

By the Editors of Soccer America Magazine

The Soccer Field HANDBOOK

How To
Build, Fund
& Maintain
Soccer Fields



Presented by the



110 yd

TOUCH LINE

CORNER ARC

CENTER SPOT

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GOAL LINE

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The Soccer Field Handbook

Welcome

The U.S. Soccer Foundation is pleased to welcome you to the “Soccer Field Handbook.” This is the Foundation’s latest initiative to support clubs and teams across the country as they build and enhance soccer fields for their players.

Over the years, the Foundation has provided financial support for thousands of new or improved fields, with special programs for lighting finance and planning grants added along the way. We have also worked with industry leaders to develop field building standards and offer discounted pricing on field building products and services through our Partners Resource Center, which can be found on our website at: www.ussoccerfoundation.org.

But the consensus recently has been that what the soccer community needs is a compilation of lessons learned about field building, so that people can avoid having to start from scratch every time the decision is made to construct a new field. The Foundation’s Board approved the funding, Soccer America agreed to do the research and writing and all of us are proud to present you with this finished product.

We hope you find here the information that will assist you in efficiently building the field that meets your needs. As you proceed, you will be helping overcome the major barrier to the growth of the game in this country — the shortage of playing facilities.

You embark on this journey with our best wishes for success and our hope that you will share your experiences — and pictures — with us.

Good luck.



John A. Koskinen
President
U. S. Soccer Foundation



The Soccer Field Handbook

Introduction

When the U.S. Soccer Foundation approached Soccer America about developing a how-to handbook on building soccer fields, it seemed like a pretty simple notion. Like the process of developing soccer fields, however, creating this handbook was a far larger task than we had ever imagined.

Every soccer field project is different. Just some of the differences are based on: what part of the country it's located in, whether the area is city, suburbs or rural; what resources are available, whether it's one field or a complex of many fields; what land may be available or affordable; whether a soccer organization is building the field(s) itself or with community partners; how affluent (or not) members are; how supportive the community is and what weather and soil are like. There are dozens of factors that are specific to the community, the site, the organization and the project.

Yet with all the differences — and after hundreds of pages of interview notes and research material — patterns emerged. Everybody must recruit and motivate volunteers, find a parcel of land, work with the political process of their community, create a plan, raise money, choose professional helpers such as contractors and landscape architects, decide on natural or synthetic turf, construct the field(s) and amenities, and ultimately manage and maintain playable fields, plus keep themselves engaged and motivated over the many months and even years a project could take. And most of these people have never tackled a project of this type before.

The goal of this handbook is to offer simple and common-sense information to help individuals and organizations successfully build one or more soccer fields. What it will teach is the right questions to ask, the skills and resources to find the answers, and the confidence to take the spark of the idea “we need more soccer fields” all the way to the reality of children and adults playing on beautiful green fields. It will not teach you to be a professional architect, engineer, contractor or groundskeeper, but it will help you work with those professionals in a knowledgeable, confident way.

We salute the wonderful people who make soccer fields happen. Our respect is boundless for their commitment, tenacity and energy. For those of us who play on the field or cheer on the sidelines, soccer fields just seem to happen ... and usually not often or fast enough for our liking. But to understand what it takes to ultimately have more soccer fields is to see the best of America's soccer community. It is our honor and our mission to serve it.

We wish to thank the many, many individuals, organizations and companies who offered their time, their experience and their stories for this handbook. It would not have been possible without them.



Lynn Berling-Manuel

Lynn Berling-Manuel
CEO & Publisher

SOCCER AMERICA COMMUNICATIONS LLC

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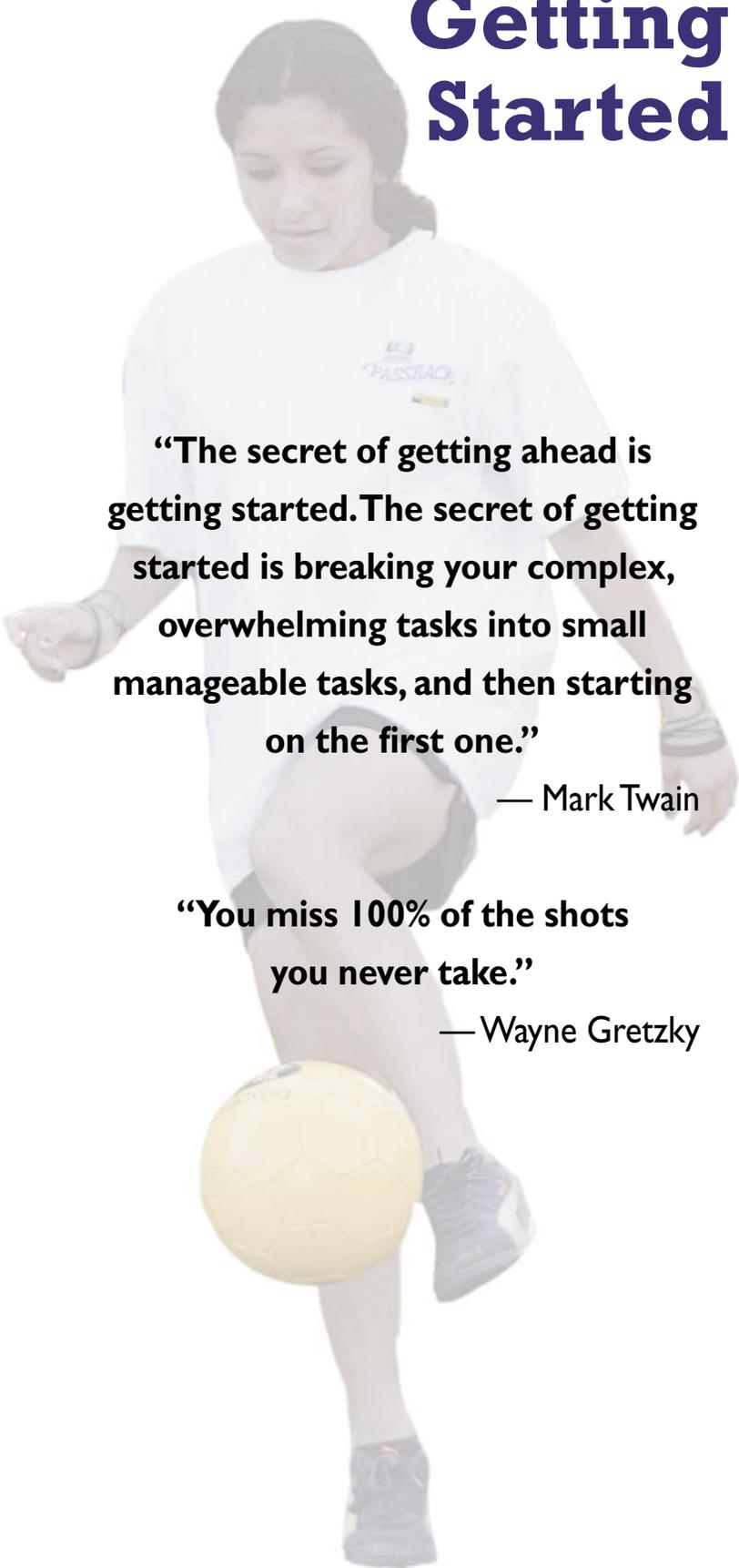
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Getting Started



“The secret of getting ahead is getting started. The secret of getting started is breaking your complex, overwhelming tasks into small manageable tasks, and then starting on the first one.”

— Mark Twain

“You miss 100% of the shots you never take.”

— Wayne Gretzky

Nothing is more exciting than the prospect of new soccer fields! There is a critical need for more field space in virtually every American community. So let's get started. Gathering volunteers, determining the need and moving into action is how the process begins.

CHAPTER 1 CONTENTS

- **Where To Begin?**
- **How To Use This Handbook**
- **The Making Of Great Leaders**
- **Taking The Community's Soccer Temperature**
- **Inclusion: Laying The Groundwork**
- **Who's In Charge Of What?**
- **What Is The Need?**
- **How To Build Consensus**



● Don't go it alone! Ask for advice from other clubs that have built fields — even your rivals. The soccer network is wide and usually cooperative.

● People do think in different ways ... and approach problems in different ways. Be patient when someone on your committee or in the community approaches a problem differently than you do. Try hard to understand their point of view. It's amazing how often respectful listening will help find a mutually acceptable solution.

Where To Begin?

“We need more soccer fields!”

It has become the soccer battle cry across America. Over 14,000,000 children and adults are playing soccer in the U.S., according to the Sporting Goods Manufacturers Association. The need for fields is only increasing. In urban, suburban, rural and even agricultural settings, soccer fields are in demand everywhere.

There are six elements required to turn the idea of new soccer fields into a reality:

1. **Committed leadership.**
2. **A suitable, affordable site.**
3. **Motivated, dedicated volunteers.**
4. **Funding or fundraising.**
5. **Determination through the political process.**
6. **Perseverance over the long haul.**

The beginnings of field projects are surprisingly similar. The need for new or refurbished soccer fields is usually self-evident. You know your community needs more soccer fields when:

- **Scheduling time on existing fields has become an experiment in frustration. There are just not enough practice and playing time slots to go around.**
- **Soccer sign-ups significantly exceed the fields that exist and players must be turned away.**
- **Fields are not getting the “rest” they need to stay safe and playable.**
- **You have a successful tournament but it is played at fields spread across many miles.**
- **You have a tournament that turns teams away because your fields are maxed out.**
- **Adult soccer has been squeezed out of the existing field space because it is considered “too hard” on the limited field space.**
- **You've already added lights to existing fields adding evening hours to the schedule, but it hasn't solved the problem.**
- **You're in a growing community with the expectation of new families with children moving in.**

Most soccer field projects become practical due to one or more of these three reasons:

1. A soccer organization or individual has determined that soccer fields are a significant need and **is willing to lead the effort.**
2. A school district, municipality or other government entity has decided additional recreational facilities are important and **soccer is or may be one of the options.**
3. A potential piece of land has been identified that could be **used for soccer fields.**

At the point a leader, soccer or not, has stepped forward to lead the effort, the conversation about needing more soccer fields becomes a real project.

How To Use This Handbook

Are you a right brain or left-brain personality? Are you creative, analytical or some of both? Do you dip into a how-to book and sample from various chapters or do you read it from the opening page straight through to the addendums? This handbook has been designed for both the creative and the analytical type. In many cases, points will be illustrated with both anecdotes and analysis. Some points may be included more than once so they come up in each topic where they apply. This is not an encyclopedia, but instead a “how-to” guide that will point you in the right direction at each step in the project.

There is no simple cookie-cutter approach to field building. What each reader will gain is an understanding of the process and what’s possible. There is such diversity of needs and circumstances that no one-size can fit all. Chapter 2 is a selection of short success stories to open up your thinking to the possible. Some unusual approaches have worked for others. Some organizations have just been darn lucky. Others have “made lemonade” when it appeared all they had was a lemon on their hands. Creativity and a willingness to think outside the box is an important part of the field development process.

The balance of the handbook will walk you through the steps — and the thinking behind them — that has resulted in successful projects for many others. You will need to adapt the information to your circumstances. But soccer people have learned to be very adaptable!



● Feel free to dip in and out of this handbook. Move to the chapters and sections you need when you need them.

● Managing expectations can be one of the most challenging aspects of a field project. For those not immediately involved, it may seem like it’s taking too long, it’s not as big or involved as it should be or costs are too high. Consider building an email list and having a regular (at a frequency you can handle, such as bi-monthly or quarterly — perhaps more frequently as the project picks up speed) e-newsletter. It’s a low-cost mechanism to push out information on your project and keep people in touch. A website is also important but people have to remember to visit. An e-newsletter shows up in their mailbox and keeps them in touch with what you’re doing.



● There are important benefits to having different personalities on your field committee. A successful leader values that diversity. Different personalities have different skills and perspectives. A variety of approaches to problems and issues will be essential to your field project's success.

● A good leader knows that sharing credit may be the most powerful motivator of all.

The Making Of Great Leaders

One person or a very small number of motivated individuals most commonly drive soccer field success stories. It does not take large numbers to get the project moving. Ultimately, many people will be required to bring the project to fruition, but it really takes only one to get it started. It may be the club or league president, but it is equally likely that this leader will emerge from within the organization. We encourage you to take on this commitment and help get your community's soccer field project off the ground.

Leaders come in many different styles ... and they all can work. But what is required to build a successful soccer field project is the leader's willingness to:

- **Create a vision.**
- **Communicate that vision.**
- **Recruit others to help.**
- **Be energetic & passionate.**
- **Value collaboration & consensus.**

Leadership and building a team are always challenging and a soccer project is no different. But to make that role the most effective, here are some tips on gaining the cooperation of others, reprinted courtesy of The Leader's Institute (theleadersinstitute.com):

- **Acknowledge the importance of other people.** The deepest principle in human nature is the craving to be appreciated. — *William James*
- **Show enthusiasm and energy.** Enthusiasm is by far the highest paid quality on earth, probably because it is one of the rarest; yet it is one of the most contagious. — *Frank Bettger*
- **Encourage and facilitate two-way conversation.** Education is a kind of continuing dialogue, and a dialogue assumes, in the nature of the case, different points of view. — *Robert Hutchins*
- **Ask other people's opinions.** I have opinions of my own — strong opinions — but I don't always agree with them. — *President George W. Bush*
- **Ask questions instead of giving orders.** Never tell people how to do things. Tell them what you want them to achieve, and they will surprise you with their ingenuity. — *General George S. Patton*
- **Show sincere gratitude.** God gave you a gift of 86,400 seconds today. Have you used one to say "thank you"? — *William A. Ward*
- **Give strength-centered compliments.** The life of many a person could probably be changed if someone would only make him feel important. — *Dale Carnegie*

Taking The Community's Soccer Temperature

You will be working with two communities: soccer and everybody else. And, you'll need to take the soccer field "temperature" of both.

Here are four questions to judge the "temperature" of your soccer community:

1. Is the club and/or league board of directors excited and committed to a soccer field project? *Yes or No*
2. Is there a solid group of volunteers to draw from? A single leader can get the field project started, but it will take plenty of help to bring the project all the way to conclusion. *Yes or No*
3. Are there any cash resources already available from within your club or league to jumpstart the project? There will be lots more information on fundraising later in this handbook, but existing start-up cash is a great resource. *Yes or No*
4. Are there other soccer organizations in your area that you can work with or who have already been successful developing one or more fields? *Yes or No*

If you answer YES to all four questions, than your soccer community's temperature is HOT and ready to roll.

Here are four questions to judge the soccer field "temperature" of the rest of your community:

1. Are athletic facilities already part of a master plan of your community's park and recreation or other agency? *Yes or No*
2. Is "green space" a hot button for the politics in your area? *Yes or No*
3. Are there other agencies or groups such as school districts, universities, or the county that may be discussing developing athletic or recreational facilities? *Yes or No*
4. Has your community been financially supportive via tax or bond initiatives of civic spending? *Yes or No*

If the answer is YES to all four questions, then the rest of your community's temperature is HOT, too!



● Some field project teams have had good success with community surveys. However, these can be time consuming tasks and when you're asking "do you know about our soccer team" or "will you consider contributing donations to a soccer field project," you're as likely to get answers based on what people think you want to hear as much as what they will really do. But do a survey if you think it will have value in your situation. One of the most popular and least expensive online survey tools is SurveyMonkey.com. Even big companies use it!



● Invite inspectors to your planning meetings to help you troubleshoot. Actively recruit members of these agencies as volunteers on the project. They will know the inside and out of the planning and approval process.

● Put every contact you make in a database with their name, agency, mailing address, phone number and email. Try to include a notes field that lets you jot down how supportive (or not) they seemed and if there are specific resources or help they may be able to offer.

Inclusion: Laying The Groundwork

One of the early steps for the leadership of your soccer field project is to have a preliminary meeting or conversation with any individual or organization that may be able to help with this project.

You will do three things in these meetings:

1. **Let them know the need for soccer fields** and your intention to pursue the project.
2. **Ask if there are any plans or projects** that they know of that your soccer field project could be part of.
3. **Ask for their advice and willingness** to serve as a sounding board as you undertake the planning and preparation for your project. As your plans develop, you will want to take advantage of that availability. And most people love to be asked for advice!

The type of organizations and individuals to contact include:

- **City & county staff and elected officials.**
- **Parks & Recreation Dept. staff and elected or appointed officials.**
- **Other soccer organizations in your area** (they may be your rivals on the field, but off the field they can be strong allies).
- **Other sports organizations** (baseball, softball, football, rugby, lacrosse, skateboarders — all have need for space just like you do and may be willing to work with you or tell you about their experience).
- **School district staff and board members.**
- **Service/fraternal organizations who may be able to help your project** (i.e.: Lions, Kiwanis, Soroptimist).
- **Community media** (the editors or sports reporter for your local community newspaper).
- **Universities, colleges, churches, etc.**

Who's In Charge Of What?

Field project steering committees can range from very formal to very casual. But even if there are just two people in your hierarchy, you will be doing most of the same tasks as a committee many times that size. The following jobs may vary in what they're called and who does them, but this is a simple structure for your **Field Development Steering Committee**:

Chairman: Primary responsibility for the committee; lead spokesperson; insures that all deadlines are met and approvals signed off; insures that either he/she or another representative is at every important meeting and event; keeps the process on track; serves as “cheerleader” when the committee gets discouraged or has set backs. Will likely be the “face” of the field project.

Administrator: Keeps track of all the details; records and distributes meeting minutes; keeps calendar of important events, deadlines and other dates; keeps centralized copies of all contracts, minutes, invoices, correspondence; point person for day to day contact.

Committee Chair/Finance: Handles the following tasks or oversees committee members that handle the tasks of:

1. Fundraising (grant writing, sponsorship sales, donor development, fundraising events or projects)
2. Finance (budgets, approving invoices, bidding vendors)
3. Purchasing

Committee Chair/Operations:

1. Site location/selection
2. Selection of professionals i.e. contractor, landscape designer, architect, irrigation and turf experts
3. Permit oversight
4. Deadline/scheduling contact with contractor

Committee Chair/Communications & Marketing:

1. Oversees needs analysis
2. Coordinates media and public relations
3. Produces all necessary collateral material
4. Assists with fundraising projects
5. May “track” the political process

Look for the following qualities in all volunteers:

- **Relevant experience.**
- **Time availability.**
- **Commitment to the project.**
- **A history of follow-through.**
- **Enthusiasm.**
- **Team player.**



● People are rarely less busy than they are right now. If a volunteer doesn't currently have time to complete tasks they take on or misses deadlines, it is very unlikely that they will have more time in the future. Even when they think they will, life tends to get in the way!

● When gathering volunteers, value redundancies. If a person gets ill, is swamped at work or has a sick child, always try to have a back-up (or two!) that can step into their place.

● Have a regular meeting schedule of your field project team that people can plan around. Each task force should report progress and problems. Make these meetings short and convenient. (Perhaps a monthly breakfast meeting at a local restaurant?)

● Find a useful job for everybody that wants to help and every skill-set.

● Having a single administrator who coordinates all the paperwork and tracks details insures that the right hand and the left hand really do know what the other is doing! Seek someone for this position who is excellent with details and deadlines.



● When others ask, be forthright about your experiences. Share what works and what doesn't, even with competitors. What goes around comes around.

● Double-check everything. Never rely on one person who says something is true (particularly regarding legal or permit questions). Important corollary: Get everything in writing. And make copies.

What Is The Need?

An important Getting Started step is analyzing the specific need for your soccer field project. These will be the hard numbers that fire up your steering committee, give fuel to your case for a field project and serve as the foundation of much of your planning, fundraising, site selection, design and construction.

You should consider both current needs and your needs over time. To project growth, determine what has been the percentage of growth (in number of players) over the last five years. Then consider what is taking place in your community in terms of the increase in the number of families with children. Are you a fast-growing community or has your community leveled out? Your projection for growth should go out at least five years into the future. It should be a reasonable, educated estimate. Call your local city offices to determine what department and person would be the best to speak with to help you gather this information:

- **Number of current competitive & recreational players.**
- **Expected increase in number of players.**
- **Average number of players per team.**
- **Number of teams.**
- **Number of hours each team practices per week.**
- **Ages of teams.** (Younger teams will play small-sided games which allow two games to be played on a single full-size field.)
- **How many additional games may there be if lights are added to the fields?**
- **Average length of each game.** (Recognizing older kids or adults may play a full 45 minute half, but younger kids will play shorter halves.)
- **Number of games per weekend.**
- **Fields needed for games per weekend.**
- **Are tournaments important to you now or in the future?**

How To Build Consensus

There is no project, soccer fields or otherwise, that will get universal agreement from all its stakeholders. But what it must have is the consensus that it is valuable and worth pursuing. Consensus decision-making, as defined by Wikipedia, the free online encyclopedia that is built completely on the consensus of its users who can change anything they don't agree with, is a decision-making process that not only seeks the agreement of most participants, but also to resolve or mitigate the objectives of the minority to achieve the most agreeable decision. In the end, it doesn't mean everybody thinks it's the perfect solution. But it does mean it's a solution everybody can live with.

Sometimes you can simply force a project through with the power of your personality, your expertise or your ability to bring voters to the table. But you ignore consensus building at your peril. Consensus building is not the fastest decision making process, but it insures that everybody can live with, and support, the final outcome.

In building consensus, focus first on what you all agree on (i.e. it's good to keep kids off the street, we need more recreational space, child obesity is a problem, safety first). Often it is most things. Building your relationships on what you agree on will help you tackle those later disagreements in a friendlier, less confrontational manner.

To help build consensus within your leadership team, soccer organization or larger community:

- **Listen more than speak.**
- **Speak softly. Loud voices raise blood pressure.**
- **Remember that there's always more to learn.**
- **Look for areas of agreement.**
- **Be courteous.**
- **Build relationships.**
- **Assume everyone has his or her heart in the right place.**
- **Support positive movement even when it's not quite as far as you want it to go!**
- **Leave egos at the door.**
- **Set goals and move forward.**



● “Don't get ahead of yourself. Put your energy into solving the current problem. If you don't have land, you can't worry about bleachers. If you have land but no money, you can't bring in bulldozers until you get funds.” — Doug Fielding, Bay Area Association of Fields

● There will always be barriers — financial, physical and political. Expect them and realize they are valid. Be prepared to logically, emotionally and financially deal with them on their merits.



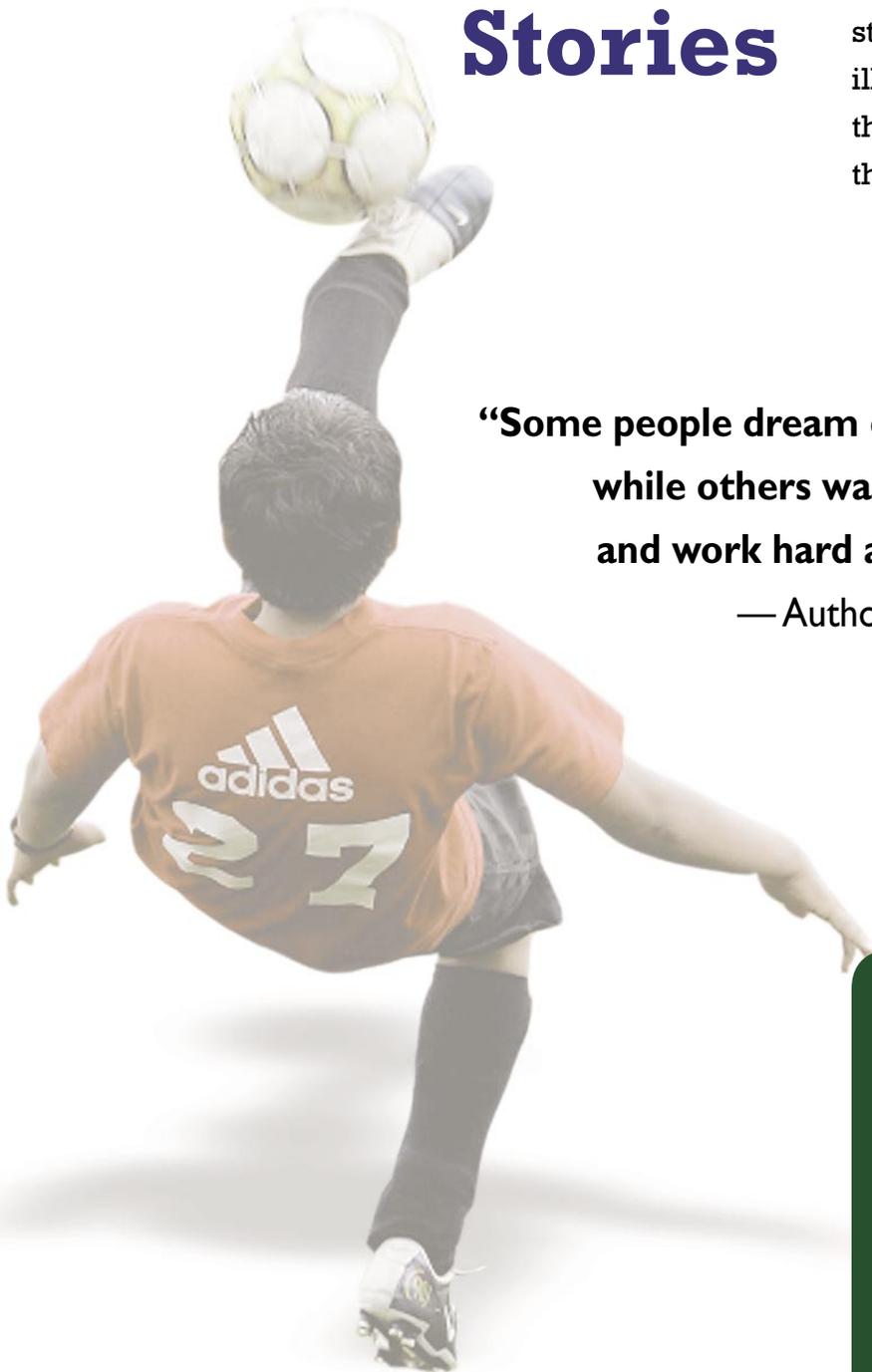
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Soccer Success Stories

Nothing is more heartening than stories of communities that have been successful developing soccer fields. Here are seven success stories and one “nice try” — to illustrate the energy and creativity that soccer people bring to building their field of dreams.

**“Some people dream of success ...
while others wake up
and work hard at it.”**

— Author Unknown



CHAPTER 2 CONTENTS

- Waverly, Iowa
- Montgomery County, Maryland
- Boise, Idaho
- Warren County, Virginia
- Clearfield, Pennsylvania
- Berkeley, California
- Lancaster, California
- Horsham, Pennsylvania

Skilled Volunteers Key To Staying On Time And On Budget

Waverly Shell Rock Soccer Complex
Waverly, Iowa

When the Waverly Shell Rock Soccer Association planned its new complex, the organization, which serves 500 players and spans two towns five miles apart in northeastern Iowa, knew what it wanted: nine full-sized fields, including a fenced and lighted premier facility to showcase the local high school program. They had spent years finding the land and months planning and designing the project.

They also knew they wanted to maintain control of the project, rather than have local government run it. They knew they were working on a tight budget and wanted to have the complex completed in record time. Meticulous planning was going to be the key to success.

How To Do It On A Budget

Waverly Shell Rock's organizers also knew what they did not want: hiring professional fundraisers, or paying a general contractor. They'd seen other soccer groups contract out fundraising and general contracting, and knew that in their two small communities that cost would be prohibitive.

"We couldn't afford those funds, so we had to figure out how to do it ourselves," said Waverly Shell Rock secretary/treasurer Bruce Toenjes.

Their can-do attitude, a bevy of skilled, committed volunteers, lots of planning and some fortuitous circumstances ultimately brought the project in at \$1

million, including \$350,000 for the cost of the land. This is considerably less than half of what the same project would generally cost EXCLUDING the land cost.

Waverly also found an uncommon way to drastically cut its maintenance cost: it dug a well on the property. Their underground irrigation system could run right off their own well water.

Keeping Control Was Critical

The other factor that was critical to Toenjes and his board was retaining control of the project. "We'd been playing on public fields all over town. We knew what it's like to have conflicts with other events, and worry the grass wouldn't be cut," Toenjes said. Board members had attended a U.S. Youth Soccer workshop and had heard disturbing stories of other soccer organizations that felt they had lost control of their facility to a city or school district.

"We knew, with the money we were putting in, that we wanted to keep control," Toenjes said. "But we also knew that because the city was still providing substantial financial support, they had to get something out of it too." What the city of Waverly got was a premier facility — and they got it far faster than if they'd had to bid it out and build it through traditional government channels. The complex now belongs to the Waverly Shell Rock Soccer Association, though a provision allows the city to take title to it at some point. If that option is exercised, the soccer organization can enter into a long-term lease.

The key to both cost containment and the speed of getting the facility up was doing it themselves.

Skilled, Willing Volunteers Are Key

Finding a volunteer construction supervisor was critical to the project's success. Jeff Soash, a board member whose fulltime job is electrical contracting, volunteered to serve as the general contractor. He was

What the city of Waverly got was a premier facility — and they got it far faster than if they'd had to bid it out and build it through traditional government channels.

involved from the initial stages, and was instrumental in adding a second floor to the concession-restroom building, for meetings and tournament administration. “That was a great idea,” Toenjes said. “Everyone uses it, including referees. Other teams are really jealous.”

Soash knew what he was doing, from both soccer and engineering perspectives. A former player and referee, he was familiar with what worked — and what did not — at other facilities. “He had a vision. He knew what he wanted, and what we wanted,” Toenjes said.

Soash stopped by often, in between his own jobs and after work. He estimates that at the peak of the project, he was putting in 50-80 hours a week. Beyond time and expertise, he contributed money to the project. In appreciation, Waverly Shell Rock named its concession-administration building in honor of his family.

Other board members volunteered legal and regulatory work, and wrote grants. They did hire a local surveyor to handle the surveying, construction drawings, and much of the on-site supervision of grading.

Fundraising On The Fly

No board member had formal fundraising experience, so they learned on the fly. They asked a local accountant (not a board member) to handle funds; his assistant tracked pledges and gifts. Most fundraising took the form of sponsorships.

Looking back, Toenjes said, the group’s biggest mistake might have been undervaluing the amount charged for some naming rights. The premier field — named for Rada Manufacturing — went for \$75,000, which Toenjes termed “about right,” but if Waverly Shell Rock had charged just \$5,000 more than the \$25,000 requested for each non-premier field, they’d have raised an extra \$40,000. The project was completed with an \$80,000 shortfall, so that would have cut the deficit in half.

Local Businesses Buy Naming Rights

Local businesses, including G&R Publishing, First National Bank, First Insurance Services and State Bank of Waverly, bought naming rights. So did service groups like the local Kiwanis Club and Masons, and

the R. J. McElroy Trust.

Nestle signed on as well.

The Rada, G&R, McElroy and Nestle pledges were paid up front. Others were spread over time — typically, \$5,000 a year for five years. That forced the club to borrow over \$200,000 from a bank and from city and county economic development organizations. Though the interest rate was good, borrowing added \$80,000 to \$120,000 to the total cost of the project.

Borrowing Was Money Well Spent

Toenjes called it money well spent. “If we had waited for every penny to come in, we still wouldn’t have been able to turn over dirt. It was a question of getting started and completed, even if we didn’t have all the cash in hand.”

Yet despite all the volunteer planning and work, Waverly Shell Rock’s project would not have been a success without careful attention to the field surface itself. B&K Products of Des Moines took soil samples, and provided fertilizer and seed recommendations.

The soccer club also consulted with Iowa State University’s extension service and a local turf expert (a golf course maintenance supervisor), and then poured over Pennsylvania State University’s resource materials. When all those sources agreed on the approach the soccer organization wanted to take, Toenjes said, “we knew we were on the right track.”

Excellent planning and an enormous commitment of time and enthusiasm by dedicated volunteers is what allowed Waverly to bring its project in on time, and under budget. Their choices may not work for everyone, but it should encourage every field project design team to consider all its options. ■

Excellent planning and an enormous commitment of time and enthusiasm by dedicated volunteers is what allowed Waverly to bring its project in on time, and under budget.



Maryland Complex Models European Facilities

Maryland SoccerPlex And Discovery Sports Center
Montgomery County, Maryland

In the mid-1990s, John and Maureen Hendricks returned home to Maryland from the Gothia Cup. Their daughter played for the prestigious Bethesda Soccer Club, and the facilities in Sweden impressed Hendricks — founder of the Discovery Channel — and his wife. Chatting in a Pizzeria Uno with Bethesda soccer booster Ken Solomon, they realized the only thing holding back soccer in the Washington, D.C. area was a lack of good fields.

That week Hendricks called friends and acquaintances, including the governor of Maryland and the Montgomery County executive, to gauge support for a plan to build a soccer complex.

“The stars were aligned,” said Trish Heffelfinger, executive director of the Maryland Soccer Foundation, the parent organization for what is now the Maryland SoccerPlex and Discovery Sports Center.

Business Plan Kicks Off Process

The Foundation was incorporated in October 1997. An extensive and detailed business plan was created outlining the vision and mission of the project, the people and companies that would be involved, the communities that would be served, expense and revenue projections, maps, photos and timelines — in all almost 100 pages of details and documentation.

Fifteen months later, the Montgomery County Planning Board approved a proposal to build a \$19 million soccer complex in Germantown, several miles northwest of Washington. It was the largest public/private partnership ever in the county.

The approval process was interesting, Heffelfinger said, “From a private standpoint we found it lengthy and frustrating. But other people who have dealt with government told us we did it with lightning speed.”

Overcoming Neighborhood Objections

Three neighbors objected to the proposal, citing traffic and pollution concerns. However, Heffelfinger said, “enough people in the public saw that it fit a real need. We were totally devoid of adequate fields.”

The Foundation told county executive Doug Duncan it wanted to construct a 24-field complex. At the time, South Germantown Recreation Park was being planned for 13 fields, tennis courts, baseball diamonds, a swimming pool and an adventure playground. Duncan and the Maryland-National Capital Park and Planning Commission said that, if the Maryland Soccer Foundation could redesign the park for 24 fields — without sacrificing all the other elements, — they’d OK it. Working with a landscape architect, the Foundation devised a plan that worked.

The Foundation offered to lease 162 acres of the 655-acre park for soccer. It financed the \$14.1 million cost of 19 fields (four more are planned), plus a stadium and indoor multi-use facility, through tax-exempt bonds. Debt service and operating costs were to come from operating revenue, sponsorships and donations. Hendricks provided important contacts and introductions to help raise additional funds from local corporations, while his wife was a driving force behind development and construction.

Fear For First-timers

However, Heffelfinger said, “The commission was scared. They’d never built or managed a complex like this. We told them we could do it — that we had a plan, and would be good stewards of the land. But we hadn’t done it either. There was no proof. We spent a lot of time building trust, helping them see our point of view. Along the way, we developed an outstanding working relationship with the commission.”

Construction began in July 1999. The complex

Despite outreach to other athletic and non-athletic communities, Heffelfinger said that soccer remains the facility’s primary user. No other sport is played on the soccer fields, and in the summer of 2005 an outdoor league was introduced.

opened 15 months later, with the Rael Vodicka Washington Area Girls Soccer (WAGS) Tournament as its premier event. “That was incredibly gutsy,” Heffelfinger acknowledged. “None of us had ever worked on a tournament before, and there we were showcasing the premier girls tournament in the country. But it was incredibly exciting, and it put our facility on the map instantly.”

Providing Good Stewardship

The Foundation has proved to be good stewards of the land. Its operation of the SoccerPlex exceeded the planning commission’s expectations, Heffelfinger said. Families — particularly those with young children — have embraced the complex.

Yet difficulties arose.

“Like any group, we got very excited by our ‘field of dreams,’” said Heffelfinger. “But I think we also lost sight of the unglamorous side of things: the maintenance, and the cost of marketing and operations.”

Debt service is \$1 million a year. The business plan was developed in 1997, during a booming economy.

“It was the dot-com era, there are a lot of high-tech companies in this area, and we anticipated the facility would draw lots of sponsors,” Heffelfinger said.

Economic Changes Impact Outcome

By 2000, however, the economy had slowed, and many dot-com firms failed. The Foundation realized its Catch-22: it solicited sponsors while building the complex, but those sponsors waited to commit until the gates opened. “This is a great sponsorship opportunity, but it’s not an easy sell,” Heffelfinger said. “Timing is important. Unfortunately, we were behind the eight-ball from day one.”

The first year of operation saw a significant shortfall in revenue. The Foundation had planned to break even by the end of year two. Five years later, it was still working on achieving that goal.

Determined to make the complex work, the Foundation focused on alternate sources of operating revenue. It broadened its Soccer Tots program, and appealed more directly to the baseball, volleyball, and lacrosse communities. In addition, it broadened the marketing and use of its indoor facility.

Indoor Center Morphs To Events

What had been planned as an indoor soccer center morphed into a venue for trade shows, and cultural and community events. “Event management” was added to the job description of facility employees.

However, it took a year to gain approval for a lease amendment to make it happen. County executives feared the indoor sports center would become a corporate convention center. However, Heffelfinger said, 85 to 90 percent of indoor events are still geared to youth sports.

Fortunately, Heffelfinger said, county residents have realized that non-sports activities, like church festivals, an interior design show and an Indian cultural event, add value to the facility.

Facility Business Always Evolving

“We’re always looking at the mix of what we offer, and trying to add quality events,” Heffelfinger noted. “We originally thought we’d do a lot of basketball, but we found it hard to compete with the county in the leagues we offered. So now we emphasize basketball tournaments and camps, not leagues.”

It took two to three years to understand the value of the facility to various markets, she said.

Despite outreach to other athletic and non-athletic communities, Heffelfinger said that soccer remains the facility’s primary user. No other sport is played on the soccer fields, and in the summer of 2005 an outdoor league was introduced. Soccer revenue is important: in 2005 the Foundation charged a fee of \$300 per game (a two-hour block of time), up from \$200 in 2000. There are 4,200 games a year.

Fees Pay Maintenance

Those fees help pay for maintenance. Including equipment, materials and labor, that maintenance runs to \$25,000 a year — per field. Maintenance is the one budget item that increased in both 2004 and ’05, Heffelfinger said. “Outdoor facilities are a finite resource. If you don’t take care of them, your facility suffers.”

It has been a long and winding path from pizza parlor to SoccerPlex. Yet despite all the ups and downs, Heffelfinger said, “anyone here will tell you this is the most worthwhile thing any of us has ever done. Nothing compares with seeing kids coming in with their families and playing soccer on excellent fields.” ■

Turf Farm Is Creative Solution To Field Needs

Boise Capital Soccer Club
Boise, Idaho

Creativity is the key to funding field maintenance. Soccer clubs often spend tremendous time and energy battling over playing surfaces. Grass or synthetic turf? If the latter, what type? Which is better for players? Which is more economical to build? Which is easier or cheaper to maintain?

The Boise Capital Soccer Club never discussed those issues. From the moment it identified the site of its new complex, it knew it would be grass. The reason: It purchased 20 acres from a turf farm.

The owner had spent his professional life growing lush, green grass. The club also extended the relationship to include a major in-kind donation from the turf farm owner for almost all the maintenance of the fields, plus the use of additional space for large tournaments.

Boise Capital's board of directors did not set out to buy part of a turf farm. When they began searching for a fields site several years earlier, they were open to just about anything.

As the largest soccer club in Idaho, situated in a booming metropolitan area, they had a couple of specific criteria — centrally located to the growth of

the Boise Valley; easy access from major roads and highways — but high purchase prices or restrictions on land usage limited most options.

Turf Catches Coach's Eye

One day, a coach in their program stopped by the Turf Company farm. He was there for non-soccer reasons, but as he gazed out at the “flat land filled with acres of sod, ready to be harvested and trucked to homes and private industries throughout the West” he recognized its potential as playing fields.

The owner of the turf farm had no soccer connection, beyond previously leasing a small portion of his land to a Police Athletic League soccer group. But he liked children, he understood the value of the game to youngsters and soon he and the Boise Capital directors were in serious negotiations.

At first, said Mike Brown, secretary of Boise Capital Soccer Foundation (the non-profit arm of the club charged with developing the facility), the club planned to lease a portion of the turf farm. But the Turf Company had a different idea: The club could purchase 20 acres of the farm's total of 150 acres, allow the company to continue to grow turf, and rotate eight full-sized fields from year to year, allowing different sections of the property to be harvested. An agreement was quickly hammered out, which included the use of adjacent acreage for large tournaments.

Boise Capital's board of directors did not set out to buy part of a turf farm. When they began searching for a fields site several years earlier, they were open to just about anything.

All Maintenance Included

It was a win-win plan. The owner maintains all the turf, including fertilizing, growing and cutting. Training and playing on the turf actually strengthens the roots, helping develop better sod for the company. “It takes 10 months to grow good turf,” Brown said. “It's nice to be part of that process. And for us, having great turf really enhances our technical training.”



Before each season, the Boise club tells the Turf Company owner the number of fields it needs. He accommodates and they move accordingly. Perhaps the only downside to the arrangement: There are no bleachers. However, that has not diminished the attraction of the site. “Other clubs come here, and they’re amazed,” Brown said. “They say, ‘Why hasn’t anyone else thought of this?’”

The club takes care of all the lining, but the turf farm handles irrigation, using wheel lines. Every team’s post-training cool-down routine includes moving portable goals, to facilitate watering.

Donated Computers Expand Services

The Boise Capital club uses four of the 20 acres for parking. One field is lighted; it is the only permanent one. The club built one permanent structure, a two-story clubhouse. Outfitted with a big-screen TV,

The clubhouse also includes donated computers, so players can do homework before or after training; offices for coaching directors and changing facilities for referees. On the drawing board: a barbecue pit.

it’s perfect for get-togethers (several teams have held sleepovers). The clubhouse also includes donated computers, so players can do homework before or after training; offices for coaching directors and changing facilities for referees. On the drawing board: a barbecue pit.

In just one year from conception to operation, the turf farm facility has planted Boise Capital firmly on the Western soccer map. US Club Soccer held a regional tournament at the site, and the district and state

high school tournaments were played there. It was the first time all the high school championships were held in one place.

All of Boise is proud of the Capitals’ Turf Company fields, but perhaps no one is prouder than the company’s owner. At one tournament, thrilled by the crowds, banners and excitement, he hired a helicopter to photograph it from the air. ■

The Biggest Challenge Can Be Managing Expectations

Skyline Soccerplex
Warren County, Virginia

For 20 years, part of Ed Stump Park had been used for soccer. The fields were rough, and not even flat, but for many players in Warren County, Virginia the space sufficed. However, by the late 1990s soccer had taken off around Front Royal, Va., in the northwestern part of the state. With over 1,000 youth players, demand for adequate facilities was growing.

Ten years earlier Avtex Fibres Inc., the county's largest employer and for 40 years a leading manufacturer of rayon (used primarily by the military for things like parachute cords), was closed by the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Environmental Quality. The land was polluted with fly ash, zinc sulphate and copper disulphide, and in 1986 was designated a Superfund site.

Useable Site Emerges

Yet part of the property had not been used for manufacturing. By 1998 the county was negotiating with bankruptcy attorneys and the EPA to purchase 75 acres for \$25,000, plus back taxes. It was recommended that 30 of those acres be developed to expand adjacent Ed Stump Park.

The following spring, Doug Stanley, Warren County's administrator and director of planning, was contacted by the EPA and FMC Corporation, the site's owner from 1963-76 that bore the entire \$80 million responsibility for cleanup.

The EPA and FMC asked about the possibility of constructing soccer fields there. Stanley got other parties on board, including town and county officials, the Front Royal-Warren County Economic Development Authority, youth soccer representatives, and the local newspaper.

