clarify again the stakeholders’ wants and needs.

The Project Team

Developing the project team is an important plan element. Each project will require a different composition of team members to complete the project. In constructing an athletic field, there is usually a general contractor. He or she may hire a number of subcontractors to complete earthwork, add concrete areas, install irrigation systems, wire the electrical components, install lighting, test materials, etc.

In addition to the outside contractors, all of the internal stakeholders must be identified and included on the project team. It is essential that the CSFM or the sports turf manager be a member of the project team, and should be relied upon to lead the team as project manager. In addition to the sports turf manager, team members may be from administration, finance, athletics, other end-users, etc. The scope of work and each team members' area of expertise will define the specific responsibilities assigned. Teams may contain certain decision-makers who have the ultimate authority and responsibility.

The most important qualification for team members is the ability to collaborate to achieve the set goal. Many teams really aren't "teams"; rather they are a collection of individuals who are vying for power and position on the project.

To create high performing team:

- Develop a sense of urgency – this can catalyze a group around the meaningful goal.
- Set clear rules of behavior – these should include expectations for attendance, confidentiality, discussion, respect, and equitable sharing of the real work.
- Keep information flowing – new information allows the team to continually redefine their solutions for the best outcome.
- Reinforce the good work of the team – positive feedback and recognition inspires a team to work harder toward the set goal.

Expertise that Saves Time & Money

Including the CSFM/sports turf manager on the project team has tangible results: saving time and money. The CSFM/sports turf manager brings expertise that can avoid costly mistakes due to incorrect specifications for products and materials that can cause project rework and delays. The CSFM/sports turf manager can advise on:

- Grass species selection
- Drainage design and specifications
- Soil profile
- Equipment selection and maintenance schedules
- Grow-in management
- Irrigation systems
- Field scheduling and long term management

Not Invited to the Table?

How does the CSFM/sports field manager insert him/herself into the project if he/she has not been included on the project team? First, stay calm and do not overreact. Consider it an oversight, and develop a quick plan to present to your boss that shows your value to the project.

- Call on your network. Bring comparative information from other sports turf managers who have undertaken projects of similar scope.
- Provide technical information, i.e. money or time saving options, new turfgrass research, etc.
- Develop a list of suppliers who you or others trust for their products and provide cost comparisons.
- Do an analysis of weather and other climatic effects on the project.
- Bring the season's schedule and offer solutions to how you can make certain the season's opening is on time.
- Offer contingency plans if the field isn't ready in time.
- Ask to be put on the team – if not as a "full participant", then at least to listen so you can understand the decisions made so you can provide appropriate on-going management. You are the person who has ultimate on-going responsibility for the performance of the field and your boss must understand how valuable it is for you to know elements such as the irrigation installation and the sub-base construction. Once on the team, really listen and selectively offer expert advice. Then you will become trusted as a knowledgeable source and a collaborative team member.

Executing the Project

Once the goals, objectives, tasks, schedule and the project team are defined, executing the project is next.

Obviously, the most important element of executing a project is 'doing the work according to the plan'. Also essential to 'doing the work' are regular meetings with all team members. At these meetings and outside of the meetings, it is imperative to continually communicate information about the project.

Use Technology

There are many project management templates and software available to help you keep track of all the elements of the project. Generally, effective project management templates include tracking for:

- overall budget
- individual costs tracking
- scheduling (timing, procurement)
- milestones or task achievement
- personnel assignments
- labor and resource management
- subcontractors

Use a simple value engineering formula to keep track of progress:

$$\% \text{ complete} \times \text{budget} = \text{progress to date}^*$$

(*this is represented as a number, which will define the value of the project to-date). This is a measurement independent of expenses incurred or time spent. Then you can compare this number to the budget and to the schedule and adjust. It will tell you if you are ahead of or behind schedule and if you have spent more budget dollars than the progress made. Project management templates can graph or chart this for a visual snapshot. Good project management tools also provide excellent trend-tracking.

Over-budget and Delayed Projects:

If the project is over-budget, consider:

- subcontracting
- shortening the schedule
- utilizing less staff or reorder their priorities
- reviewing the scope of work for tightening, cutting out elements, etc.

If the project is behind schedule, consider:

- adding staff
- authorizing overtime
- subcontracting
- reviewing the scope of work and deliverables
- implementing concurrent scheduling of some work elements

Documentation

Typical documentation for projects includes:

- Submittals on project
- Field progress using photography
- Communication
- Compare testing reports with ASTM standards
- Meeting reports

Ask for all Plans, Specifications other Components

The sports turf manager should get copies of all documents related to the entire project, and should generate some of those documents. For example, the sports turf manager should receive the earthwork specifications and the basic mechanical requirements for the project. These documents will validate to the General Contractor what the subcontractor is providing. It is your reference tool to confirm that work is being performed properly. There will be revisions throughout the project, so make sure that you keep receiving the most up-to-date information from the General Contractor.

Submittal packages are references for you as the project becomes complete. You will need these in the future in case there is a problem. Examples of submittals would be “As-built” drawings for the irrigation system.