In June 1999, the executive director of the U.S. Soccer Foundation paid a visit. At that time the Foun-

ation was seeking to develop soccer fields at 11 Superfund sites across the country. The partnership included bipartisan support from U.S. Senators John Warner and Charles Robb.

Site Has Special Challenges

This project was more difficult than those at other Superfund sites. The Virginia property was covered with trees and scrub brush; it also had to be graded. The partners hoped that the Army Corps of Engineers and a state reserve unit could remove the growth and grade the land, but eventually FMC did much of the work.

The company provided \$150,000 in in-kind services, taking off topsoil and removing clay. They used that material as fill in their other projects. The U.S. Soccer Foundation also helped, bringing in an engineering company early in the process to assist with needs and cost assessments.

Phase I, completed in June 2005, consisted of four fields, including a stadium field with in-ground irrigation system, plus a playground, shelter and parking lot. The county provided \$510,000, the U.S. Soccer Foundation \$120,000, the town \$73,387, and the Front Royal Soccer Association \$20,000. Phase 2, involving three additional fields, lights, restrooms, concession stands, bleachers, a maintenance and storage facility, drinking fountains and a walking trail, is scheduled for completion by 2012.

A Long Haul

It's been a long haul, Stanley admitted, and no one has been more frustrated at the time frame than the public. "They expected instant results," he said. "Managing expectations has been one of our biggest challenges."

But after years playing on rough, ungraded fields, not far from a polluted park, Warren County's burgeoning soccer population knows it's worth the wait. ■

It's been a long haul But after years playing on rough, ungraded fields, not far from a polluted park, Warren County's burgeoning soccer population knows it's worth the wait.

Former Airfield Reborn As Soccer Fields

Clearfield Soccer Association
Clearfield, Pennsylvania

The Clearfield Soccer Association looked for land for new soccer fields for nearly a decade. Plenty of areas in central Pennsylvania have been strip mined for coal, then reclaimed by mining companies, and they seemed likely sites. But the state's stringent Department of Environmental Protection (DEP) regulations controlled their use, and CSA volunteers could not find anything suitable for soccer fields.

Then came word that a nearby garment business was scaling back, and no longer needed the back third of their 75-acre property. A former airfield, it was flat and grassy. A CSA coach, whose full-time job is as a surveyor, was asked to do site work. He identified 22 acres as ideal. The price was set: \$3,000 an acre.

Volunteers Bring Many Skills

A group of 10 CSA members spearheaded the project. Three had been involved since the organization first began looking for land. Two were attorneys; one was the surveyor; others included mining executives, paralegals, a banker and a logger.

"They represented a good range of backgrounds and vocations," said former CSA president Eric Johnson. "It's important to have different people working in different areas, depending on their strengths, interests and expertise."

The attorneys researched the property's history, negotiated the purchase agreement, gained approval for a change in zoning from commercial back to its original designation as agricultural/residential (which allowed construction of a recreational park), and

worked out a right of way through the property to the fields in back. A soccer parent who worked for the DEP handled all water flow issues. The paralegals handled much of the organizational and secretarial work.

The surveyor was particularly important. He managed the topographic details, and ensured that the fields were constructed on the flattest area available. "The flatter the surface, the less work and expense you have," Johnson noted.

Good Soil

Good soil is critical to containing the costs of soccer field construction and the CSA was fortunate that theirs was excellent. "This was virgin farmland, with 12 inches of topsoil," Johnson said. "We had so much, we skimmed some off so it wouldn't be too muddy." They stored the extra topsoil to use in the future.

The CSA also utilized the services of mining experts. Their excavation and earth-moving knowledge was invaluable, Johnson said.

But the land could not become fields unless the CSA purchased it. To raise the more than \$100,000 in cash, and a similar amount in in-kind donations, the organization initiated a "Buy an Acre" campaign. Prices were \$4,000 for a full acre, \$2,000 for a half acre and \$1,000 for a quarter acre. Those contributions are recognized with plaques (in three sizes) in the concessions and storage building. Three groups — U.S. Soccer, the Pennsylvania Department of Conservation and Natural Resources, and a local family — ponied up \$10,000 each to buy entire fields, which will be named for them.

Benefits Key To Fundraising

Offering those naming rights and plaques was important, Johnson said. "Whenever you fundraise, you have to give something in order to get something in return. You have to show a definite benefit. It doesn't have to be elaborate, but it has to be something." >>

"Whenever you fundraise, you have to give something in order to get something in return. You have to show a definite benefit. It doesn't have to be elaborate, but it has to be something."

>> Former Airfield Reborn As Soccer Fields, continued

A dinner-dance was more important as a publicity tool than for the amount of money generated. “A lot of fundraising isn’t direct,” Johnson noted. “Sometimes an event creates publicity, and that leads to a donation indirectly down the road.” The \$100,000 was raised in less than a year.

It still took three years for actual work to begin on four full-size fields, eight smaller ones, a building for concessions, restrooms and storage, and infrastructure such as water, sewer, electricity, roads and parking. The process was not always smooth, Johnson admitted. “We had our fights. Toes got stepped on. But our goal was fields for kids, and whenever we had a problem we regrouped, re-examined our focus, and said, ‘Let’s move forward.’”

Excavation Costs Slow Project

One reason it took three years to build the fields is that excavation costs were high. The CSA examined many options. One was to rent equipment through government agencies, then ask for volunteers to operate it. “There are a lot of retired heavy equipment operators in this area, with grandchildren in our program,” Johnson said. “They would have done it for six or eight hours a day. But we didn’t have anyone who could spend that time overseeing the project as a construction manager.”

Many issues were solved by researching how other organizations solved similar ones. CSA officials talked often with clubs in an 80-mile radius.

The CSA group met once a month, to assess progress in both site development and fundraising. Everyone took ownership of both areas. “With a small

group, you don’t want to get too fragmented,” Johnson said.

Grants Important Funding Source

Another option to help with expenses was grants. The CSA applied for several – and were turned down. The reason was that they were not yet ready to begin construction. But they reapplied, made sure they could meet certain target dates and deadlines, and were awarded \$30,000 from the U.S. Soccer Foundation, and \$10,000 from KwikGoal.

That created a snowball effect. A local businessman put the CSA in touch with a state legislator. The connection led to a \$100,000 grant from the Pennsylvania Department of Conservation and Natural Resources.

Though a tremendous help, that grant came with strings attached. “When you accept state money, you have to play by their rules,” Johnson said. One rule was that the CSA was bound to pay prevailing wages on contracts. A bit of research, however, determined that this stipulation applied only on large contracts.

Reworking Bid Ensures Success

The next step was to put the entire project out to bid. Two came back, but both were deemed too high. So a local contractor helped the CSA rework the bid. After whittling down some specifications, the organization put the project out to bid again.

This time, they received a bid for \$80,000 – including a 1,700-foot shale and stone road. Road costs were kept low by two important contributions. A local quarry donated 300 tons of stone, while a nearby mining company offered more than 100 tons of shale.

Finally, Clearfield Soccer Association was a truly fitting name! ■

The process was not always smooth, Johnson admitted. “We had our fights. Toes got stepped on. But our goal was fields for kids, and whenever we had a problem we regrouped, re-examined our focus, and said, ‘Let’s move forward.’”

Perseverance And Partnerships Pay Off

Fielding, Harrison And Gilman Fields
Berkeley, California

Doug Fielding has learned a few important lessons after years spent developing athletic fields in Berkeley, California. They include:

- Rome wasn't built in a day and neither are soccer fields. Figure three to five years of long-range, intense work.

- Big corporations and foundations are not likely to give big money to fields projects. And even if you snag a rare \$100,000 grant, that's a drop in the bucket compared to what you'll likely need to build even one field.

- Politicians have plenty on their plate besides field construction. They must be educated about the importance of youth sports.

Whatever It Takes

Whether creating alliances with other sports organizations, skateboarders and environmental groups, countering neighborhood opposition to field development or applying political pressure to City Council members, Fielding has done whatever it takes to build athletic fields on three separate sites that are valued at over \$24 million. And in Berkeley, one of the toughest places in America to be awarded permits and allay concerns, that's saying something.

Obstacles are inevitable. In Berkeley, these often take political form. For example, one set of fields was planned for an unused parcel of land on the edge of an industrial neighborhood. Objections arose on a variety of levels: The possibly toxic air could harm

young players. Field construction might drive out existing industry. Removing the property from tax rolls would harm the city's finances.

Another project faced objections from neighbors who feared it would lower their property values. A third park, 14 acres of a 2,100-acre parcel planned for a state park, was opposed by environmental groups that wanted to keep the area undeveloped.

Change Is Often Hard

"No matter where you decide to make a change, people will complain," Fielding says.

That's when politicians become involved and the process really starts. As passionate as you may be about your project — and as equally worked-up as your opponents may be — politicians may not see it as urgently.

Fielding says, "Politicians deal with lots of issues. As important as I may think a playing field is, it may take a back seat to budget cuts or education. That's why it's so key to get politicians to pay attention to your cause. Find someone who knows the mayor or City Council members, who can pick up the phone and meet with them."

You have to make them understand the profound importance of youth sports to their community. You have to prove to them that this is not just your issue — it's an issue for hundreds of kids, and for all their parents who vote."

Creating A Multi-sport Alliance

In Berkeley, Fielding produced large numbers by creating an alliance called the Association of Sports Field Users (including skateboarders, whom Fielding says "are great at meetings"). The organization included men, women and children in a variety of sports. "Politicians saw there were a lot of eyes watching," Fielding says.

To counter complaints about building fields in an industrial area, Fielding's group pointed to similar

"Find someone who knows the mayor or City Council members, who can pick up the phone and meet with them."



>> Perseverance And Partnerships Pay Off, continued

successful projects. For the 2,100 upland acres, field proponents emphasized the importance of combining both passive and recreational usage.

But it's one thing to call a politician; it's another entirely to call a corporation or foundation. "There's not a lot of sources for funding," Fielding says. "Everyone talks about getting \$100,000 from the US Soccer Foundation, or \$25,000 from Starbucks or money from Nike. Well, around here a field costs three to four million dollars, when you factor in the cost of land. Even if you get a couple of grants, whose got the rest of that money?" His answer: municipal, state and federal governments.

Partners Help With Government Funds

Because his Berkeley projects involve multi-sport fields, Fielding says he partners with anyone he can in his quest for government funds. "All they have to do is live and breathe." Too few soccer organizations do this, he says. "The soccer community must join in with softball and baseball groups, even if they're battling over who gets which slots. Sports groups have a lot in common, whether they realize it or not."

For all those reasons — planning, designing, countering criticism, raising funds and finally construction itself — it will take years to get the project done. Many soccer volunteers are not used to thinking that far ahead. Nor are many willing to commit so much time and energy to a field their own child may never get to use.

"It takes a certain type of person to hold on for so long," Fielding says. "It's an astronomical amount of work." He finds people who have already shown that their love for the game transcends all else — people

who do not coach their own children, for example, or those who serve an organization even if their own kids no longer play.

Small Team; Special Skills

Fielding works on each project with a small (six- or seven-person) team. Each member has a specific skill set that must be maximized. One person may be the no-nonsense "bad cop"; another the more mellow "good cop," able to smooth over hurt feelings engendered by the tougher bad cop. One person may be a detail-oriented engineer; another, a big-picture environmentalist; a third, someone who deals every day with contractors. Each person should handle the role he or she is best suited for.

Fielding, for one, knows his role. "I'm the abrasive guy," he says proudly. "I'll fight for anything."

Which is why Berkeley now boasts the \$18 million Gilman Fields, the \$5 million Harrison Park — and the \$250,000 Fielding Fields. ■

"The soccer community must join in with softball and baseball groups, even if they're battling over who gets which slots. Sports groups have a lot in common, whether they realize it or not."

Land-switch Makes Soccer Destination A Reality

Lancaster National Soccer Center
Lancaster, California

When you've got lemons, so the saying goes, make lemonade. A corollary could be: when you've got 100 acres of long, narrow land directly underneath the flight corridor of an aircraft test site, make soccer fields.

That's what Lancaster, California did. The city of 130,000, located in the high desert Antelope Valley, has fulfilled its ambition: to become a regional soccer destination, attracting teams and tournaments from throughout the West

In the mid-1990s, Lancaster's six fields, located at one city park, could not meet the heavy demands of California Youth Soccer Association-South teams, as well as adult leagues. (AYSO teams utilized area schools). Recognizing a need for more fields — and an opportunity to draw tourist dollars into the local economy — the planning commission, redevelopment agency, city council and city managers decided to go whole hog.

Creating A Soccer Destination

They researched the numbers and sizes of fields, plus amenities, at complexes that were already regional attractions, in places like Bakersfield, Temecula, San Bernardino and Orange County, and as far away as Boise, Idaho. Then the town fathers pledged to equal or better them.

Though much of Southern California is overdeveloped, Lancaster still had large open expanses. Some city-owned land was more desirable for housing than recreation; developers, meanwhile, owned parcels underneath the aircraft test flight path, just south of Edwards Air Force Base, that would be a tough sell to homebuyers. A creative land deal that included swapping the two parcels created a mile-long, extremely narrow site that was perfect for soccer fields.

City and state funds, including contributions from

the redevelopment agency, moved the process along. The first of three major construction phases began in 1997. By 2005, Lancaster had built 34 grass fields. Twenty-four were regulation size; the other 10 were big enough for U-10 games. Eight regulation fields boasted full lighting; another dozen had practice lighting. There were five restroom buildings (two with concession stands), two activity centers (with restrooms, offices and social halls), two play areas, a maintenance yard, and plenty of parking.

Adapting To A Unique Site

But every site has its own peculiarities. Early on, planners realized that wind would be a problem, so trees were quickly planted.

Bleachers were low on the priority list, so berms (earth embankments) serve as both seating areas and windbreaks.

Because of the site's configuration — it is just two regulation-size fields wide — parking is done in small areas, rather than in large central lots. Directional kiosks, with maps and "you are here" arrows, help orient visitors.

It did not take long for Lancaster's field complex to fulfill its creators' dreams. In fact, according to parks supervisor Dan Munz, "We're not only a regional site — we attracted too much attention!" To prevent overuse, the fields are closed every Friday. Tournaments are prohibited during July and August, though league play is allowed. ■

A creative land deal that included swapping the two parcels, created a mile-long, extremely narrow site that was perfect for soccer fields.



Fields Not Easy Even For ‘Super Clubs’

FC Delco
Horsham, Pennsylvania

FC Delco's experience in developing a soccer field project is a reminder that the road to building soccer fields can be a bumpy one, even for the most famous soccer clubs.

For 18 months, FC Delco pursued a range of options for a field. It had developed one of the most successful soccer programs in the country, but that could not shield it from an East Coast reality: land is expensive, hard to come by and strictly zoned.

Rather than purchase private property, Delco approached schools and municipalities across eastern Pennsylvania. The club pitched its project as a win-win situation: the soccer group brought know-how and some money to the table, while the government agencies would gain a much-needed multipurpose synthetic grass field. It would be utilized each afternoon for interscholastic athletics, but Delco realized that many of its own players were involved in those programs too. The club's primary needs were evenings and weekends. Delco accepted its secondary position — and even made it a selling point to politicians and educators.

Educating Potential Partners Is Key

Both cities and schools needed to be sold on the project's concept and that educating wasn't always easy. "We found municipalities were developing space without a plan," said FC Delco president Rob Smith. "Some didn't realize the extent to which [top quality synthetic grass] could not only reduce maintenance expenses of fields, but also reduce maintenance expenses of open space."

Some townships did not know they could get grants to help with field development. "Municipalities don't always think in terms of public/private partnerships," Smith noted. "A lot of times they think of private organizations as adversarial, but we're not."

Negotiations began in earnest with one school district. "The superintendent of grounds was great to work with," said Smith. "He knew all the field maintenance issues, and all the budget issues. Plus, he had the school superintendent's ear. He understood the day-to-day function and operation of the district, and the political realities of the superintendent. He got us to the decision-makers. They're the people who deal with the politicians and taxpayers."

The club's primary needs were evenings and weekends. Delco accepted its secondary position – and even made it a selling point to politicians and educators.

Finding The Right Inside Person

That contact came almost by accident. "It seemed like every school official always directed us back to the facilities person," Smith said. "Eventually we realized that without his support, we wouldn't get far."

The lengthiest amount of time was spent searching for a suitable location. Because the U.S. Soccer Foundation grant Delco was pursuing included deadlines, "the longer it took, the more pressure we felt," Smith said.

Finally, Delco crafted an agreement giving the club two consecutive 15-year field leases, for a total of 30 years. Delco would put \$350,000 into the project; the rest would come from partners and grants.



Fast May Not Be Best

Two people did much of the work on Delco's end. They followed all leads, negotiated all deals, and reported frequently to the board. Utilizing such a small team helped the larger organization move as speedily as it could, Smith said. However, "In retrospect, we shouldn't have applied for our grant so quickly. No one (on our board) fully understood the magnitude of everything that needed to occur within the timeframe of the grant."

Ultimately, the deal fell through. Because Delco owned no property, it had no assets to secure against

the project. For the school district, that was a deal-breaker.

"We've got a long history, and we had a capital campaign, but we couldn't raise the money in the time the district wanted," Smith said. "It was a great idea, but financing and timing were issues we couldn't resolve."

For FC Delco the search for the right site and the right partner continues. But the experience they gained in the process is invaluable and, the next time, they expect all the pieces will finally come together. ■

"In retrospect, we shouldn't have applied for our grant so quickly. No one (on our board) fully understood the magnitude of everything that needed to occur within the timeframe of the grant."



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.



A Place To Stand: Getting The Land

Nothing else will matter if you can't find a place for your new soccer field project. It has to be a parcel of land big enough for your needs, located near your players (as opposed to an hour's drive away), affordable to acquire, develop and maintain, and in a location where unhappy neighbors, endangered species, floods, gang violence, toxic waste or other acts of man and God will not stop you. Or at least not slow you down too much.

“Give me a place to stand and a lever long enough and I can move the world (or at least build a soccer field).”

— Archimedes (sort of)

CHAPTER 3 CONTENTS

- **The Land Is Really The First Step**
- **How Much Land Will I Need?**
- **How Much Will The Land Cost?**
- **How Do I Find The Land?**
- **11 Ideas On How To Find Your Land**
- **Things To Consider As You Review Sites**



● **Identify one key contact person in land negotiations. Avoid the left-hand-doesn't-know-what-the-right-hand-is-doing syndrome.**

● Find someone who knows the history of the property you're eyeing. He or she can tell you things about the land you may not know.

● **You can either figure out what you want to build or understand what you can build with what is available to you.**

● The success of many programs has been in creating multi-use facilities. Consider softball, baseball, lacrosse and even skate-boarders as partners in your project. Getting large public facilities developed involves many levels of public and private support. The more people who feel they have a stake in getting your project developed, the higher the probability you will be successful.

● **Design a simple scale model of your fields as soon as you can.** Landscape architects will do this later in much greater detail, but this preliminary model allows everyone to see what will and won't work right from the outset for a specific site. You can do this without professional help. It takes a few hours of careful measuring, then a software program like Corel Draw or just construction paper cut to scale. Move things around until they make sense.

The Land Is Really The First Step

There's only a limited amount you can do until you have some land in your sights. Your organization can begin to set money aside. And it can begin to consider what its needs are. But you can't put together a plan, consider financing or even get your members very excited until you have a piece of property (or several if you're lucky) to focus on.

Many project leaders spoke of the false starts, the prospects of a perfect piece of property that fell through, the enthusiastic meeting with City planners that went nowhere. This can be a frustrating stage and it can stretch the patience of your organization. Managing expectations of your membership can become one of the surprise items on your to-do list.

Tackle your soccer field development project one step at a time. At this point, focus your attention and time (and it can be considerable time) on identifying and acquiring the best site.

If you have secured a site, much of this chapter may not apply to you. However, pay special attention to the check lists and tips of what to watch out for. Each site will have its own issues. Knowing those issues before you make a commitment is the critical key to bringing a project in on time and on budget (or as close as possible). And the issues — from soil you could turn into clay pottery to industrial neighbors who don't want the liability of children in their neighborhood — can be a very long list!

How Much Land Will I Need?

- **One soccer field takes about two acres of land.** That's the same amount for a lacrosse or rugby field. An acre is 4,840 square yards (The amount of land that was considered tillable by one man behind an ox in one day. And there are going to be days you feel like that ox!). A square acre is approximately 70 yards long on each side.
- **One lighted, natural-grass soccer field** will serve approximately 250 players per play day.
- **If you're partnering on a site,** a softball or baseball field takes three acres.
- **The footprint of a building with two meeting rooms,** a concession stand, two bathroom stalls per field and some storage space will be approximately 36' x 60'. (There will still be waiting lines for the bathroom between games.)
- **For parking, each space requires 9' x 18',** but then add in space to back up and that's 9' x 40' per space. For 60 players, allow a minimum of 45 spaces (that assumes some carpooling and drop-offs).
- **A service road is 8'-10' wide.**

Source: Association of Sports Field Users

How Much Will The Land Cost?

You could end up leasing your land for \$1 per year ... or paying a million dollars for it. The point is that this is one question that this handbook will not be able to answer for you. Public-private partnerships are popular because generally the public entity (city, school or county) leases you the land and their employees maintain it. However, you then live with their rules — which can be frustrating and seemingly arbitrary. But as always, he who holds the purse strings dictates the rules. Buying private land could cost you a lot more. But it will allow you to dictate much more of the project details and control its use once you're in operation.

How Do I Find The Land?

There are just as many ways to find land as there are organizations trying to develop soccer fields! But land is likely the most expensive — and perhaps the most exasperating — element you will deal with.

It's frustrating for someone trying to develop a soccer field complex on Long Island or the San Francisco Bay Area (where open land is rare and fabulously expensive) to hear about the vast open parcels of near-rural North Carolina or suburban Southern California. But you have to deal with where you live, and the conditions of each project will be different.

Public-private partnerships with a city, school district or park and recreation department are the most common for soccer complex projects. Generally, the institution may bring the land to the table and may handle the maintenance through its budget and employees.

11 Ideas On How To Find Your Land

- 1. School districts.** They may be planning recreational developments and you could partner with them. Also consider contacting colleges and universities.
- 2. City and county.** Contact your city and county about open space and recreational projects they are considering. It doesn't have to be soccer specific. You may see potential for a soccer component to a project they already have on the drawing board. And they may not be thinking about soccer at all. Also call county extension offices.
- 3. City, county and regional parks.** Contact the park and recreation departments of your city, county and state. And any regional park districts. They may have land that is mandated for recreational use or be looking for partners in developing projects themselves.



● **Think outside the box.** Instead of buying property, perhaps you can lease an unused portion of flat land in a subdivision, office park or turf farm.

● **Involve as many people as you can in your search for land.** You may not know every available parcel in town, but someone else in your organization might. The more people on the lookout, the better the chances of finding a site no one ever thought of before.

● **The flatter the property, the easier it is to build on.** Moving earth costs time and money.

● **Check the soil.** Good soil is crucial. No one wants to get hit with a huge, unexpected bill that reads: "Trucking in topsoil to complete project." Very early in your land shopping bring in a soil engineer to test the soil for you.



- Get a referral from a local architect. It's a good chance there's an engineer he or she can recommend and works with on a regular basis.

- Contact ASFE (Associated Soil and Foundation Engineers) at www.asfe.org. They should have information on soil engineers in your area.

- Ask your local building officials for a list of accredited soil engineers in your area.

- If tournaments are a part of your financial model, you will need to have a big enough complex to host them. That takes a bigger parcel of land. For a one-day summer (or lighted field) event, you can assume 16 teams per day per field. Today tournaments often have 200-plus teams. That's about 12 fields for a one-day event. You may need more land ... or a less ambitious financial model.

4. Spread the word to the members of your soccer club, league or association to keep an eye out. But don't stop there. Let everyone in your circle of influence know your need. And have everyone on your team talk to his or her circle of influence. Mention it at work, church, PTA, Kiwanis' meetings, your health club or doctor's office. It's like job hunting: the more people know that you're looking (and what you're looking for), the more likely you'll get a referral to an interesting opportunity. If you're looking for 10 acres, let people know that. Don't worry too much about cost at this point. That will come later.

5. Contact your Geographic Information Systems office. It can be a state or county office. They should be able to provide you maps of open space, zoning and even ownership information.

6. Drive around your area. Get familiar with it. Get to know the urban nooks and crannies, the underused suburban "back 40's" or industrial park back lots. If the land is going to be undeveloped for at least five years, it may still be worth developing if it can be done for the right price. Keep a notebook in your car to jot down the address or general area of any open land that seems a potential. Ownership and contact information can be checked at the County office.

7. Contact your local Environmental Protection Agency for the potential of brownfield land locations that could be converted to fields as part of a clean up. Since its inception in 1995, the EPA's Brownfields Program has changed the way contaminated property is perceived, addressed and managed. The EPA definition of a brownfield is "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

8. Review the Park & Recreation master plans of the cities in your target area. If playing field development is already part of it, check if land has already been allocated. Be part of this process.

9. Notice if industrial parks or suburban hotels seem to have unused space. In Florida, a soccer field complex is actually an extension of a local chain hotel. The hotel had the extra land that it didn't have immediate plans for and the soccer folks had the expertise. Soccer got a great facility and the hotel gets paying customers from tournaments and events, plus tons of local goodwill and the business that goes with it.

10. **Call the softball, baseball, lacrosse and other sport organizers in your area.** Consider a multi-use facility. Let them know you're looking for land and would be willing to share. Recruit them into your process

11. **Real estate professionals.** Contact the real estate agents and developers in your target area and let them know your needs. They see a lot of property. They also have great insights into changing demographics or housing patterns in your community, which can impact everything from purchase price to land usage. Realtors also have early information on available property. Enlist their help — many of them may be soccer parents — early in the process

Things To Consider As You Review Sites

Here is a checklist of attributes that you'll need to consider about a land parcel. Each can have cost (money, time and/or aggravation) implications.

- **What's the topography?**
 - Is it flat, sloping, or hilly?
 - What's the slope? That will determine grading. (Any slope will always be steeper than it appears.)
- **General condition**
 - Existing buildings that have to be refurbished or demolished?
 - Any easement or right of way issues?
- **What's the parcel's orientation?**
 - Fields need to set up on a north/south access to keep the low sun out of players' eyes.
 - If a multi-use facility, a baseball field will have the diamond in the southwest or northwest corner.
- **How much brush, how many trees need to be cleared?**
 - This can add expense.
 - Will it turn out that you're cutting down the neighbor's much-beloved woods?
- **Access & traffic**
 - Are roads already leading to it?
 - Will new access roads be needed?
 - Is there heavy industrial traffic in the neighborhood?
 - Is it next to busy roadways or highways?
- **What type of soil?**
 - Heavy clay will have drainage problems.
 - Will the soil need lots of conditioning to grow grass?
 - Any oil or mineral deposits?



● It is estimated that there are more than 450,000 brownfields in the U.S. The EPA has a grant program that can provide up to \$200,000 for cleanup. You may be able to get a very attractive deal.

● Got nearly all the land you need, but not quite? Creative land swaps can seal the deal. Consider trading other land owned by your soccer association, or a government entity, for the final parcels that allow you to construct a field complex.

● Across the country, developers of subdivisions are being urged — or forced — to include open space in their plans. Early in the process, offer to help developers turn open space into athletic fields. It's a winner for the builders — and the homeowners.

● Unless you are truly lucky, your search for land will take longer than you expect. Do not commit to unrealistic deadlines. Grants or other financing may require a start date. It can become a chicken or egg conundrum: buyers or partners may want guarantees of grants, but grantors want guarantees that the land or partnership is in place. Be patient in this process.



● Get the best legal assistance you can for any lease discussion. You will live with the issues of upgrades, access and much more for a long time.

● Don't forget zoning. Many municipalities have laws restricting where fields may be built. Research zoning issues carefully ahead of time to avoid wasting architects' and other fees.

● If someone offers you land for free, or at a very low price, don't jump. It may not be the best deal. If you can't play soccer because your fields are in a heavy flood zone, or you can't build fields because the land costs too much to develop, it's not worth the low price.

● Don't forget bus spaces. They take up plenty of room but prevent traffic snarls.

■ What's the neighborhood?

- Industrial?
- Commercial?
- Agricultural?
- Residential?
- Rural?

■ How is the parcel zoned?

- Is it zoned for this type of use or will it need to be re-zoned?
- Check with the city or county for updated zoning information.

■ Environmental issues

- Will it need testing or special cleanup?
- May there be endangered species issues?
- May it interfere with wetlands or coveted natural green space?
- Is it in a heavy floodplain or watershed?

■ Utilities. Where's the closest ...

- Electricity?
- Water? (potable and irrigation)
- Sewer lines?
- Telephone service? (Less important in this era of cell phones, but still required by many public partners.)

■ Unique weather

- Strong winds?
- A hot or cold microclimate?

■ Is it big enough?

- Can it accommodate fields & parking?
- Is there room for future expansion?
- Is there enough space for tournaments?

■ What's the neighborhood like?

- Will residents complain about traffic & noise?
- Will field lights bother neighbors?
- Will industrial neighbors be concerned about liability?
- Is it a dicey neighborhood that will be scary to your constituents?

Politics, Politics, Politics

The politics of your field project need to be a win-win process for everyone and putting yourself in the other person's shoes will go a long way to managing what may seem daunting.

“All politics is local.”

—Tip O'Neill



CHAPTER 4 CONTENTS

- **Understand What You Are Selling**
- **Planning Ahead**
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● Look to attract more people and families to your facility (and your cause!) by adding a playground, bicycle or walking paths, or other non-soccer amenities.

● Identify local power brokers. They can work the back channels if you need help with political or zoning issues.

● If crime around playing fields is an issue in your community, create a chart of the crime rates by neighborhood in the city. Generally, crime rates around parks are actually lower than other areas.

Understand What You Are Selling

The idea of having to sell something rocks many people back on their heels. The politics of getting a soccer field complex built, however, is the process of careful, creative, honorable selling. Politics in this context is the art and science of actually getting something done.

What may surprise you is that you very likely are often NOT selling a soccer field project. Instead you may be selling:

- **Increased community green space.**
- **The fight against childhood obesity.**
- **Recreational opportunities for minorities.**
- **Recreational space for skaters, baseball, softball and lacrosse players.**
- **Reduced juvenile crime and drug use.**
- **Family together time.**
- **Increased retail traffic to a business area.**
- **Reducing teen pregnancy (the majority of teen pregnancies are conceived between 3 & 6 p.m. on weekdays).**
- **Equity for girls and women (female sports participation has increased 40%, but new field development is not keeping up with this added demand).**
- **Keeping kids in school.**
- **Increased community ownership and pride in surroundings.**

The great thing is that your soccer field development may be able to serve any or all of these important issues. And you STILL get your soccer fields out of it!

Building soccer fields is your first priority, but as you ask others in your community to commit their vote, their tax dollars or their neighborhood to your project, they very likely will need to see the larger issues at stake. Not enough people may care about your ODP program or your championship soccer club. For people to support your project they have to see how it will affect them and the issues they care about.

A smart card player reveals their hand as he or she needs to, and part of the political process may be revealing only a portion of your hand to any one group that you're convincing to support your project. But it must be done with honor. No lying or shifty dealings here. You're representing all of American soccer each time you go out and present your soccer field project. But it's legitimate to speak specifically to the interest group's issues and concerns. The soccer fields for your club may be in the background a bit during some of these discussions, but if the group's special interest is community green space or soccer fields for the Latino community, your task is to present that aspect of the project in a persuasive way.

Planning Ahead

A city or town is expected to provide parks and recreation facilities for its residents. That's one of the benefits residents want their tax dollars to routinely fund. Long-term planning is required to make that happen. So it's critical that you and your soccer organization are part of that long-term planning process. The Parks & Recreation Commission or a similar municipal group will likely have or will be developing a master plan.

- **You want to be part of this process** as early as you can — from the beginning is best!
- **This planning process may precede your soccer complex** development by years, but if your team is part of the process you can advocate for your soccer fields being included as part of that master plan. That will make your political process much, much simpler.
- **At the first discussion of developing soccer fields**, attend a Park & Recreation Commission meeting. Determine who the key decision-makers and influencers are and meet with them.
- **These meetings will help you more fully understand** any roadblocks your project may run into as well as what may be the most effective means of promoting your soccer field agenda. Probe to find out their existing issues and mandates.
- **The more your project can dovetail** with what's already in the works, the easier your process will be.

Meetings, Meetings And More Meetings

Getting a soccer field complex approved and financed is generally a two- to five-year process. And you will attend dozens and dozens of meetings including:

- **City Council.**
- **School Board.**
- **County Supervisors.**
- **Planning & Zoning.**
- **Park & Recreation.**
- **Neighborhood Groups.**
- **Civic clubs e.g. Kiwanis.**
- **Property owners or developers.**
- **Chamber of Commerce.**
- **One-on-ones with city, school and public agency staff.**
- **Other potential user groups.**
- **And so many more.**



● **Politicians delegate a lot of work to their staff members. Court and educate them, too.**

● **Numbers work.** Get youth players in your community to attend a meeting in uniform. Make sure their voting parents are there too. But don't overdo it. Pick your battles carefully. If you turn out huge numbers for a meaningless meeting, the next time you need them they won't be as motivated.



- Join forces with other sports groups, even those you've battled with in the past, or are currently fighting, to make the argument that athletic fields are vital for youngsters' physical health and emotional development.

- Make sure your community is behind you. Sometimes the need for new fields is evident; sometimes it is not. If necessary, mount an informational campaign to show graphically and emphatically why your complex is necessary. How many kids are there who may want to play sports? How does that match fields that already exist? If the proportions are off (and they almost certainly will be), you've got strong facts to present.

Any meeting you miss can have dramatic repercussions. If you're not at that meeting telling your story, then somebody not associated with your project is likely there telling it for you — often with misinformation or a negative spin. One missed meeting can put your project back months or even years. And those meetings will come up every night of the week, and Saturday and Sunday. And they'll too often last until the wee hours of the morning because your item is the last on a long agenda.

Your leadership team should include two or three people who attend meetings, and one of you should be on-call and all must be fully informed on every piece of the project.

Welcome to the arena of the political activist because that is exactly what you have become! It may have frustrations and set-backs. But your cause is just! The soccer playing children and adults of America need you to take this forward.

Q&A: Protecting Your Not-For-Profit Status

From bond initiatives and zoning decisions affecting local field-building projects to federal funding for the Land and Water Conservation Fund, the U.S. Soccer Foundation receives many questions about whether and how a soccer organization can lend its voice to the decision-making process. Here are the Foundation's answers to some of the most common questions. This advice includes information provided by Alliance For Justice, which offers comprehensive resources on this topic on its website www.afj.org.

Please note: This information is being provided for informational purposes only. The information is not a substitute for expert legal, tax or other professional advice tailored to your specific circumstances and may not be relied upon for the purposes of avoiding any penalties that may be imposed under the Internal Revenue Code.

Question: Can our soccer organization “lobby” — and not put our non-for-profit status at risk?

Answer: This answer comes as a surprise to many, but the good news is that every non-for-profit soccer organization can (and in many cases should) lobby, within limits!

Federal tax laws allow all non-for-profits to engage in reasonable amounts of lobbying as long as it is not a substantial part of your overall activities. In fact, if your activities are predominantly local in nature, you are most likely not engaging in “lobbying” at all.

Q: What is “lobbying?”

A: Simply stated federal tax law defines “lobbying” as an attempt to influence legislators in support of or in opposition to specific legislative proposals. “Direct lobbying” is communication with a legislator that expresses a view about specific legislation, while “grassroots lobbying” is communication with the public that expresses a view about specific legislation and includes a call to action.

Q: So, when our organization contacts our School Board or Parks and Recreation Commission about the need for more fields, are we “lobbying?”

A: No, actually you’re not “lobbying.” Federal tax law narrowly defines the term “Legislator” as a member of a legislative body or his/her staff. This includes “Executive Branch” officials who participate in the legislative process, such as Governors or Mayors who sign or veto legislation.

This means that administrative bodies — including school boards, utilities commissions or districts, planning and zoning boards, parks and recreation commissions, and other special purpose bodies (whether elected or appointed) — are NOT considered legislators under federal tax law. Therefore, contacting any of these groups about the need for more playing fields is not “lobbying” for purposes of the Federal law.

Q: Can our soccer organization endorse or oppose political candidates?

A: The short and clear answer here is NO! A 501(c)(3) organization is strictly prohibited from direct involvement in campaigns for any public office, from your local dogcatcher to the President of the United States.

It’s important to know that, in particular, your soccer organization can, and should, get organized and call upon your elected leaders to make the development of soccer fields a priority in your community. By staying on the sideline and not fully exercising your legal rights, the game suffers and “falls to the back of the line” while key decisions are being made on how your community’s limited public recreation resources are being allocated.

Q: You’ve already explained that 501 (c)(3) organizations are strictly prohibited from direct involvement in political campaigns. What about ballot initiatives like local park bonds or school bonds, which may include funding for more soccer fields?

A: You most certainly should lend your voice to such decisions. A 501(c)(3) organization can support, oppose, and even initiate ballot measures (such as school and park bonds). The IRS considers work in support or against a ballot measure to be “lobbying activity,” NOT political campaigning. Why is this distinction important? Because it separates campaigns for political office from ballot initiatives. While your soccer



- It’s tempting to offer partial control to another organization or government entity. That’s OK — so long as each group clearly understands who controls what (field maintenance, scheduling, inclement weather policy, etc.). Formal agreements must be established in writing, up front, or turf battles (of the non-grass kind) are sure to erupt.

- Expect neighborhood opposition. Again, realize that those objections — traffic, noise, and lights, et al — have validity. Be prepared to counter every argument with logic, reason, facts, the law and passion.

- Municipalities and soccer clubs may clash over field usage. Clear policies regarding who has priority and access — and when — need to be addressed early in the negotiations.



● A soccer complex will provide economic benefits to your community. Use economic studies to show exactly what those benefits are. The U.S. Soccer Foundation has a handy Economic Model on its website (ussoccerfoundation.org) that you can plug your numbers in to.

● Determine your priorities before negotiations begin; and know which priorities are non-negotiable.

● Take as much time as you need to develop trust with local or state governments.

organization can express support for a local park bond, you may not comment on specific candidates included on the same ballot.

Note that what you're doing is considered "lobbying" under federal tax law and, if you're doing much of this, you should consult your legal counsel to ensure that your organization's cumulative activity is within the limits for lobbying activity. It is important to consider the potential "return on investment" of your organization's support of a local bond initiative. A small amount of time spent on a local green space or park initiative may secure a big return of new soccer fields in your community.

Q: OK. We can get more involved in advocacy and even "lobby" our elected officials, but what do you mean by limits?

A: Federal tax law allows 501(c)(3) not-for-profit organizations to lobby within certain limits. Those limits are determined as either a function of your organization's expenditures on lobbying activities or whether lobbying activities rise to the level of a "substantial" part of the organization's activities. There are numerous resources available to help you better understand these limits, including online resources provided by the Center for Lobbying in the Public Interest (www.clpi.org) and the Alliance for Justice.

We encourage you to educate yourself by utilizing these resources, and consult your organization's legal counsel before beginning any significant, organized advocacy effort.

Q: What about any state or local laws relating to non-for-profits and political activity?

A: In addition to federal rules, be aware of state requirements that affect your non-for-profit. These rules can vary widely from one locality to the next. Contact your state association of nonprofits and/or the state Attorney General and Secretary of State to learn about the local guidelines and potential reporting requirements in your particular area.

Q: Finally, what about me? Can an individual, who happens to be involved with a local soccer organization, still get involved politically?

A: The answer is absolutely, YES! Individuals who serve on your board, coaches, parents, even paid staff, who are directly associated with the organization, may participate fully in the political process. However, if they are participating in the political process as an individual, it's important to make sure they're doing so on their own time and they do not attribute their personal views to your organization.

It's About Votes

If you are working with a city, county or school district, your task will be about influencing the votes of elected officials — a city council, school board or similar body. If there are nine people on the council, you need five votes. On a larger scale, it may be about influencing the votes of a community or county.

If at some point you determine that you are not going to get that majority, take the time to reevaluate your objective. Can your field plan be modified or moved to reduce the opposition? If not then perhaps it was a good idea whose time has not yet come.

You will need to have persuasive, accurate, concrete explanations and examples to address every concern and issue that comes up. The politicians you want to support your project will need to answer these questions for themselves and their constituents.

Always Think Win-Win

In politics too often if one side wins, the other side loses. The “losers” spend all of their time figuring out how to keep the “winners” from getting all the benefits of their victory. We prefer to think of it as “lose-lose.” But there is a better way. A soccer field development project is long term and you want the community to support it at every step of the way. So, as Stephen Covey made famous in the “The 7 Habits of Highly Effective People,” you want to think win-win.

You want to find every advantage for as many interest groups as possible. That's where it's important to review the variety of elements you are selling. The soccer fields are a given. That's why you got involved in this process in the first place!

- **If community green space is valuable** to constituents in your community, then they *win* when you succeed.
- **If parents in your town are concerned about childhood obesity**, then they *win* when you succeed.
- **If you deliver more playing opportunities for minorities**, then they *win* when you succeed.
- **If you engage the baseball, softball and lacrosse or skateboard organizations** in your community and develop a recreational complex that can serve them in addition to soccer, then they *win* when you succeed.

The more people who win when your project succeeds, the more successful you are likely to be. Conversely, the people who feel they are losers to your project will tend to haunt it forever. They will pick, pick, pick, wasting your time and energy.



- Be prepared to manage expectations, as well as construction. The public — even people intimately involved with a fields project — often underestimate the time it takes to plan, build and open a complex. Don't promise the moon, particularly when partnering with a governmental agency that moves slowly or a soccer organization that races ahead.

- When dealing with government organizations, realize that you can't control everything. They've got the upper hand when it comes to things like permits and approvals. It's a cumbersome process. The upside: Partnerships with government allow you to have access, and get things done, in ways that may not be possible privately.



● Put yourself in your neighbors' shoes. They may have legitimate concerns about things like traffic and lighting. Examine every aspect of traffic flow and lights to minimize the impact of your field complex on the neighborhood.

● It can be difficult to build a dedicated soccer complex; everyone wants multi-use centers. Don't be afraid to add baseball, football, lacrosse or other sports to your plans. Then work with those other sports organizations. Make sure they can deliver the market and revenue you anticipate.

Putting Yourself In The Other Guy's Shoes

This is the most challenging piece of the soccer field development political process. It is also among the most important. Approach every discussion, debate or decision by putting yourself in the other person's shoes.

- If a business is concerned about the liability of having children in their industrial neighborhood, **put yourself in its shoes.**
- If conservationists are worried about an endangered bird species that nests on your site, **put yourself in their shoes.**
- If the Latino community believes it won't get to play on these new fields, **put yourself in its shoes.**
- If residents are frustrated by proposed increased taxes, **put yourself in their shoes.**
- If the neighbors are concerned about noise, traffic or late night lighting, **put yourself in their shoes.**
- If residents are concerned that playing fields will bring more crime into the area, **put yourself in their shoes.**

This is part of the win-win political strategy. It takes friends and lots of them to accomplish a soccer field development project. Take the concerns and criticisms seriously. Consider how it would feel if your business might have an increase in its liability insurance premium, or if your quiet neighborhood might face increased traffic and yelling kids. Listen to the concerns and find ways to respond constructively. Attempt to adjust your project when it makes sense.

You may not make everybody happy in the end. But it is critical that people feel that you have truly listened and heard what they had to say and that you've taken it seriously and tried to find solutions. Communicate regularly to them. Keep them updated on your progress. If you ignore your critics or concerned neighbors, you can be sure they will fight your project. Avoid that if you can.

It Can't Be Just You

You will need to prove widespread support of your project. It may be only you leading the effort for your club or league, but the city council, school board, park and recreation commission and community groups will need to see many other faces during this process. Bringing 200 kids in uniform along with their parents to a council meeting to demand that they approve the project will be powerful.

Consider Expanding Beyond Soccer

The potential of expanding beyond a soccer-only complex comes up again and again. That's because it is often the key to getting the project done. Politics may make strange bedfellows and it may be the first time you've had a civil conversation with the baseball coach or skateboard mom. But a complex that is multi-use, that brings multiple sports to the table, can vastly increase the pressure on the politicians to make it happen.

Collateral Materials For Your Project

You will need to have Fact and Frequently Asked Questions sheets. These should be simple and clear. One or two pages only. They'll be the documents most used in public settings. They'll be a handy pass-out for neighbors, at meetings and to the public.

Your Business Plan will be the backbone of selling your project to elected officials, bankers, vendors, foundations and sponsors. And even to the soccer community. It is a portrait of what your project is, who are the people and companies involved, what it will cost to build and maintain, how it will be funded and whom it will serve. It should address all or most of the issues that critics will have. It must be filled with facts, facts, facts. It must also help explain the vision you have. It can be surprisingly simple in presentation or very glamorous. But in either form, it will need to include the same information.

See Chapter 5 of this handbook for the steps to build the best Business Plan for your soccer field project.

Creating Allies Within The Political Structure

You will need to meet with these officials one by one. You will need to present them your plan and listen to their concerns. You will need to know where their biggest issues are going to arise. And they will need to know that if they support your project, your constituents will support them in the future. You are building allies. This is a critical piece of the political process.

Once you find friends, work hard to keep them.



- You need an advocate in the public sector — someone on a commission, council or board who believes in what you're doing, understands the benefits to your community, and can speak on your behalf behind the scenes. A soccer parent is often the best person to fill this role, but while finding an advocate you should meet with anyone who might help.

- You can also join forces with non-sports groups. For example an environmental organization working to save a site from a developer, or a neighborhood organization seeking to reclaim an overgrown, unkempt lot.



- Make an early assessment of the political landscape. The sooner you know who's for your project, and who needs more persuading, the better off you'll be.

- It's your job to educate politicians about the importance of your project. Phone calls work better than letters. Politicians listen to constituents' cogent arguments; they don't have time to read lengthy documents.

Managing The Information Flow

You may be shocked by the misinformation that can circulate about your project. But keep calm during this process. And keep up the pressure. It's the reason to be at every meeting. You need to know what's being said and how your information is being interpreted. Have your fact sheets ready. Respond immediately by talking to the decision-makers who have been told any incorrect information. And send a follow-up letter so the correction is confirmed in writing. Send the letter to the organization, individual, commission or boards that made the incorrect statement and copy everyone you think is appropriate.

Make Peace With Being The Squeaky Wheel

Your project is likely to create more work for agencies and staff. If it's a public-private partnership, it's probably a lot more work. And nobody really likes more work. You must be consistent in applying friendly, but serious pressure that they get things done. Follow-up, follow-up, follow-up. It's called the Drip Method. Call, drop by, e-mail, but keep the pressure on for them to get the tasks done. The squeaky wheel does get the grease. This must be your role.

But don't forget to make gracious gestures. Perhaps a plate of chocolate chip cookies for the staff when you arrive for a meeting. Or personal holiday cards. And certainly personal invitations to every activity and event that is part of your fund- or friend-raising process. These are courtesy gestures, not payoffs. So they should be modest and heartfelt.

How To Create A Winning Business Plan

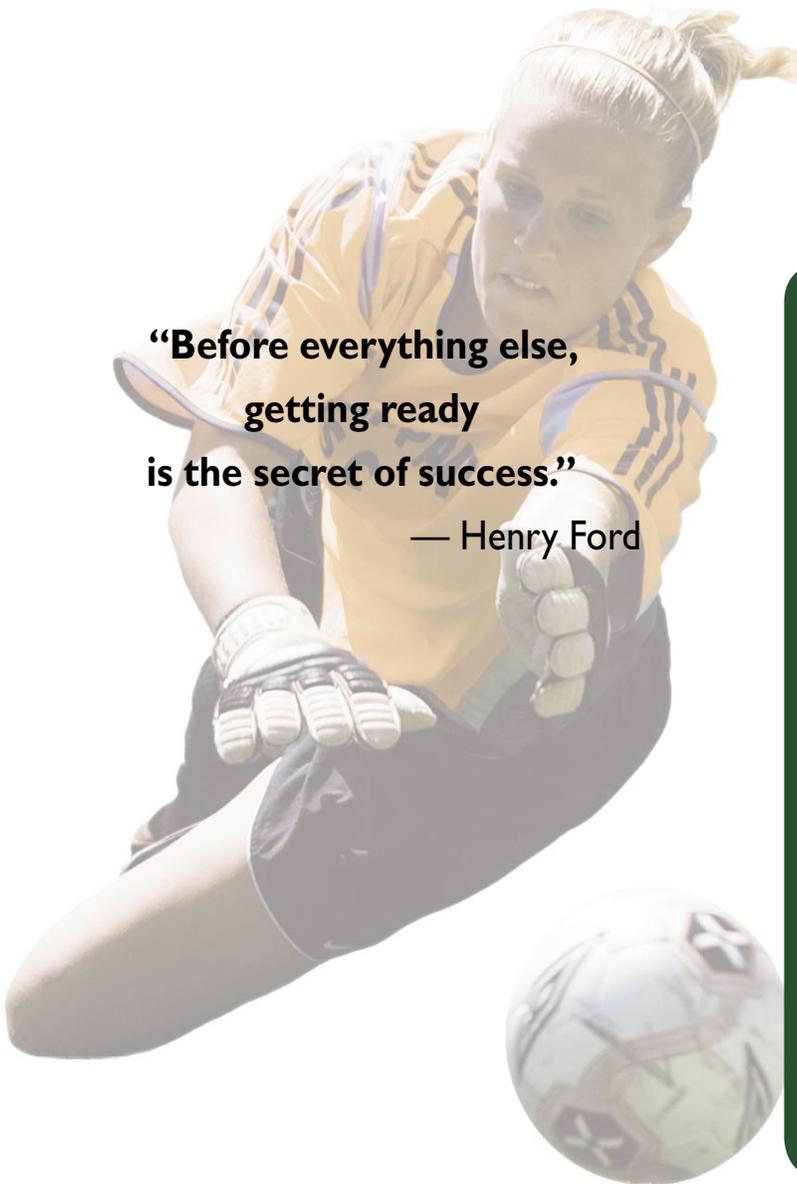
Creating your business plan is a big task with lots of research and decisions to be made. But it will serve as the roadmap to your successful soccer field development project.

**“Before everything else,
getting ready
is the secret of success.”**

— Henry Ford

CHAPTER 5 CONTENTS

- What Is A Business Plan?
- The Business Plan’s Objectives
- How Much Does A Business Plan Cost?
- Organizing Your Finances
- Organizing Stats, Charts & Maps
- Projecting Expenses & Revenues
- A Soccer Field Development Business Plan Model
- The Business Plan Worksheet
- Field Project Vision
- People & Partnerships
- Development
- Fundraising
- Management & Maintenance
- Business Plan Final Thoughts





● A business plan can be a few pages or a few hundred pages! But normally 20-30 pages will do it for a field development project.

● Create your business plan early. Once it's in place, everything else follows. Ask for help from someone who already operates a similar facility — and ask what mistakes should not be repeated.

What Is A Business Plan And Why Do We Need One?

Your field project will most likely be a non-profit venture, but as you plan, fund, build, manage and maintain it, you will need to operate on a business-like basis. Whether for-profit or non-profit, you have to raise capital to build and then find a way to have enough revenue to maintain and operate your soccer field project.

A business plan is a concise, attractive document that answers all the questions about your project. There are other names for this tool — strategic plan, field development plan, etc., but we like calling it a business plan. That name gives all the stakes holders — your members, potential funders, public agencies, and the community — the clearest picture of what you are trying to achieve: a business-like operation.

Your business plan is primarily an organizing tool used to simplify and clarify goals, strategies and financial details. However, a business plan is also a sales tool. If it cannot convince at least one other person of the value of your field project, then either your project is not worth pursuing or, more likely, your plan needs major rewriting.

The Business Plan's Objectives

Your business plan will have four primary objectives:

1. **Create a compelling vision** of your field project in words, charts and pictures.
2. **Confirm that your organization** has the capability to execute the project.
3. **Establish emphatically the need for the project.**
4. **Prove you understand your costs** for building, operations and maintenance and have a practical plan to develop the revenue to pay those costs.

How Much Does A Business Plan Cost?

The cost of writing and designing the business plan can be small, but the information you will need to gather to make it complete is a more substantial cost. Ideally your organization will have a nest egg of around \$25,000 to pay for the experts necessary to determine what's possible with the parcel of land you have identified and what will be the costs. If you and your organization can do much of the work yourself, the costs can be much less. If your project is small this cost will also be much less. And if your project is large or is complicated by environmental or other issues, it can be much more.

Organizing Your Finances

You will need to get a good handle on all the revenues and expenses of your soccer club, league or organization. Your business plan will need to include historical details of your organization's revenues and expenses. Begin now to ensure that your financial information is organized and accessible.

If your treasurer needs professional assistance to ensure that all the financial details of the club, league or organization are in good order, that's an important expense to take on right away. Complete, well-organized financial information is essential to a winning business plan for your field project.

You should be running your current soccer budget on a traditional accrual basis. That simply means that when you receive an invoice, it immediately becomes a "payable" on your books — even if you haven't paid it yet. And once you have billed someone for a charge it immediately becomes a "receivable." The accrual method of accounting lets you more accurately look beyond just the cash you have in the bank today. For many, this is an unnecessary (and dramatically oversimplified) tutorial, but for others, the accrual method of accounting will be new.

Much of the financial information will appear only as a summary in your business plan. However, for bankers, public agencies and others that you hope will invest in your project, you will need these complete documents if they are requested:

- **3-5 years worth of audited, reviewed or compiled financial statements.**
- **3-5 years of tax returns.**
- **3-5 years of budget against actual.**
- **Determination letter from the IRS substantiating your non-profit status.**



● **Plan, plan, and then plan some more. Take your time to plan right.**

● By planning in phases, you can accomplish each step as you have funds to continue. It breaks both the fundraising and construction process into steps. It also keeps your members and funders enthused as tangible progress is made.



● The writing style of a business plan should be clear, succinct, and compelling. Find an individual in your group that has some writing experience or hire someone to help you. It is not a novel, but being able to paint a word picture of the history, need and value of the project can bring your plan to life.

Organizing Stats, Charts & Maps

The words and images you use to paint a picture of your project are the qualitative component of your business plan. It's important that it's clearly written and attractively designed. But it will be the quantitative aspects — numbers, statistics, maps and charts — that will give your plan the authoritative edge. Begin to compile statistics and information today.

Information that will be useful to find or develop:

- **Community demographics** (age, gender, income, ethnicity, number of children in households).
- **Comparisons to other youth sports programs** (number of youth participating by sport).
- **Your membership numbers** and demographics (age, gender, income, ethnicity). And how they may have changed over time.
- **Number of fields, parks and other green space** relative to the number of children in your community. If you can figure this out on a square foot basis, it makes for graphic comparison. For example, “there are 5 square feet of green space for each child under 15 years of age in our community.”
- **Projections of community growth**, particularly the number of school-age youth.
- **Number of youth soccer players** in each club or league in your area.
- **Number of soccer and other sports fields** that already exist in your area. This will be important to establish the need for your facility.
- **Number of adults playing soccer in your area.**
- **Maps of the geographic area** that your soccer fields will serve.
- **Map of the exact location of your project.**

Some sources for this information include:

- **Census bureau.**
- **City and county general plans.**
- **School District planning and projection documents.**
- **Park & recreation agencies.**
- **Other soccer organizations in your service area.**
- **Other sports organizations in your service area.**
- **A survey to parents in your organization.**

Projecting Expenses & Revenues

This is the central, quantitative component of your business plan. It's where the rubber meets the road on all the choices you make. Grass or synthetic turf? Buy or lease? Two fields or 10? Locker rooms, snack bars, meeting space? Bleachers? Is extensive grading or sub-surface work required? What type of water access do you have? Is there potable water? Are there environmental issues? Where are phone lines? Will large quantities of topsoil be needed? Do you need to put in roads? How many parking spaces? Landscaping? Lights or no lights? Soccer-exclusive or multi-use?

You will be working with a variety of experts such as contractors, soil engineers, hydrologists, landscape architects, etc., to make these decisions and develop the cost figures that go with them. These decisions determine how much money you will need to raise.

A Soccer Field Development Business Plan Model

There are as many forms and styles to preparing a business plan as there are business plans! What follows is a basic outline that you should feel free to adapt as it suits your project and your needs.



● Your business plan does not need to be full-color, but photos and graphics must be crisp and clear. It is worth hiring a local graphic designer to assist you in preparing the look and feel of your plan. Color copiers can often give you full color for a reasonable price if you just need a few copies at that quality.



Soccer Field Development BUSINESS PLAN WORKSHEET

	<p>FIELD PROJECT VISION</p> <p>What do you want this field project to be? What is the need & benefits?</p>	<p>Project history Need Location Detailed description</p>	<hr/> <hr/> <hr/> <hr/> <hr/>
	<p>PEOPLE & PARTNERSHIPS</p> <p>Who are the people/ organizations involved? Why are they the best to accomplish this project?</p>	<p>Description of structure (foundation, public-private partnership, etc.) Roles & responsibilities Description of agencies & their personnel involved Board of director bios Staff bios Consultant bios Organization chart Soccer organization financials/balance sheet</p>	<hr/>
	<p>DEVELOPMENT</p> <p>What are the specifications of the project? How long will the project take to develop?</p>	<p>What are all the costs of development? Detailed overview Phasing schedule Development costs Operational issues Construction cost estimates</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
	<p>FUND RAISING</p> <p>How will funds be raised for the project? What is the timeframe for the fundraising?</p>	<p>Capital campaign overview Sources of funding Pledge projections Cash flow projections</p>	<hr/> <hr/> <hr/> <hr/> <hr/>
	<p>MANAGEMENT & MAINTENANCE</p> <p>How will the facility be managed & maintained? What will be the sources of continuing revenue?</p>	<p>Outline of any agreements Facility use & scheduling Project proformas Revenue sources Operations & maintenance costs</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>



FIELD PROJECT VISION

A. The history of your project

It's like telling a story, "Once upon a time..." Explain how the idea for the project got rolling. If you've put together a foundation, task force or public-private partnership, this is the opportunity to describe how it developed. Explain how you've built relationships with other sports and public agencies. The history of the project lays the groundwork for your plan.

B. Establishing the need

How will your project support the community? This is a component of your plan that will be well served with graphs and charts to support your text. The need for this project must be convincing. National soccer statistics are useful, but local stats are what will sell your reader. Are you turning children away each season? What is the growth in your community over the last 10 years? What is the increase of community soccer and/or sports facilities in your community over the last 10 years? If there are concerns about crime, can you show statistics of other parks in your region and their crime stats before and after development? Can you compare soccer fields to other sports facilities to see how they're lacking? How many children are playing soccer at the high school and club level? What are projections for the number of school-age children over the next 10 years? What are the projections for fields and green space over that same time period? Is there a booming Hispanic population that wants to play soccer, but can't find fields?

C. Location, location, location

Why does the location of the parcel you've selected work for your project? It may be the only parcel of land that was available to you, but you need to emphasize why this is an excellent location for your needs! Location is often best shown with maps. In addition to a map of the land itself, consider also mapping your membership by ZIP code and overlaying it against the parcel map. Perhaps add in maps of the larger geographic area and where existing soccer or sports facilities are located. Pick and choose from the information you have available to present it in the most powerful way to emphasize the need for the facility. Show where major highways and access roads are. This is particularly important if you may need to build access to the location.

D. Detailed description

This is where you get to offer in loving detail what your soccer field project will look and feel like. How many fields? Indoor facilities? Full-size fields or mini-fields? Buildings? Bleachers? Grass or synthetic? What type of grass or synthetic turf? Lights? What will it look like? Amenities? How will it fit into its surroundings/neighborhood? How many other sports or recreation facilities be included? Any special features? Add an artist's rendering of the facility to give the reader a picture of the project.



- Remember that a winning business plan isn't about the document; it's about running your "business" better, setting goals, tracking progress and keeping your eyes on the future while not tripping over the "gopher holes" in front of you. It forces you to think through and track all the pieces of your field project. It's an important sales tool, but if you're not going to read it regularly, then don't ask anybody else to.

- It can be easy to get caught up in the snazzy presentation that you may be making to stakeholders. A good presentation is a great way to communicate the core of a plan, but it doesn't substitute for a plan itself!



- Biographies shouldn't be too long. 100-200 words are usually adequate. In the case of consultants you're hiring, you may want to extend it further with similar projects they've worked on and other professional credentials. Photos are a nice addition.



PEOPLE & PARTNERSHIPS

A. Description of structure

Have you created a public-private partnership, a foundation or some other structure to develop and run your field project? This is your opportunity to describe it in the most positive way. If your club or soccer organization is running it directly, explain why.

B. Roles & responsibilities

Who will be doing what? If it is a public-private partnership, detail what responsibilities each group will have and how they will be executed. This is a critical area to have clear from the very beginning.

C. Description of agencies & their personnel involved

If you're working with city, county, school district or other public agencies, help the reader understand the scope of the agency's involvement and if there are specific individuals who will be involved this is an opportunity to give their background.

D. Board of director bios

These are the people from your soccer organization or the foundation or other entity you've created to build and manage the project. Give their soccer, business and philanthropic background.

E. Staff bios

If you have staff already in place that will be involved in the field project, include brief bios. If you haven't gotten as far as staffing, they obviously don't go in, but you can include job descriptions.

F. Consultant bios/resumes

These are the people and companies that you have hired or are offering pro bono help to work on this project, including but not limited to: general contractor, soil engineer, architect, landscape architect, grounds specialist, hydrologists, fundraising or marketing specialists, etc. Include similar projects they've successfully executed and other credentials. Be sure to mention any soccer connection.

G. Organization chart

This is optional, but in a larger project it can be helpful to see how individuals and agencies report up the ladder and who are ultimate decision makers.

H. Soccer organization balance sheet

This is the spot for your organization's balance sheet. It gives your reader an understanding of your financial situation. Potential funders or partners want to know that the organization leading the project is stable and will be in place to see the project through to fruition.



DEVELOPMENT

A. Detailed development overview

What are the specifics of this field project's development?

It is common for development to be done in phases so each phase should be fleshed out. It can be specified on a quarterly or annual basis. Phase 1 is commonly identifying the land parcel, selecting consultants, refining the concept, topographic surveys, traffic analysis, drafting the business plan, preliminary reports on hydrology. This is when most of the numbers and specifics of your project are developed for the business plan. Additional phases could include putting in one or two regulation-size grass fields and bathrooms, then building locker rooms and meeting space, then adding a synthetic grass field, then adding bleachers, etc.

B. Development & construction cost estimates

The consultants you bring in will help develop the majority of these estimates. They will be based on the details of your plan and the specifics of your site. Similar to building a house, each decision will have a cost attached. A bigger, fancier house will have a bigger, fancier price tag.

C. Operational issues

This is the opportunity to explain your thinking behind the operational choices you've made. How will traffic and parking work? What type of lighting will you have, if any? How will you avoid neighbors being negatively affected by the lights? How will noise be addressed? How are environmental issues being tackled? How are you working with your business neighbors who are concerned about unsupervised children running around before and after games? Each project will have different issues, but you will need to think them through and be able to provide concrete answers.



FUNDRAISING

A. Capital campaign overview

How is your group going to raise the money necessary to develop and construct your field project? This is the place to state the goal of your capital campaign (e.g. \$2,000,000). Who do you see as the best sources of the funds you need? Who are the people, companies, or agencies that you expect to step forward? If you are generating a public initiative such as a city or county bond issue, this is the opportunity to explain it in detail.

B. Types of funding

Explain what types of funding you are developing, such as donations, pledges, grants, activities & events, sponsorships, government contributions. If there are other organizations in your area that have had successful fundraising programs, get specifics and use them for comparison. Being able to support your fundraising projections with facts will give you a lot of



- Be conservative in your estimate of how long it will take to break even. No matter how great you think your business model is, plan for unforeseen circumstances.



● Spend plenty of time determining the type and quality of fields you want. There is a vast difference in cost between level ground, laser grading or synthetic turfgrass — and difference in maintenance costs too. But whatever you decide, if it's at all possible, at least one or two fields should be synthetic, to maximize year-round play.

credibility. Assume that the people who will be reading your business plan will have a reasonable idea of what's possible and what's not.

C. Cash flow projections

Cash flow projections will be your best, educated guess on how capital funds will flow into your coffers. On-going, committed funds such as pledges and government contributions are ideal, but you will also need to project sponsor, grant, and other fundraising expectations. It is very important that these projections not be pie-in-the-sky. You may indeed have to live with their accuracy. Project your fundraising over time. Your fundraising is likely a multi-year process.



MANAGEMENT & MAINTENANCE

A. Overview of management & maintenance

Who is responsible for the various aspects of managing and maintaining the facility? What staff do you expect to hire? What will they do? What volunteer help is expected? Flesh out the details, as you know them. Who runs the snack bar? Who handles grounds-keeping? Who handles janitorial? What if there's an emergency? If a public-private partnership, which organization will handle which details? Are there specifics of your area's weather, soil or other natural circumstances you'll need to account for? How will you keep the grass growing?

B. Outline of any agreements

If you are working with public agencies, have committed to private contractors, or have a lease(s) or purchase agreement, include the details of these agreements.

C. Facility use & scheduling

Who will determine allocation of playing times? Fees? Access? What are the playing season(s)? What does a weekly playing schedule look like? When will the field(s) lay fallow for rest and/or replanting? What will weekend, weekday and evening schedules be? Are there summer camps or clinics planned? Will it host tournaments? A year-round calendar would be a handy graphic here.

D. Revenue sources

Explain your revenue plan. How many hours of usage do you expect? What do you base that on? What is the range of usage fees (different for adults or children)? How do these fees compare to fees others are charging? Where do tournaments or camps fit in? Will you have several clubs or sports organizations as anchor tenants? Outline your donation and pledge campaigns. What on-going fundraising you may be doing, e.g. annual dinner-dance or silent auction. If sponsorships are a significant source of revenue in your plan, you MUST back this up with solid reasons why you expect them. This is often the most hypothetical of revenue sources and often does not pan out or is not consistent on an annual basis.

E. Operations revenue projections

Now you put numbers to those revenue sources. Project five years in detail, including: usage fees (don't forget to subtract for downtime in inclement weather or during rest & reseeding), tournaments, concessions, merchandise, camps & clinics, other events such as birthday parties (particularly if you have an indoor facility), sponsorships, pledges/donations, grants, etc. In-kind donations can be included, but should be noted as non-cash contributions.

F. Operations expense projections

Project five years in as much detail as possible, including equipment (much of this cost is at start-up, but mowers, lining equipment, etc., need servicing and replacement over time), fertilizer, utilities, water/irrigation, groundskeeping staff, seed or turf plugs, periodic synthetic turf cleaning, janitorial, concession staff or management, cost of concession & merchandise goods, supplies, marketing & promotions, replacement costs of grass around goalmouths and other high-use areas.

Business Plan Final Thoughts

If the business plan sounds like a lot of work, it is. But it includes most of the decisions you will need to make to bring your field project to reality. It's much cheaper and easier to plan on paper than to get your project rolling and find expensive surprises later on. Don't shortchange this process. A business plan is the backbone of your project. It will ensure that your project comes in on time, on budget and with a little money in the bank for emergencies!



- To project field revenue, you will tally the number of hourly slots during which the field should be playable. With grass fields, you must allow months when the fields are fallow and inclement weather dates when they're unplayable. You will project an average per hour rate, and then multiply that on a weekly or monthly basis. You will then have a reasonable projection of the revenue from fees.

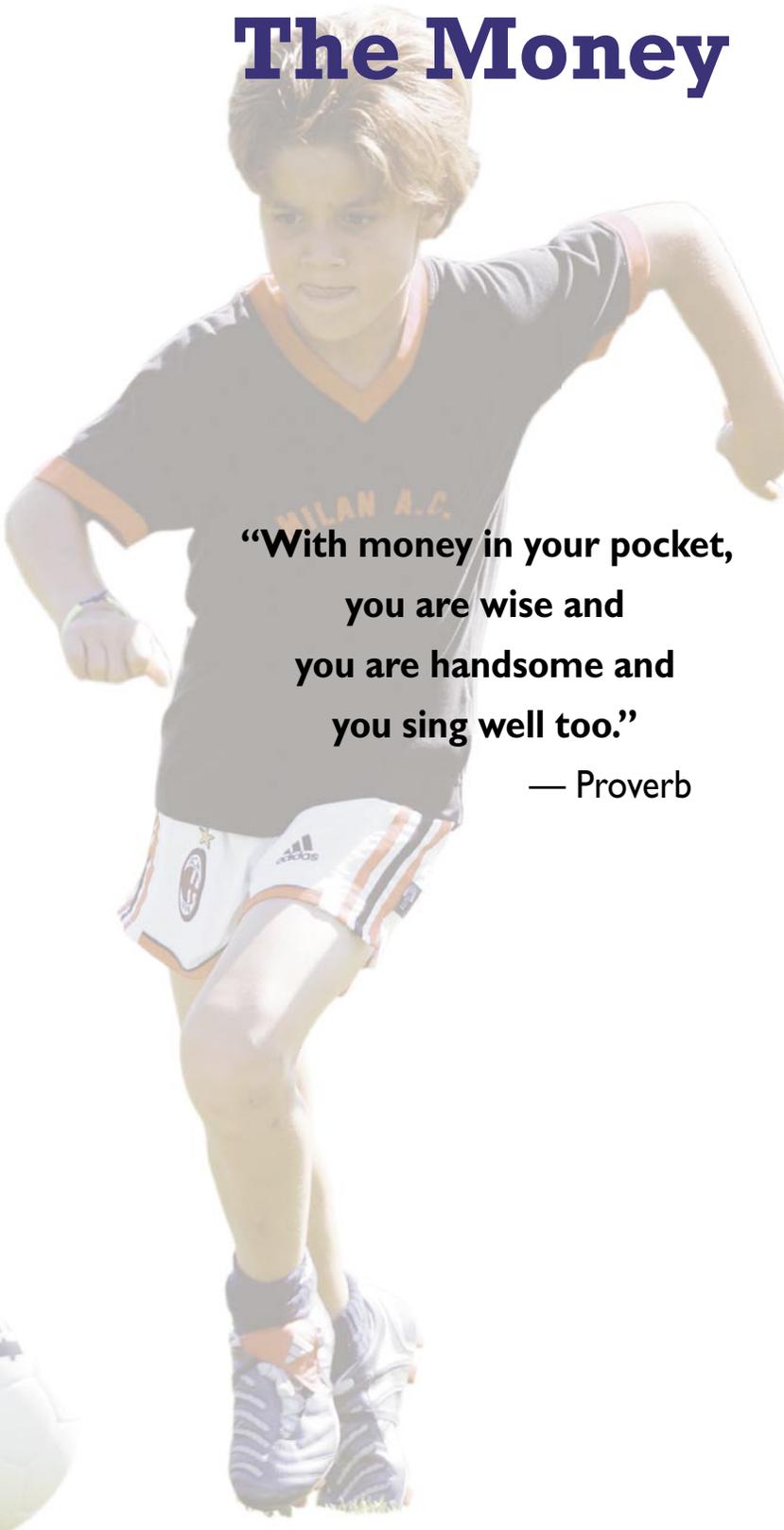
- The business plan is not a static document! Schedule a meeting every few years so club managers and board members can review the strategic goals of your club. Revise your business plan as needed.



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.

Show Me The Money

Whether refurbishing a single soccer field or building a giant soccer complex with dozens of fields — it all starts with the first dollar!

A young boy with brown hair, wearing a dark blue soccer jersey with orange trim and white shorts with orange and blue stripes, is running with a soccer ball. The jersey has "MILAN A.C." visible on the front. He is wearing blue and white soccer cleats. The background is a bright, slightly blurred outdoor setting.

**“With money in your pocket,
you are wise and
you are handsome and
you sing well too.”**

— Proverb

CHAPTER 6 CONTENTS

- **The 4 Sources Of Cash For Soccer Fields**
- **Build A Fundraising Committee**
- **Create An Information Brief**
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- **How To Find Grant-Making Organizations**
- **EPA Brownfield Cleanup Grant**
- **Successful Grant Writing Checklist**



● The first funds are always the toughest. You will build momentum. In fact, as new funders come into your project, update your business plan and Information Briefing with their names, so that others will see the types of individuals, companies, and organizations that are supporting you.

● Some people enjoy asking others for money; others don't. Make sure your fundraisers are suited to the task.

● Make sure no donations go unnoticed. It can be as elaborate as naming a field for a donation or as modest as a thank-you note.

The 4 Sources Of Cash For Soccer Fields

There are four basic sources for the cash and other resources you need to fund your soccer field project and keep it running successfully:

- 1. Your members** (via registration fees, capital assessments, field use fees, tournaments, member volunteer time, member in-kind donations, individual donors or fundraising activities).
- 2. Your community** (via business sponsorships, capital assessment or field use fees from other soccer or sports groups, fundraising activities, community volunteers, in-kind and cash donations, or large “angel” donors).
- 3. Private foundations** or other non-profit funders.
- 4. Public agencies** (municipalities, school district, park district, county, state or federal via public-private partnerships or grants).

Build A Fundraising Committee

The fundraising process for even a single field is a big job. It will be important to have a whole group of people to spread the work around. However, it's critical to find one person dedicated to leading the effort. Having one dynamic person who has fundraising as his or her primary responsibility is often the key to success.

It also makes sense to have various committee members head up the different fundraising channels you may use, i.e. special event, grants, sponsorships, donor development. These each take dedicated effort and require different skills.

The responsibilities of your fundraising committee will include:

- **Organizing itself.**
- **Making committee assignments, e.g. research, grant writing, sponsor sales.**
- **Researching fundraising options.**
- **Reviewing past fundraising experience of your organization and other organizations in the area.**
- **Creating fundraising informational materials.**
- **Writing grant proposals.**
- **Targeting and developing a donor base.**
- **Deciding on a fundraising campaign.**

- Recruiting additional volunteers.
- Executing the fundraising project(s).
- Accounting for fundraising expenses and revenue.

Helpful skills, talents and experience to seek for your fundraising committee:

- Soliciting in-kind donations.
- Sales.
- Recruiting and managing volunteers.
- Organizing an event.
- Excellent follow-through.
- Local ties to the business community.
- Local ties to the political community (city, county, school district).
- Grant writing experience.
- Excellent organizational skills.
- Sponsorship fulfillment experience.
- Public relations or marketing background.

Create An Information Brief

One of the fundraising committee's first tasks is to create an *Info Brief*. When you speak to your members, the community and other potential funders, you will need to describe your project, its mission and goals in a brief, compelling way. Your Business Plan is the backbone of this process, and you will want plenty of copies of it to distribute. But you will need a different tool — something brief, visual or both — to distribute at meetings and events, to include in mailings and to ensure that each person who speaks about the project is giving the same information.

Your Info Brief is ideally no more than the front and back of a single sheet. It can be a brochure format or a flat hand-out. It should be graphic, short and compelling. The information included will be pulled from your Business Plan and tailored to your project and needs. It can include:

- Project mission statement.
- Overview of project and the need for it.
- Benefits to the project's users.
- Benefits to the community.
- Answers to frequently asked questions.
- Prominent individuals and organizations that support it.
- Cost of the project.
- Rendering of project.
- Contact information (very important!).



● Fundraising does not have to be direct. A dinner-dance, for example, may raise only a few thousand dollars. But people have fun; they socialize; they talk —and sometime down the road, the connections made might lead to a large, unexpected donation. The same is true with grants. One small initial grant can be used to leverage larger ones later.

● Don't delay your fundraising efforts until your fields project is already underway. Begin raising funds early; put the money into a capital fund.



● Creativity counts. One soccer organization got a construction company owner who was about to buy an expensive earthmover to test the equipment at a field site it was in the middle of developing.

● Create an excellent mailing list of your Circle of Friends from the beginning of your project. Continually add to it. There are many simple database software programs. At the minimum, you want to capture the following information: name, company, mailing address and e-mail. Other useful fields to include: potential in-kind donations they could make, an assigned member of the fundraising committee who will be their ongoing liaison to the project.

Your Membership Is The Place To Start

Your soccer organization's own membership is the place to start your fundraising. If you have 5,000 registered players and you assess a one-time fee of \$5 to \$10 per player for soccer field development, it totals \$25,000 to \$50,000 toward your field development fund. That makes for a nice nest egg for early planning of your complex once you find a land parcel that seems to suit your purposes.

If you have only 50 registered players in your organization, it will be important to find other soccer or sport organizations to work with. The larger your pool of players, the more financial and other resources you have available.

This initial money will allow you to refine your facility's footprint, have a topographical survey done, do soil testing, prepare a professional style business plan, etc.

If your membership is low income or otherwise not able to generate any internal funding for soccer fields, you will move directly into Friendraising! (See section 6-6: Kick Off A Friendraising Campaign.)

Your Members As Ongoing Funders

If you are going to convince your organization to assess a one-time fee for field development, consider selling it as an annual assessment that begins immediately. Get your members used to the notion that developing soccer fields takes cash and that the start of those funds will come from the membership. All fundraising works best when potential donors know that there is already a financial commitment on the part of your organization's members. Whether a public agency, a foundation, business or private donors, your organization's financial commitment makes it easier to walk in their door with a strong case for giving.

Unless your project is in a low-income area, some portion of the capital and operating funds will likely need to come from your own membership. Emphasize to your members that competition for dollars — whether from public agencies, taxpayers, sponsors or anyone else — is fierce.

There are many fundraising projects you can and likely will launch. But they all require a lot of time and effort. Having each member step up with \$10 (or \$20, or \$50!) is a lot easier than getting members to bake a cake for a bake sale, recruit kids and adults to wash cars, sell candy bars, light bulbs, raffle tickets, seeds or gift-wrapping or plan a dinner dance! Some of these may be excellent to help expose your project to the community and can give you high public relations value, but it's a labor intensive way to raise the money that will be needed for a project of this scope.

Field Assessment Frequently Asked Questions

Q: Can we start field assessments if we haven't got a site or public partner yet?

A: Yes! In fact don't delay! If you can convince your organization to do it, begin that assessment today. If invested and earning compound interest, in the time you are researching your needs, searching for your site or developing your public partners, the seed money to proceed will be growing. And the more of your own cash your soccer organization has to work with, the more flexibility it will have when a deal is to be done.

Q: We're a small club and willing to work with others, but we have a bitter relationship with local teams. What do we do?

A: The power of a prospective field project can be amazing. And other membership organizations that charge a registration fee are your best allies. Go out and extend the olive branch. Let them know you want to work together to provide playing space for both/all of your sports. This is the time to put what's best for the kids as the first priority.

Q: How do I sell this to my members? I don't think they'll stand for an increase in registration fees.

A: This is not an increase in registration fees. Position it to your membership as a player field assessment to develop playing facilities. Without fields, there will be reduced playing opportunities. Other public and private organizations will be adding (perhaps a lot) of funds to this project, but explain to your board and members that, much like having cash for a house down payment, the more cash you have to work with at the front end of the project, the more attractive you are as a partner.

Q: But we're a 501(c)(3) non-profit organization. Won't the funds we set aside be considered profit?

A: A non-profit organization can generate surplus funds as long as they are to be used for non-profit purposes. If you're putting money aside to develop soccer fields, put it in a separate capital development bank account, clearly earmarked for this capital project. Discuss the details with your organization's banker and accountant.

Q: But we don't know our banker! What do we do?

A: If your soccer organization has a checking account, credit cards or any other routine banking tools, be sure that you meet with the highest executive at your branch. Introduce yourself and develop a relationship. It will generally be to your advantage to select a local bank or a branch of a regional or national bank that has deep ties to your community. Check if any of your members are a local banker or know one as a friend or business associate. A personal introduction is the ideal approach.



- Assign a fundraising committee member to handle local media relations. Finding someone with media experience will be very helpful. Cultivate reporters, columnists and editors who cover local activities and events.

- If a special event is part of your fundraising, find a leader/chair specifically for it. Special events can be fun and successful, but they are very time consuming and labor intensive projects.



● Your state's department of parks may potentially have millions of dollars for land acquisition and development. Visit their website as part of your fundraising/grant writing research. But even authorized funds can be unavailable based on the state's budget health.

● Consider the classic "sponsored brick" concept. For a fee, your members, community folks and sponsors can have their name (or their family name, name of a deceased loved one, etc.) engraved on a paving brick, a wall plaque or other commemorative item. Almost any soccer field project can incorporate this element, even if it is a freestanding wall or a walkway around the snack bar!

Routinely provide your banker with the revenue & expenses statement for your soccer organization, strategic plans, annual reports or other materials you distribute. And involve him or her as you develop your field project business plan. And make sure they get invitations to your award banquets and other events.

Field Use Fees Are A Major Revenue Source

Field use fees will be a major revenue stream for your project and you will be required to project these for your business plan. In fact, use fees are the core of your ongoing revenue.

Snack bar, T-shirts and other retail revenue rises and falls. Sponsors come and go based on the economy, the state of their industry, changes in management or simply the vagaries of a company marketing department's direction. Use fees will be the majority of the ongoing revenue used to make any payments necessary and maintain fields.

Fees vary dramatically from area to area and organization to organization: from \$50 to \$150 per hour, with many different deals for the host club, tournament rentals and dominant users. They're commonly lower for youth soccer and higher for adult soccer. Fees also increase during peak hours and with the use of lights.

Early in your process, compile a list of the fee structures of all the fields used in your area. This is important information to include in your business plan because it gives a comparison of your soccer fields and others around you.

This research will tell you the current minimum and maximum use fees for your area. With a new field, particularly one with amenities such as bathrooms, snack bars or seating, you may be able to justify a higher use fee. However, this will take some testing.

As with pricing of any product, it is generally easier to decrease rather than increase it. Open your facility with the highest pricing your market will support – this is generally easier than raising it over time. There is a great tendency to want to offer the lowest price, but this is often the fastest way to not be able to pay your bills. Do not be afraid to offer a good product at a good price.

Kick Off A Fundraising Campaign

The basis of the most successful fundraising is FRIENDRAISING. It's the process of identifying and cultivating individuals who are most likely to provide funds, skills, time and other support for your project. Think of this as your Circle of Friends. Events and activities that are hard to justify as truly raising significant funds in themselves can serve well as opportunities

to introduce your project to your Circle of Friends. Or to thank the Circle of Friends for their support. Or to help your Circle of Friends feel more personally connected to the project. Your Circle of Friends can include:

- **Parents of active players.**
- **Relatives of active players (e.g. grandparents).**
- **Player alumni of your organization — if you've been around long enough, they may now be young professionals who are willing to give back to your club.**
- **Parent alumni — they may have fond memories of the value of the program to their son or daughter and wish to help make it available for others. If they are empty-nesters, they may also have time to contribute.**
- **Residential neighbors around the project area.**
- **Business neighbors around the project area.**
- **Community business leaders.**
- **Politicians.**
- **School leaders.**

This selective list of people, which can be as small as a few dozen or as large as a few hundred, is the target donor base for your fundraising efforts. You can maximize your donation efforts by focusing on this group first. Even if you are planning community-wide events, your Circle of Friends will be the backbone of your fundraising.

In-Kind Donations Are As Good As Cash

In-kind donations are services or products that remove a cash item from your budget. Donations can be time, expert advice and goods to assist the start-up or maintenance of your project. Think creatively and there may be companies, agencies and individuals that can donate significantly to your project. In many communities, in-kind donations add up to thousands of dollars off the bottom line. Just some of the in-kind donations that will have value to your project include:

- **Land donation/free lease.**
- **Public relations assistance.**
- **Architectural planning.**
- **Grass seed.**
- **Fertilizer.**
- **Use of lawn equipment.**



- **In return for cash or in-kind donations to a fields project, allow local vendors to sell at tournaments.**

- **Most grants come with deadlines. Make sure when you apply for a grant that you can fulfill every requirement.**



● To get foundations to give money, a hook may be helpful — “environmental clean-up” for example or “programs for the handicapped.” You can’t just ask for funds for a sports program — particularly one that serves what is perceived to be affluent youth.

- Plumbing expertise and/or supplies.
- Dirt, sand, gravel.
- Trees, shrubs, sod.
- Planning & design.
- Legal assistance.
- Accounting assistance.
- Grading and soil preparation.
- Installation work.
- Contracting.
- Irrigation systems.
- Printing of brochures, posters and collateral material.
- Electrical services.
- Construction equipment (bulldozers).

Calling All Angels

In the investment world, an Angel is an individual (often friends and family) who gives money with very limited strings attached to a start-up company. An Angel is what everybody is looking for in the soccer field development world as well. An individual who steps up and happily hands you a check for a million dollars and just asks that the field is named after him or her.

Angels do exist. A philanthropic individual or family who just wants to help their children or help the community has funded a variety of soccer complexes around the nation. But PLEASE DON'T COUNT ON FINDING AN ANGEL TO FUND YOUR PROJECT. You may be waiting forever. And most often, they seem to find you rather than the other way around.

All of the friendraising and fundraising activities you launch will put you on the path to finding an Angel if one is out there.

Selling Brick By Brick & Candy Bar By Candy Bar

Fundraising events and activities can be very successful. They also can be a lot of hard work with little profit to show for them. Your committee must be smart about its time and efforts and carefully evaluate its ability to focus on the most successful avenues. Poorly executed events or activities can seriously hamper your credibility for future fundraising activities, including finding willing public partners.

It's also important to not compete with your own teams! If they are

selling candy bars or other items, they will not be excited about also selling on behalf of the club or league.

Some things to consider as you review fundraising options:

- **Is there an individual willing and able to commit a lot of time to lead the event or activity?**
- **Are there enough others who are willing to commit to actively participate?**
- **Is there a market for what you are selling?**
- **Are there other events or activities in your area that will compete with you?**
- **Will you be competing with your own teams' fundraising activities?**

Fundraising Do's & Don'ts

- **Do get involved in a labor-intensive event ONLY if you have a large pool of enthusiastic volunteers.**
- **Do clarify your goals for each fundraising event. In addition to raising money, these events can also help educate the community about your project, recruit volunteers, motivate major contributors, market your organization and/or expand your organization's network.**
- **Don't do a fundraising activity that may upset a major donor.**
- **Do protect your non-profit status — check any legal requirements before proceeding, especially if you're doing anything that looks like a lottery.**
- **Don't do a fundraising activity unless it is well coordinated and excellently executed.**
- **Do launch a modest fundraiser first to test your systems.**
- **Don't be afraid to cancel an event or activity if it is not coming together.**
- **Do consider how sponsors may get value out of your activities and events.**
- **Do invite prospective donors to non-fundraising events such as tournaments and ground breakings. Build the relationship now and ask them to donate later.**



● Launch your fields with the highest fee practical. It is always easier to reduce fees rather than increase them. You can also create discounts for heavy users, special programs, etc. You will likely get some complaints, but they will be offset by the increased ability to invest in maintenance and improvements.

● Fundraisers must know what they're doing. Soccer experience is less important than being able to find the proper sources, speak their language and cultivate them. A public relations background helps, too.