Document Progress Using Photography

The sports turf manager should document the project’s progress pictorially. The more pictures you can take during the building process the better. It is suggested that you photograph the project from the same positions daily. This will provide a historical time lapse of the project. Make sure that you communicate to the construction team that you will be photographing the project for future reference. Take pictures from more than one angle.

Document Progress Using Punch Lists

Use punch lists from the first day to simplify the final close out. This process virtually eliminates delays at the final walk through step and streamlines the payment schedule.

Document Test Results

Testing materials by an independent testing laboratory is strongly recommended. Soil materials and gravel materials will need to pass ASTM standards for construction. Find a reputable independent consultant that can assist you with testing and provide a clear understanding of the results.

Document all Meetings

Written reports from all construction meetings are useful. Make sure you date and record the parties that attended the meeting and capture who is responsible for follow-up for each item discussed for future reference. Consider developing a weekly construction report for the owner that tracks each day’s weather, equipment on site, personnel/ workers on site, and any events that may have impacted the project.

Risk Management

Construction projects often fail to achieve their time, budget, and quality goals. This is frequently due to the failure of the project team to analyze and assess all risk factors. Owners and contractors have attached high importance to risk factors such as safety, quality and financial failures.

Safety

There are two prongs to safety as it relates to field construction:

1. the safe performance of the final playing surface for the end-user athlete; and
2. the safe working conditions for the field construction workers

It is the project manager's responsibility to ensure both and should be the primary objective of all members of the project team.

Adherence to the specifications of required quality and components just starts the process for building a quality field. ASTM is the resource for internationally accepted standards for diverse industries, www.astm.org. Through its F08.64 subcommittee, ASTM has nine active standards for Natural Playing Surfaces and the work of F08.65 has generated three standards for Artificial Turf Surfaces and Systems.

Testing insures performance according to the design standards and is used as the basis for accepting or rejecting work. Use accepted statistical methodology and random sampling.

Worker safety requirements fall under the Occupational Safety and Health Administration (OSHA) and OSHA may pay visits to your field construction site. Site visits from OSHA, however, do not guarantee worker safety. Only educating workers about safety practices and being vigilant in adhering to these practices will provide greater injury protection. Risk management relative to safety involves considering the risks of different working practices. It also involves maintaining physical safeguards such as barricades, braces, railings, and other requirements as specified by the project, or state or local government.

Implementing standard practices are also important, such as requiring:

- hard hats on site.
- eye protection on site.
- hearing protection near loud equipment.
- long pants and sleeved shirts
- safety shoes

You may also be required to provide first-aid supplies and trained personnel on site as well as safe and sufficient drinking water.

Quality Control

Traditional quality control is the notion of an acceptable quality level, which allows a fraction of defects. In contrast to this traditional approach, the goal of Total Quality Control is no defective items are allowed anywhere in the field construction process. While zero defects can never be permanently obtained, this approach provides a commitment to improved quality.

Financial Failure

While much effort is placed in negotiating the contract terms to avoid risk, according to a survey conducted by DPIC (insurance conglomerate) only 3 percent of all claims result from the contract terms. The largest percentage of claims (more than 30 percent) results from technical errors or omissions on the project, reinforcing the need to develop and implement a quality control program.

Final Close Out & Beyond

If you have been keeping track of punch list items as the project progresses, the final walk-through should not reveal any surprises or cause project delays due to the need to rework.

This is the time to re-evaluate your warranties and keep close track of the performance of each element guaranteed in your field construction.

Develop a performance measurement report that contains the field use, level of play, unusual weather or climatic challenges, etc. Document and track these items to help you justify additional budget or resources needed to manage this field or substantiate the need for additional fields.

Typically, the CSFM/sports turf manager will determine the grow-in period and when the field is ready for play, as well as develop the maintenance protocols for the field's on-going management. In some cases, the contractor and/or consultant may be asked to provide a month-by-month, year-long management plan.

'Top 10' Tips from Sports Turf Project Managers

1. ***Allocate sufficient time*** – to gain an understanding of all the project elements, i.e. how to read the plans, specifications for utilities.
2. ***Buy a good digital camera*** – to document the project's progress, to troubleshoot and to be used as a communication tool if the general contractor or specific subcontractor is not on site. Add appropriate descriptive notes and dates on each photo.
3. ***Hone your communication skills*** and constantly ask yourself the question, "who else needs to know this." Keep your friends close and your stakeholders closer!
4. ***Use Punch Lists beginning Day 1*** – this is an efficient method to track progress and aligns work with the payment schedule.
5. ***Trust your instincts*** – if something looks off, stop and review it or conduct more tests.
6. ***Ask questions*** to help you learn on the fly – typically you are not formally trained as a project manager or a construction manager. By asking questions you will become an expert.
7. ***Be flexible*** - you cannot control all of the variables. It is easier to find solutions to problems when you accept what you cannot control.
8. ***Be firm when necessary***, but treat people with kindness, respect, and fairness. Remember that good relationships are the wheels of a successful project.
9. ***Be proactive*** rather than reactive. It takes less energy.
10. ***It is easiest to negotiate*** terms and conditions at the onset of a project.