- Always include an address and phone number for your group with any materials you distribute — flyers, information briefs, business plans, etc. You want people to be able to get in touch with you!

- 85% of non-profit funding comes from private donations. Reaching out to individuals can pay off in a big way!

- Check on local laws and regulations for bingo, raffles, casino nights and other “gaming” fundraisers. You may need a special permit or they may not be allowed at all in your area. It’s crucial you protect your non-profit status.

43 Fundraising Idea Starters

Every organization has different strengths. Here are 43 fundraising ideas to help kick your team’s brainstorming into high gear. However, to be successful your group must settle on only one or two activities to put all its efforts behind. Select them based on what best fits the opportunities and limits of your organization. Remember, almost any idea can be a BIG idea if the scale is large enough. Please check local and legal requirements.

- 1. 100 Club.** 100 individual and/or organizations contribute \$1,000 each.
- 2. Sell a Brick.** Paved walk or wall includes personalized pavers.
- 3. Raffle a House!** The Bethesda Blast worked with a local real estate agent whose son played for the club to buy, refurbish and raffle off a house — keeping the profits for the club.
- 4. Sell Grass by the Square Foot.**
- 5. Babysitting Evening.** Baby-sit children in a church or large facility for 4 hours; include planned activities and promote as a great time for parents to have holiday shopping time alone.
- 6. Recycling.** Collect cans, newspapers, etc. and turn in for cash.
- 7. Carwashes.**
- 8. Mega Garage or Yard Sale.** School yard, a whole neighborhood or bring everything to the field site.
- 9. Raffles.** Quilts, trips, day at a spa, electronics — the list is endless. Just be sure to follow local legal requirements.
- 10. Gift Wrapping during Holiday Season.**
- 11. Pancake Breakfast.**
- 12. Crab Feed.** Local companies supply everything. You add volunteers (regional).
- 13. Valentines.** Flowers-to-go. Sell wrapped carnations placed on top of a box of candy. Visit your local wholesale flower mart for potential partners.
- 14. Letters from Santa.** Write letters from Santa to children of parents who give their name, including a special something about the child’s wishes.
- 15. Bingo Night.**
- 16. Bake Sales.**
- 17. No Bake Sale.** Sell “no bake” coupons — instead of donating a carrot cake, donate \$10. Come up with clever names of what’s for sale.
- 18. Cookbooks.** Collect favorite recipes, make books and sell.
- 19. Picnic Basket Auction.** Put together the coolest looking picnic baskets and auction off to highest bidder.
- 20. Fun Fair or Carnival.**

21. **Live Auction.**
22. **Silent Auction.**
23. **Golf Tournament.**
24. **Merchandise.** Sell candy, cake, magazine subscriptions, discount books, etc.
25. **A Taste of “Your Club Name” with Food from Parents.**
26. **Soccerathon, Walkathon.** The ‘thon of your choice.
27. **Battle of the Bands.** Local high school bands compete.
28. **Putting Flags on People’s Lawns for Special Days.** Students do this early in the morning of significant days such as July 4th and retrieve them that evening. Do this for five holidays and charge appropriately.
29. **Goat Insurance.** Hold a “goat insurance” fundraising event that people can’t resist because they can’t stop laughing. Flyers are mailed to your membership and/or other groups to announce that your organization will raffle off a donated goat. For \$10, a person can send in the names of three people. Letters are then sent to those three people, telling them they have a chance to win a goat. But, for \$10 they can buy “goat insurance” to protect themselves from being entered in the raffle. The winner of the raffle does get the goat, but after the fun wears off, the goat’s returned to its owner.
Source: Santa Clara Hospice (Santa Clara, Calif.)
30. **Dinner Theatre.** Provide simple dinner and play for entertainment.
31. **Refreshment Stand.** At community events, estate sales, etc.
32. **Spaghetti Feed.**
33. **Secret Balloon Sale.** Put a note of winnings inside each balloon. Participant pays for a try at “the big prize.”
34. **Calendar Sales.**
35. **Craft Sales/Fairs.**
36. **Haunted House.**
37. **Book Fair.**
38. **Children’s Movies.** Shown in the morning at a neighborhood theater with movie profits going to organization and snack bar proceeds going to theatre.
39. **Soccer or Regional Theme Gift Baskets for Sale.**
40. **New Year’s Eve Party.** For adults.
41. **First Night Party.** For teens, non-alcoholic.
42. **White Elephant Sale.**
43. **Super Bowl or MLS Cup Subs.** Take sandwich orders, buy or get the ingredients, have a team party to make them and deliver subs by game time.



- Have a coach or player send the thank-you note to each contributor. You want to create a continuing relationship with your funders – even if it’s just a single individual giving you \$10!

- Start your Circle of Friends list with people you know. If each person in your soccer organization contributed a short list of neighbors, colleagues and friends who may be potential donors, it’s the beginning of a truly targeted donor list!



● Try to get a list of the residents in the ZIP code surrounding your planned fields. Nothing could be more powerful than to recruit them to your Circle of Friends! A mailing, or even more powerful, a personal conversation with each of these individuals about the value of the fields to the neighborhood, to the value of their property, etc. could bring you allies and donors — and also reveal what the concerns and controversies your development may face.

How To Find Government & Private Grants

There are two primary sources for grants: private and public. Grants are a way that the private or public organization can help share the cost of a project that fits its purposes and philosophy. Grants are usually cash, but they can also be services or products. The U.S. Soccer Foundation's All Conditions Fields grants, as an example, include discounts on lights, synthetic turf, goals and signage.

What grants are NOT is no-strings-attached money. In accepting a grant, your organization agrees to abide by the deadlines, rules and regulations of the granting body. It is important that prior to applying for a grant, your group is comfortable with those details. The grant is a contract and if you do not abide by its rules, you may be legally required to return the money, even if you have already spent it.

Very few grants are specifically for soccer fields. More commonly, the soccer field will fulfill the grant purpose in a different way. Some examples are:

- Promoting after school programs.
- Cleaning up toxic land for healthy use.
- Supporting youth athletics.
- Offering opportunities to low-income youth.
- Neighborhood development.
- Supporting youth health and welfare.
- Increasing urban green space.
- Creating public recreation opportunities.
- Decreasing crime.
- Increasing tourism.

How To Find Grant-Making Organizations

Researching grant-making organizations will take time and effort. Here are some places to begin:

- The Foundation Center at www.fdncenter.org is an excellent place to start.
- Check your state, county and city's websites.
- Visit ussoccerfoundation.org.
- Visit your public library — librarians are great resources.
- Ask school district officials.
- Ask park & recreation officials.
- The federal government at www.grants.gov.

EPA Brownfield Cleanup Grant Background Information

Environmental Protection Agency (EPA) Cleanup grants provide funding for a grant recipient to carry out cleanup activities at “brownfield” sites. These are sites that in the past had industrial toxins contaminate the ground. Former manufacturing sites are an example. An eligible organization may apply for up to \$200,000 per site. These funds may be used to address sites contaminated by petroleum and hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum).

Cleanup grants require a 20 percent cost share, which may be in the form of a contribution of money, labor, material or services, and must be for eligible and allowable costs (the match must equal 20 percent of the amount of funding provided by EPA and cannot include administrative costs). A cleanup grant applicant may request a waiver of the 20 percent cost share requirement based on hardship.

An applicant must own the site for which it is requesting funding at time of application or demonstrate the ability to acquire title. The performance period for these grants is two years.

For more information, visit www.epa.gov/brownfields.

Successful Grant Writing Checklist

- **Read the criteria for the grant very, very carefully.** The number one reason for a grant not being made is that the organization or project does not fit the criteria.
- **Meet every deadline.** They are usually locked in stone.
- **Follow directions perfectly.** Do not exceed word counts (if they are given), provide the exact number of copies (if required), supply any required addendums or documentation, do not include any addendums or documentation that are not specifically required, answer every question exactly as it is asked.
- **Provide, when requested, an accurate, realistic budget.** If you're applying for an appropriate grant, then assume that the grant makers have read many proposals similar to yours and are knowledgeable about costs and revenues.
- **Clearly understand the purpose the foundation or organization is trying to achieve, then tailor your grant application accordingly.** If your project does not specifically fulfill the organization's purpose, you will be wasting your time.



- When applying for grants, timing is everything. Make sure you meet all your deadlines — but be sure too that you're able to meet target dates as specified on the application forms. For example, some foundations do not award money unless you're able to start construction by a certain date.

- Many (actually most!) grants come with strings attached. By accepting state money, for example, you agree to play by the state's rules. Make sure you understand what conditions are attached to grants and donations.



● Check the US Soccer Foundation's website. They've got great information on applying for grants.

● Money matters. Even if you secure one or two grants from a corporation or foundation, you will need more. Consider several revenue sources. Municipal, state and federal governments are good partners for field projects.

● Think outside the box. One soccer association hit limestone while cutting away a hill at one of its new fields. Instead of carting it away at enormous expense, they crushed it and placed it beneath the field. For drainage, that worked far better than tile. That field is now playable even in torrential rain. That's creative "fundraising"!

- **Clarify the maximum grant size that is available and do not request more than that.** However, do not automatically request the maximum grant. Normally, a grant will only cover a portion of your project. A grant covering a specific aspect of the project with an appropriate dollar amount attached will be more attractive than a general fund-type request.
- **If an initial letter of inquiry is required, spend as much time on it as you would the entire grant application!** You will have a very brief opportunity to give the most salient points of your grant request. You will then be invited to apply for a grant ... or not.
- **Review the organization's list of previous grant recipients.** Does your project fit with what grants have been made before?
- **Confirm that your city/county/state fits the granting organization's geographic target area.**
- **In writing the grant request, talk less about soccer and more about whom the project will serve.**
- **Consider how your project meets needs that are not already met in another way.**
- **You will likely be required to supply brief bios** on each of the key people in your organization. Have this information ready. Include both personal, professional and soccer background.
- **Have a list of community references** — prominent people in local business or government who will speak for your organization's qualifications to fulfill the grant.
- **Detail how the rest of the funds will be attained for the project.** You will generally be required to demonstrate the potential for other financial support. The granting body needs to know that their money is part of a larger project that will be successful. Grants are usually not the first or only money in a project.
- **Show how your organization will be able to sustain the project when the grant funds end.** Grants are generally not for long-term funding, but granting organizations want to know that you have a plan that ensures their investment will benefit the community over time.

Sponsorships: Building Relationships

Sponsorships can be a great way to raise funds for your soccer field project, but sponsors want to build a relationship with your members. And sometimes that can be a tall order.



**Coming together is a beginning.
Keeping together is progress.
Working together is success.**

— Henry Ford

CHAPTER 7 CONTENTS

- **What Is A Sponsorship?**
- **Where Are The Big National Sponsors?**
- **Local Sponsors Are The Ticket**
- **Sponsorship Good News, Bad News**
- **Sponsorship Secrets A To Z**



● This is a big league example, but may have youth league applications: the Oakland A's baseball team once had a major cleaning product as the sponsor of its bathrooms! Its "extra clean" bathrooms had signs in them declaring the product sponsorship and the cleaning crew's use of the product. The company even had "naming rights" of the inspection sheet posted on the wall that was dated and timed after each clean-up was performed.

● If your fields are a partnership with public entities such as schools or local government, it's critical you determine any limitations on corporate signage, naming rights, etc. You may not be allowed to display logos or have corporate names on public facilities.

What Is A Sponsorship?

A sponsorship is a relationship. It is not just a sign on a field. A business or organization gives cash or product in exchange for the ability to create a relationship with a group of potential customers. In the case of your field project, those potential customers are generally your players and parents. The more effective your organization is at building the relationship between the sponsor, your members and the larger community, the more attractive the project will be to potential sponsors. If your organization is not effective in building that relationship, the business will likely not continue the sponsorship.

The sponsorship will include a group of benefits for the sponsor. These can include:

- **Company logo on uniforms and/or practice t-shirts.**
- **Advertising space or sponsored editorial in programs or yearbooks.**
- **Advertising space or company logo on registration or other forms.**
- **Advertising space or sponsored editorial on organization website.**
- **Logo on organization letterhead and other collateral materials.**
- **Signs/company logo at the fields (signboards, light poles, fences, nets behind goals) and at events.**
- **Naming Rights of the field or complex (e.g. Citizens Bank Fields at Progin Park, Mass.).**
- **Company name affiliated with a club scholarship fund.**
- **On-site sampling or sign-up.**
- **Distribution of flyers or coupons.**
- **Ability to use member mailing and e-mail lists.**
- **On-site product sales.**
- **Naming Rights to an event that takes place at the fields.**

Where Are The Big National Sponsors?

Sponsorships from big national companies — even soccer companies — are not often in your mix of funding sources. With only the most unusual of exceptions, soccer fields are local projects of very limited interest to national sponsors.

Companies must justify sponsorships, even positive community projects, on a business basis. Local sponsorships don't generally promote sufficient sales for a national company to justify them. If a company has a non-profit, foundation arm, it will also usually prefer national projects. If a national sponsor does come into the mix, the most likely reason is because it is part of your community, with its national headquarters or a large division located in your city or your city is a new market for them.

Local Sponsorships Are The Ticket

It will be local businesses that find the most value in a sponsorship of your project. Just some of the businesses to approach:

- **Banks.**
- **Fast Food restaurants.**
- **Sporting goods or soccer stores.**
- **Insurance agents.**
- **Real estate agents.**
- **Supermarkets — particularly local chains.**
- **Local corporations.**
- **Local manufacturers.**
- **Accountants.**
- **Beauty salons or spas.**
- **Youth and teen clothing stores.**
- **Family restaurants.**
- **Contractors.**
- **Pizza chains.**
- **Car dealerships.**
- **Local newspapers.**
- **Soft drink bottlers.**
- **Hotels.**



● “Please don’t tell me about how much exposure we’ll get,” one national company spokesman advises. “I don’t want to be rude, but we get exposure from a U.S. National Team or MLS sponsorship. And even then it must convert to sales — preferably measurable sales. Exposure isn’t what we’re looking for with a grassroots organization ... we have to sell our product.”

● When soliciting funds for fields, seek a broader base than soccer or sports-related businesses. Most companies — insurance agencies, hair salons, attorneys offices, you name it, have someone whose child plays soccer.

Sponsorship Good News, Bad News

Sponsorships are a good-news, bad-news funding source. The good news is that sponsor dollars can be significant. The bad news is that the ups and downs of the business climate or changes in a business’s marketing direction means the dollars may not be consistent from year to year. Sponsorships also are challenging to sell and can be a lot of work to fulfill. It is good to have them as part of your funding mix, but also important not to consider them your only funding source!

Sponsorship Secrets A To Z

Attitude. “We’re here to serve” is the best attitude to offer potential sponsors. Sponsor resources will help your program prosper, but you must make the commitment to serve the sponsor’s needs and objectives. It can be an excellent bargain, but there aren’t any shortcuts.





● Sponsorships are not easy to come by. You must work hard to get them — then work just as hard to retain them.

● Create sponsorship “tiers” such as bronze, silver and gold. Each will receive an escalating set of benefits such as program ads, signage, etc. at increasing price points.

Benefits. Provide a list of benefits showing the value the sponsoring company will receive (e.g.: mention in newspaper or radio commercial spots advertising an event, ad in the tournament program, event tickets, etc.).

Pointer: Big sponsorship or small, it works the same. For local sponsors, benefits can include: company logo on team uniform, team or organization letterhead, press releases and on materials distributed to players, coaches or families; ads in program or yearbook; coupons distributed at games. Be creative — you’re only limited by your imagination.

Customer. The sponsor is the customer. This is lesson No. 1 of selling, servicing and satisfying a sponsor.

Pointer: Treat your sponsor like your most important customer.

Details. Details, details, details. It’s always the little things that cause sponsors to feel disappointed. Go to great lengths to make sure that you are 110 percent behind your sponsor. A contract is a beginning not an end for good sponsor relations.

Effective. An effective sponsorship proposal is brief, clear and to-the-point. Include: 1) a succinct description of the team, event or project; 2) detailed list of sponsor benefits; 3) specific reason why the opportunity meets sponsor’s needs (the more homework you’ve done, the more persuasive this component will be); 4) price (in cash, product, service or a combination). Don’t ramble. Do be enthusiastic, but keep it professional. Include a short cover letter highlighting only one or two points you’d like to emphasize. Include a folder of “support materials” if you have them, such as newspaper clippings from previous events, letters of recommendations from other sponsors, a publicity/media schedule. A proposal can be very fancy, but doesn’t have to be. A simple, accurately typed format is fine.

Fit. Make sure the company sponsor you’re pursuing is a sensible “fit” for your team, program or event. Local retail or service businesses will get most value from local programs. Large corporations or soccer manufacturers will only be interested in large or national programs and events.

Pointer: Start local and work up. Don’t forget soccer shops, local soft drink or beer bottling companies (which tend to handle local sponsorships), banks, restaurants, supermarkets, specialty retail stores (e.g., women’s or children’s clothing), etc.

Good of the Game. It can be a great result of a successful sponsorship, but it is almost never a company’s reason for sponsoring your project. Sponsorships are business decisions and must have value on a business basis. The best sponsorships are win-win situations — your soccer field project receives needed resources and the sponsor receives needed business impact.

Homework. Do your homework. Dig in and be curious about your prospective sponsor's business. It's from that foundation of knowledge that real and productive sponsorship creativity flows. The most creative soccer promotion in the world isn't worth a dime if it's developed in a soccer vacuum. By contrast, you'll be surprised how easily ideas will evolve into worthwhile programs (and sponsorship renewals!) if you take the time to understand the fundamental dynamics of your customer's business.

Impressions. Sponsors like to know how many "impressions" they are getting. That's the number of times their logo or message is being viewed. One way to increase this count is to use a sponsor's logo beside/within each page number in your program. Consider putting sponsor logos on: corner flags, rulebooks, flyers, port-a-john doors, medals, pins and trophies.

Judgment. Use good judgment on how aggressively you follow up on your sponsorship proposals. Give a call within one week to assure the proposal has been received and to answer any preliminary questions. If you don't get a direct "no" at that point, send an enthusiastic follow-up note. Call again in two weeks. Remember, most companies receive many sponsorship proposals and many factors must be taken into consideration. Don't get discouraged if it seems to drag on. Until you get an actual "no," your proposal is still active. Continue to send notes, make calls and generally stay in touch, but don't cross the line to being obnoxious. Also, it's fine to send proposals to multiple companies, but be sure that all are aware that your offer is not an exclusive one. Or, set a time limit for exclusivity (e.g., "We are pleased to make this an exclusive opportunity until Jan. 10, 2008.").

Keep it simple. At least in the beginning. Serving a sponsor's needs is often more work than you think. Start with easier to implement programs. Build on that success.

Listen. That means really LISTEN — to your sponsor or potential sponsor. Even if you find it uninteresting or totally foreign to your own professional experience, challenge yourself to learn the basics of their business. Not just marketing objectives — but how their product is produced and brought to market; the structure of their sales force and its relationship to retailers; the key nomenclature of the particular industry — all of it.

More. Provide your sponsor with more than they provide you — and more than they expected. Document your efforts on their behalf and make sure you're geared toward meeting their objectives.



- You may be able to get significant dollars and a national sponsor name attached to your project — but at the local level. Local soft drink bottlers may be potential sponsors. Or a local sporting goods store that receives co-op promotional dollars from a national vendor.

- National companies often have cooperative programs with local retailers. The retailer runs ads or promotions for its store, but they feature the products of the national vendor. The national vendor picks up all or some portion of the cost. But as a rule you'll also need to commit to only selling or serving products from those vendors or allowing the sporting goods store to take over on-site sales.



- Don't overlook local vendors. Many will sell to you at cost, or donate labor, in-kind trade or money to your project.

- Don't undervalue naming rights. Take time to determine what you'll charge sponsors. It's better to aim too high and lower your price later, than charge too little and be forced to make up the shortfall.

Numbers. Don't inflate the numbers. The numbers game is very important to a client. If your attendance, including parents, is 2,000 for three days, then say it is 2,000 but could go higher. But do not inflate this figure to read "around 5,000" just to impress a customer.

Objectives. Know the sponsoring company's objectives for developing an association with your field project and what the company hopes to accomplish with its sponsorship.

Pointer: This was a tip supplied by a big company sponsor, but it applies to every sponsor from the corner drugstore to the local real estate agency. Don't guess at this. Sponsor objectives vary widely. Consider creating a brief "Statement of Objective" that the sponsor approves to ensure that you and the sponsor are on the same track.

Promise. Don't promise more than you can deliver. For example, you cannot promise to put up banners and signage when you have only a limited number of concession stands to hang them on or when local park regulations won't allow it. It's always better to under-promise and over-deliver. Your sponsor will be pleasantly surprised by what is delivered and is more likely to recommit to your organization.

Quantity. Remember the huge quantity of other programs and events vying for a sponsor's interest and resources. Not just soccer, but every sport, special interest and social concern. Don't take any sponsor for granted.

Realistic. Be realistic about your organization's ability to serve a sponsor. Carefully evaluate the time, energy and access you can honestly offer. Have enough helpers (volunteer or otherwise) to make sure every step is taken care of.

Pointer: Everything takes time. Hanging signs, stuffing flyers in registration kits — it always takes more time than you expect.

Success Stories. Be sure a complete "value book" is made and sent to the sponsor to report back to them on the success of their sponsorship and the direct value they received. Success stories (both anecdotes and hard data) keep sponsors happy and coming back for more. Sponsors are always interested in what they get in terms of recognition, advertising and association with the event (or team). Try to get the sponsor involved in all aspects of the program.

Thank-you. Remember to say thank-you. Start with a simple thank-you note — handwritten is best.

Pointer: In addition, consider sending a framed certificate, a special sponsor trophy, a club jacket with the sponsor's name, notes from all the players or a framed team photo. You can't say thanks enough.

Understand. Understand that a sponsor is giving you money, products or services in exchange for specific benefits.

Pointer: Reread 'C-ustomer'.

Volunteers. Staffing is critical to most soccer organization sponsorships. Are volunteers well trained? Responsible and reliable? Do they understand sponsor needs? Give a volunteer training to be sure. The number of volunteers you can draw upon will be crucial to deciding what projects you can execute.

Work with others. Enlist your local soccer store to work on-site at your event (soccer manufacturers usually consider this required), approach a local charity to provide volunteers in exchange for a donation of a portion of the event's proceeds, tie in with the team across town to give your program extra reach. Consider all the ways you can expand your results by bringing others — individuals, groups and organizations — into your project.

Xtra. Always go the extra mile for your sponsors. Finding a good sponsor partner for your program is hard work, so don't lose them because you cut corners. Fulfill every promise, plus add in any extras you can. It's much easier to keep one sponsor happy from year to year than to go looking for a new one because you didn't follow through.

Yes. Say yes as much as you can to a sponsor, but also know when to say no. If a sponsor ever asks you to do something not in keeping with the best interest of your program, turn them down. Graciously, but clearly. It is important to know what your limits may be and have the sponsor aware of them ahead of time. This may not come up often, but when it does, it can be very uncomfortable. Projects involving young children often have the most restrictions.

Zero. Zero in on what is special or different about your program and be sure to highlight it in your search for sponsors. Narrow is often more saleable than broad. Companies often target very specific markets: children 7 to 12, the thirty-somethings, young mothers, Hispanic men, teenage girls, etc. If your project, event or team fits into a specific category, you can often find a powerful sponsor ally with a company that fits its strategy into the same category as yours. Geography can also be an asset. Companies frequently target specific geographic areas (Florida, San Francisco, the Western states, etc.). If your program serves the geographic area they're looking for, you've got the start of a good sponsorship fit.

Source: *Sponsorship Secrets From A-Z* © Soccer America



- Set a time limit on naming rights. Perpetual sponsorships are a one-shot deal. Naming rights that expire after, say, 10 years, provide an important new source of revenue.

- If pledges are paid up front, you've got funds in hand. If, on the other hand, pledges are deferred, you might have to borrow money to complete the project. However, some donors may contribute only if they have the option to spread payments out (some foundations are limited by bylaws in the amount they can disburse each year). There is no right or wrong way to schedule pledge payments — but this issue must be addressed in capital planning.



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.

Field Design On A Dime

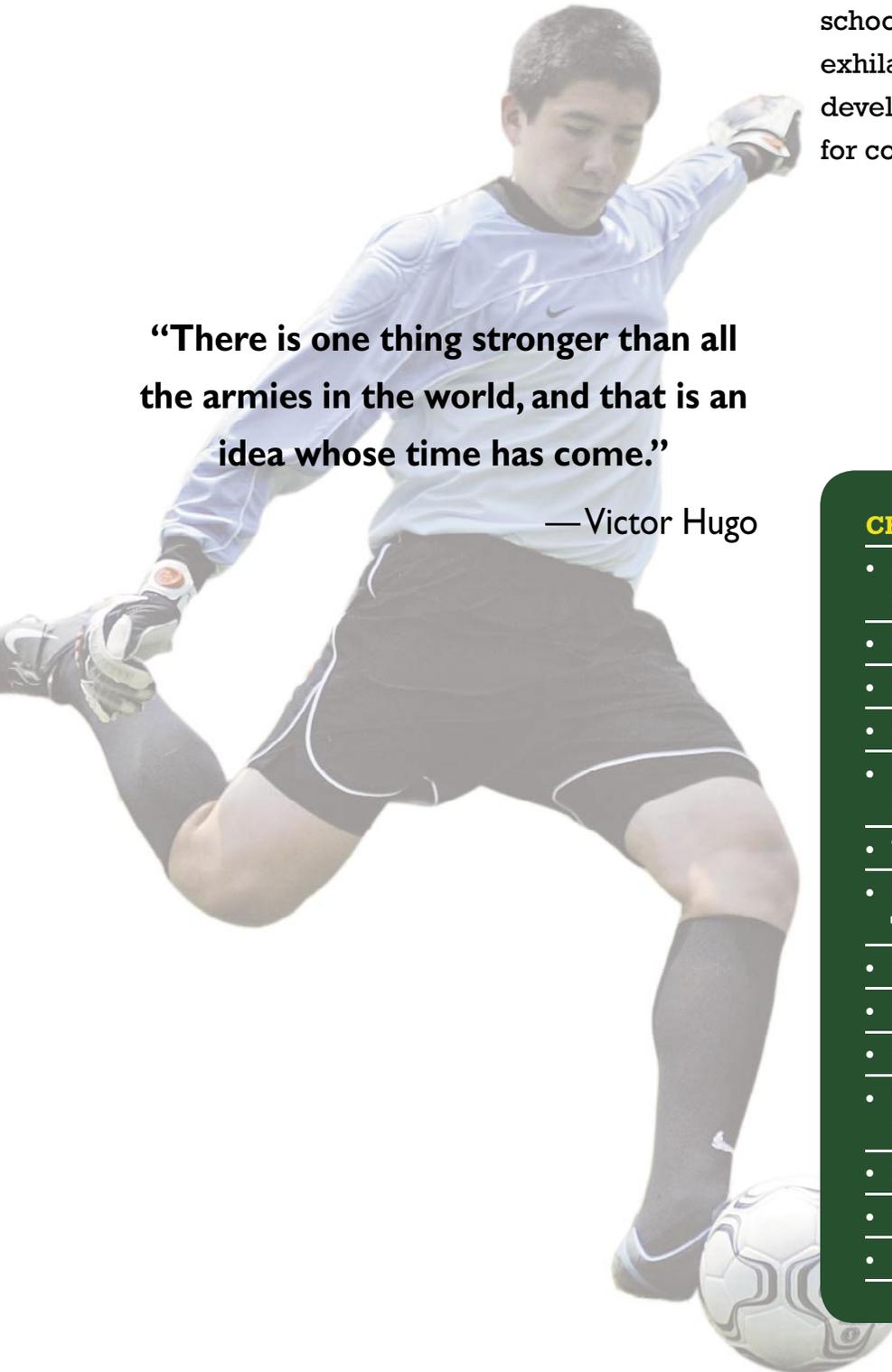
You have found your land, you're raising funds, and perhaps you've developed partnerships with other sports organizations, your city or school district. Now you're at an exhilarating stage of the process: developing your field project blueprint for construction.

“There is one thing stronger than all the armies in the world, and that is an idea whose time has come.”

—Victor Hugo

CHAPTER 8 CONTENTS

- **Developing Your Field Project Blueprint**
- **Getting The Lay Of The Land**
- **Elements Of Good Design**
- **Light It And They Will Come**
- **Soccer Field Design By The Numbers**
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- **Natural Grass**
- **Synthetic Grass**
- **Irrigation Drainage Primer**





● Just a reminder to the landscape architect that soccer fields need to be laid out on a north/south axis. You don't want the sun in players' eyes.

● The area where a crowned field meets the level touchline can get swamped. Extend the field's slope beyond the touchline — 10 to 15 feet is ideal.

● A non-sand based soccer field needs to have a minimum of 1% to 1.5% slope for good drainage. For fields with underground drainage, the slope should be no less than 1%. A field should never be flat.

Developing Your Field Project Blueprint

Your soccer field project has moved into one of the most exciting stages of all: the development of the detailed blueprint that will be put out to contractors for bid or from which construction will begin.

You developed a base plan early in your process to generally see how your field(s) and structures could lay out. You determined what was possible with the parcel of land you are working with. This allowed you to examine your wishes and needs against the general limitations of the site.

The footprint you produced to give you a sense of how a parcel could lay out is now turned into a detailed blueprint. Similar to building a house, it is this plan that the construction team will build from. It must answer all the questions regarding labor, materials and other costs. Later changes in this plan could cost you unexpected increases in expense.

Getting The Lay Of The Land

The first step in preparing the plan will be a topographical survey of your parcel. A **surveyor** or **civil engineer** is the professional who will do it.

The survey will be a graphic representation of all the surface features of the property. This will tell you the contours, rises and dips (**elevations**) of your land, the placement of trees or structures and any other above ground elements that will have to be considered. Remember, structures and trees will likely need to be removed, which is a cost that needs to be planned for.

You will turn over your base plan, any wish list and your budget parameters to a landscape architect. This professional will take that information, along with his or her conversations with your team, and flesh out the details into a blueprint to work from. He may hire irrigation or other specialists for aspects of the plan.

Elements Of Good Design

Your ultimate goal seems simple enough: safe fields for your kids to play on. But good design of your fields project will also:

- **Keep players from running full speed into spectators.**
- **Stop endless balls sailing out of the park or onto adjacent fields.**
- **Ensure players don't have the sun in their eyes.**
- **Ensure there are handy gates in any fencing, so a ball over the fence doesn't mean a run around the entire field!**
- **Ensure a grass field has access to water for irrigation, either built in or above ground.**
- **Keep synthetic turf fields properly draining.**
- **Prevent permanent swampy spots in the field, at the goal lines or on the touch lines.**

- Prevent muddy parking lots, ensure enough parking and enough room for a bus to turn around.
- Keep bathroom lines to a reasonable length.
- Ensure natural grass fields have enough room to shift around, so you're not constantly fighting bare or compacted spots.
- Stop lights from shining in your neighbors' windows.
- And maybe even add a little shade on a hot day!

Each decision you make will likely have cost and other ramifications such as permits or inspections. Your Business Plan will need to incorporate these estimated costs and the reasons behind your choices.

Here is a list of decisions you will need to make:

Fields

- Natural or synthetic grass?
- If grass fields, will they be soil- or sand-based?
- What type of grass?
- Seed or sod?
- How much dirt may have to be cut from one area or filled in another area to achieve properly graded playing fields?
- Will new fill dirt or topsoil need to be brought in from outside the site?
- Will dirt need to be removed from the site?
- How much room between fields?
- Where will spectators be allowed to stand?
- Where will teams be located on the sidelines?
- How much room can you allow for shifting fields?

Maintenance

- Built-in irrigation or above ground sprinkler system?
- What will be the necessary slope to give proper drainage on the fields?
- Is a built-in underground drainage system necessary?
- What is the quality of the native soil?
- What soil improvements can be made during construction to minimize future maintenance problems?

Structures

- Permanent restrooms or port-a-johns?
- Field house with meeting space? One story or two?
- Concession stand?
- Storage?
- Bleachers or grandstand?
- Ticket booths?
- Maintenance building?



● Soccer/lacrosse field combos seem logical in the design stage, but the soccer goalmouth sits exactly on top of the lacrosse 20-yard box. They both eat up the grass in the same area creating a maintenance challenge.

● Sloping a field end to end almost always makes the ends of the field perpetually wet and sloppy. Don't do it.

● If you build a concession stand, restroom facilities or maintenance building, consider adding office space. And if you add office space, don't forget at least one meeting room – and space for referees. You'll be surprised how that helps attract officials for tournaments. And if you're building one story already, build a second story if at all possible. You will be glad for the space.



● Plan on safety from Day 1. In the design and construction stage put yourself in the picture as spectator or participant. Poorly placed catch basins, sprinkler heads or other features can be dangerous.

● Restrooms are expensive and complicated. There will be strict guidelines from your city/county that cover installation, including the number of stalls, plumbing codes and handicap access. Work with your local board of health from the planning stage to ensure that you keep the process as simple as possible. Port-a-johns may be your best Phase 1 solution.

● Don't forget zoning. Many municipalities have strict laws controlling where fields may or may not be built and whether lights are allowed. Research zoning issues carefully ahead of time, to avoid wasting architects' and other fees.

Parking & Traffic

- How many car slots?
- Are bus slots needed? How many?
- Gravel, paved or unpaved parking?
- One parking lot or multiples?
- Curbs needed?
- Must access roads be added into or within the facility?
- What traffic signage may be necessary?
- Lighting for parking lot?
- Handicapped spaces and ramps?

Health & Safety

- What environmental hazards may be an issue?
- What rules and regulations affect handicapped access for bathrooms, bleachers or buildings?
- By trying to get one extra field in have you made the corridors between fields too narrow to be safe for players or spectators?
- What kind and how much fencing?
- How tall should the fencing be?
- Are lockable gates necessary?
- If fields and/or complex are fenced, how many pedestrian gates are necessary? Truck gates?
- Where should trash receptacles be placed? How many?

Utilities

- Where will water come from? What is distance/difficulty/expense of accessing it?
- Will ponds be needed?
- Could it pay to dig a well? What are the water rights for the parcel?
- Where will electricity come from? Is access to public utilities available at an acceptable cost or will a generator be needed?
- How will you connect to sewage/waste lines? Is a septic or other system required?
- Can telephone lines be brought in?

Labor

- What skilled (e.g., electricians, contractors, earthwork/grading) volunteers are available?
- Will a public partner require union labor? It may impact how upscale you can afford to go on some features.

State & Local Regulations

- Will an environment impact report be required?
- What are handicap access regulations?
- What permits will be required?
- What agency is responsible for each permit you need?

Aesthetics

- Do you want berms that can serve as seating?
- Do you want shade trees or other landscape features ?
- A play/picnic area?

Light It And They Will Come

Lights on a soccer field can add an average of three hours per day more usage of each field on a year-round basis. Their installation can cost \$70,000 to \$120,000. However, that's still a lot cheaper than building more fields.

Some things to consider in adding lighting to your plans:

- **Complete lighting specifications are included in the Addendum Section of this handbook.**
- **If you have neighbors, they will be very sensitive about the prospect of field lights.** Your neighbors' concern will not only be the light itself, but the nighttime crowds and noise. These are valid concerns, but good planning and communications can eliminate much of the problem.
- **Today's field lighting systems are sophisticated.** They can ensure very limited spill of light outside of the field and minimize glare in the windows of your neighbors. As you shop for lighting vendors, be sure you discuss this issue. The best lighting systems shine directly down on to the field. Your neighbors should barely know they're on.
- **A good neighbor policy should be considered at the design stage.** If you are in an urban or residential area, it will be important that you gently and accurately explain your lighting plans to your neighbors. The idea of the lights is generally much more problematic than the reality. However, ensuring your neighbors that games will end at a reasonable hour, that crowds will be properly controlled and that you've addressed their reservations seriously will go a long way to calming their fears. Be sure to provide neighbors with ongoing contact and a means of addressing any immediate concerns, beyond simply calling the police.
- **Research any special requirements for your state, county, city or town.** For example, California requires that the lighting system be inspected at the factory by one of their inspectors prior to shipping. You pick up the tab for that.



● If a track is being considered as part of your complex, remember that soccer players with cleated shoes will be coming off the field. Discuss surface and layout options with your track & field colleagues to reduce harm to the track as much as possible.

● Design the trash to International Association of Athletics Federations (IAAF) standards which allows the width needed for a full-sized soccer field.

● Push paths and walkways away from end lines to avoid player-spectator collisions.

● Don't forget bus spaces or carpool area. They take up plenty of room, but including from the start prevents traffic snarls down the road.



● Most cities will have existing ordinances that affect lighting, such as how late it can stay on. Check with your city for details.

● When building a clubhouse or meeting facility on-site, plan to make it as user-friendly as possible. A wide-screen TV draws players, parents and fans for big games; computers enable players to do homework before or after training.

- **The key to effective lighting** is that it is uniform across the entire field and that there's enough light to play safely.
- **Remember to research permits** that will be necessary if you install lighting.
- **Designing the lighting needs is best left to experts.** Selecting poles, planning the electrical system, etc., require professional advice. But there will be questions that your neighbors will ask long before your fields are in play, so be sure that your landscape architect gets professional advice along the way.
- **As you research lighting vendors,** also make sure the system is on a computerized timer. That ensures they automatically go on at sunset and off at a scheduled time. And ask about being able to access them remotely from your computer, cellphone or PDA. This will save a trip to the field to turn lights on or off. Often coaches are left in charge of turning lights off. It's a step that often gets missed. The automatic system saves someone from a late night phone call to come down to the field and turn off the lights. It also saves money and helps negate neighbor complaints.
- **Lighting brightness is measured in foot-candles.** Televised soccer requires 50-foot candle brightness. For normal usage, 25-30 foot candles will be fine. If being able to have games televised is important to your facility, discuss this carefully with the lighting vendor.
- **Soil quality will be one factor** that significantly impacts installation price. The deeper the poles need to be anchored because of soft or unstable ground, the greater the cost will be.
- **If you have lots of land** and can build all the soccer fields you need, lighting may be less important. However, even one lit field will add cache to your facility. Soccer players love to play under the lights! And now your fall season doesn't have to wrap up by 5 p.m. For working parents, lighted fields can enable them to see their children's games. This can be a great sales point when you're justifying lights in the fundraising process.
- **Check with the vendors you research** about their ability to provide modern, efficient light bulbs. They'll save dollars and the environment by drawing less power, and they need replacement less often.
- **If your area of the country has hurricanes, ferocious winters or other serious weather,** be sure to discuss with the lighting vendors your concerns. Excellent quality lighting systems should make it through even the most inclement weather.
- **Consider the sponsorship opportunities that become available.** Signage and banners can be hung from light poles.

Soccer Field Design By The Numbers

■ Soccer Field/Softball Footprint	3 acres
■ Field Width Minimum	50 yards
■ Field Width Maximum	100 yards
■ Field Length Minimum	100 yards
■ Field Length Maximum	130 yards
<i>Source: FIFA Laws of the Game 2007</i>	
■ Recommended Field Footprint (minimum)	124 x 84 yards
■ For Adult and Older Youth (absolute minimum)	65 x 100 yards
Final Size of Footprint with Sidelines, Goals, etc.	74 x 107 yards
■ For Younger Youth (absolute minimum)	50 x 80 yards
Final Size of Footprint with Sidelines, Goals, etc.	59 x 87 yards
■ Distance Between Fields	10-20 yards

- Allow for two small-sided fields to be set up on a full-size field.
- Excellent “rotation” for natural grass fields: Older youth field for one season, two U-10 fields for the next season.
- Be sure to rotate natural grass fields often.
- Make your field footprint larger than a true field, so you can move your field around to reduce wear.
- If bleachers are added, measurements must be added to the width.

■ Service Roads — width	8-10 feet
■ Parking Spaces — per field (minimum)	45
■ Parking — each space	9 x 18 feet
■ Parking — single side with room to back out & turn	9 x 40 feet
■ Parking — on two sides with a single center lane	9 x 60 feet
■ Fence Height — behind goals	10-12 feet
■ Fence Height — along sidelines	6-10 feet
■ Bathroom Stalls — per field (minimum)	2

- Bring in port-a-johns for tournaments.

Footprint dimensions if you will be including baseball or softball in your complex:

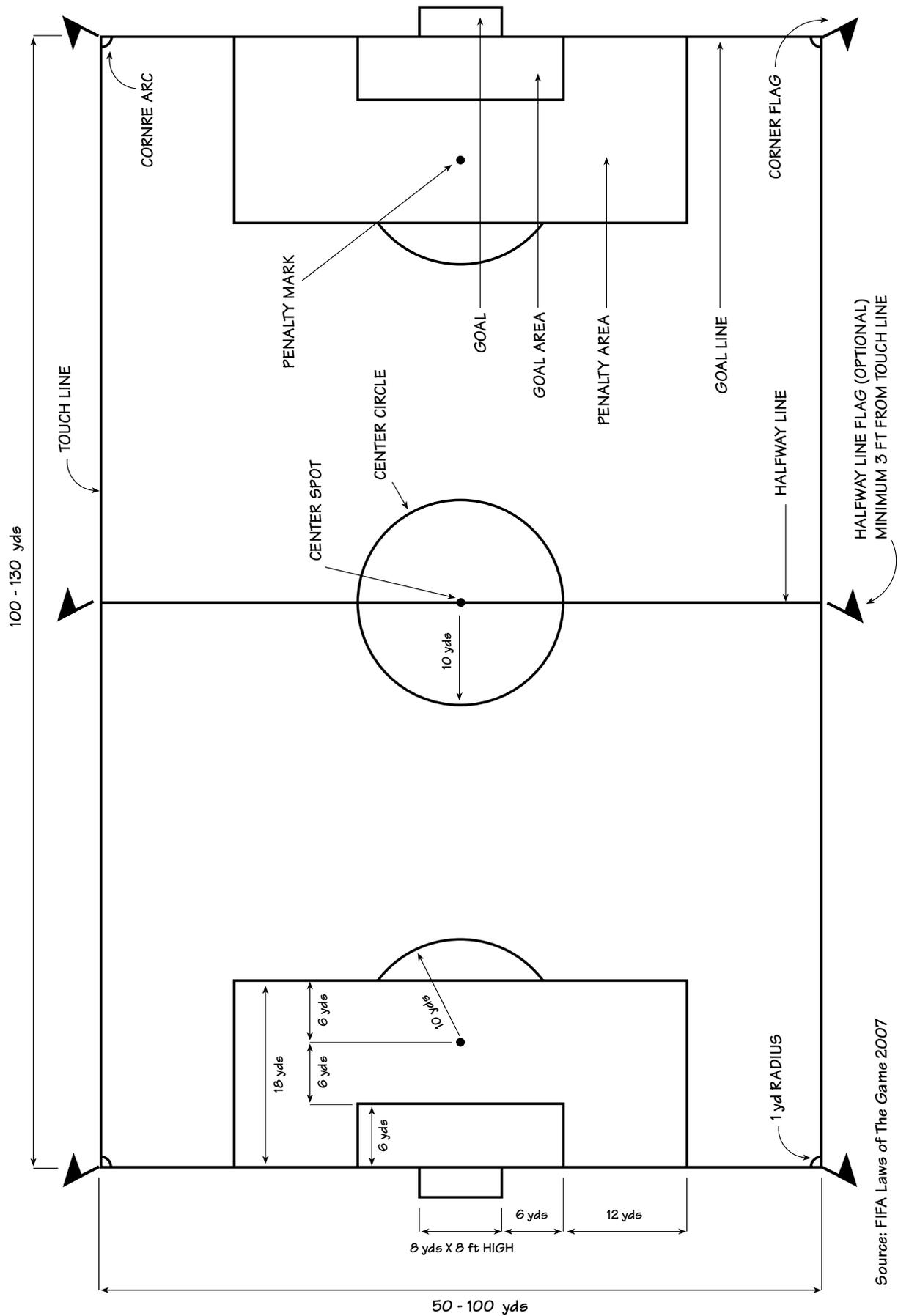
- Little League baseball & girls softball: An infield dirt area of 120 feet and a home plate to outfield fence of 200 feet. With foul territory, backstops, etc., the actual minimum dimensions of the square are 225 x 225 feet.
- Adult and older teen baseball: A 190-foot infield and a home plate to center field of at least 340 feet. Actual minimum dimensions of the square are 360 x 360 feet.

Source: Association of Sports Field Users



● Parking is important. Plan access roads, lots, signage and traffic flow carefully.

● Have patience. Don't settle for something less than what you know you will need.



Source: FIFA Laws of The Game 2007

What Will It Cost?

The cost of all the elements from turf to earthmoving varies A LOT. Just some of the factors:

- **What part of the country you're building in. East and west is more expensive than midwest and south.**
- **Requirements of union labor by a government partner or the philosophy of your organization.**
- **The amount of excavation that will be required to make your fields appropriately crowned.**
- **The quality of existing soil.**
- **Whether your area is urban, suburban, rural or agricultural.**
- **How many materials and how much labor you get donated.**
- **How good the relationship is with your vendors.**
- **The skills available within your volunteer base. Electrical, contracting, plumbing and construction experience is golden.**

But there are still some broad ranges that can give you an idea of costs for planning purposes.

Costs are a range of full retail as of 2006 including fully paid labor.

Land acquisition is not included as part of these costs. Sources include: manufacturers, project managers, the Association of Bay Area Fields, Sports Turf Managers Association and Clough Harbour & Associates LLC.

Natural Grass Fields

- Native soil installation with in-ground irrigation \$250,000-\$400,000
- Sand-base installation with in-ground irrigation \$475,000-\$650,000

- Requires under-drainage system.

- Annual maintenance per natural grass field \$20,000-\$30,000

- Includes water, mowing, seed, fertilizer, insecticides, fungicides, routine soil sampling and aeration.

Synthetic Grass Fields

- Purchase, installation, basework \$600,000 - \$1 million
- Annual maintenance \$5,000-\$10,000

- Includes grooming, cleaning and repair.



- The crown of your fields will drain faster than the rest of the field, which will need to be considered in the design of the irrigation system.

- Berms, grass covered rises, are cheap, comfortable alternatives to bleachers. However, they must be engineered well, to ensure adequate drainage. Have your landscape architect plan the berms at the design stage so any extra dirt from your site can be put in the right places.

- Check with vendors you research to see if they offer financing options for their products.



● If your complex is large, consider small parking lots near fields, rather than one large central lot.

● If individual fields are fenced, be sure there are plenty of openings to make it faster to retrieve balls.

● Your landscape architect will need to research any special state or local standards such as handicap and wheelchair access requirements.

For All Fields Types

■ Lights — installed, per field	\$70,000-\$120,000
■ Structures — clubhouse, etc.	\$110 per square foot
■ Parking — fully paved	\$10,000 per space
■ Landscape design and architect fees	10% of project
■ Fencing*	\$20-\$40 per linear foot

*based on fence heights of 6-12 feet.

Building In Phases May Be The Answer

As you start to add up the costs of your wish list and balance it against your expected available funds, you may bump up against a painful reality: your current plan doesn't provide enough funding for the number of fields, bleachers, buildings, restrooms or other features you really want.

There is an answer: build in phases. The trick is to do a master blue print with 100% of the features in it, but then build in financial increments and attach timeframes to them. Similar to building a house, making changes later in the process can add big bucks to the construction process. But if there are features you know you will want, but can't afford them today, it makes sense to build them into the complex's footprint and utility setup.

If eventually you want built-in bathrooms, but today you can only afford port-a-johns, your plan should still have the placement of sewer and other systems factored in. It may make sense to do some of the preliminary work while irrigation lines are being brought in.

Building in phases can also have the benefit of delivering incremental successes. You can have a ground breaking or other celebration at the end of each phase. A field complex can be a long project and seeing steps get completed can help keep your team's enthusiasm high.

Soil Science 101 — A Primer

For most city folks, dirt is dirt is dirt. Unless you want to grow grass on a soccer field. Then dirt becomes “soil” and it’s the backbone of a safe, high-quality playing surface.

Soil is a combination of finely ground particles of minerals and organic material aggregated together with spaces or “pores” in between that water, nutrients and air can flow through. If your ground is clay or so compacted that there aren’t any pores left, water will sit on the surface in a swampy mess. Yet if it’s so porous that water and nutrients simply drain through it, you could spend a fortune keeping it wet and fertilized enough for your grass to grow.

Many a novice has said, “all we have to do is mow a field and it can serve soccer.” But within weeks, the grass will likely be dead and children will be playing soccer on a bumpy, dirt field with twisted ankles and poor passes the most likely result.

For soil to be the best for a soccer field, it needs to have enough organic matter to hold in nutrients the grass needs to be healthy, but also enough minerals (sand) and pore space between to allow water to drain through reasonably quickly and air to get to the roots of the plants. It is this ratio of organic matter, mineral particles and pore space that determines the quality of your existing soil and what may need to be done during the construction phase to make it as high quality as possible. It’s similar to the pre-planting soil preparation you do in a garden.

The three basic types of soil:

- **Sand:** course texture, drains fast, requires a lot of water
- **Silt:** medium texture, drains moderately fast, requires moderate water
- **Clay:** fine texture, drains slow, holds water and drains slowly

Almost all soil is made up of a combination of all three types, and how soil looks and feels depends on how much of each particular soil type is in the mix. A simple way to judge soil type is to take a handful from your site, wet it and squeeze. The more clay that’s in the soil, the more it will hold together (ahem, like clay!). The more sand that’s in the soil, the more it will fall apart. The more silt that’s in the soil, the more likely you’ll have a nice compact handful of dirt — not too sticky, not too loose.

The specific type of soil you have and how it retains water will be a key parameter in the later design of your irrigation system. Soil Science is just that, a science, but the basics are based on water, nutrients and air.

Note: You can get your soil samples analyzed at your local Extension Service, a cooperative program between your local university, the U.S. Department of Agriculture and state counties.



● In multiple field complexes, each field must function as an individual drainage unit. It can’t be draining into another field.

● If there are any changes made during the installation of an irrigation system, the installer must notify the designer. Changes may need to also be made in the design of the system.

● Require an “as-built” design by contractor upon completion. Keep a copy in the controller housing.



● Consider carefully where spectators will stand. Coaches, parents and kids running up and down sidelines cause extra wear. If you don't have sufficient room to rotate or shift your natural grass fields on a regular basis, you may have to limit who can be on those sidelines.

● In multiple field complexes, players running at top speed can crash into spectators and cause injuries. If you can't create at least a 30-yard clearance between fields, then you may be required to restrict spectators from those tight areas. Putting players on one side of the field and spectators on the other side of the field can solve a multitude of problems.

The 3 Types Of Soil Fields

There are three basic types of soil for natural grass fields:

- **Native Soil:** The existing dirt at your site or topsoil brought into the site.
- **Modified Soil:** The existing dirt enriched with organic amendments, such as peat, and/or mineral amendments, such as sand to a depth of about 6 inches. This is done during the construction process, so needs to be planned for in the design stage.
- **Soil-less:** Basically 80-85% sand with 10%-15% organic amendments added. It has a layer of this sand mix approximately 12 inches deep under the grass. This will drain fast (and is often the basis of flat, professional quality fields), but it will take a tremendous amount of water and fertilizer to give grass enough nutrition to grow. It will also usually require the expense of an underground drain (pipes) system to move the water away from the site. Some experts also recommend that the sand be replaced every 10 years due to compaction. This is generally for pro or college soccer fields and not a practical choice for community soccer fields.

Soil Testing Is Required

In the original evaluation of your site, before other planning begins, it is important to have the soil tested. The testing is to determine the fertility of the soil. Understanding its quality, or lack of quality, will help you determine what amendments, or potentially new, expensive top soil, may be needed in the construction stage and what type of irrigation/drainage system may serve you best.

Soil testing will let you know:

- **pH balance.** This is the acidic quality of the soil. An ideal pH of 6.0 to 6.5 helps the nutrients become available to support healthy turf grass.
- **Physical properties** such as how much silt or clay are in the soil.
- **The mix of chemical nutrients** such as magnesium, calcium and potassium.
- **The perk rate of the soil.** This is how fast water will drain through it. This will impact both drainage and your water bill.

Depending on the quality of the soil, ongoing soil tests can be done once or twice a year to determine what additions will give you the healthiest turf grass. On an ongoing basis, soil samples are taken in the spring or fall. In a new construction, testing can be done as soon as the soil is workable.

To find a soil-testing lab, check your local phone book or contact a local golf course or university turf manager (through the university's Extension Service) in your area. Normally, it's a simple mail-in process.

Soil also has texture. This will be a key to the watering/irrigation requirements you'll have because the texture of the soil determines how it absorbs and holds water.

Turf Primer — Natural & Synthetic

Grass is what a soccer field is all about. Short, cushiony green turf that is smooth, even and allows the ball to roll true is the nirvana of soccer fields. It can be natural or synthetic, but either way, it's what so much of your design, construction and maintenance is all about.

Natural turf versus synthetic turf is a cost and performance choice.

Please see "Natural Turf vs. Infilled Synthetic Turf Comparative Analysis" by Clough Harbour & Associates LLP in the Addendum Section of this handbook.

Another excellent reference source is the Sports Turf Managers Association website: www.stma.org.

Some things to consider:

- **Synthetic turf is costly at its front-end installation**, but has lower annual maintenance costs.
- **Natural turf is a fraction of the upfront cost**, but is several times more expensive and requires much more effort to maintain.
- **Synthetic turf can be playable in all weather conditions** so extends your playing season. There is no down time for re-seeding or rest.
- **There is approximately a 8-year life span** to synthetic turf and a large expense to remove, dispose and replace the surface.
- **Synthetic surfaces tend to hold and reflect heat**, significantly increasing on-field temperatures, particularly in hot, humid weather.
- **As part of your research it is critical** to speak to anyone in your area who is already using synthetic grass and natural grass athletic fields. Discuss the plusses and minuses of both surfaces for your specific area.

Natural Grass

Natural turfgrass, when well prepped and well maintained, is an amazing biological system that can repair itself, is soft, but speedy, creates oxygen, ensures a cool playing surface and can add beautiful, natural green space in a community.



● There are many microclimates. Seek advice from turf specialists in your area about the best grass or other special considerations. You can find them at local universities, community garden companies, nearby golf courses and through state extension services.

● Consider the best time of year for your area to break ground. You will want the longest stretch of dry weather for all earthmoving work, but it's great to have the rainy season begin as seed or sod begins to grow. Discuss the timing with local golf course groundskeepers and experts at a local university's agricultural department.

● Generally allow one year for a seeded soccer field to be at full playing maturity. If you must start play a lot sooner, consider sod or synthetic turf.



● In the South, the best turfgrass choices do not come in seed form and you'll more likely be planting grass sprigs (small grass plants) or laying sod.

● Some tips for succeeding with sod from the University of Florida Institute of Food and Agricultural Studies: rototill 6-12" deep and water planting area thoroughly before laying down sod. Test the soil and add recommended amendments before rototilling. Thoroughly water the freshly laid sod and roll with lightweight roller, then water daily for first two weeks.

● Sod can have some potential drainage problems. The base soil may have good drainage, but if you cap it with sod in a growth medium that's even slightly heavier than the base soil, it can seal it and not allow it to drain properly.

Turfgrass falls into three broad types based on temperature during its growing season. They are:

- **Warm Season** — These turfgrass species have their growing season during the warmer months (80°-95° F). These include bermudagrass and tall fescue. They're generally drought resistant and grow slowly once night temperatures are in the 60s. Icy weather or frozen soil can damage or kill this type of turf.
- **Cool Season** — These species experience their best growth during the cooler spring and fall when temperatures are in the 60°-75° F range. These include Kentucky bluegrass, perennial ryegrass and creeping bentgrass.
- **Transition** — Transitional zone temperatures are often less than 40° F in January and greater than 75° F in July. There can also be very high humidity. Turfgrasses have been specifically developed to serve these areas and are generally cold resistant varieties of bermudagrass, tall fescues and zoysia.

The turfgrass zones are quite broad with the cool season zone generally the top third of the country (plus Canada), the warm zone the bottom third and the transitional zone the middle third. However, for every rule there's an exception. And every area has microclimates that must be taken into consideration. The best solution of which grass to choose is to chat with local golf course turf managers and the department of agriculture at your local universities. They will be able to guide you.

Seed Or Sod

Grass seed can take many months to grow to full, playable maturity. Sod, grass already rooted in a growth medium that comes in rolls similar to a carpet, will root to the topsoil and be playable in a few weeks.

This is a cost-benefit decision your group must make. Seed costs about \$20 per 1,000 square feet. Sod will be playable in just a few weeks, but it will cost about 35 cents per square foot for materials and installation. For a 120' x 60' field, that's the difference between \$640 for seed and \$11,340 for sod. Seed is still the more common choice with nurturing and growing time often considered a reasonable exchange for the big cost savings. Other advantages of seed, according to landscape architect Richard Gray, who worked on the 50+ soccer field complex in Blaine, Minn., can include:

- **Assurance that the seed mix is specific** to your area's microclimate.
- **A smoother playing surface**, with no unevenness due to seams between rows.
- **A uniform soil mixture** is maintained from field surface to the bottom of the seedbed layer, allowing for better air and water movements.

Synthetic Grass

The best synthetic turf uses new technology to emulate many of the features of natural grass, including similar cushion and ball bounce. It doesn't require any irrigation, but does require installation of a rock/sand or other subsurface and often a built-in drain system to ensure excellent drainage. And instead of mowing, it requires regular grooming, cleaning and repair.

Not all artificial surfaces are equal. The original “plastic grass” that gave synthetic turf a bad name with athletes because of dramatically increased injuries and “turf burns” has given way to ingenious surfaces that combine grass-life synthetic fibers with a base compiled of sand and rubber particles that is loosely packed around the blades. It's an advancement that has resulted in some synthetic turf products being approved by FIFA, the international governing body of soccer, for most international use.

Top-grade synthetic grass is a very large front-end expense. The synthetic turf and installation, including the required gravel and sand or pre-fabricated synthetic subsurface and possible drain system, can cost up to \$1 million. It is also generally expected that the life of the turf will be 8 years, so you may need to replace the surface and refresh the subsurface at that time.

The advantages of a top-quality synthetic surface, however, are obvious: no downtime for rain or other weather and low-cost maintenance. It also continues to be considered the Cadillac of youth soccer fields and is often a selling point for venues to attract tournaments and events. Every team has had a game or even an entire tournament canceled for rain. That generally doesn't happen with synthetic grass. But this is not a place in your budget to pinch pennies. Only consider the best products and highly qualified vendors for installation.

Purdue University's Department of Agronomy suggests that you be sure to get answers to these questions before you buy new synthetic turf:

- **Installation:** Who's installing? What's their experience? References? Drainage needs? Backing? Sewed or glued seams? Painted or stitched lines and logos?
- **Warranty:** How long does the warranty last? What's covered? What's not covered? What does the owner have to do to maintain the warranty coverage? What causes the warranty to become null and void? Is it a third-party guaranteed warranty?
- **Lifespan:** How long will this turf really last?
- **Maintenance:** Who will do it? What needs to be done? Brushing? Cleaning? Repairing? Stitching? How much does it really cost to maintain? How do we deal with vandalism?
- **Heat buildup:** How hot will it get on and around the field on a sunny summer day?
- **Replacement of fabric:** Where does it go? Who pays for removal?



● The warranties on synthetic turf may not apply under certain circumstances. Examples include improper cleaning, normal wear and tear, use of improper footwear or equipment and failure to properly maintain, protect or repair. And remember that any warranty is only as good as the soundness of the company that issues it. Be sure to only work with reputable companies in purchasing the turf and generally only with experienced installers they recommend.

● If your ability to shift your fields during the season is limited, you may have no choice but to require parents to stand away from the sidelines and to fine teams for damaging sideline turf. It takes some training of players and spectators – and perhaps some unhappy folks in the beginning, but you have little choice.

● Be sure a detailed, accurate schematic of the irrigation and drainage system is kept on record. This will save a great deal of time, money and trouble if repairs need to be made.



- Check that dirt isn't settling over time around irrigation sprinkler heads and leaving it dangerously exposed above ground. It becomes a hazard to spectators and players coming on or off the field.

- Avoid building an irrigation system with a centerline of heads along the length of the field. You want to be able to shift the field to help with turf wear.

Irrigation/Drainage Primer

Water is the No. 1 requirement for healthy, playable, natural grass, and an excellent irrigation system will likely be the best investment you will make.

Efficiently irrigated fields will:

- **Be safer for players.**
- **Be more resistant to weeds, insects and fungus.**
- **Need less fertilizer, pesticides and fungicides.**
- **Recover more quickly from heavy use.**
- **Stay green and cushiony even under a full playing schedule.**
- **Allow for a longer playing season on healthy grass.**

Irrigation is all about getting the water onto the grass and into the soil. There are two basic systems, above ground or below ground, either automatic or manual. The area's natural rain will rarely be sufficient to supply the year-round water that's necessary.

Automatic, below ground irrigation systems must be installed in the construction phase of your field. They are more efficient, effective and make maintenance of every soccer field easier to manage. However, for reasons of cost or the short-term availability of a field (for example, a limited lease where you may not want to make capital improvements on the site) above ground irrigation systems may be necessary. Some irrigation and drainage basics:

- **Designing an underground irrigation** or drainage system is a job for professionals. Any error will be very costly to fix later.
- **The basics of an irrigation system is a collection of sprinklers** that can be turned on and off with automatic controllers. Underground systems involve laying pipes under the ground that will bring in the water from its municipal or other source to your field(s). An above-ground system is just what it sounds like: very large, agricultural-type sprinklers that are attached to large hoses then moved around as needed. They are less convenient and labor intensive, but may be necessary in your particular situation.
- **The point of connection** is where the system is hooked into the municipal or other water system.
- **Pressurized and non-pressurized piping** will be laid out 18 to 24 inches (sometimes deeper) under the surface of the field, connecting to an outside source.
- **Retractable sprinklers** now have very small heads and should retract almost completely underground, so as not to be a menace to players.

- **Plumbing codes will require a backflow preventer** if your irrigation system is tied into a drinking water system. This ensures your water does not back up beyond the point of connection into the general water system. There will be many other plumbing codes for your area that your irrigation designer will need to comply with. These codes vary greatly from area to area.
- **Drainage is all about getting water off the grass** and directed out of the soil. This can be accomplished simply through the natural “infiltration” of water into the soil and “percolation” downward through the soil.
- **The key to good drainage is to ensure** that the field has a raised crown running down the center with a slope of no less than 1% (a one foot drop per every 100 feet). However, under certain conditions, including compacted soil, very loose, sandy soil or the topography of your site, an installed, underground drainage system may be necessary to move the water away from the subsoil. This is an added expense that your landscape architect will need to plan for.
- **A key aspect of irrigation and drainage in the design stage** of your field project is that each field must be considered a separate, self-contained unit. You don't want one field draining down into another field resulting in a swampy mess much of the time.
- **There are many types of equipment**, systems and sprinklers. Your irrigation design expert will help advise you on the best applications for your site.
- **Whatever brand of sprinkler head you choose**, be sure it is easy to get from suppliers in your area. You will want to be able to replace them quickly and conveniently. Check with different manufacturers for specialty features and warranties offered.
- **Soil quality will vary throughout your site.** How fast it absorbs water and how quickly it drains can vary even within a single field. Your irrigation designer will need to understand all these aspects of your fields as part of the design process.
- **Consider irrigation between fields.** One complex was sorry they hadn't planned this in advance so they could keep the grass between fields healthy as well. They would have had more “swing room” for their rotation of their fields.
- **Require the following from the contractor/consultant:** As-built scheduling/runtimes of zones; winterization and spring startup instructions; on-going system maintenance schedules.



● Use a professional for the layout of the irrigation system! The builder must understand the water quantity, quality, design capacity, nozzle selections, etc.

● If there is low water pressure, more heads with smaller water output should be used when laying out the irrigation system, and they can be on one valve/zone containing up to 7 sprinklers. Make sure the sprinklers have small, exposed, rubber covers and stainless steel riser assemblies.

● With good water pressure the irrigation system can have as few as three heads on a valve. This will give you control in adjusting watering to account for differing soil and grading issues on the field. It is always a good idea to compare the cost per head per zone.



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.

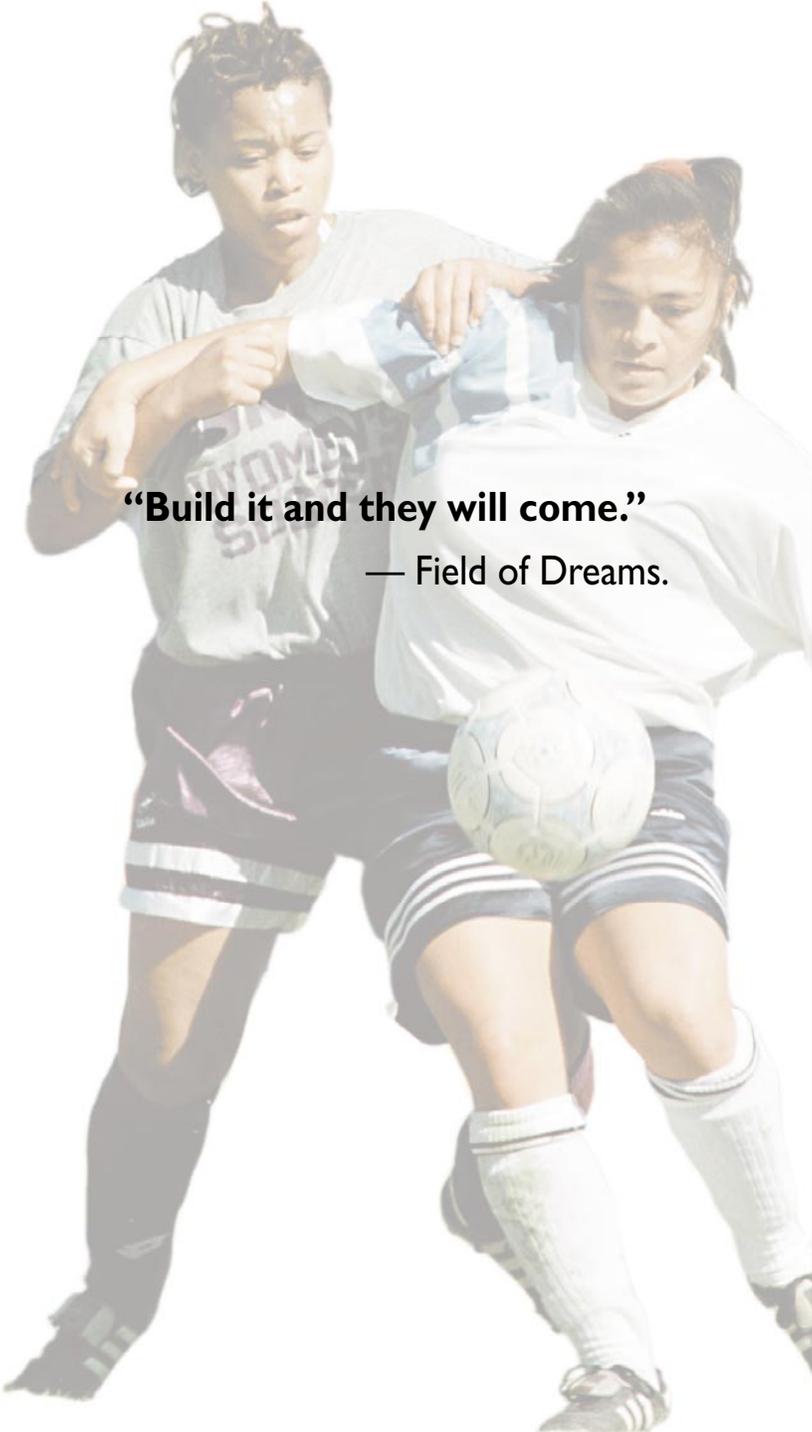
Breaking Ground: Construction

Construction. The time has come to bid and build the field complex that all your hard work and planning has made possible.

“Build it and they will come.”
— Field of Dreams.

CHAPTER 9 CONTENTS

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● As a rule the biggest construction mistake is not having a good enough understanding of the site, the characteristics of the soil, irrigation and drainage. The better the site preparation, the better the long term quality of the field.

● Try to make as few changes as possible during the construction stage. Change orders will add considerably to your costs.

● If changes are made during the building phase of the project, get full details of the changes and the cost in writing ... even if the contractor says "no problem."

Getting Final Approval For Your Plan

When your landscape architect's bid documents are signed, sealed and delivered to your satisfaction, the next phase is submitting the plans to your city for review and approval. Once the plan is approved, you will be required to build exactly to the plan specifications or you will need to resubmit any changes in the plan to the same agencies.

If you are caught making changes during the construction process without approvals, you can be required to not only stop construction, but also actually return the site to its original condition. Ouch!

The review process for field projects can take several weeks to many months. It will move through a number of departments related to the specifics of the project, including, but not limited to planning & zoning, public works, health/sanitation, parks & recreation, transportation (related to roads, traffic patterns and parking) plans, plus will likely also come under scrutiny related to community issues such as concerns about noise, crime or the best use of the site in question.

There is a high likelihood that you will be required to go through one or more public hearings before permits are approved. Your neighbors and other concerned parties will be notified, given time to study your plans, then have the opportunity to address their concerns in a public setting.

It is certainly possible that this review process will require you to make changes in your plans. But it's much better to have these happen before you break ground! You will have preliminary costs from your early planning and working with your landscape architect, but you want your prospective contractors to bid on the exact, approved specifications of the job.

The time and complexity of the approval process will depend on:

- **Number of fields.**
- **Expected number of users.**
- **Source of irrigation water.**
- **Whether it's an urban, suburban, rural or agricultural area.**
- **Extent of earthwork & grading required.**
- **Erosion and runoff concerns.**
- **Resistance from other sports groups — you're getting resources and they're not.**
- **Resistance from neighbors.**
- **Lighting.**
- **Environmental issues — are the fields on wetlands, a flood plain or may there be endangered species on the site?**
- **Previous use of the site — was it already a public park or was it the site of a manufacturer that may have left toxic materials behind?**

- **Complexity of structures you want to build.**
- **Public or private financing.**
- **Potential change in traffic patterns or parking issues.**
- **Security concerns.**
- **Water use/rights.**

Putting Your Project Out To Bid

You or your public partners will likely chose to put the project out to contractors to bid on. You will want to develop a list of individuals or companies that have experience in similar projects or seem appropriate for other reasons. As one large soccer field contractor noted, “It’s like when I do a do-it-yourself project at home. I’m pretty handy, but invariably it’s a lot more successful the second time. Let’s just say, you don’t want to be the learning experience!”

Here are some ways to find contractors with the experience you’re looking for:

- **Check within your organization. There may be professional, qualified contractors that would like to bid on the project.**
- **Call golf courses. Contractors that build golf courses are excellent candidates to build soccer fields.**
- **Check with any other soccer field projects in your area.**
- **Check with local park & recreation departments in both your city and surrounding cities.**
- **Check with the agronomy or agricultural department at your local university. They will often know contractors that have experience in turfgrass installations.**

Volunteers & In-Kind Donations Can Save You Big Bucks

Just a reminder that using volunteers and in-kind donations of materials can save you a great deal of money on the construction of your soccer field project. But your contractor will need to be willing to work with – and supervise — volunteers and accept in-kind donations of materials. A real advantage to having construction or contractors in your soccer group is they tend to know and have good relationships with exactly the individuals and companies that can make valuable in-kind donations or discounts on products and services. But never hesitate to go to companies and tell



● **Keep excellent, detailed records, including photos, during the construction process. Track any changes in plans, deadlines or costs.**

● **Are your contractor, landscape architect, or other key vendors soccer people? If they have played, coached or refereed, they will have a much better understanding of how all the pieces fit together in a field project. It’s certainly not required, but it is a nice plus.**

● **Be cautious in accepting free fill dirt. Determine its exact source and consider having it tested for toxic debris. Check references if this is a new “vendor.”**

● **Reclaim and recycle. If you’ve got extra topsoil, for example, store some for future use.**

● **The more construction professionals you have as volunteers, the less your costs may be. Their ability to not only volunteer their own time, but to recruit their vendors and suppliers to offer good pricing or in-kind donations can save 20%, 30% or even 40% of your costs.**



● Size your field pad so that two small-sided fields can fit side by side on it. It's smart to periodically rotate a field out of use of older players and adults. Young children are gentle users of turf and it gives the field a rest. U.S. Soccer, U.S. Youth Soccer, AYSO and virtually all other soccer organizations have recommended small-sided games for U-10 players.

● Locate any buried utilities prior to starting any groundwork!

● Consider proximity when choosing a contractor, even if it's a volunteer. They will need to be on top of each step of the project, which means many hours spent at the site particularly at the peak of construction. A 50-mile commute may considerably cut the number of trips they make to the field.

● Delegation is not abdication. When you hire a landscape architect, contractor, or any other professional during the planning and building of your soccer field facility, you will still have final responsibility for it turning out right. If your soccer experience tells you that higher fences are important to stop balls from sailing into other fields or more space is needed between fields, go with your experience.

them about your project and your needs. They may consider it a valuable community service project for their company.

Just some of the skills and items that can be donated include:

- All professional services — surveyors, irrigation & drainage specialists, electricians, plumbers, etc.
- All “hard labor” services — these can include everything from chopping down trees and brush to picking up debris or rocks.
- Top soil.
- Fill dirt.
- Sand & gravel.
- Fencing.
- Seed or sod.
- Fertilizer and soil amendments.
- Earthmoving services and/or equipment.

Can You Be Your Own Contractor?

A volunteer from your organization certainly can be your primary contractor, but it's not easy. At the peak of a multi-field project, the contractor could be putting in 50 or more hours a week. They will be responsible for all aspects of the project's construction including managing all the subcontractors. The person who takes this on as a volunteer will have to be willing to commit the necessary time and energy and must be an effective manager.

You may be lucky and find someone within your organization who really can do the job right as a volunteer. If so, they will usually be either a retired contractor or someone who owns their own business and has a flexible schedule.

Things to consider if someone within your organization wants to be the primary contractor on the project:

- Do they really have the time to take on the project? Have you had good experience with them meeting deadlines in other jobs or projects they've taken on for your club, league or organization?
- Are they familiar with the city or county where your project is located? Knowing the agencies and people involved is a big help with permits, inspections and approvals.
- Do they have field construction knowledge? Just as with a hired contractor, you probably don't want to be their guinea pig. General contracting experience gives you the organizational know-how, but field construction is a specialty of its own.

- Have you already found this person responsible, reliable and meticulously organized?
- If they own a construction business, are you comfortable that they will not pad materials or subcontractor's invoices in lieu of direct payment?

What Are The Responsibilities Of Your Contractor?

Your contractor is responsible for:

- **Scheduling each step of the project**, including when it will begin and end. They should be familiar with optimal planting time for your area so scheduling of natural grass installations can be backed up from that date.
- **Holding pre-construction meetings** with your organization and others involved in the project.
- **Managing all workflow.**
- **Following the landscape architect's** (or surveyor's) work plan to the letter.
- **Hiring all labor or subcontractors** necessary for each piece of the project.
- **Ensuring the quality and timeliness of the work** — of all labor and subcontractors.
- **Ordering all necessary materials** and ensuring it is on-site when needed. If the contractor doesn't plan well, much time and money can be wasted waiting around for materials to show up.
- **Serving as communication central** with the city, other government agencies, subcontractors and your organization. Excellent communication skills are required.
- **Staying within agreed budget.**
- **Understanding your organization's needs and wishes.**
- **Filing for all permits and any other documents.**
- **Scheduling and being on hand for all inspections.**
- **Supervising any volunteer labor.**
- **Understanding the unique nature of your site** including, but not limited to, soil, local regulations, your microclimate, etc.
- **Clearing, excavating and grading the site.**
- **Installing irrigation and drainage systems.**



● Get contracts for every professional relationship. Keep copies of every agreement, receipt and letter.

● Contractors are inclined to charge top dollar for government projects. So be sure to note if your fields are being financed by your soccer organization. The discount can be substantial.

● Expect (demand!) a complete construction schedule from your contractor. It should include all construction phases, such as ground breaking, clearing of all above surface brush, trees and structures, excavation, installation of irrigation and drainage system(s), preparation of the subsurface, planting, grow-in and future maintenance.



● There should be one point person from your organization that the contractor goes to with issues and problems. Too many cooks can muddy communication and create bigger headaches.

● Ask your contractor for a proposed schedule of inspections. He/she should make the call and be in charge of the inspection tour, but you will want to know that the inspections have been completed and you may want to be on hand to hear what the inspectors say.

- **Hiring and supervising** any necessary subcontractors, such as irrigation/drainage installers, electricians, earthmovers, synthetic turf installers, etc.
- **Preparing any sub-base required**, including adding appropriate amendments to the soil for natural grass or the sand/gravel base for synthetic grass.
- **Preparing the seedbed for natural turf.**
- **Selecting synthetic turf** — although, because of the expense involved, this is a decision normally made with the field developer.
- **Choosing and planting grass seed**, sprigs or sod.
- **Mulching, watering, fertilizing.**

How To Hire A Qualified Contractor

Here are some of the questions the Sports Builders Association of America recommends you ask any prospective contractors:

- **How many years has the company been in business?** If it is a relatively new company, what is the work experience of its principals? How many fields have they built? Were they responsible for the complete project, just for surfacing, just for site work? Look for individuals or for a company with specific knowledge and experience in natural or synthetic turf field construction (as your needs dictate).
- **Does the company have experience** in the type of project you contemplate? Look for a company with experience in projects similar in size and scope to yours.
- **Ask for references and for a complete list of recent projects.** If a significant project is omitted from the list of references, there may be a reason for that omission. Call references and ask questions. Determine as much information as you can about a prospective contractor's knowledge, experience, workmanship, and ability to meet schedules, financial responsibility, and accountability. If possible, visit completed projects and talk to owners.
- **Get references** from design professionals, subcontractors, bankers and bonding companies.
- **Ask about a contractor's insurance;** have there been any major accidents or claims against the builder? Consider using American Sports Builders Association's Contractor Qualification Form to secure necessary information.

- **Ask about awards and recognition.** Has the contractor won any awards for its work? Have the contractor or any of its employees been certified or accredited by any trade organization?
- **Check on lawsuits.** If the contractor has been or is currently involved in litigation, find out the details. Check with your local Better Business Bureau, or with any local licensing agency, for consumer complaints.
- **Ask to meet the individuals who will be involved with your project,** particularly the job superintendent. Does the superintendent seem knowledgeable about measurements, orientation, materials, construction and marking of turf fields? Does he understand grading, drainage, site preparation and base materials? Is he familiar with different turf surfaces? Can he make recommendations regarding specific surfaces for your needs? Is he a Certified Track Builder (CTB) or a member of the American Sports Builders Association? What is his current workload; can he realistically handle your project within a reasonable time frame?
- **Consider communication. You want a contractor who listens to you and responds to your needs.** You want someone with whom you feel comfortable, someone with whom you can establish rapport. You want a contractor who will build the facility you want, not one who will build his standard field and move on. You want a contractor in whom you have confidence. Don't underestimate the value of a good working relationship.
- **Ask for proposals in writing and compare them carefully.** Ensure that the bids, including products to be used and methods of construction, are equivalent to your specifications. What is included in the contract price? Who, contractor or owner, is responsible for such items as permits, site preparation, identification and relocation of utilities, taxes, insurance, removal and replacement of trees and shrubbery? Such items, while essential to the project, may or may not be included in the bid; whether or not they are included can significantly affect the contract price and the overall project cost. Even if construction materials and methods are identical and items included in the contract are consistent, look beyond price when comparing proposals. Compare proposed construction schedules, progress payments, and guarantees and warranties.
- **Be sure that you understand what is included in any guarantee or warranty—materials, workmanship or both and for how long.** Is the warranty or guarantee backed by a bonding company, or if not, does the contractor have the financial ability and the reputation for backing up his work? Remember that a warranty is not a substitute for a quality installation by a reputable builder.



● Keep a calendar – and make sure someone has responsibility for keeping and updating it. Don't let important dates and deadlines slip by.

● Additional questions to ask a prospective contractor: How can we save money on this project? What are the most common things that could go wrong during construction and how would you deal with them?

● Don't try to sneak by without appropriate permits. You can be legally required to tear down or dig up whatever work you have done with a permit. It's not worth the risk.

● Keep heavy construction equipment off the field area when it's wet. You don't want any unnecessary compaction of the soil.



● The Army Corps of Engineers will often help with earth moving projects as practice for their teams. But remember they are practicing! The Corp has district offices around the nation and you can contact them directly.

● Depending on your site you may need water, air and soil quality testing done. Toxic chemical residue can be expensive to clean up, but it's still cheaper if it's done before any building takes place.

● Remember that the job is not complete until the city, county or other applicable agencies have inspected and approved it. Generally, permits expire in some time period (generally six months to a year for this type of project) and, if the inspection is not completed in that period, the permit process will need to start again.

● One volunteer's sole job could be overseeing the permit and inspection process.

- **Rank the proposals and then attempt to negotiate a contract with your first choice builder.** If the bid of your preferred contractor seems high, question the bidder to determine why. Remember that price is not the only consideration. A project which is initially more expensive but which provides long-term satisfaction and wears well is a good value.
- **Once you have chosen a contractor, confirm your agreement in writing.** The contract documents should be as specific as possible and should include, where appropriate, a construction contract, conditions of the contract, drawings and specifications defining the scope of work including labor, materials, equipment and transportation to construct the project. It is also critical that it includes a timeline/schedule.
- **Consider appropriate bonding.** You may require a bid bond, a performance bond and/or a payment bond. Also, you should require a certificate of insurance as proof that your chosen contractor has adequate insurance coverage.

Permit & Inspection Basics

Permits aren't a conspiracy to make your project more difficult or frustrating. It is your city and county's responsibility to ensure that any building or excavation project is safe for its users and the neighbors around it, and that it does not have a negative impact on the environment.

Permits will be required for:

- **Excavation.**
- **Grading.**
- **Demolition.**
- **Construction.**
- **Sewage/plumbing.**
- **Electrical work.**
- **Building.**
- **Paving.**
- **Heating.**
- **Soil erosion.**
- **Storm water.**
- **Lighting.**

How To Make The Permit Process Easier

The permit process can be long and frustrating. It's often hard to understand from the outside what's going on. But being cooperative, courteous and contacting the agencies early in the process is the path to the best experience possible. An experienced, local contractor can help expedite the process because he will be more familiar with the permits your city or county requires.

And a friendly, understanding attitude may be the best help of all!

Here are some steps to make the permit process as easy as possible:

- **Your city and/or county will likely have a website that reviews the permit process for you. Spend enough time to really follow all the links and get all the details.**
- **Have a pre-application meeting to discuss the project, your site and get advice and technical assistance on the permit process.**
- **Be cooperative and courteous at all times.**
- **Handle information requests promptly.**
- **Educate yourself on the permitting process of your city or county. Every place is different.**
- **Figure out if you or any of your club members have political connections that may help expedite the permit review for your project — if so, have them place a phone call on behalf of your project.**
- **Deliver your permit application in person and get a receipt! Don't risk the possibility of it getting lost in the mail or being delayed while the mail sits on someone's desk.**

Inspectors Are Not The Boogeyman!

The inspection process is not there just to be a thorn in your project's side. It's there to ensure that work meets the minimum standards of construction codes, zoning, erosion and runoff control and other ordinances. They don't want your field draining into the houses next door or sewers backing up into local creeks. A few ways to make them easier:

- **Be on time. Inspectors generally won't wait around, and it will be harder to reschedule.**
- **Have all approved plans and drawings available on site for review.**
- **Have all appropriate parties (contractor, installers, etc.) on site for each inspection so questions can be answered on the spot.**
- **Don't take it personally. Inspectors can be pleasant ... or not. Their job is to protect the public and they take that very seriously.**



● Check out contractor references and referrals from local cities and park departments, but remember that government agencies may be required to go for the lowest bidder. They may not always get the best work.

● Contact schools and cities that have recently completed projects for referrals to specialists. Would they recommend them? Some additional questions could include, was the contractor good at solving problem as they came up? How is the field wearing and does it play well? Were there any surprise costs?



- Aluminum goals are subject to vandalism if not stored away in a locked building. They can be cut up and sold as scrap for enough money to make it worth a vandal's while. If locked storage is not available, chaining them to a fence or metal post is the best alternative.

Goals, Goals & Goals

Goals are the only “construction” feature on a soccer field. However, permanently constructed soccer goals or goals that are too heavy to move are not a wise choice for any soccer field. The ability to shift or rotate fields will significantly reduce your maintenance costs and permanently fixed goalposts will not allow that.

This is the time to yell loud and clear: “DON’T USE HOMEMADE GOALS.” Soccer goals may seem simple to construct, but portable goals are not. They are carefully counterbalanced to give them maximum stability, but are still light enough to be moved around. They must also be properly anchored at all times.

A full size goal is 8' x 24', but goals come in a variety of smaller sizes for practice, small sided games and youth soccer, so you will want a variety of sizes to accommodate different age groups. You can negotiate a better price if you buy them all at once.

For durability and safety, invest in quality goals. For complete information on the specifications and safety aspects of portable soccer goals, please see the addendum section for the U.S. Consumer Product Safety Commission’s “Guidelines for Movable Soccer Goal Safety.” Here are some of the myths and facts about goal safety taken from those guidelines:

MYTH: The majority of soccer goal related injuries occur during matches or training.

FACT: Most soccer goal related injuries occur when organized soccer playing is over, either during the transport of goals, when goals are being used for unapproved purposes, or during pick-up soccer.

MYTH: Heavier soccer goals need not be anchored because of the inherent difficulty in moving.

FACT: Any unanchored goal can be tipped with catastrophic results.

MYTH: Home-made goals that match the manufacturer’s designs or styles will act as a suitable replacement for professionally manufactured goals.

FACT: The CPSC reports a large majority of goals involved in fatal or serious tip-over accidents involve “home-made” goals made by shop classes, custodial staff, or local welders not fully aware of proper anchoring techniques and safe counter-balancing goal designs.

MYTH: Soccer goals will not tip unless moved or climbed upon.

FACT: Unanchored portable, lightweight goals are capable of tipping during high wind conditions, especially with nets affixed to the frame. All goals should be anchored when they are in the upright position.

MYTH: Once a goal is anchored, it is considered secure.

FACT: Unless a goal is anchored in a permanent/semi-permanent manner (ground sleeves or anchors in cement), it should be secured after

soccer play is finished by locking goals face to face, locking goals to a permanent structure, or folding goals to the ground.

MYTH: Padded goals will reduce injury when a goal tips over.

FACT: Padding will not protect a person from injury when a goal tips over.

Groundbreaking Ceremony

This is a terrific opportunity to celebrate the project and cultivate your relationship with your members, the media, your neighbors, city officials and potential donors. Breaking ground is really something to celebrate! You've made it through the design, permitting and community review process and you're on your way.

The Groundbreaking Ceremony is the ideal time to include existing and potential donors. For those who have already given money, they get to see it in action. For prospective donors, they get to see where their money could go and you get to explain how their money could make a difference to the final product.

Digging the first shovel of dirt is a natural photo opportunity for city officials, local celebrities and your organization. Invite local newspapers and TV stations. Have youth soccer players and their parents on hand to remind everyone whom the fields will serve.

This may not exactly be part of the construction, but it's an important point in your project and you should take the best advantage of it possible. And it's a great opportunity to remind all involved what this important project is all about: the kids!

Keep A Visual Record

Photo-document your construction process. This is very important, because it allows you to demonstrate progress to donors, members, media, etc. It also makes great images for your website. Some things to keep in mind:

- **Use a common reference point** (or points) in the background of your photos (e.g., a unique tree, building, telephone pole, etc.) and consistently take photos from the same vantage point with the same reference point. This will make for much more powerful images. The viewer can see the time-lapse progress of the site.
- **Find an accomplished photographer** from your parents, members, volunteers.
- **Consider paying for an aerial photographer** to do before and after shots to truly capture the scope of your project.



- Improving the soil in the construction stage can include everything from removing rocks or chemicals such as spilled oil to bringing in amendments such as sand or peat to adding fertilizer or herbicides to control weeds.

- Remove all debris and brush prior to grading. Grass, weeds and groundcovers can be killed and then rototilled into the soil.



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.

Smart Maintenance

Any field can be green, lush and playable on the first day of the season, but smart maintenance is the key to having that same field just as playable all season long. After all your investment in building soccer fields, the most important investment of all is an excellent maintenance program.

“Grass grows by the inch and is killed by the foot.”

—Anonymous



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● In field maintenance, prevention is always the best cure.

● Consider scattering your fields with lightweight, 4' x 6' plastic goals. Even kids can move these around. It helps distribute practice traffic over the entire field.

Smart Maintenance

If you've chosen natural grass, you've finally got your fields in, seed or sod has been planted and the grass is growing, the question now is how do you keep them healthy and playable year in and year out? The pundits will tell you it's just like a big front lawn, but think about what your lawn would look like if hundreds of kids and adults were running across it for 8 or 10 hours every day! Your natural "lawn" is going to take management of its use, water, mowing, aeration and proper application of fertilizer, weed and pest control products.

If you've chosen synthetic grass, and the new turf has been installed and it's gleaming green and beautiful in the sun, how do you keep it clean, safe and playable year in and year out? You, too, will have hundreds of kids and adults running across your beautiful fields, sweating, spitting, kicking up or compacting the in-fill, and nature will take its course of spreading leaves, bird poop, and weed seed across the pristine turf. Your synthetic "lawn" is going to need its own grooming and upkeep.

For both natural and synthetic turf, the fundamental reasons for excellent maintenance are:

1. **Safety first.** Soft spots, holes, slick weeds, lumps and rocks are all recipes for falls, twisted ankles, blown knees and worse. Safety should always be the first priority of a field maintenance program — particularly if the budget is tight and maintenance choices have to be made.
2. **Playing performance.** Every player and coach knows that a smooth, well-maintained field insures the ball rolls true for dribbling and passing.
3. **Aesthetics.** There are few things more beautiful than the rich, glossy green of a healthy, clean soccer field.
4. **Durability.** Whether natural or synthetic turf, a lot of money and time have been spent to create these soccer fields and you want them playable for a long time to come!

The keys to effective natural grass maintenance include:

- **Managing the use of the field — including rotation, rest and weather cancellations.**
- **Water, water, water.**
- **Correct, regular mowing.**
- **Fertilizing.**
- **Pest and weed control.**
- **Letting it "breathe" via aeration.**
- **Routine soil testing and correction.**
- **Overseeding.**

The keys to effective synthetic grass maintenance include:

- **Following the manufacturer's recommendations exactly** (warranties are normally contingent on maintaining to manufacturer's specifications).
- **Correct, regular brushing.**
- **Settling time for the infill of a new system.**
- **Leveling or redistributing the infill** (when using a turf with infill).
- **Water, water** (less than natural grass, but still important for cleaning, cooling and stabilizing infill).
- **Prompt removal of leaves, soil and other organic matter.**
- **Immediate repairs of failing seams or damage.**
- **Policing to insure no food, beverages, gum or cigarettes are used on the field.**

Your 'New Best Friend'

In the early stages of your soccer fields planning, design and construction, you will want to find one or more turf experts on your specific geographic area. This will be your “new best friend” — the person that can advise you on:

- **What type of grass should you choose?**
- **What's the best “rest” schedule for your fields?**
- **When and how much fertilizer should be applied?**
- **What type of weeds, insects or fungi is your area susceptible to?**
- **What soil balancing may you need?**

Not only does every area of the country have different weather and geology, but also your field may have its own specific microclimate or microgeology.

Here are some places to find your “new best friend.” It pays to find one or more individuals who are experienced in your area and willing to give advice.

Cooperative Extension System offices. Commonly referred to as “extension” or “county extension” offices, the U.S. Department of Agriculture's Cooperative Extensive System is a nationwide, non-credit education network. Each U.S. state and territory has a state office at its land-grant university and a network of local or regional offices. These offices are staffed by one or more experts who provide useful, practical and research-based information related to agriculture, environmental health, natural resources, etc. csrees.usda.gov/Extension/



● Follow manufacturers recommendations and schedule for the maintenance of all equipment. It will increase its effectiveness and give it many years of use.

● Help your league understand seasons based on practical field-related considerations. If your season starts too early in the spring and your grass hasn't come out of winter dormancy, the damage will follow you throughout the year. Or if fall playoffs occur after the natural growing season ends, offseason recovery will be more challenging.



- Follow manufacturers directions on the time necessary between applying weedkillers and seeding.

- When choosing a mower, sit on it. Somebody will be spending a lot of time there so make sure it's comfortable.

- Crumb rubber is a controversial choice for field maintenance. Some turf managers like it for extra durability in the goalmouth, on the sidelines or as a light top dressing on sand-based fields. Other turf managers ban it completely. You may want to try it in one goalmouth to see how it works for you.

Sports Turf Management Association. With chapters in most states, the STMA is the professional organization that networks, educates and establishes standards for turf managers in the U.S. Local chapters can be tremendous sources of expert turf managers. This is an organization you will want your turf manager to join whether they are paid or volunteer. stma.org

College or University groundskeeping staff. If you have a college or university in your area that has soccer or other playing fields, they will have a full time expert on hand caring for them. These are often passionate individuals who are happy to offer advice and guidance as you select grass types, consider irrigation and drainage issues, determine growing seasons, etc. They've been there, done that. And may be willing to help you, too.

Golf course turf managers. Golf courses may not get the same wear as soccer fields, but their users demand the highest level of maintenance. Again, these will be professionals who've had to deal with many of the same issues as you. And if there's a golf course in your immediate area, they know your microclimate, geology, and soil structure better than anybody.

Park & Recreation groundskeeping staff. If there are already professionals maintaining parks and playing fields in your immediate area, they could be terrific at advising you on your needs.

Soccer complex turf managers. If you have other soccer fields or field complexes in your region, contact them. Many are happy to help.

Great Maintenance Starts With Great Communication

The tighter your maintenance budget, the more important it will be that you communicate to your players, coaches and parents the standards and importance of regular maintenance, canceling play when fields are too wet, shifting field layouts to spread wear, and rotating natural grass fields out of play to rest. Players, coaches and parents want to play and there will be howls of fury when games are canceled due to rain and snow or schedules get condensed because of groundskeeping decisions.

Some unpopular rules may also be necessary: spectators pushed back from the sideline (if fields don't have much room for rotation), no walking on fields when they're resting, or no food, drinks or gum on the synthetic field. So the support of your users is critical.

Doug Fielding, chairperson of the Association of Sports Field Users (ASFU) in the San Francisco Bay Area, has a simple, but clear goal he cites for field maintenance that we encourage field developers to adopt:

“The goal of field maintenance is to perform a top quality maintenance program and then maximize the use — with one caveat: at a certain time every year (I use Sept. 1) the field must look as good if not better than it did the previous year. If it looks worse, either the maintenance program isn’t good enough or it’s not possible to maintain the playing field at the current usage level.”

Reasonable standards of maintenance for a natural grass field are:

- **Generally flat field with no bare areas.**
- **No holes.**
- **No mushy spots.**
- **Thick grass.**

Setting the standards of your maintenance program is important. Assuming you’re not a professional facility with a game once or twice a week, you have to balance doing a good job of maintenance and managing how much and when your user groups can play on the fields.

Natural grass has lots of ability to maintain itself, but constant use will very quickly leave it as bare dirt if it doesn’t get maintenance help. Synthetic turf has the image as being almost maintenance-free, but it will become lumpy, slick and icky (think spit, sweat, bird poop!) if the time isn’t taken to brush, smooth and clean it.

How To Work With Your Turf Manager

Someone will need to be in charge of field maintenance. That includes making the call of when fields will be out of play (for weather, rest, etc.) You will likely hire a part time or full time person to manage this process. Occasionally volunteers do it all, but it is a big job with a lot to learn. It’s commonly more than volunteers want to do on an on-going basis. Unlike the construction process, maintenance will be a day in and day out activity for the life of your fields. But if you do find that committed volunteer, count yourself lucky!

You may have volunteers who help mow, pick up litter or rocks and give help for special projects, but the day to day managing of the grounds is usually best left to a professional (or a novice who is willing to commit to learning the ins and outs of your turf.)



- Beware of coaches that move goals back into the goalmouth after maintenance has carefully moved them elsewhere to reduce wear and tear during practices.

- Remember to lock up portable goals or chain them to a fence when they’re not in use. It’s for maintenance, safety and security.



● **Go green and consider natural, organic fertilizer.** Be sure that it is fully composted so no stray weed or other seeds are introduced to your turf.

● **Overuse is a possibility for any field complex.** Declaring one day a week off-limits to all play cuts down on wear and tear; so does closing fields completely during the offseason.

● **When shopping for mowers and other large equipment, get several of the equipment dealers in your area to come out and demonstrate products and their benefits.**

Pro Tips For Working With Your Turf Manager

Kevin Meredith is the award-winning manager of the National Soccer Hall of Fame's four world-class soccer fields in Oneonta, NY. Here are his tips for successfully working with your turf manager:

- **Have one maintenance decision-maker.** Too often you get three or four people reading articles and saying you have to do this or that, but in the end it has to be one person who makes the decision. Give the head turf manager the respect and authority to make the call.
- **Change an unsatisfactory turf manager, if you must.** But you want to allow them ownership of the fields as long as they're doing the job.
- **The time to decide who will take care of the field is when it's being built.** It's ideal to have them see and be a part of the building process. Then they'll know the issues from the ground up. They'll understand why things are being done a certain way and there won't be guessing later.
- **The No. 1 attribute a good turf manager needs is passion.** You can learn everything else. People that do this type of work...we need immediate gratification. When we stand back after mowing and striping a field, we see a piece of art. That's our canvas. Nobody will protect it like we will.

The Right Tools For The Job

Maintenance Tools For Natural Grass

- **Mower: rotary or reel depending on grass species, quality requirements, etc.**
- **Irrigation system.**
- **Aerator: core (plug) or slice type, typically pulled behind a tractor or utility vehicle.**
- **Fertilizer spreader/weed and pest control sprayer: typically pulled by a tractor or a utility vehicle.**
- **Line Painter: available in walk-behind or riding configurations.**

Optional:

- **Blower and/or sweeper: for debris/litter management.**
- **Deep tine aerator.**
- **De-thatching equipment: typically pulled behind a tractor.**
- **Seeder: typically pulled behind a tractor.**
- **Top Dresser: utility vehicle mounted or pulled behind a tractor.**

Maintenance Tools For Synthetic Grass

- **Grooming equipment:** typically some type of broom, brush or tine that is dragged over the field to stand the synthetic fibers up and to distribute the crumb rubber infill.
- **Utility cart for grooming/cleaning equipment, pushing snow or operating sprayer.**
- **Spraying equipment to stop weeds from growing through the synthetic surface, to lessen the static charge from the crumb rubber, and to apply wetting agents.**
- **Sweepers:** to remove trash and other materials from the playing surface.
- **Blowers (back pack and 3 pt. hitch):** to blow clean the turf of trash and leaves
- **Vacuum:** to remove small items, such as sunflower shells and peanut shells.
- **Top dressing equipment:** to periodically re-dress areas that have lost crumb rubber
- **Sanitation equipment and sprays for the spot removal of bacterial growth from bodily fluids.**

Optional

- **Pressure washers or other flushing equipment to remove unwanted fluids or contaminants.**
- **Spiking equipment for de-compaction and/or to help with redistribution of crumb rubber.**
- **Irrigation system (some manufacturers require irrigation to maintain warranty.)**
- **Painters for adding additional lines and scrubbers for cleaning painted lines off the synthetic turf.**
- **Special rubber blades for snowplows.**

FIFA's Tips For Maintenance Of Synthetic Turf

FIFA, the world governing body of soccer has developed tips for maintaining synthetic turf, although its No. 1 tip is to follow the manufacturers recommended maintenance plan and schedule. In fact, your warranty may be nullified if you do not.



● When working with synthetic turf, **DO NOT** attempt repairs on your own. Contact the installing company immediately and insist on prompt repair under the terms of your warranty.

● If you have multiple fields, consider having one field "rest" each year – giving it a full year to recover and re-grow. Rotating that resting field so that every field has a year of rest after three or four years of play will give all the fields an opportunity to fully recover from hard use, making for healthier, safer turf for years to come.



● There's no shortcut to actually walking your fields every week during the season and every other week during the offseason. Check for soggy spots, mowing issues, dead areas and weeds.

● Try seeding the goalmouth throughout the year. The goalie's cleats can work the seeds into the soil.

FIFA has only approved the infill type synthetic systems, although many of the tips apply to all synthetic turf. Here is some of the most pertinent advice:

- If in doubt, ask the experts of your particular system, namely the supplier!
- Do not apply any chemicals onto the surface without prior consent. Many chemicals, particularly petroleum-based products, can do damage. Always refuel tractors or other vehicles off the playing surface.
- Chemicals that can be used include algaecides, mossicides, weedkillers and de-icers.
- The surface should be brushed regularly according to the number of hours of use. (The manufacturer will supply a schedule.) The more often or intense the use, the more frequent the brushing.
- The regular brushings should be in all directions to keep fibers upright and evenly distribute the infill. (You don't want to have fibers lean in one direction, as it will change how the ball rolls.)
- Water synthetic fields to lubricate and cool the surface and stabilize the infill.
- After a heavy rainfall, check the infill levels. Infill can migrate with the slope of the field.
- The penalty spots and corners are prone to disruption of the infill. Ground staff may need to "top off" these areas more often than the rest of the field. It may be necessary to top up these areas every day during intense usage.
- When material begins to accumulate at the edges of the field, debris should be removed from it and accumulated material cleaned and brushed back into the main field.
- New systems that utilize infill materials may require a period of settling-in. This will necessitate a regime of regular brushing on a more frequent basis than is normally required. The installing company will give advice as to the necessity and added frequency of this extra brushing.
- Wherever and whenever contaminants (i.e. body fluids) are present, remove them as soon as possible.
- No food or beverages should be allowed on the field. Equally problematic is chewing gum, although this can be simply remedied by freezing (put ice cubes on it) the offending gum, which can then be broken out of the field when it becomes solid.
- Smoking is strictly forbidden

- All organic matter such as leaves, soil, seeds, etc., if left, can result in algae, moss or weed growth. Remove as soon as practical.
- If the infill shows signs of agglomerating, break up the lumps.
- Check regularly for compaction of the infill, particularly in the high usage areas. Check by bouncing a ball on the surface. A surface with uneven compaction will show variable ball bounce. A high ball bounce will often indicate loss or compacted infill.
- Check any seams for failings. Synthetic turf is installed in big rolls with seams between. If the seams have failed in any place, contact the installing company immediately.
- if you have an irrigation system, check it periodically. Also check the drainage system periodically to see that it is still functioning well.
- When a field begins to show signs of significant compaction and accumulation of debris, it's probably time to bring in a specialized maintenance company or the installing company to remove portions of the infill, clean it and re-introduce it back into the surface.
- Snow can be removed by using a snowplow. Check with the manufacture as to the correct equipment, although usually a rubber blade is required. if your area gets a lot of snow, ensure you have sufficient area around the field to deposit the snow you've removed.
- Remove the majority of snow with the plow. The final 2-4 inches can be removed with a brush. A rotating brush is particularly useful for this.
- Snowblowers can also be used to remove snow.
- Weeds are easily removed by hand if there aren't too many.
- Moss and algae require special treatment normally using specific chemicals and techniques to remove residues. The advice of the installing company should be sought at an early stage if the problem occurs. The longer you leave an infestation in general, the bigger the problem will become.
- The most important design feature is to avoid contamination, such as player-, wind- or animal-born contamination and surrounding vegetation.
- Players will inevitably take the shortest path between the changing facilities and the field. If that pathway is dirty, they will carry that dirt on their boots onto the field. To avoid this, ensure the pathway is clean.



● According to research released in 2007 by FIFA, the world governing body of soccer, there is no increase in potential for injury on the most modern, infill-type (“third-generation”) artificial turf surfaces as compared to natural grass.



● “Field Closed” signs on traffic sawhorses in the middle of the field are inexpensive and NECESSARY.

- If other vegetation surrounds the field, this will inevitably be deposited on the field. For example, grass areas around the field, when cut, will deposit cuttings on the field. Try to leave a barrier between the natural area and the artificial field. This can be a physical barrier or a vegetation-free zone.
- Contamination, particularly pollution and seeds, will be blown onto the field by the wind. Take this into consideration when deciding on the location of the field.
- Animals, particularly birds, will leave deposits on the field. Clean them off as soon as possible as the deposits will become nutrients for moss, algae and weeds.
- Many companies supply a logbook as a method of recording the maintenance and usage of the field. Typical logbooks will allow the owner to record the routine maintenance times, operatives, machinery used, etc. as well as recording the field usage.
- And one more time...Follow the manufacturers recommendations at all times. And when in doubt, give them a call!

Field R & R: Scheduling For Healthy Natural Turf

Managing use of a field is an often unpopular, but necessary responsibility of the field maintenance director. Decisions will include how much playing time each field gets, shifting fields to spread wear, working with the schedule to rotate heavy users (the aggressiveness of high school age and college players tends to dig and tear at the turf while pee-wee soccer players are gentle users) and when to let individual fields rest.

Grass seed can be playable in 12 weeks...but it takes a full year to have grass grow thick enough to be traffic tolerant and shock absorbing. And it takes almost three years to have a fully mature stand of turfgrass. The bottom line is that soccer is hard on turf. Soccer cleats compact the soil and tear up the grass. Periodic rest will be required for fields to renew and recover.

Grass sod can be playable more quickly, but it also takes time to set down its root system. Check with suppliers on recommended settling time for specific turf types suitable to your part of the country.

Many field developers have regretted being pushed by anxious players, coaches and parents into letting play begin on fields without giving them that first year to put down deep, healthy roots, and build up its mass. In your planning stages, do all in your power to have that year of growing time included in the schedule. It won't always be possible, but it will decrease your maintenance issues considerably.

But once the turf is playable, like all biological organisms it will require

rest to stay at its healthiest. In fact, managing a field's rest periods is among the most critical long-term aspects of soccer field maintenance.

During the rest periods, the field should be:

- **Watered & mowed regularly.**
- **Overseeded.**
- **Fertilized.**
- **Aerified at least once or even twice.**
- **Weed killers and pesticides applied (if necessary)**

We're going to assume that every soccer field you have is used to its maximum availability. Soccer players are on it all season long...and they would be on it in the offseason given the opportunity.

For most parts of the country, the practical time to rest fields out of play are summer and winter. Optimally fields are rested from June to August, then again from December through March. However, the exact timing and duration for resting your fields is one of those individual, area-specific decisions that is best made with the help of your "new best friend."

Water, Water Everywhere

An excellent irrigation system and good drainage is worth its weight in gold to a soccer field turf manager. Water percolates down through soil and is taken in by the root system of the grass. The more sand-like and porous the soil, the more quickly the water will percolate in, and away. The more dense and clay-like the soil the slower it will percolate in.

Watering basics:

- **Irrigation is critical for healthy, playable soccer fields.** There is virtually no location in America that has enough natural rainfall on a year-round basis to allow you to forego regular supplemental watering at some point in the year. And if there were such a place, you likely wouldn't want to live there!
- **Make sure the watering system is in good repair.** Check it before you do any work on the field.
- **Soccer fields generally require 1 to 1.5 inches average per week of water.** Nature may supply some of that, perhaps more at certain times of year than others. But your maintenance process must make up the rest. A rain gauge is a low-cost device that will let you measure the amount of rain falling on your fields. Or any measuring container should do the trick. But with experience, walking your field will let you know if more or less water is needed.
- **Water early so that fields are dry by sundown.** It helps discourage diseases.



● Pay attention to human damage... players on the bench digging holes with their cleats, parents or coaches pacing the sidelines (leaving worn spots), etc. It can sometimes be easier to manage people than turf. Consider moving spectators back.

● A trick for spotting depressions that need to be filled in with top dressing: run the sprinklers until the field is waterlogged or go to the field after heavy rain. Then, circle the wet areas with field lining paint. That way you know exactly the area that needs to be raised.



● As high-traffic areas of the field like the goalmouth become more compacted, weeds will appear. Aerating will give the grass a chance to rebound and crowd out the weeds.

● You should be able to push a screwdriver 4-6 inches into the dirt. If not, check on your watering schedule because the field is too dry.

- **The watering schedule should be checked and adjusted weekly** throughout the playing season.
- **Native soil fields will not necessarily absorb water evenly.** Adjust irrigation valves to compensate. Walking and watching your field closely will help you know when and where to look for dry or wet spots. At each valve you should be able to adjust the watering time and frequency.
- **Deep, less frequent watering tends to make for a deeper root structure.** Watering the full amount once a week is ideal. But if your soil will not absorb that much water, use the fewest applications that will work for you.
- **Check watering distribution** by putting a few same-size containers around the field. If some are getting less water than others, keep an eye on those areas for signs of water stress.

Managing Your Soil

Managing the soil is one of the critical keys to healthy turfgrass. Good soil can help you reduce the need for fertilizer, chemicals and water.

1. SOIL TESTING & ADJUSTMENTS. Test annually in the early life of your fields, but then every other year should be adequate. The quality of soil is critical to the quality of your turf. And every area has different soil. You may add one or a number of minerals, such as calcium, magnesium, potassium, phosphorus or sulfur to help bring the soil into natural balance.

Most commonly, soil testing is checking the pH (percent hydrogen) of the soil. However, in adjusting other trace minerals often the hydrogen level will adjust as a result.

Contact your extension office for lab recommendations to test your soil and detailed instructions of how to gather and submit the samples.

2. AERATION. A green, properly cushiony soccer field needs to “breathe.” Aeration is the process of creating holes or slices 3 or 4 inches deep into the soil to let water, air and nutrient additions enter the soil. Compacted soil keeps water and air out. Important microbes that help produce plant nutrients and make the soil porous need oxygen to grow. A compacted field is also a hard field — certainly not what you want for soccer.

There are both core and slice aerifying tools. Both are generally towed behind a tractor or utility vehicle.

The core aerator has hollow tines that literally pull up a “core” of dirt a half-inch in diameter and several inches deep out of the ground and leaves it on the surface of the field. A field can take up to 15 days to “recuperate” from core aeration so this is best used when fields are “resting” during their growing season. The cores can be allowed to dry then use a rotary mower (rather than a reel type) to chop up the cores and they become part of your

field. One essential step: break up cores with a drag mat before using the rotary mower on them. Much more effective and less dust created. Not as harmful to the rotary mower.

The slice aerator is a knife-like tool that slices into the ground several inches deep. It is less intrusive than the core method and can be done throughout the season to reduce compaction. Fields will be playable immediately. In heavily used fields, slice aerify every couple of weeks during the season using two different directions.

3. FERTILIZER. Fertilizer is the “food” that makes your grass grow, but the need for it increases under the constant use of a soccer field. Determining what, how much and when to fertilize is very specific to your area, soil and type of grass. Contact your local extension office to confirm specific fertilizing recommendations.

Fertilizer has three numbers that describe its “specialty.” The first number is nitrogen, which stimulates top growth. The second is phosphorus, which stimulates root growth. The third is potassium, which improves wear tolerance and disease resistance.

Generally you want time-released fertilizer that will enter the soil over time. The fertilizer granules are coated similar to a time-release cold capsule. It may cost more, but will last up to twice as long as regular fertilizer.

4. TOP DRESSING. Top dressing is adding soil or sand lightly over the surface of the grass. Top dressing can fill in depressions to level the playing surface (sand is usually best for this purpose as organic material will break down more quickly), condition the soil and keep grass seeds moist. The top dressing will work its way into the soil matrix with watering and use. Generally, use soil or organic material for top dressing that is similar to the base soil. Sand should not generally be used as a top dressing on clay soil because sand and clay turn into cement!

How Much Weed And Pest Control?

The best weed and disease control is properly maintained turf. It will tend to squeeze weeds right out by blocking the sun from hitting the soil surface. But lots of factors can stress the turf, making it more susceptible to pests. These include:

- Heat
- Humidity
- Overuse/compaction
- Too much water
- Too little water
- Improper mowing



- Consider leaving mowing clippings on the field. They can add important nitrogen to the soil as they naturally break down. If they build up to too thick of a thatch, which will stop water from getting through, likely grass is growing too long between mowing. You'll need to cut away the thatch.

- Pesticides and fertilizer: The label is the law. Always follow the manufacturers label instructions precisely. Used exactly as instructed, safe. Important to understand the product, its uses, its limits, its dangers.



● To check if you're mowing enough, check a blade of grass all the way to the ground. If it's completely green, you're good. If a brown layer has developed, mow more frequently.

● Dull mower blades tear rather than cut the grass. This leaves it open to disease. Check the blades regularly and sharpen often. Follow manufacturer's specs for sharpening.

Weed & Pest Basics:

- **Turfgrass does not need to be completely free of weeds and pests.** You may need to eradicate fire ants or bees, but as long as the turf is maintaining its quality and is playable, you can likely live with a few weeds or insects.
- **Properly identify the pest.** Whether it's a weed, insect or fungus you need to know exactly what it is. You'll want the right pesticide for the problem. Take a sample of it to a local nursery or your extension office for proper identification.
- **Healthy turf will outgrow many pest problems.** Weedkillers and pesticides don't have to be the first solution. Increase your maintenance procedures first. Try spot use before blanket use.
- **Follow all manufacturers directions exactly.** This is the surest way to have the product be safe and effective.
- **Pesticides should be handled by experts.** Bring in a certified pro to handle the application. Unless you have someone licensed on staff, this can be contracted out.
- **Blanket weed killers are not generally recommended for soccer fields.** If the turf is healthy and well maintained, spot treatment a couple of weeks before the season will manage most weed issues.

Mowing 1, 2, 3

Mowing can have the most immediate visual impact on your field but mowing correctly is also basic for the health of your turfgrass.

Mowing Basics:

- **Mow the grass at a frequency where you're taking no more than 1/3 of the blade with each mowing.** This can be twice a week at the height of the growing season, but it will vary significantly by weather, time of year, type of grass and locale.
- **Closer cut fields,** which offer the smoothest surface, may require more water, fertilizer and weed control.
- **Always mow with a sharp blade.** You want the grass blade to cut rather than tear.
- **If mowing is frequent, clippings can be left on the grass.** If you can't see the grass under the clippings, the grass is too long.
- **Thatch is an accumulation of living and decomposing grass stems,** roots and other matter that can create a "woven" layer between the soil and the grass blades. A thin layer can improve turf resilience to wear. But a layer over 1/2" can begin to block

water penetration, provide a welcome environment for insects and disease and stop added grass seeds from reaching the soil. It's particularly troublesome with grass types that spread via runners such as Bermudagrass. Mowing clippings actually contribute very little to thatch development.

- **Normal decomposition breaks down thatch**, but if it does get too thick, vertical mowing or “dethatching”, which cuts into thatch, is the solution. This can be done with a stand-alone vertical mower or an attachment to a regular mower. Similar to core aerating, it will take a week or two for the turf to recover from dethatching and you'll want to do this chore when the fields are resting.
- **There is no one-size-fits-all mowing height.** It will depend on the type of grass, climate, time of year and level of soccer being played. This is a discussion to have with your extension office or other “new best friend” and your users.
- **A rotary mower is less expensive**, similar in concept to a home mower and is adequate for most needs. A reel mower has a cutting action more similar to a pair of scissors, cuts cleaner, and is preferable for mowing heights of less than 2 inches.
- **Grass should be green all the way to the ground.** If a brown layer has appeared just above the soil, increase your mowing frequency.
- **Mowing patterns into the grass is cosmetic and does not affect playability.** Cutting the grass in different directions, such as striping, bends the blades, which results in what looks like dark and light stripes. If you've got the time and interest, it can make a field look quite spectacular.

Overseeding

Overseeding is adding new grass seed, often with topdressing, to an existing stand of turf. It's usually done in conjunction with a slicing or slitting tool to push the seeds into the soil. Depending on the part of the country you are in, you may be adding seeds of different grass types to keep an actively growing grass type when the base grass is going dormant.

For many field managers, overseeding is almost a weekly activity during the season. Players' cleats can do much of the work of pushing seeds into the soil.

Plan a regular watering schedule keeping seeds in mind. Without enough water, seeds will not sprout.

Maintenance Postscript

Maintenance of soccer fields is both a science and an art because there are no perfect fields. Every turf manager of even professional fields, can point to their trouble spots or overuse. The solution to almost every poor field is improving the maintenance — water, fertilizer, aeration and mowing, then managing your user groups so the field gets the rest and recovery time it requires.

Each field is unique and its maintenance will be a learning process. Don't hesitate to ask for advice from the experts around you. As you develop the optimal schedules for your fields, learn the products that work best and all the other specifics of keeping your fields healthy, please remember to pass that knowledge along to those who need it. As you become an expert, be the “new best friend” to the next group trying to build and maintain a soccer field!

Addendums



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- **Glossary**
- **Resources**
- **Guidelines For Movable Soccer Goal Safety**
- **Lighting Standards Of The U.S. Soccer Foundation**
- **Questions To Ask Your Turf Vendor**
- **Soccer Goal Safety Overview**
- **Comparative Analysis — Natural Turf vs. Infilled Synthetic Turf For A New Soccer Field**
- **Professional Turf Manager's Guide To Efficient Irrigation**
- **Sports Fields & Grounds — Solutions To Make Your Turf The Best It Can Be**



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(Editor's Note: See U.S. Soccer Foundation Field Lighting Specification addendum in this section for lighting glossary.)

Aeration	Opening up soil by mechanical means to relieve compaction and let air, water and nutrients in.
Artificial turf / Artificial grass	A grass-like playing surface made of synthetic materials.
As-built drawing	A drawing that shows the exact installed elements of a field construction project.
Berm	A mound of soil or other material built up next to a soccer field for spectators to sit on or to block wind. Often covered by grass.
Bond	A debt instrument issued for the purpose of raising capital by borrowing. Cities, states and other local government entities issue bonds to raise capital for a range of capital improvement projects including schools, parks and recreational facilities such as soccer fields. These bond issues usually require approval by the voters.
Brownfield	Property that is characterized by the presence or potential presence of a hazardous substance, pollutant or contaminant.
Catch basin	A drainage structure that allows water to flow into an underground network of pipes.
Clay	A soil material of very tiny particles that tends to hold moisture and nutrients. Also refers to a soil mixture that contains more than 40% clay.
Compaction	Compression of topsoil usually due to playing time or foot traffic. When soil is too compacted, water, air and nutrients can't get into it. It may require loosening through aeration.
Cool season zone	An area that has a maximum temperature of 70-75 degrees F during the turfgrass growing season. In the U.S., it's roughly the top third of the continental states.
Crown	The elevated center area of a soccer field. It's raised to encourage runoff of water.
Cut	Removing soil from an area during the construction or maintenance of a field. Fill is the opposite — adding soil to an area of a field.

Dethatching	Removing the thatch layer on the surface of the soil. See “Thatch.”
Drainage	The downward movement of water from the surface through the soil. Can be helped with a drain system.
Earthmoving	The process of moving, adding (filling) or removing (cutting) dirt to prepare a properly graded soccer field; usually using heavy equipment.
Fill	Adding soil to an area during the construction or maintenance of a field. Cut is the opposite — removing soil from an area of a field.
Finish grade	The final surface contours of a soccer field just before turf is planted.
FieldTurf	A brand of synthetic grass that uses patented technology to emulate the best natural grass fields.
Grade	The slope or incline of a soccer field; the process of achieving that slope with earthmoving equipment.
Grant	A form of public or private financial aid that does not need to be repaid. Normally grants are for a very specific purpose.
Green space	Open recreation, park and nature areas that offer green grass or other vegetation. Considered a valuable and desirable component of urban and suburban communities.
Grooming equipment	Typically some type of broom, brush or tine that is dragged over a synthetic turf field to stand the synthetic fibers up and distribute the infill.
Herbicide	Chemical used to control weeds or other vegetation.
Infill	The crumb rubber and/or sand used to “fill in” the spaces between synthetic grass fibers. Holds the artificial grass blades upright and emulates the feeling of soil when walked/run on.
Irrigation system	A network of underground pipes that feed into a sprinkler system. Controlled by a manual or automatic timer to supply water where and when needed.
Laser grading	Using lasers to accurately contour a soccer field.
Lobbying	An attempt to influence legislators in support of or in opposition to specific legislative proposals. Reasonable lobbying is allowed under IRS rules for non-profit organizations.

Native soil	The soil that is characteristic of a specific locale/region, with no amendments added.
One-third rule	Healthy turf is encouraged by generally not mowing more than one third of the grass blade.
Overseeding	Sprinkling additional grass seed right over existing turf. In cool zone areas the same grass seed is added to increase the density of the grass. In warm zones, a different seed is usually added in the fall to have actively growing seed during winter and spring.
Pea gravel	1/8" - 3/8" washed gravel rocks. Often used as part of a sub-base for a soccer field to assist proper drainage.
Peat	Undecomposed (or only lightly decomposed) organic material that accumulates under very wet conditions. Used as an organic amendment to soil.
Percolation	Water moving down through the soil.
Permeability	How fast water moves down through the soil. Usually measured in "inches per hour."
Permit	Legal authorization to conduct an activity. Can be required for almost every stage of soccer field construction. For soccer field construction purposes, normally handled through a department of planning and zoning.
Pesticide	Chemical used to destroy pests.
Plug	Piece of live turf that is planted and will spread.
Precipitation rate	The rate that water is applied to a soccer field. Usually measured in inches per hour. Can be through rain or an irrigation system.
Scarify	Scratching (usually mechanically done) the surface of the ground to prepare for seeding.
Slit seeding	Making slits in the turf with a soil slicer and scattering seed over them. The slits help the seed make contact with the soil.
Sod	Mature turf that comes in rolls or sections.
Sodding	Installing sod over a prepared area of bare soil.

Soil amendments	Soil additives such as peat, sawdust or humus (organic) or sand (non-organic) used to improve soil drainage or retention of water or nutrients.
Sub-base / Subsoil	The layer of soil under the topsoil or synthetic turf of a soccer field.
Subgrade	The contours of the sub-base designed to allow the topsoil or synthetic turf to be installed over it.
Synthetic turf / Synthetic grass	A grass-like playing surface made of synthetic materials.
Thatch	A layer of living and dead grass stems and blades and other organic material that can develop at the soil level. If it gets too thick, water and air can't reach the roots of the turf, and the thatch must be mechanically thinned or removed.
Topography	Detailed, precise description of the surface contours and features of a place or region. Often a graphic representation.
Transitional zone	An area where both cool and warm zone turfgrass types can successfully grow. In the U.S., generally the central horizontal third of the continental states.
Warm season zone	An area that has a maximum temperature of 80-95 degrees F during the turfgrass growing season. In the U.S., it's roughly the bottom horizontal third of the continental states.
Weed	Any plant that you don't want in a specific location that has taken root on its own.
Zoning	Form of land use regulation by a local government, restricting certain land uses (e.g., agricultural, industrial, residential, park space) to specific areas within the locality. Zoning ordinances tend to be very specific and changing them is often a lengthy process requiring petitioning of the local zoning board and involving public input.

U.S. Soccer Foundation's Partners Resource Center

The Foundation's Partners Resource Center offers the soccer community a comprehensive resource for planning, designing and developing soccer projects and programs. The following companies are soccer industry leaders that provide expertise and discounted products and services through the Foundation's Partners Resource Center.



Ballard Sports

<http://www.ballardsports.com/>

Ballard Sports, the Foundation's Supplier for Soccer Facility Maintenance and Construction Services, provides Community Partners with preferred pricing for services such as site master planning, design, construction, and maintenance of soccer facilities.



Clough Harbour Sports

<http://www.cloughharbour.com>

Clough Harbour Sports, the Foundation's Supplier for Soccer Facility Design and Planning Services, provides Community Partners with expertise in soccer facility design. Clough Harbour's full service approach allows them to build world-class projects without breaking budgets.



Eurosport

<http://www.soccer.com>

Eurosport, the Foundation's National Partner for Soccer Equipment and Uniforms, was founded in 1984 to provide high quality, hard to find soccer gear, at reasonable prices, through its nationally circulated catalog. The catalog embodies the company's passion for the game and the people who play, coach, and support soccer.



FieldTurf

<http://www.fieldturf.com/>

FieldTurf, the Foundation's National Partner for Synthetic Grass Soccer Field Surfaces, received the first FIFA Certification for a synthetic grass surface in 2001. FieldTurf's select components, patented formulation, and construction/installation methods allow them to emulate the best natural grass fields.



Hunter Industries

<http://www.hunterindustries.com/>

Hunter Industries, the Foundation's National Partner for Irrigation Equipment, is one of the world's leading manufacturers of irrigation equipment for turf, landscape, and soccer fields. Hunter Industries' focus is on landscape irrigation with a significant part of its business centering on the proper care and maintenance of sports turf.





International Sports Images

<http://www.isiphotos.com/>

International Sports Images, the Foundation's Supporter for Digital Media and Photography, has served as the official photographer for the U.S. Men's and Women's National Soccer Teams for more than 10 years.



John Deere Landscapes

<http://www.johndeerelandscapes.com/>

John Deere Landscapes, the Foundation's Supplier for Irrigation and Landscape Supplies, provides discounted products to build, maintain, and enhance soccer fields.



Kwik Goal

<http://www.kwikgoal.com/>

Kwik Goal, the Foundation's National Partner for Goals, Nets, Field Equipment, and Mobile Seating, was founded in 1981 with the purpose of fulfilling the growing need for portable soccer goals. More than 25 years later, Kwik Goal is North America's largest manufacturer of soccer goals and training equipment.



Musco Sports Lighting

<http://www.musco.com/>

Musco Sports Lighting, the Foundation's National Partner for Sports Lighting, has focused on the design and manufacture of sports lighting for more than 20 years. Musco provides solutions to questions such as, how much light is enough? How can installation, operating and maintenance costs be minimized? How can a lighted soccer facility be a good neighbor?



TGI Systems

<http://www.worldwidetgi.com/>

TGI Systems, the Foundation's Supporter for Graphic Signage, is an innovative leader in the sports graphic industry. TGI designs and manufactures state-of-the-art, computer-generated signage for arenas, stadiums, universities, leagues, federations, and sporting events.



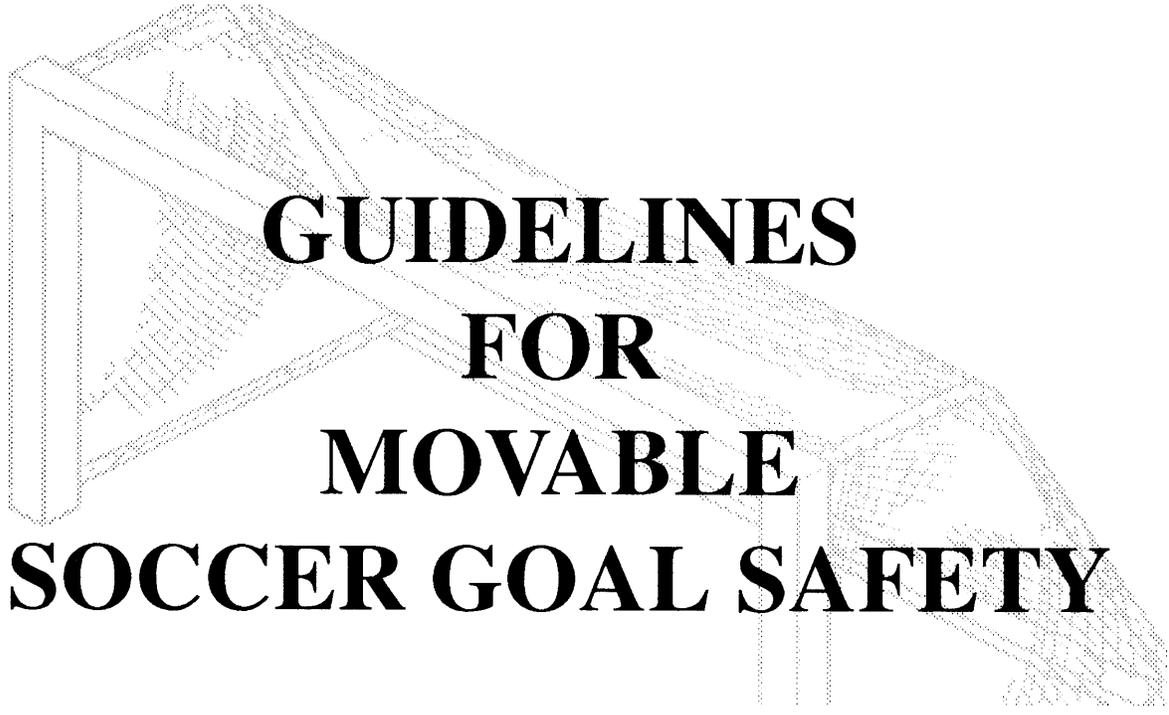
Toro

<http://www.toro.com/>

Toro, the Foundation's Supporter for Turfgrass Maintenance Equipment, is a worldwide leader in turfgrass maintenance equipment for soccer fields. Toro provides our Community Partners with significant discounts towards the purchase of products such as mowing equipment, utility vehicles, aerators, line painting equipment and field marking paint.



**For more field building resources,
visit www.ussoccerfoundation.org**

A large, faded, dotted-line illustration of a soccer goal is positioned in the background, behind the title text.

GUIDELINES FOR MOVABLE SOCCER GOAL SAFETY

January 1995
U.S. Consumer Product Safety Commission
Washington, D.C. 20207

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1. Introduction

This handbook presents guidelines for the installation, use and storage of full-size or nearly full-size movable soccer goals. The U.S. Consumer Product Safety Commission (CPSC) believes these guidelines can help prevent deaths and serious injuries resulting from soccer goal tipover. Publication of the handbook is intended to promote greater safety awareness among those who purchase, install, use, and maintain movable soccer goals.

These guidelines are intended for use by parks and recreation personnel, school officials, sports equipment purchasers, parents, coaches, and any other members of the general public concerned with soccer goal safety.

These guidelines are intended to address the risk of movable soccer goal tipover. They are not a CPSC standard, nor are they mandatory requirements. Therefore, the Commission does not endorse them as the sole method to minimize injuries associated with soccer goals.

2. Soccer Goal Injuries and Deaths

According to the 1994 National Soccer Participation Survey (Soccer Industry Council of America), over 16 million persons in the United States play soccer at least once a year. Seventy-four percent (over 12 million) of these persons are under the age of 18. Soccer ranks fourth in participation for those under 18, following basketball, volleyball, and softball and well ahead of baseball, which has an annual participation of 9.7 million.

There are approximately 225,000 to 500,000" soccer goals in the United States. Many of these soccer goals are unsafe because they are unstable and are either unanchored or not properly anchored or counter-balanced. These movable soccer goals pose an unnecessary risk of tipover to children who climb on goals (or nets) or hang from the crossbar.

The CPSC knows of four deaths in 1990 alone and At least 21 deaths during the past 16 years (1979-1994) associated with movable soccer goals. In addition, an estimated 120 injuries involving falling goals were treated each year in U.S. hospital emergency rooms during the period 1989 through 1993. Many of the serious incidents occurred when the soccer goals tipped over onto the victim. Almost all of the goals involved in these tipovers appeared to be **"home-made"** by high school shop classes, custodial members, or local welders, not professionally manufactured. These **"home-made"** goals are often very heavy and unstable.

The majority of movable soccer goals are constructed of metal, typically weighing 150-500" pounds. The serious injuries and deaths are a result of blunt force trauma to the head, neck, chest, and limbs of the victims. In most cases this occurred when the goal tipped or was accidentally tipped onto the victim. In one case an 8-year-old child was fatally injured when the movable soccer goal he was climbing tipped over and struck him on the head. In another case, a 20-year-old male died from a massive head trauma when he pulled a goal down on himself while attempting to do

chin-ups. In a third case, while attempting to tighten a net to its goal post, the victim's father lifted the back base of the goal causing it to tip over striking his 3-year-old child on the head, causing a fatal injury.

High winds can also cause movable soccer goals to fall over. For example, a 9-year-old was fatally injured when a goal was tipped over by a gust of wind. In another incident, a 19-year-old goalie suffered stress fractures to both legs when the soccer goal was blown on top of her.

3. Rules of Soccer

From the Federation of International De Football Associations' (FIFA) *Laws of the Game, Guide for Referees, July 1993.*

“Goal-posts and cross-bars must be made of wood, metal, or other approved material as decided from time to time by the International Football Association Board. They maybe square, rectangular, round, half round, or elliptical in shape.”

“Goal-posts and cross-bars made of other materials and in other shapes are not permitted. The goal-posts must be white in color.”

“The width and depth of the cross-bar shall not exceed 5 inches(12 cm).”

From the National Federation of State High School Associations' (NFSHSA) 1994-95 *National Federation Edition-Soccer Rules Book.*

“They shall consist of 2 upright (posts) 4 inches but not more than 5 inches (0.10m by 0. 12m)...the tops of the posts shall be joined by a 4 inches but not more than 5 inches (0. 10m by 0.12m) horizontal crossbar...”

From the National Collegiate Athletic Associations' (NCAA) *Rules for Soccer.*

“...and shall consist of two wooden or metal posts, . . .the width or diameter of the goal-posts and crossbar shall not be less than 4 inches (10.16 cm) nor more than 5 inches (12.7 cm).”

4. Design/Construction Guidelines

While a movable soccer goal appears to be a simple structure, a correctly designed goal is carefully constructed with counterbalancing measures incorporated into the product. The common dimensions of a full-size goal are approximately 7.3 m (24 ft.) in width by 2.4 m (8 ft.) in height and 1.8 m (6 ft.) in depth (see Figure 1). The stability of a soccer goal depends on several factors. One effective design alternative uses a counterbalancing strategy by lengthening the overall depth of the goal to effectively place more weight further from the goal's front posts (more weight at the back of the goal). A second design selects lightweight materials for the goal's front posts and crossbar and provides much heavier materials for the rear ground bar and frame members. This tends to counterbalance the forces working to tip the goal forward. Another design uses a heavy rear framework and folds flat when not in use, making the goal much less likely to tip over. Finally, after these various designs are considered, it is imperative that ALL movable soccer goals be anchored firmly in place at all times (see section 5).

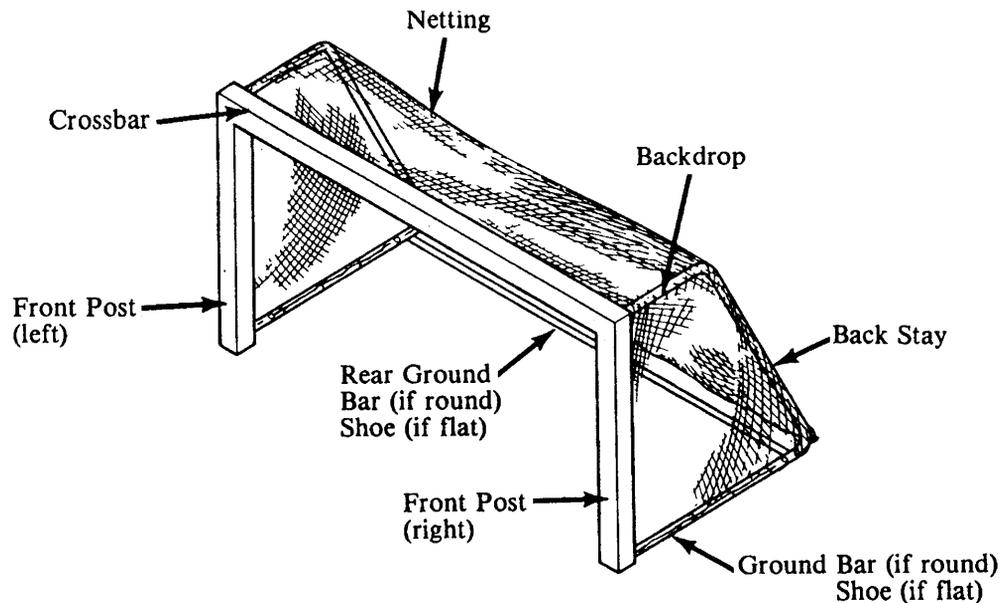


Figure 1: Components of a Movable Soccer Goal

5. Anchoring/Securing/Counterweighting Guidelines

A properly anchored/counterweighted movable soccer goal is much less likely to tip over. Remember to secure the goal to the ground (preferably at the rear of the goal), making sure the anchors are flush with the ground and clearly visible. It is **IMPERATIVE** that **ALL** movable soccer goals are always anchored properly (see Figure 2). There are several different ways to secure your soccer goal. The number and type of anchors to be used will depend on a number of factors, such as soil type, soil moisture content, and total goal weight.

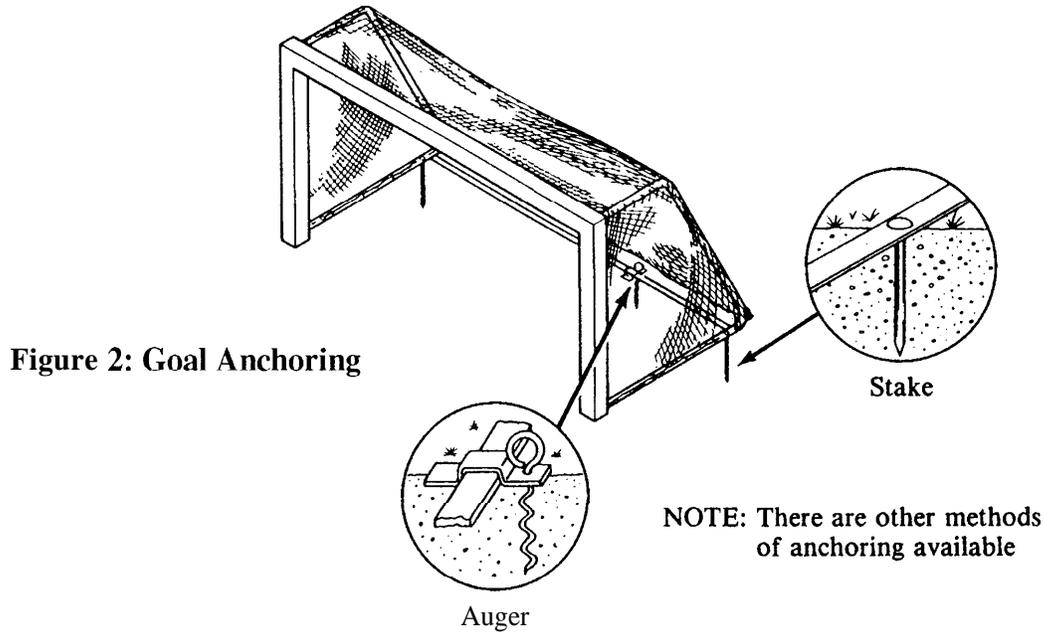


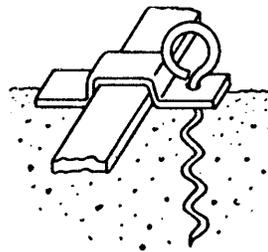
Figure 2: Goal Anchoring

Anchor Types

● Auger style

This style anchor is “helical” shaped and is screwed into the ground. A flange is positioned over the ground shoes (bar) and rear ground shoe (bar) to secure them to the ground. A minimum of two auger-style anchors (one on each side of the goal) are recommended. More may be required, depending on the manufacturer’s specifications, the weight of the goal, and soil conditions.

Figure 3.1: Auger Style Anchor



● **Semipermanent**

This anchor type is usually comprised of two or more functional components. The main support requires a permanently secured base that is buried underground. One type (3.2a) of semipermanent anchor connects the underground base to the soccer goal by means of 2 tethers. Another design (3.2b) utilizes a buried anchor tube with a threaded opening at ground level. The goal is positioned over the buried tube and the bolt is passed through the goal ground shoes (bar) and rear ground shoe (bar) and screwed into the threaded hole of the buried tube.

Figure 3.2a: Semipermanent Anchor

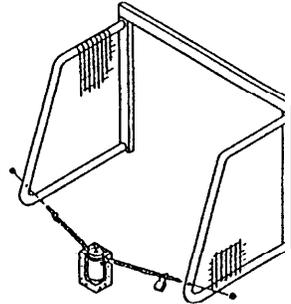
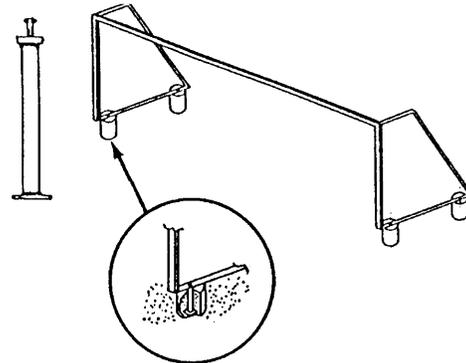


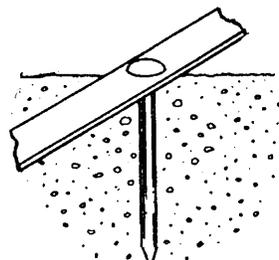
Figure 3.2b: Semipermanent Anchor



● **Peg or Stake style (varying lengths)**

Typically two to four pegs or stakes are used per goal (more for heavier goals) (Figure 3.3). The normal length of a peg or stake is approximately 10 inches (250mm). Care should be taken when installing pegs or stakes. Pegs or stakes should be driven into the ground with a sledge-hammer as far as possible and at an angle if possible, through available holes in the ground shoes (bar) and rear ground shoe (bar) to secure them to the ground. If the peg or stake is not flush with the ground, it should be clearly visible to persons playing near the soccer goal. Stakes with larger diameters or textured surfaces have greater holding capacity.

Figure 3.3: Peg or Stake Style Anchor



● **J-Hook Shaped Stake style**

This style is used when holes are not pre-drilled into the ground shoes (bars) or rear ground shoe (bar) of the goal. Similar to the peg or stake style, this anchor is hammered, at an angle if possible, directly into the earth. The curved (top) position of this anchor fits over the goal member to secure it to the ground (Figure 3.4). Typically, two to four stakes of this type are recommended (per goal), depending on stake structure, manufacturers specifications, weight of goal, and soil conditions. Stakes with larger diameters or textured surfaces have greater holding capacity.

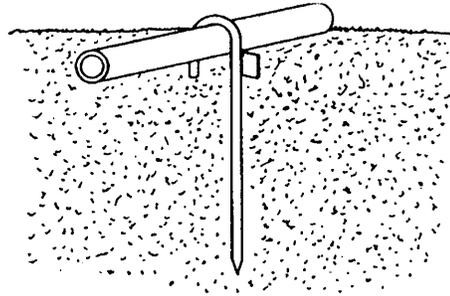
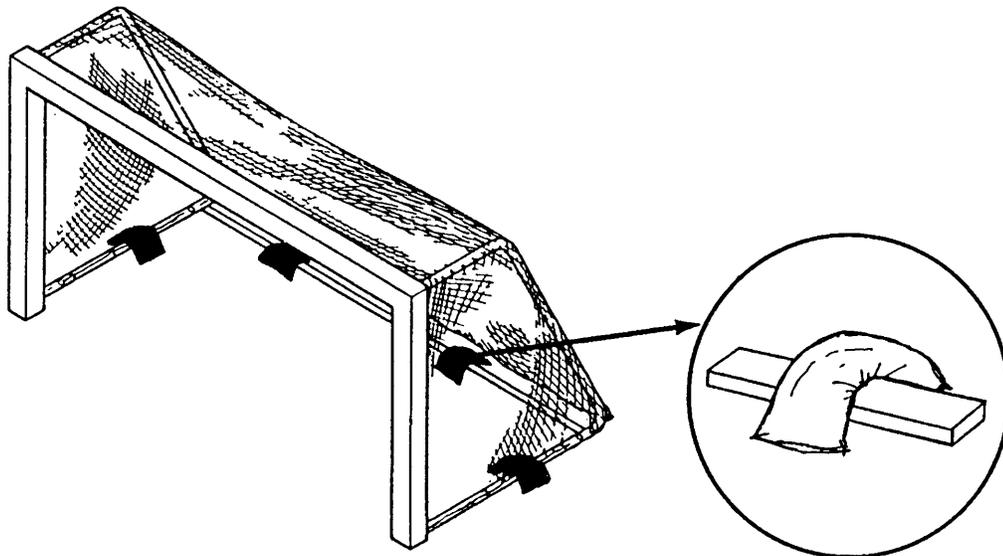


Figure 3.4: J-Hook Anchor

● **Sandbags/Counterweights**

Sandbags or other counterweights could be an effective alternative on hard surfaces, such as artificial turf, where the surface can not be penetrated by a conventional anchor (i. e., an indoor practice facility) (Figure 3.5). The number of bags or weights needed will vary and must be adequate for the size and total weight of the goal being supported.

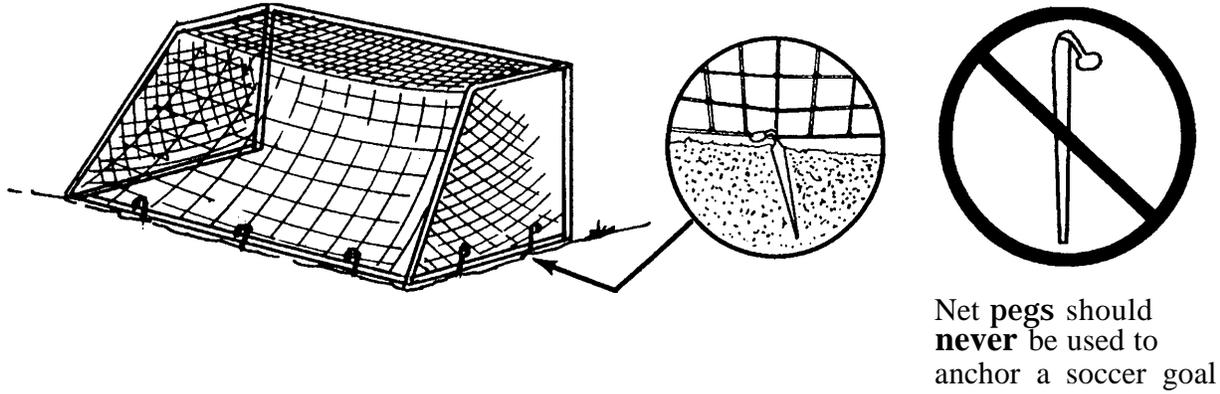


(Rear) Ground Bar/Shoe

Figure 3.5: Sandbag Method of Anchoring

● **Net Pegs**

These tapered, metal stakes should be used to secure only the NET to the ground (Figure 3.6). Net pegs should NOT be used to anchor the movable soccer goal.



Net pegs should **never** be used to anchor a soccer goal

Figure 3.6: Net Pegs

6. Guidelines for Goal Storage or Securing When Goal is Not in Use

The majority of the incidents investigated by CPSC did not occur during a soccer match. Most of the incidents occurred when the goals were unattended. Therefore, it is imperative that all goals are stored properly when not being used. When goals are not being used always:

- a) Remove the net,
- b) Take appropriate steps to secure goals such as:
 - 1) Place the goal frames face to face and secure them at each goalpost with a lock and chain (see Figure 4.1),

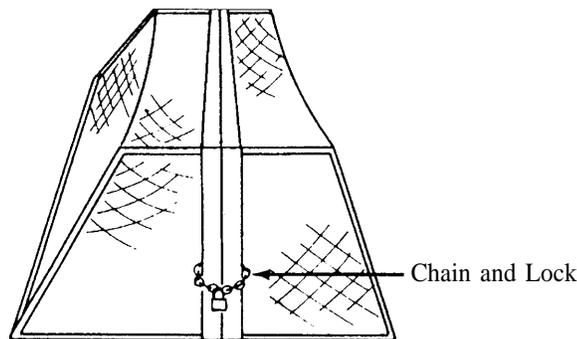


Figure 4.1: Join Goal Faces and Lock Together Using Chain and Lock

- 2) Lock and chain to a suitable fixed structure such as a permanent fence (see Figure 4.2),
- 3) Lock unused goals in a secure storage room after each use,
- 4) If applicable, fully disassemble the goals for seasonal storage, or
- 5) If applicable, fold the face of the goal down and lock it to its base.

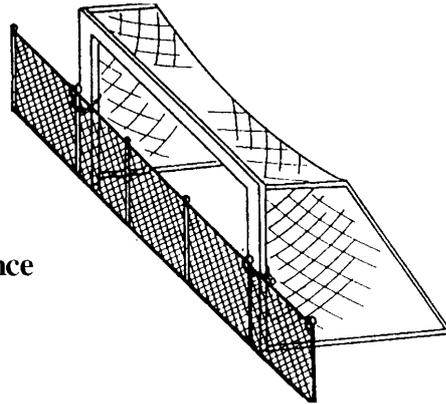


Figure 4.2: Attach Goal Face to Permanent Fence with a Chain Lock

7. Conclusions/Safety Tips

- Securely anchor or counterweight movable soccer goals at ALL times (see prior illustration).
- Anchor or chain one goal to another, to itself in a folded down position, or to nearby fence posts, dugouts, or any other similar sturdy fixture when not in use. If this is not practical, store movable soccer goals in a place where children cannot have access to them.
- Remove nets when goals are not in use.
- Check for structural integrity and proper connecting hardware before every use. Replace damaged or missing parts or fasteners immediately.
- NEVER allow anyone to climb on the net or goal framework.
- Ensure safety/warning labels (see Appendix C) are clearly visible (placed under the crossbar and on the sides of the down-posts at eye level).
- Fully disassemble goals for seasonal storage.
- Always exercise extreme caution when moving goals and allow adequate manpower to move goals of varied sizes and weights. Movable soccer goals should only be moved by authorized and trained personnel.
- Always instruct players on the safe handling of and potential dangers associated with movable soccer goals.
- Movable soccer goals should only be used on LEVEL (flat) fields.

Appendix A. List of Soccer Organizations

Federation of International De Football Association

Hitzigweg 11,8030
Zurich, Switzerland
Telephone 41-1-384-9595

National Federation of State High School Associations

11724 NW Plaza Circle
Box 20626
Kansas City, Missouri 64195-0626
Telephone (816) 464-5400

National Collegiate Athletic Association

6201 College Blvd
Overland Park, Kansas 66211-2422
Telephone (91 3) 339-1906

APPENDIX B. For Further Information

For further information on soccer goal anchors and/or to obtain **FREE** soccer goal warning labels (see Appendix C), safety alerts/bulletins and additional copies of this document, please contact:

The Coalition to Promote Soccer Goal Safety

c/o Soccer Industry Council of America
200 Castlewood Dr.
North Plain Beach, FL 33408

or call any of these Coalition members:

800-527-7510
800-334-4625
800-243-0533
800-531-4252

or write: U.S. Consumer Product Safety Commission
Washington, D.C. 20207

To report a dangerous product or a product-related injury, call CPSC'S toll-free hotline at (800) 638-2772 or CPSC'S teletypewriter at (800) 638-8270. Consumers can get recall information via Internet gopher services at cpsc.gov or report product hazards to info@cpsc.gov.

This document is in the public domain. It may be reproduced in part or in whole by an individual or organization without permission. If it is reproduced, however, the Commission would appreciate knowing how it is used. Write the U.S. Consumer Product Safety Commission, Office of Information and Public Affairs, Washington, D.C. 20207."

The U.S. Consumer Product Safety Commission (CPSC) is an independent regulatory agency charged with reducing unreasonable risks of injury associated with consumer products.

Appendix C. Warning Labels

! WARNING

ALWAYS ANCHOR GOAL

Unsecured Goal Can Fall Over
Causing Serious Injury or Death

! WARNING



Never climb or hang on goal.
Goal can fall over causing
serious injury or death.

! WARNING



NEVER CLIMB OR HANG ON GOAL

Goal Can Fall Over Causing
Serious Injury or Death

! WARNING

Always anchor goal.

Unsecured goal can fall over
causing serious injury or death.

Lighting Standards
of the
US Soccer Foundation

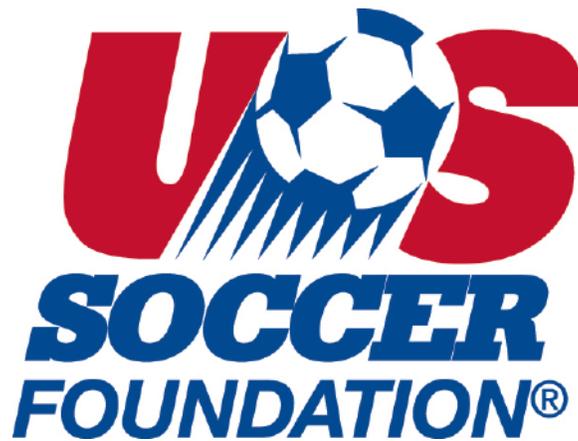


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Thanks to Musco Lighting for assisting in the development of these guidelines.

Lighting Guidelines

The following standards have been created for the United States Soccer Foundation by Musco Lighting. These standards apply to the lighting of soccer fields funded through the Foundation Grants Program and are strongly recommended as a reference for projects using the Resource Center as a guide.

Lighting athletic fields provides more opportunities for participants and allows increased family and community attendance at evening events. These standards incorporate the most current data available regarding the desired performance, lighting, electrical and structural issues that apply to installation of a safe, effective lighting system. Lighting technologies currently available vary greatly in efficiency, with the most effective providing life cycle savings equal to or greater than the initial cost of the system, depending on hours of usage.

The standards are divided into recommended minimums and desirable features. The minimums establish criteria important to safe conduct of soccer activities and include evaluation of operating costs over the expected life of the lighting system. Desirable features are established to give added values where appropriate for a your facility's needs.

With ever increasing pressure on operating budgets, leagues are encouraged to clearly establish the performance criteria they expect and to evaluate the life cycle operating cost of the sports lighting system.

I. Recommended Minimum Standards

These minimum standards are recommended for all lighting installations after the date of adoptions of these standards. Any modification in existing lighting systems after this date should be done so as to result in a lighting system in compliance with these standards. To be in compliance, a system must meet all recommended minimum standards. **Note:** The highest level of use for each facility shall determine the level of lighting required.

PART 1 – GENERAL

1.1 LIGHTING PERFORMANCE

The quantity of equipment needed is determined by the efficiency of the lighting system. Newest technology is capable of delivering equal or better results with up to half the amount of equipment than prior technology systems. There are two acceptable methods of determining the amount of equipment needed.

A. Preferred technology

By utilizing a series of timed power adjustments, a lighting system is able to provide “constant light levels” and greatly extend the life of the lamps. In addition, this generation of lighting has high performance optic characteristics that enable large reductions in the quantities of luminaires needed to meet design targets.

B. Prior technology

Computer designs are done using two sets of values. One predicts “initial light levels” when lamps are new. The other predicts “maintained light levels” after the lamps have passed through a depreciation in light output. It is important to have the lighting designer use a maintenance factor adequate to account for this depreciation in light output throughout the life of the lamp. A value no greater than .70 shall be applied to initial light levels to predict these maintained values. Quality manufacturers are willing to provide guarantees of lighting performance.

C. Performance Requirements

Playing surfaces shall be lit to an average constant or target light level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Measured average illumination level shall be +/- 10% of predicted mean in accordance with IESNA RP-6-01, and measured at the first 100 hours of operation.

Level of Play/Description	Average Constant or Target Light Levels (Horizontal)	Maximum to Minimum Uniformity Ratio
Standard — Competition No special spectator considerations	30 footcandles	2:1
Premium — Tournaments Up to 5,000 Spectators	50 footcandles	2:1
Professional — Stadiums* Special considerations	75+ footcandles	1.5:1 or better

* Professional facilities involve large spectator seating and/or televised events

D. Glare for Participants

To achieve placement of lights in positions that enhance playability, pole heights, pole locations and fixture placements should be as shown on the layouts in the appendix.

1.2 ENVIRONMENTAL LIGHT CONTROL

Many facilities are located near residential properties, creating the possibility of spill and glare onto adjoining properties. Consideration should be given to this issue during the initial lighting design stage to minimize this effect. Some communities are implementing ordinances designed to minimize light pollution. Contact your local planning committee or zoning board.

The lighting equipment manufacturer can assist in assessing this issue and provide drawings showing maximum footcandles at any points of concern on adjacent properties. Do not hesitate to investigate a manufacturer’s reputation, abilities and past experiences in working with local authorities and private property owners regarding glare and spill issues.

1.3 LIFE CYCLE COSTS

Facilities continue to struggle with operating budgets. Because the efficiency of lighting systems currently available can vary greatly, a life cycle operating cost analysis should be completed when evaluating lighting systems. Owners should expect a quality lighting system to last a minimum of 25 years.

These standards provide a Life Cycle Operating Cost Evaluation form to assist with the process. Items that should be included are energy consumption based upon the facilities expected usage, cost for spot relamping and maintenance, and any additional savings in energy or labor cost provided by automated on/off control systems.

Contract price and life cycle operating cost should both be considered in determining a lighting manufacturer for the project.

1.4 WARRANTY AND GUARANTEE

Product warranties are a good gauge of a manufacturer’s confidence in their products. Prior generation equipment can range from 5 years to 10 years, and details of covered items and conditions vary greatly. New generation technology comes with warranty periods of up to 25 years and includes guaranteed light levels, parts, labor, lamp replacements, energy usage, monitoring and control services, spill light control and structural integrity. The manufacturer should provide specially-funded reserves to assure fulfillment of the warranty for the full term. It is highly recommended you insist on these all inclusive warranties to limit your league’s future exposure to escalating costs and maintenance hassle.

PART 2 – PRODUCT

2.1 LIGHTING SYSTEM CONSTRUCTION

A lighting system should consist of lighting, electrical and structural components designed to work together as a system that is durable and provides safety features.

A. Outdoor lighting systems should consist of the following:

1. Galvanized steel poles and crossarm assembly. Wood poles or direct burial steel poles are not recommended.
2. Pre-stressed concrete base embedded in concrete backfill or a poured-in-place foundation containing reinforcing steel cured a minimum of 28 days before any stress load is applied.
3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
4. All ballasts and supporting electrical equipment shall be mounted remotely in aluminum enclosures approximately 10' above grade. The enclosures shall include ballast, capacitor and fusing for each luminaire. Safety disconnect per circuit for each pole structure will be located in the enclosure.
5. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

B. Manufacturing Requirements

All components should be designed and manufactured as a system. All luminaires, wire harnesses (if provided), ballast and other enclosures should be factory assembled, aimed, wired and tested for reduced installation time and trouble-free operation.

C. Durability

All exposed components should be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed steel should be hot dip galvanized per ASTM A123. All exposed hardware and fasteners should be stainless steel of at least 18-8 grade, passivated and polymer coated to prevent possible galvanic corrosion to adjoining metals. All exposed aluminum should be powder coated with high performance polyester. All exterior reflective inserts shall be anodized, coated with a clear, high gloss, durable fluorocarbon, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All wiring shall be enclosed within the crossarms, conduit, pole or electrical components enclosure.

D. Lightning Protection:

All outdoor structures shall be equipped with lightning protection meeting NFPA 780 standards.

E. Safety

All system components shall be UL Listed for the appropriate application.

F. Maximum total voltage drop

Voltage drop to the disconnect switch located on the poles should not exceed three (3) percent of the rated voltage per IESNA RP-6-01.

2.2 STRUCTURAL PARAMETERS

A. Location

Poles shall be located as shown on the drawings in the appendix to these standards. Whenever possible, poles should be located outside of fences to avoid causing an obstruction or safety hazard to the participants.

B. Foundation Strength

Project specific foundation drawings stamped by a licensed structural engineer illustrating that the foundation design is adequate to withstand the forces imposed from the pole, fixtures and other attachments to prevent the structure from leaning.

C. Support Structure Wind Load Strength

Poles and other support structures, brackets, arms, bases, anchorages and foundations shall be determined based on the 50 year mean recurrent isotach wind maps for the appropriate county per the State Building Code. Luminaire, visor, and crossarm shall withstand 150 mph winds and maintain luminaire aiming alignment.

D. Structural Design

The stress analysis and safety factor of the poles shall conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

E. Soil Conditions

The design criteria for these specifications are based on soil design parameters as outlined in the geotechnical report. If a geotechnical report is not provided by the school, the foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2001 IBC, Table 1804.2-I-A.

PART 3 – EXECUTION

3.1 FIELD QUALITY CONTROL

A. Illumination Measurements

Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, School's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA RP-6-01, Appendix B.

B. Correcting Non-Conformance

If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios and maximum kilowatt consumptions are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:

1. Manufacturer shall, at his expense, provide and install any necessary additional fixtures to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.
2. Manufacturer shall minimize the Owner's additional long term fixture maintenance and energy consumption costs created by the additional fixtures by reimbursing the Owner the amount of \$1,000.00 (one thousand dollars) for each additional fixture required.
3. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specifications.

3.2 ONGOING QUALITY ASSURANCE

A. Visual testing should be performed annually on lamps, lenses, conduit, poles, fuses, ballasts, grounding connections and breaker boxes to insure integrity and safety of system.

B. Full light and safety audits should be performed every other year. See Annual System Operation and Maintenance Checklist at the back of these standards.

II. Desirable Features

The following practices are recommended for increasing the lighting system performance.

4.1 TV Quality Lighting

Lighting for televised events involves additional considerations besides spectators and participants. It is recommended that leagues wishing to light facilities for television broadcasts use consultants and lighting manufacturers with experience and knowledge in that area.

4.2 Controls and Monitoring System

A remote controls and monitoring system will provide ease of operation and management for your facility. Manufacturers providing systems with a 25 year warranty will utilize this system to ensure your lighting performs as required.

A. Remote Monitoring

System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The manufacturer shall notify the owner of outages within 24 hours, or the next business day. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).

B. Remote Lighting Control

System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields, to only having permission to execute "early off" commands by phone.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

C. Management Tools

Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

D. Communication Costs

Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.

E. Cabinet Construction

Controls and Monitoring Cabinet shall be constructed of NEMA Type 4 aluminum. Cabinet shall contain custom configured contactor modules for 30, 60 and 100 amps, labeled to match field diagrams and electrical design. Manual Off-On-Auto selector switches shall be provided.

4.3 Auxiliary Brackets

Sports lighting manufacturers can provide accommodations for mounting auxiliary equipment such as speakers on sport lighting poles. This ensures poles will be sized to accommodate the weight, dimensions and EPA of the additional equipment. Brackets shall be welded to the pole and fabricated from hot-dip galvanized steel with a covered hand hole access and internal wiring in the pole.

4.4 Scoreboards

Incorporating scoreboards onto the lighting poles can provide additional cost savings over installing separate structures. Lighting manufacturers can assist in providing a method for attaching a scoreboard appropriate for the sport.

4.5 Field Perimeter Lighting

The parking areas, major areas utilized for passage, and areas immediately bordering the facilities should be lighted to an average of approximately 2 footcandles. Care should be taken to eliminate darkly shadowed areas.

For additional information, contact the U.S. Soccer Foundation

**U.S. Soccer Foundation
1050 17th St. NW
Suite 210
Washington, D.C. 20036
Phone: 202/872-9277**

LIFE CYCLE OPERATING COST EVALUATION

This form will assist you in comparing 25-year life cycle operating costs from multiple manufacturers. Bid proposals will be evaluated based upon compliance with the specifications, contract price and the following life cycle operating cost evaluation.

BID ALTERNATE A:

A.	Energy consumption ____ Number of luminaires x ____ kW demand per luminaire x ____ kW rate x ____ annual usage hours x 25 years		
B.	Demand charges, if applicable	+	
C.	Spot relamping and maintenance over 25 years Assume ____ repairs at \$ ____ each if not included	+	
D.	Group relamps during 25 years ____ annual usage hours x 25 years / <u>lamp replacement hours</u> x \$125 lamp & labor x number of fixtures	+	
E.	Extra energy used without control system ____% x Energy Consumption in item A.	+	
F.	Extra labor without control system \$ ____ per hour x ____ hours per on/off cycle x ____ cycles over 25 years	+	
G.	TOTAL 25-Year Life Cycle Operating Cost	=	

BID ALTERNATE B:

A.	Energy consumption ____ Number of luminaires x ____ kW demand per luminaire x ____ kW rate x ____ annual usage hours x 25 years		
B.	Demand charges, if applicable	+	
C.	Spot relamping and maintenance over 25 years Assume ____ repairs at \$ ____ each if not included	+	
D.	Group relamps during 25 years ____ annual usage hours x 25 years / <u>lamp replacement hours</u> x \$125 lamp & labor x number of fixtures	+	
E.	Extra energy used without control system ____% x Energy Consumption in item A.	+	
F.	Extra labor without control system \$ ____ per hour x ____ hours per on/off cycle x ____ cycles over 25 years	+	
G.	TOTAL 25-Year Life Cycle Operating Cost	=	

SUBMITTAL INFORMATION

Design Submittal Data Checklist and Certification

This form will assist you in comparing proposals from various lighting manufacturers. All items listed below are mandatory, shall comply with the specification and be submitted according to your pre-bid submittal requirements.

Included	Tab	Item	Description
	A	Letter/Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
	B	On Field Lighting Design	Lighting design drawing(s) showing: a. Field Name, date, file number, prepared by, and other pertinent data b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x & y), or home plate for baseball/softball fields. Illuminance levels at grid spacing specified c. Pole height, number of fixtures per pole, as well as luminaire information including wattage, lumens and optics d. Height of meter above field surface e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance and uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor. f. Manufacturers shall provide constant light level or provide both initial and maintained light scans using a maximum 0.70 Light Loss Factor to calculate maintained values.
	C	Off Field Lighting Design	Lighting design drawings showing spill light levels in footcandles as specified.
	D	Photometric Report (glare concerns only)	Provide photometric report for a typical luminaire used showing candela tabulations as defined by IESNA Publication LM-35-02. Photometric data shall be certified by laboratory with current National Voluntary Laboratory Accreditation Program or an independent testing facility with over 5 years experience.
	E	Life Cycle Cost calculation	Document life cycle cost calculations as defined on the Life Cycle Operating Cost Evaluation. Identify energy costs for operating the luminaires, maintenance cost for the system including spot lamp replacement, and group relamping costs. All costs should be based on 25 Years.
	F	Luminaire Aiming Summary	Document showing each luminaire's aiming angle and the poles on which the luminaries are mounted. Each aiming point shall identify the type of luminaire.
	G	Structural Calculations (if required)	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of Iowa.
	H	Control and Monitoring	Manufacturer shall provide written definition and schematics for automated control system to include monitoring. They will also provide examples of system reporting and access for numbers for personal contact to operate the system.
	I	Electrical distribution plans	If bidding an alternate system, manufacturer must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of Iowa.
	J	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed per the number of years specified.
	K	Warranty	Provide written warranty information including all terms and conditions.
	L	Project References	Manufacturer to provide a list of project references of similar products completed within the past three years.
	M	Product Information	Complete set of product brochures for all components, including a complete parts list and UL Listings.
	N	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications.
	O	Compliance	Manufacturer shall sign off that all requirements of the specifications have been met at that the manufacturer will be responsible for any future costs incurred to bring their equipment into compliance for all items not meeting specifications and not listed in item N – Non-Compliance

Manufacturer: _____

Signature: _____

Contact Name: _____

Date: ____/____/____

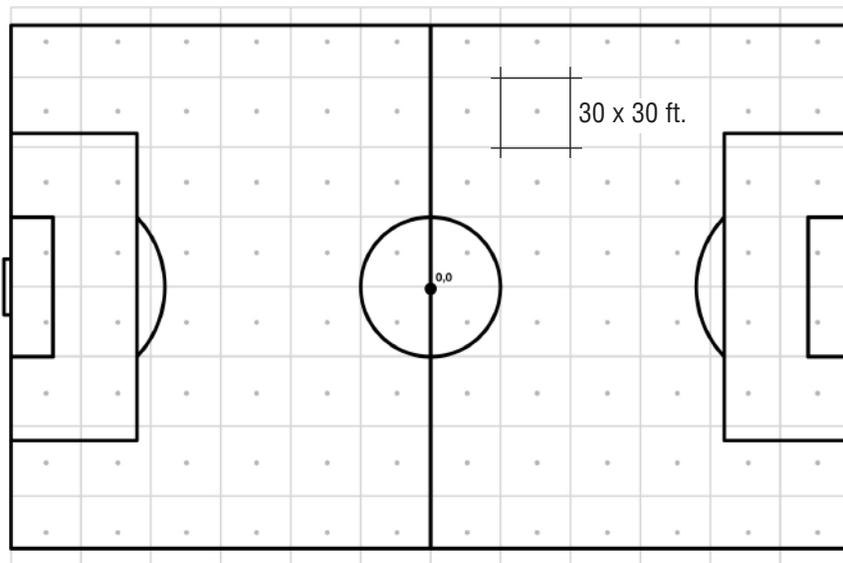
APPENDIX

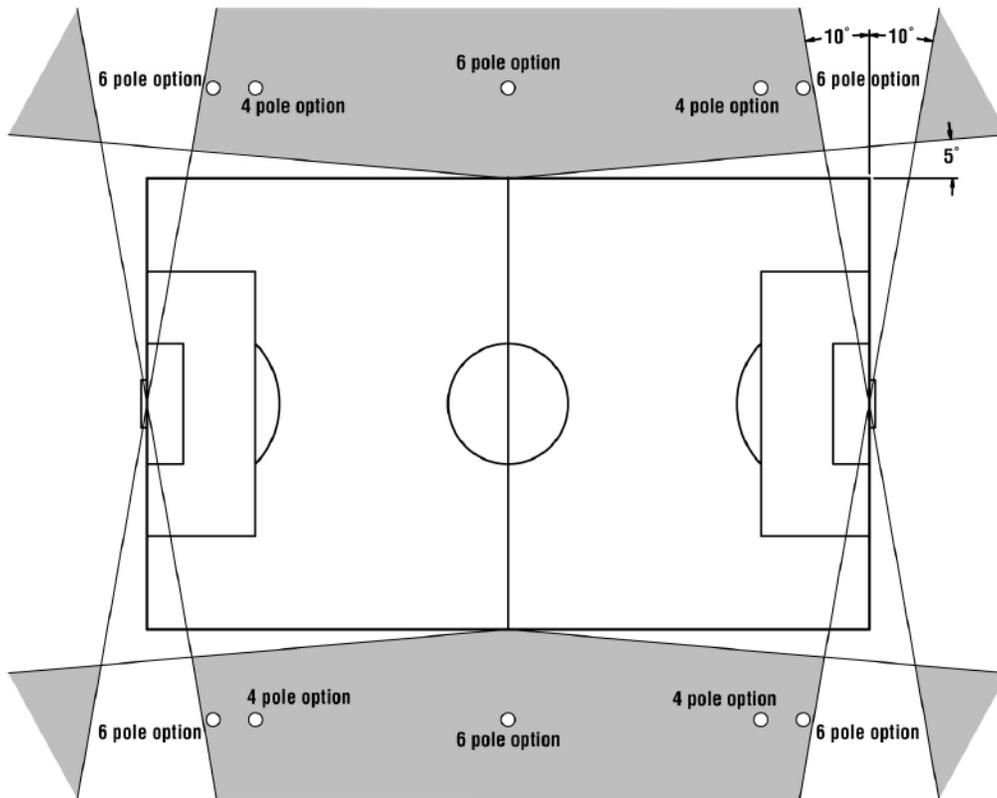
Field-Measuring Grids of Typical Facilities

Level of Play	Typical Facility Dimensions (ft ²)	Horizontal Footcandles Constant/Maintained	Uniformity (Max to Min)	Typical Lighted Area Dimensions (ft)	Grid Size (feet)
Standard	180 x 330	30	2.0:1	190 x 340	30 x 30
Premium	225 x 360	50	2.0:1	230 x 370	30 x 30
Professional*	225 x 360	75+	1.5:1	230 x 370	30 x 30

*Professional facilities may require special consideration in regard to television requirements and seating capacity.

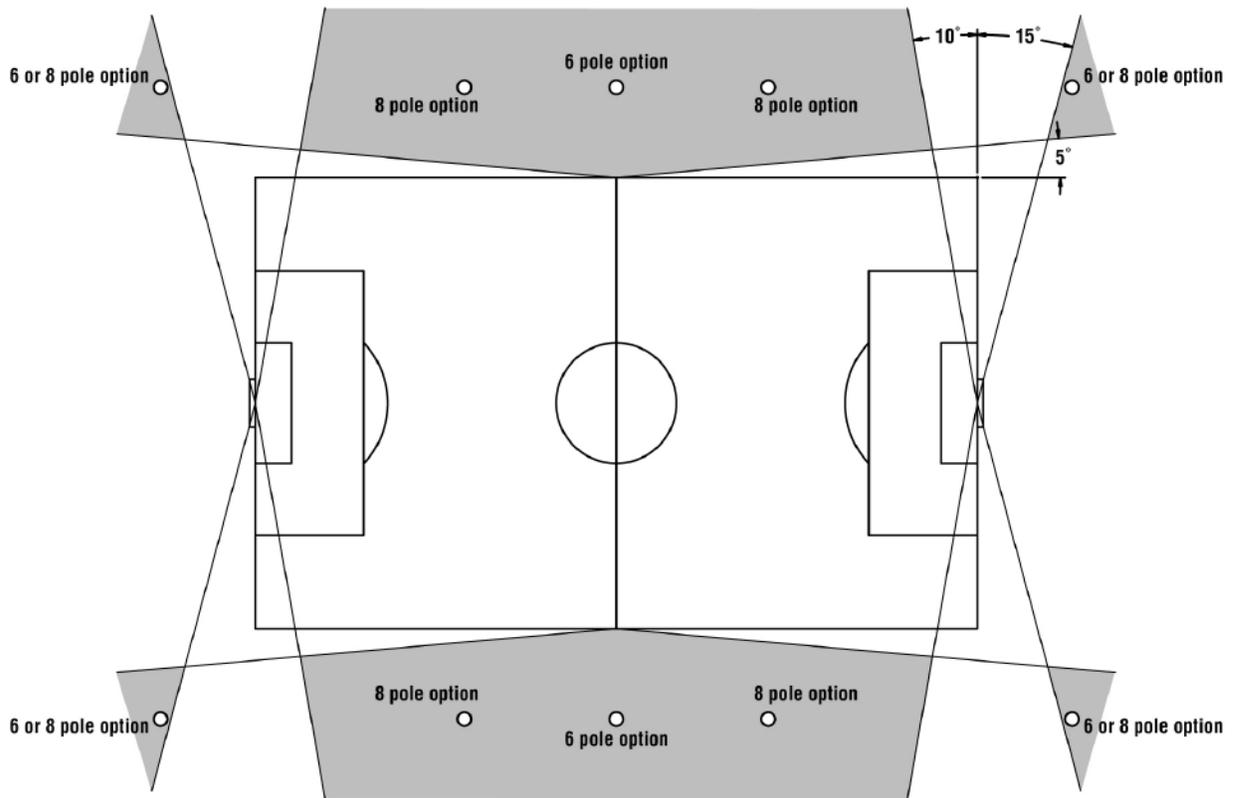
Light Level Grid Point Layout





4 to 6 Pole Configuration

1. Special consideration for lighting placement is given to stadiums with customized roof mount potential.
2. Shaded areas indicate recommended pole location. All poles should be at least 20 feet from sideline.
3. On a 4-pole design, poles should be located between the penalty line and the goal line.
4. On a 6-pole design, setback of middle poles will depend on the presence of bleachers.
5. Pole placement and aiming angles shall be designed to minimize glare for players and spectators.
6. For new facilities or upgrades, it is recommended to consult a lighting professional for optimal pole placement.



6 to 8 Pole Configuration

1. Special consideration for lighting placement is given to stadiums with customized roof mount potential.
2. Shaded areas indicate recommended pole location. All poles should be at least 20 feet from sideline.
3. Setback of middle poles will depend on the presence of bleachers.
4. Outside poles should be located beyond end line. Optimum placement for TV is 15 degrees or greater off the end line for an end camera.
5. Pole placement and aiming angles shall be designed to minimize glare for players, spectators and television cameras.
6. The ratio of key light to backlight main camera levels should be between 1:1 and 1.5:1. A ratio of 1:1 is preferred.
7. For new facilities or upgrades, it is recommended to consult a lighting professional for optimal pole placement.

ANNUAL SYSTEM OPERATION & MAINTENANCE CHECKLIST

Needs
OK Repair

Notes:

WARNING!! Turn off electricity at power source and at safety disconnect on the pole.

Service Entrance & Pole Distribution Boxes		
Check service panel for proper markings. • Emergency information should be visible.		
• Warning stickers, wiring diagrams, circuit labels and other servicing information signs should be posted and clearly legible.		
Test reset action on all service breakers. • Snap all breakers on and off several times to ensure firm contact. • If fuses are used at main service, check continuity.*		
Check the wiring. • Insulation around wiring should show no signs of deterioration. • Wiring should show no heat discoloration.		
Check all taped connections. • Signs of wear should be replaced.		
Make sure no live parts are exposed. • Bare wires and exposed connections should be wrapped with insulated covering.*		
Padlocks for service entrance & distribution boxes should be in place and operational.		
Poles		
Wood poles: Check to see that poles aren't leaning. • Leaning poles may be unsafe and replacement or re-installation and/or re-aiming may be necessary.		
Check for twisting. • If poles have moved, re-aiming of the fixtures may be necessary.		
Check for decay. • Wood poles decay from the inside out. Core testing is the best method to determine the condition and safety of the pole.		
Steel poles: Check baseplate for signs of deterioration. • Check anchor bolt for signs of corrosion. • Check grouting under pole to make sure proper drainage exists.		
Check for all pole access covers, replace missing covers.		
Cables and conduit: • Pull on conduit to check for looseness. • Check for loose fittings and damaged conduit. • All cables should be straight and properly strapped.* • If cables are exposed to the elements, make sure the insulation has the proper rating.*		
Check overhead wiring. • Wiring should be properly secured. • Check that new growth on tree branches and limbs won't obstruct or interfere with overhead wiring.		
Luminaires		
Check fixture housings. • Housings should show no sign of cracking and/or water leakage.		
Check lenses. • Clean lenses. • Replace broken lenses.		
Replace burned-out lamps.		
Check luminaire fuses. • Replace burned-out fuses. • Fuses should be the correct size.		
Insulation covering on wiring should show no signs of wear or cracking.		
Ground wire connections must be secure.		
Check around ballasts for signs of blackening.		
Check that capacitors aren't bulging.		
Check aiming alignment of all fixtures. • On wooden poles, see if crossarms are still aligned with the field and horizontal.		
Ground		
Check grounding connections.*		
Check nearby metal objects. • Make sure metal bleachers and other metal objects are located at least 6 feet from the electrical components. • Metal objects, such as bleachers, must have their own individual grounding system.		

* These tests and/or repairs require the services of a qualified electrician.

GLOSSARY

Aiming Angles	The degrees below horizontal that light fixtures are aimed at the field. Angles are measured from a horizontal plane at fixture height. Critical in safe, playable lighting design.
Ballast	A transformer that delivers the proper operating voltage for high intensity discharge type lamps including metal halide lamps.
Constant Light Levels	The amount of light you can expect on the field at any given time over the life of the system.
Footcandle	The measurement of light on a surface. One footcandle equals one lumen spread over one square foot.
Glare	Light that interferes with the ability to see. Luminaire design, proper aiming angles and pole locations are key to limiting glare for participants and spectators.
IESNA	Illuminating Engineering Society of North America. An organization that develops recommendations for sports lighting.
Initial Light Levels	The average light levels when your lamps are new. Manufacturers that do not provide constant illumination should provide scans showing what these levels will be.
Lumen	A quantity measurement of light, used mostly in measuring the amount of light a lamp develops.
Maintained Light Levels	The lowest average amount of light for which a lighting system should operate over its extended life to ensure performance requirements. Maintained values should be no more than 70% of initial values to be sure that lamp depreciation has been accounted for in the design. You should receive scans showing what this level will be.
Max. to Min. Ratio	The smoothness of light on the field. Also called uniformity ratio. A design criteria to assure that light is distributed evenly across the entire field. A max/min ratio of 2:1 means that the brightest point is no more than double any other point.
Metal Halide Lamp	A lamp that generates light by passing electrical current through metallic gases. The first choice for sports facilities because of efficiency and color.
NEC	National Electric Code. A national safety code for electrical systems, which is the basis for most local codes.
NEMA Type	A classification of reflectors. For example, a Nema 2 reflector gathers light in a narrow, focused beam allowing it to be projected a long distance. A Nema 5 projects light a relatively short distance in a very wide beam. Most lighting designs use various combinations of Nema types to get the desired results.
NFPA	National Fire Protection Association. An organization that establishes and publishes various codes such as the Lightning Protection Code and the National Electric Code.

Overturning Moment	The amount of force applied to a lighting structure, mostly from wind. Pole foundations must be designed to withstand this force.
Reflector	Key element of lighting optics. It surrounds the lamp (bulb) and directs light to the field. The efficiency of the reflector determines how many light fixtures you have to buy and maintain.
Remote Electrical Enclosure	A weatherproof enclosure that allows the heavy electrical gear to be moved from the top of lighting structures to a lower point where they can be serviced easily.
Smoothness	The change in light levels between measuring points. The less change between points the more even the lighting.
Spill Light	Wasted light that falls off the field or is projected into the sky. Systems that can re-direct spill light back onto the field save dollars and keep neighbors content.
Tilt Factor	Most lamps generate fewer lumens when tilted off of either a horizontal or vertical position. Your design should show actual tilt factor used in your design.
Underwriters Laboratories (UL)	Independent, not for profit, product safety testing and certification organization. Visit www.ul.org for additional information.



The greatest turf on earth.®

A large, stylized question mark graphic that is filled with a close-up image of green grass blades. The question mark is positioned on the left side of the page, with its stem extending downwards.

QUESTIONS TO ASK YOUR TURF VENDOR



QUESTIONS TO ASK YOUR TURF VENDOR

1. Where is your turf made?
2. Do you own and operate your own manufacturing facility?
3. What type of yarn do you offer and do you have any test results for durability?
4. Do you offer monofilament yarn?
5. Is your monofilament yarn of the type that has a 'memory' or is it a simple flat tape?
6. How do you attach seams?
7. How old is your oldest field?
8. What is its condition?
9. Has your company done any safety testing?
10. Can you send me your test reports?
11. Do you use ambient or cryogenic rubber granules?
12. What is your recommended infill composition and weight?
13. What is your estimated G-Max level throughout the life of the field?
14. If we run a D&B on you what will we find?
15. Will you provide us with audited company financials?
16. Are your installers certified?
17. How many full time employess do you have? Tell me about your operations structure.
18. How many North American fields did you complete in 2004, 2005 and 2006?
19. What design components in your product were created to ensure efficient drainage?
20. Can you design and complete our project from start to finish?
21. How many NFL teams use your product?
22. How many NCAA teams use your product?
23. Is your product FIFA Recommended?
24. How many installations has your company completed?
25. What quality control measures does your company have in place?
26. How do you install inlaid markings (Logos, Numbers, Hash Marks)?

WARRANTY QUESTIONS

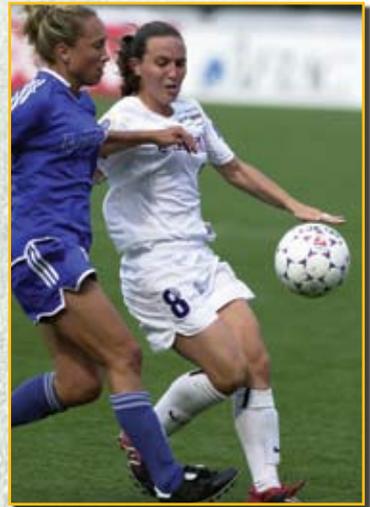
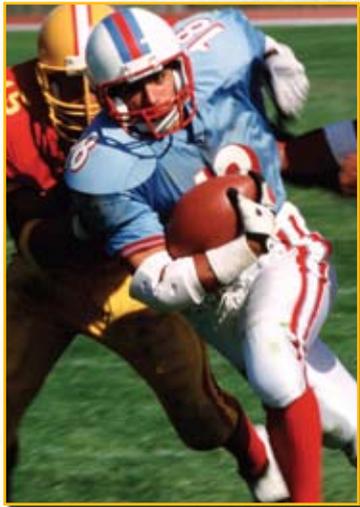


TO ASK YOUR TURF VENDOR

1. Does your company have an insured warranty?
2. Can we see a copy of the policy?
3. Who is the policy made out to?
4. Is the insurance company AM Best Rated?
5. What is the insurance company's rating by AM Best?
6. Is there a maximum amount per any single claim?
7. Is there a deductible or retention amount per claim?
8. What is the yearly aggregate claim maximum?
9. Does the policy require reporting of each field to insurer for coverage to apply?
10. Is the customer covered if your company fails or forgets to report the installation?
11. Are all fields covered, regardless when they were installed?
12. Is every new installation covered, automatically?
13. Are all old fields covered?
14. Can claims from uncovered old fields affect your company's ability to protect its current customers?
15. Does insurance coverage continue in the event of bankruptcy of your company?
16. Does insurance coverage continue if your company ceases operations without a bankruptcy?
17. Does the insurance policy respond to any product defect (as opposed to protecting only the warranty)?
18. Is the coverage prepaid for 8 years?
19. How much premium does your company pay per sq. ft.?
20. Does your company have an "in trust" cash balance, frozen to cover possible repair work?
21. How much has your company already frozen, set aside to cover possible repair work?
22. Have you already invested in prepaid protection for your customers?

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SAFETY STARTS
AT THE TOP!

KWIKGOAL.COM/SAFETYFIRST

IN AN EFFORT TO PROVIDE CONTINUING GOAL SAFETY EDUCATION to the soccer community at large, Kwik Goal has produced the following Soccer Goal Safety Reminder. This guide is based, in large part, on the CPSC document "Guidelines For Movable Soccer Goal Safety".

We encourage the many volunteer coaches, administrators, and parents to use this pamphlet as a reminder to practice pre-match goal safety inspections. We also encourage all organizations that own or use soccer goals to implement a post-match safety plan (page 7) to ensure goals are secure after organized play has concluded. Most importantly, take a few minutes to discuss this issue with your players. All age groups need to understand the dangers of climbing on any soccer goal.

Please visit www.kwikgoal.com/safetyfirst for more information on soccer goal safety and for soccer goal safety stickers.

Duplication of this document is encouraged.



This document is intended to provide basic soccer goal safety information and is not all inclusive. While following the concepts in this booklet will ensure that your soccer goal is safer, it may not prevent all accidents.

MYTH vs FACT

MYTH: The majority of soccer goal related injuries occur during matches or training.

FACT: Most soccer goal related injuries occur when organized soccer playing is over, either during the transport of goals, when goals are being used for unapproved purposes, or during pick-up soccer.

MYTH: Heavier soccer goals need not be anchored because of their inherent difficulty in moving.

FACT: Any unanchored goal can be tipped with catastrophic results.

MYTH: Home-made goals that match manufacturer's designs or styles will act as a suitable replacement for professionally manufactured goals.

FACT: The CPSC reports a large majority of goals involved in fatal or serious tip-over accidents involve "home-made" goals made by shop classes, custodial staff, or local welders not fully aware of proper anchoring techniques and safe counter balancing goal designs.

MYTH: Soccer goals will not tip unless moved or climbed upon.

FACT: Unanchored portable, lightweight goals are capable of tipping during high wind conditions, especially with nets affixed to the frame. All goals should be anchored when they are in an upright position.

MYTH: Once a goal is anchored, it is considered secure.

FACT: Unless a goal is anchored in a permanent/semi-permanent manner (ground sleeves or anchors in cement), it should be secured after soccer play is finished by locking goals face to face, locking goals to a permanent structure, or folding goals onto the ground.

MYTH: Padded goals will reduce injury when a goal tips over.

FACT: Padding will not protect a person from injury when a goal tips over.

NATURAL TURF GOAL ANCHORING SYSTEMS

When soccer goals are used on natural turf (grass), the anchoring system options are various. From anchors that are cemented into the ground, to anchors that are driven into the ground with a hammer, the consumer has the capability to obtain and utilize the anchoring system that best fits their needs.

SEMI-PERMANENT GROUND ANCHORS

Soccer goal anchors are considered semi-permanent when the base of the anchor is cemented into the ground. The goal is then placed in position according to the system, then either a bolt or a leash system is used to secure the goal to the anchor.

Another type of semi-permanent anchor is a ground sleeve that is cemented into the ground. An extended goal post will then slide into the sleeve, anchoring the goal itself into the ground.

PORTABLE GROUND ANCHORS (BELOW GROUND)

When deciding on a portable ground anchor, it is important to know the characteristics of the soil where the soccer goals are located. The quality of support offered by an anchor peg or auger anchor will be determined by the soil.

HARD TO NORMAL SURFACE:

Ground anchor pegs are one of the better options for goals being anchored to a surface that is hard or considered normal. In many areas, a 12" peg is sufficient, because the ground can become solid after 1 foot. If the soil below the surface is a little softer, then a 16" peg can be used.

SOFT SURFACE:

The 16" ground anchor peg or a portable auger anchor can be used on softer surfaces. The cork-screw design of an auger anchor will be able to grip the soft soil effectively, while the 16" ground anchor peg will provide an extra few inches of anchoring capability.

PORTABLE GROUND ANCHORS (ABOVE GROUND)

The two main options for anchoring soccer goals with above ground anchors are anchor bags or anchor weights. The minimum weight for anchoring soccer goals will vary, so checking with the manufacturer of the goal being secured for proper weight recommendations is essential. The weight amounts will also vary depending on the placement location of the anchors on the goal frame.

When using anchor bags or anchor weights, please note that the anchors should be placed behind both the posts and/or by the back corners of the goal frame.

All soccer goal anchors should be inspected for damage and installation integrity on a regular basis. Any damaged anchor should be replaced immediately.

ARTIFICIAL SURFACE GOAL ANCHORING

With the influx of artificial surfaces being used, many questions have been raised about anchoring soccer goals to these fields. While there are not many options at the present time, the few that exist are effective.

INSTALLING ANCHORS BEFORE THE TURF

Several of the soccer goal anchor styles require a ground sleeve or a large portion of the anchor to be set in cement below the surface. During the process of an artificial surface installation, the general consensus is that any anchor to be cemented into the ground needs to be done before the final surface is in place. By installing the anchor before the turf, the turf manufacturer/installer is able to properly design the turf so that any posts or hardware can go through a small space in the turf and into its anchor. Therefore, the turf will not be compromised by being cut. We recommend that you discuss anchor installation with the turf installer during the planning stages of the project.

ANCHOR OPTIONS AFTER THE TURF IS INSTALLED

Once the artificial surface is in place, it is very difficult to put anything below the surface. Therefore, goal anchor options are reduced. At the present time, anchor bags or steel anchor weights, which will anchor the goals on top of the surface, are the best goal anchoring options.



10B2601 Steel Anchor Weight



10B1601 Anchor Bag



10B2001 Chain Anchor System



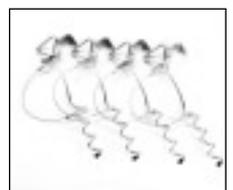
10B1901 Permanent Ground Anchor Pegs



10B101 Ground Anchors



10B114 Ground Anchor Pegs

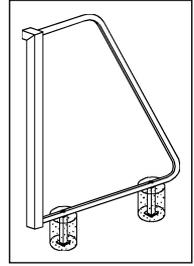


10B1101 Portable Auger Anchors

PRE-MATCH SUGGESTIONS



Is the goal firmly secured to the ground with anchors?



Is all connecting hardware (nuts, bolts, etc.) in place and secure?



Has the structural integrity of the goal been compromised (cracks in welds or posts, etc.)?



Is the goal on a level (flat) surface?



Check the net attachment system. If the attachments are anything other than Velcro or Net Clips, are there sharp edges?



POST-MATCH SUGGESTIONS



If goals are to remain in the up-right position, make sure they are secured with ground anchors.



If anchored with portable style anchors, goals should be stored by being chained together face-to-face, or placed in a face-down position.



Remove the net when the goal is not in use.



Make sure that all connecting hardware (nuts, bolts, etc.) are in place and secure.



Check the structural integrity of the goal.



Never allow anyone to climb on the goals.



If goals are to be moved, exercise extreme caution and allow adequate manpower to move the goals.



Are warning labels visible and in good condition?



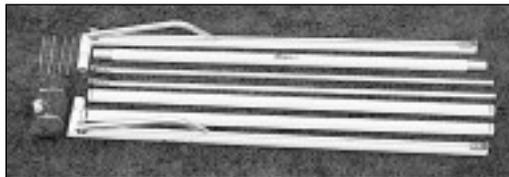
▲WARNING

ALWAYS ANCHOR GOAL.
Unsecured goal can fall over
causing serious injury or death.

POST-SEASON SUGGESTIONS



When the soccer season is complete, consider fully disassembling goals and storing them in the proper facilities.



REFERENCES

For further information on soccer goal safety and soccer goal performance standards, please reference the following resources:

U.S. CONSUMER PRODUCT SAFETY COMMISSION: www.cpsc.gov

Document numbers:

326 - Guidelines For Movable Soccer Goal safety

5118 - Movable Soccer Goals Can Fall Over On Children

ASTM: www.astm.org

F1938-98 Guide For Safe Use of Movable Soccer Goals

ASTM: www.astm.org

F2056-00 Safety and Performance Specification for Soccer Goals

THE FA: www.thefa.com

Goals for Football Technical Details

THE FA: www.thefa.com

Goals for Football Guidance Notes



A WARNING

This goal should be securely anchored at all times. • This goal is not to be stored or used on a slope or hill area. • Check that all fastenings are fully tightened before using this product. • Check fastenings periodically after using goal. • Goal shall be secured against tilting at all times. • Do not climb on net or framework.

Warning labels provide important safety information regarding proper anchoring, usage, and storage of goals and should be displayed at all times.

Making the game safer is everyone's responsibility.

Take time to understand the importance of goal safety.

Many goals currently in use could pose a potentially serious threat. Unstable and unanchored goals can tip over on those who climb or hang from crossbars, resulting in serious—even fatal—injury. To reduce the risk of accidents, greater awareness of goal safety is required, as suggested in guidelines established by the U.S. Consumer Product Safety Commission.

As a coach, administrator, or parent, you can play a key role in promoting and enforcing this awareness. Confirm that your organization's goals meet proper safety standards. Abide by all warning labels. Follow the usage, maintenance, moving, and storage instructions supplied with your goals. And teach your players to do the same.

Share the responsibility of making goal safety a priority. Because safety starts at the top—with you.

For more information and a free handbook on goal safety, please visit us online: www.kwikgoal.com/safetylist

Examples of some typical anchoring systems include weighted anchor legs, steel anchor weights, and portable anchor posts. Installed and maintained properly, they will provide a safe and secure goal.



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CLOUGH HARBOUR & ASSOCIATES LLP

MEMO

November 17, 2005

To: United States Soccer Foundation

**RE: COMPARATIVE ANALYSIS – NATURAL TURF VS. INFILLED
SYNTHETIC TURF FOR A NEW SOCCER FIELD**

Please find a series of analyses designed to weigh the various performance characteristics of a natural turf playing surface vs. an infilled synthetic turf playing surface specifically related to the proposed soccer field. Factors to consider when performing a comparison of this type include cost (both initial installation and maintenance), programmed usage requirements, climate, and safety. Additionally, we've added a brief system description for both a typical natural turf playing field and a typical unfilled synthetic turf playing field in an effort to clarify the comparison.

Natural Turf Playing Field System

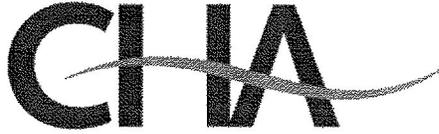
A typical natural turf playing field system would involve a native topsoil base, crowned at the center to facilitate surface drainage. The playing surface would likely be composed of a seeded or sodded turf that would ideally be irrigated with an automatic irrigation system. Initial installation cost for a field of this type will likely range from \$250,000 to \$300,000. A field of this type can be upgraded to include a sand base and associated under-drainage system designed to aggressively drain water vertically through the field, making the playing field usable a short time after a substantial rain event. Inclusion of a sand base and under-drainage system will extend the window of playability for the field while increasing initial installation cost to the \$475,000 to \$550,000 range.

Infilled Synthetic Turf Playing Field System

A typical infilled synthetic turf playing field system would involve a drain-through granular stone base and integral under-drainage system laid over a compacted native soil base. Over top the granular base, a carpet system composed of 2-1/2" length polyethylene synthetic grass blades woven into a urethane backing is placed. Over top the carpet system, a 1-1/2" depth layer of ground rubber and sand infill is placed. The infill layer comprises the playing surface for the field. Initial installation cost for a field of this type will likely range from \$650,000 to \$750,000.

Installation & Maintenance Costs

Initial installation cost for a natural turf field will likely be less than that of an infilled synthetic field as indicated above. However, this cost may be offset over time by the substantial savings realized by the dramatic reduction in life cycle maintenance costs inherent with an infilled synthetic field. Day-to-day maintenance (mowing, fertilization, aeration, etc.) required for a natural turf field, coupled with intermittent repairs to the field (re-sodding/re-seeding, irrigation system) can often total \$30,000 or more per year. While infilled synthetic turf fields are not maintenance free, they usually require intermittent grooming only, and are generally exempt from the day-to-day maintenance operations inherent with a natural turf playing field. A reasonable yearly maintenance budget to consider for an infilled synthetic turf field should fall in the \$5,000 range.



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Programmed Usage

A new soccer field will likely be subject to significant usage demands. The high demand will be additionally compounded by the fact that the playing field will likely be lit, thus subjecting the field to even more use than would normally be anticipated.

Natural turf playing fields often fall into disrepair quickly when subject to intensive use, due to the fact that the grass tissue simply isn't allowed adequate time to repair itself after subjection to the inevitable wear brought forth by intensive play. Additionally, the playing surface may be subject to excessive compaction, resulting in a hard, unforgiving surface. Consequently, a natural turf field may be required to be taken out of use during peak times in the recreation season to allow the field to "rest", and to allow for intensive maintenance operations designed to repair grass and alleviate compaction. It's reasonable to assume that a natural turf field will only be available for play 20-30 hours a week during the season of play (assumed to span late April through late October) in an effort to maintain the surface at an acceptable level of quality. Additionally, it's reasonable to assume that the field will need to be taken out of commission for up to 4 weeks in the heart of the summer for intensive repair and reconditioning, leaving approximately 22 weeks a year for play. This being the case, a natural turf playing field will likely be available for play for approximately 550 hours per playing season.

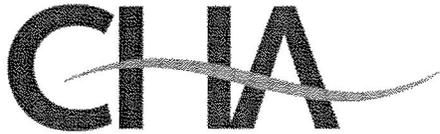
Infilled synthetic turf fields tend to alleviate these problems, as the durability and resistance to compaction of the playing surface is such that excessive wear should never become an issue. Infilled synthetic turf fields can be subject to limitless play over their lifespan (estimated 8-10 years) with little or no repair required assuming that the initial installation is performed properly. Assuming a late April through late October season of play, the field will ideally be available 26 weeks a year (no 4 week rest period required as with natural turf). Due to the fact that excessive wear is not an issue and that the field will be lit, the field will be available for play approximately 85 hours per week (subject only to restrictions/park hours). This being the case, an infilled synthetic turf field will likely be available for play approximately 2200 hours per playing season.

Climate

The climate plays a larger role in the success of a natural turf playing field. Low temperatures create a shortened growing season that makes it difficult to maintain a healthy stand of sports turf when subjected to the inevitable wear that will ensue on a playing field of this type. An actively growing stand of grass throughout the playing season is a must if the field is to repair itself from the damage brought forth by excessive play. Being that the grass will likely be dormant through much of the playing season, the damage will likely continue to compound until little if any grass is left at the end of the playing season. Infilled synthetic turf offers none of these limitations, as the field will remain playable in virtually all weather conditions, with the exception of heavy snow or rain.

Safety

Safety is and should be the primary concern for all playing fields, especially at the recreation level. Maintaining a safe natural turf playing surface is a difficult challenge, primarily due to the factors already mentioned. Poor turf health and an overly compact & unstable playing surface will likely enhance the risk of injury to those playing on the field. Due to the fact that infilled synthetic turf fields are typically immune to the factors that can serve to make a playing field unsafe, the risk of serious injury will likely be reduced significantly with an infilled synthetic turf field.



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Summary

Based on the analysis prepared herein, most heavily utilized soccer fields would make an ideal candidate for an infilled synthetic turf soccer field. If one were to consider the total cost of a natural turf playing field over a 10 year period – initial installation cost (\$250,000 - \$300,000) coupled with aggregate maintenance costs (10 years X \$30,000) – a total cost of \$555,000 - \$600,000 is arrived at. Considering that the field will be available for play approximately 5500 hours over the same 10 year period, this yields a cost of approximately \$100 - \$110 per play hour. Conversely, if one were to consider the total cost of an infilled synthetic turf field over a 10 year period – initial installation cost (\$650,000 - \$750,000) coupled with aggregate maintenance costs (10 years X \$5,000) – a cost of \$700,000 - \$800,000 is arrived at. Considering that the field will be available 22,000 over the same 10 year period, this yields a cost of approximately \$30 - \$35 per play hour, representing a significant savings over a natural turf playing field.

It certainly appears that a strong case can be made for the construction of an infilled synthetic turf soccer field that has the potential for extensive usage.

Clough Harbour Sports,
a Division of Clough Harbour Associates, LLP



A series of 20 horizontal black lines, evenly spaced, providing a template for handwritten notes.

Professional Turf Manager's Guide to

Efficient Irrigation Practices and Equipment



Hunter[®]
The Irrigation Innovators

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The information in this booklet was excerpted from Sportsfields: A Manual for Design, Construction and Maintenance, by James Pulballa, Jeffrey Krans, PhD, and Michael Goatley, PhD. Ann Arbor Press, Ann Arbor, Michigan, 1998. The Manual's chapter on Irrigation was written by Donald J. Turner, professional education manager, Hunter Industries.

Introduction

Professional turf managers for parks, public areas and sports fields are constantly concerned about how their fields look and whether or not they are safe. Playable green turf with minimal risks is the goal of any field manager, and proper irrigation is one of the key elements in reaching that goal.

In this booklet, we will consider the role of irrigation in the Integrated Cultural Management of a turf site. As we review the subject of irrigation, it is important that we distinguish between “irrigation” as a general process and “installed irrigation systems” as one way to accomplish that process. A field can be irrigated in a number of ways; an installed irrigation system is one. We will briefly discuss some of the other irrigation methods in wide use in North America, but the bulk of our discussion will focus on installed irrigation systems, which are by far the most efficient and effective in promoting healthy turfgrass.

Irrigation and Turfgrass Culture

Strong, healthy turf will hold up better under the stress of sporting and other events, and adequate irrigation is critical to promoting that healthy turfgrass culture. Proper irrigation ensures deep and healthy roots, and helps the turf recover quickly from the damage inflicted by competition and other activities. Poorly irrigated sports fields, for example, may fail to recover from any substantial damage, and may become unplayable before the end of a season.

A healthy, properly watered turf will have fewer weeds and insects, reducing the need for fertilizer and pesticide applications. These reduced applications mean lower maintenance costs. Healthy turfgrass culture can have other cost advantages as well, including reduced water usage. When all of the potential savings are tabulated, it becomes increasingly apparent that a properly designed, installed, and maintained irrigation system, combined with a well thought-out watering schedule, can both reduce operating costs and contribute to a healthy turf. Even more important, well-irrigated turf promotes public

safety because it is softer and more uniform. Greener, more visually appealing fields also enhance community spirit and team pride – both among the players and among the team that maintains the facility.

General Principles of Turfgrass Irrigation

Among professional turf managers, the principle of “deep and infrequent” watering remains the norm. While this practice is generally an effective tactic, the physical soil properties must also be considered in planning any watering program. Obviously, a clay soil will not accept as much water as a sandy soil, and will require lighter,



more frequent irrigation. Consideration must also be given to scheduled field usage; heavy irrigation a few hours before a game or public event can result in slippery and even dangerous conditions.

Most turfgrasses, including overseeded bermuda grass, need as much as 1½ to 2 inches of water per week during the growing season to support turf growth. This could come either from rainfall or from supplemental irrigation. If the turf is not receiving enough moisture it will “tell” an attentive manager when it needs watering. Signs like leaf rolling and wilting, sustained foot-printing (failure

A SAFE GREEN FIELD IS THE GOAL OF ANY TURF MANAGER, AND PROPER IRRIGATION IS ONE OF THE KEY ELEMENTS IN REACHING THAT GOAL.

INSTALLED AUTOMATIC IRRIGATION SYSTEMS ARE BY FAR THE MOST EFFICIENT AND EFFECTIVE METHOD TO PROMOTE HEALTHY TURFGRASS.

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of the turf to spring back quickly after foot or vehicular traffic), and a change in turf to a blue-green color are all characteristic of desiccation or excessive dryness.

The best time to irrigate turf is in the early morning hours, just prior to or just after sunrise. Early morning irrigation does not interfere with play in most situations, and serves to minimize the period of leaf surface wetness. Reducing the time the turf leaves stay wet is an effective way to reduce disease incidence. Early morning irrigation also tends to get more water into the soil for plant use, since evaporation rates at that time of day are minimal. Also, wind disruption of the irrigation pattern is of less concern in the early morning hours. Finally, early morning irrigation usually allows for adequate field drying before a public event or athletic competition, so use can proceed without a slippery surface.

Portable Irrigation Systems

Portable irrigation systems are those which move around the field, either transported by the staff or moving under their own power. Although these systems were once used on many fields, they cannot be considered as efficient as installed systems.

TRAVELING IRRIGATORS

This system consists of a rotating sprinkler attached to a hose, propelling itself along a wire. The sprinkler winds itself along the wire using water pressure to drive an internal winch mechanism. When the traveling irrigator reaches the end of the wire, it turns itself off. The wire then needs to be reset to a new location and the sprinkler moved to the new line. Traveling irrigators require a considerable amount of labor to continually move the equipment, and must be actively supervised by the staff to ensure uniform and adequate irrigation.

Watering is usually restricted to the daytime hours, since traveling equipment is vulnerable to vandalism (or even theft) if left out at night or unattended.

Irrigating with portable equipment, therefore, can often interfere with the park or sports field's usage, reducing the hours available for sporting events or other public activities.

QUICK COUPLER SYSTEMS

These systems are comprised of a series of underground pipes with quick couplers (sometimes called "quick connects") permanently installed flush with the ground. (City water systems usually provide all the water pressure required to operate the system, but where pressure is low, booster pumps may be used.) The valves on these systems are constructed so that a special connecting device, known as a "quick coupler key," must be utilized to turn them on. Hoses or sprinklers can then be attached directly to the system.

Like traveling irrigators, quick coupler systems have many disadvantages. In order to irrigate an area, hoses must be dragged around the field or sprinklers must be moved from valve to valve in a timely manner. Often, the already-burdened staff allows the sprinklers to stay on for irregular amounts of time, so coverage is not uniform. To reduce the time and effort of watering, there is also a tendency to operate too many sprinklers at once. This causes a drop in pressure, and the sprinklers will fail to throw the desired distance, resulting in uneven watering.

Portable systems are cheaper to install than automatic systems. But because of their many disadvantages, portable systems are viable alternatives only where budget limitations prohibit the installation of automatic irrigation.

It should also be noted that portable systems being installed today must have the same type of backflow prevention device required for installed systems. See the section on backflow prevention for more information.

Installed Irrigation Systems

The popularity of installed irrigation systems is growing rapidly because the price of installing an automatic system is decreasing, while the reliability of operation is increasing. Automatic systems save labor costs when compared to the portable alternatives, and the even distribution (and the resulting savings) of water is commonplace on well designed and maintained sports fields and public parks.

DESIGN

As with the design of the field itself, proper design of the irrigation system is a critical step; a poorly designed system cannot be made to work properly with remedial measures later on. The irrigation system design should be driven by player and user safety, as well as the need for dependability, efficiency, and easy maintenance.

It may be tempting to employ the services of a volunteer to design an irrigation project, but an experienced institutional or sports field irrigation designer or consultant will usually allow the turf manager to save both time and money in the long run. Designing an effective system requires knowledge of pipe hydraulics, zoning techniques, head spacing, wire sizing, and the efficiency, features, and reliability of various manufacturers' rotary sprinklers, valves, and controllers. The cost to repair a single error in any of these areas can easily be higher than the fee charged by an experienced designer.

In planning a system, the designer will give a great deal of consideration to choosing the most appropriate equipment, since each project will have its own specific product and budget requirements. Placement of the heads and valves will also be a major consideration, and the designer will place the heads so they are not in heavy traffic areas and the valves so they are well off the field of play.

PIPING

The pipe running from the irrigation system's point of connection (POC) into the service line to the zone control valves is called the "continuous pressure main line" or, simply "main line". It is

a common practice to use solvent welded PVC pipe at a depth of 18 inches below the surface for pipe sizes up to 4 inches, and 24 inches below the surface for pipes larger than 4 inches. Gasketed pipe is sometimes specified and should be placed deeper; 36 inches under the surface for pipes larger than 4 inches is usually considered reasonable. However, higher system pressures may lead the designer to specify deeper installation to hold the pipe securely in place.

The non-pressure pipes which connect the control valves to the sprinkler heads are referred to as "lateral lines." These lines can be installed at a depth of 12 inches, which is standard for the industry.

The backfill surrounding the pipe should be rock free and compacted to the same degree as

DESIGNING AN EFFECTIVE SYSTEM REQUIRES KNOWLEDGE OF PIPE HYDRAULICS, ZONING TECHNIQUES, HEAD SPACING, WIRE SIZING, AND IRRIGATION EQUIPMENT.



the neighboring soil. The rock free backfill will help to prevent pipe breakage, and the consistent compaction will prevent ruts in the turf that are caused by the uneven settling of the soil over the pipe trench.

Poured-in-place concrete "thrust blocks" are sometimes specified where pipe connections must be especially solid. For instance, thrust blocks are typically specified at all changes in direction on all gasketed pipe, for main line pipes over 2 inches in diameter, and on long runs when the system will have higher-than-normal pressure.

SPECIFYING THE PROPER PIPE SIZES HELPS TO MAINTAIN THE CORRECT WATER VELOCITY AND MINIMIZES FRICTION LOSSES THROUGHOUT THE SYSTEM.

CARE SHOULD BE TAKEN TO SELECT SPRINKLERS WITH SMALL EXPOSED SURFACE AREAS AND PROTECTIVE RUBBER COVERS TO MINIMIZE SPORTS FIELD INJURY AND LIABILITY.

Specifying the proper pipe sizes helps to maintain the correct water velocity and minimizes friction losses throughout the system. Water flowing through pipes experiences considerable drag or friction from the pipe itself; when the velocity of the water increases, the pressure loss from friction increases. If the pipe used for the system is too small, the operating pressure will be much lower for the heads at the end of the zone than for the heads closest to the valve serving that zone. Irrigation designers agree that there should be no more than a 10% variation in pressure among all heads on a zone.

Because designers like to maintain about the same pressure from one zone to another, most institutional and sports field irrigation system

SPRINKLERS, NOZZLES AND SWING JOINTS

A sprinkler head consists of three major components: the main body of the device, the nozzles through which water flows out of the body, and the swing joint at the bottom of the body which maintains the sprinkler's connection to the lateral lines.

Sprinkler heads have been gradually downsized over the years, primarily for safety purposes. Newer heads have a small surface diameter and a protective thick rubber cover which makes them a very safe alternative to the older-style sprinklers. Additionally, many of the newer heads have a strong spring for positive retraction so the head will not endanger the public by staying in the up position after the watering is completed. Many of today's safer heads also have a heavy-duty body cap to stand up to the large equipment now being used in routine maintenance.

Designers also like to choose a rotary sprinkler with a large nozzle selection. The nozzle is chosen to fine-tune the flow of water out of the system. The experienced irrigation system designer will use correct nozzle sizes to obtain "matched precipitation." (The precipitation rate for sprinkler systems is the rate, expressed in inches per hour, at which water is applied over the surface of the turf. "Matched precipitation" means the entire field is receiving about the same amount of water.)

Swing joints can be fabricated on-site by the installers of the system, or can be manufactured parts provided by the supplier. A three-elbow double swing joint will perform efficiently if fabricated correctly. Manufactured double swing joints with O-Ring seals cut down on installation time and are often more dependable. Correctly installed, a double-swing joint provides flexibility and resists breakage when large mowers or other heavy equipment rolls over the sprinkler.

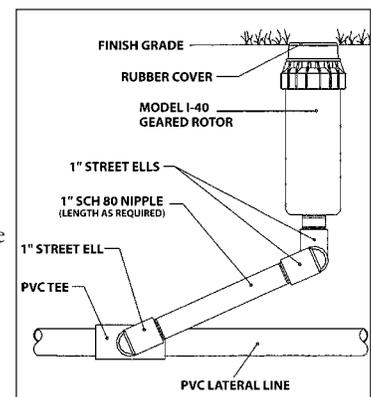


Chart 6-A Double Swing Joint Detail

designs will show a looped main line. The reduced pressure loss experienced when the water is flowing from two directions in a looped main line helps to achieve a relatively balanced pressure throughout the main line at a reduced cost. The designer would have to size the pipe larger with a single connection main line than is necessary with the looped system. This smaller pipe size saves money while reducing the pressure loss to the furthest valve.

PVC pipe is also used as sleeves for the irrigation system's pipes and wires where they pass under walkways, driveways, and roads. A good rule of thumb for sleeve sizing is two times the size of the pipe being sleeved.

PRECIPITATION RATE FOR SPRINKLER SYSTEMS IS THE RATE AT WHICH WATER IS APPLIED OVER THE SURFACE OF THE TURF. MATCHED PRECIPITATION MEANS THE ENTIRE FIELD IS RECEIVING ABOUT THE SAME AMOUNT OF WATER.



VALVES

In an irrigation system, there are two basic types of valves: shut-off valves and sprinkler valves. Shut-off valves (“gate valves” or “ball valves”) are used in a continuous pressure main line to temporarily turn the water off to the entire system or a section of the system. Sprinkler valves (manual or automatic) are used to deliver the water from the continuous pressure main line to the sprinklers. In the discussion of sprinkler systems, when the term “valve” is used alone, it usually refers to an automatic control valve.

Gate valves have a wheel type handle, and several turns of the handle are required to turn off the flow of water. Gate valves are most commonly used on mainline pipes with high water pressure or high water flow. Because several turns are required, they are easier to turn off and the potential for damage caused by water hammer is reduced. Gate valves have a brass-to-brass seat, which means that they may eventually lose their secure seal. For this reason, gate valves are not recommended for frequent use.

Ball valves have a single arm or lever that requires one-quarter turn to turn on or off. This single action is convenient, but caution should be used and the valve should not be turned on or off too quickly, because damage to the system from water hammer could result. Ball valves have resilient seats which maintain their ability to seal longer than brass-to-brass seats, making ball valves a better choice than gate valves where frequent use is expected.

Among sprinkler valves, **manual zone control valves** are not as common as they once were. The manually controlled sprinkler system requires an operator to time the irrigation of each zone, and to turn valves on and off at the proper time. The operator must be present the entire time the system is operating. Obviously, this type of system does not have the convenience of an automatic system.

Automatic zone control valves are used in conjunction with automatic controllers or timers, and are a much more convenient way to deliver water to the turf. Because these valves can be more precisely controlled, an automatic system allows the sports turf manager to efficiently schedule the delivery of the right amount of water to each zone.

There are many types of automatic control valves. On systems not directly connected to city water lines, choose a valve with an inexpensive self cleaning filtering mechanism. Because of the possibility of higher surge pressure in a large turf system, it is recommended that the valve be able to withstand pressures up to 200 PSI. A pressure regulator can be installed at the beginning of the system, but with the long main line and the potential for high friction loss, it is generally better to have an automatic control valve with a built-in pressure regulator, and control the pressure right at the valve.

Placement of the valves should be planned with maintenance and safety in mind. Automatic control valves are generally installed in groups, or manifolds, and placed underground in a plastic or concrete valve box. If the valves will be near a field of play, use plastic. The manifolds should be built with plenty of room between valves. The distance between valves is dependent on the size of the valve box; for most standard size boxes, two or three 1 inch valves can be installed in a valve box, while valves larger than 1 inch are usually installed one valve per box.

CONTROLLERS

The controller (or “timer”) is the part of an automatic sprinkler system that determines when a valve will turn on and how long the valve will operate. The controller sends a low voltage signal through buried wires to the automatic control valve, which then opens for a predetermined amount of time, allowing water to flow to the sprinklers. When the predetermined watering time is completed, the controller turns off the valve.

A controller should be chosen for its wide range of programming capabilities as well as other convenience features. A nonvolatile memory means the controller will not lose the program due to power outages or surges. Surge protection will protect the controller from serious damage due to nearby lightning strikes or power surges.

IRRIGATION CONTROLLERS CAN BE INSTALLED INDOORS OR OUTDOORS AND CAN BE FITTED WITH A REMOTE CONTROL DEVICE TO PERMIT ACTIVATION FROM ANYWHERE ON A SITE.



A PRESSURE REGULATOR CAN BE INSTALLED AT THE BEGINNING OF THE SYSTEM, BUT IT IS GENERALLY BETTER TO HAVE AN AUTOMATIC CONTROL VALVE WITH A BUILT-IN PRESSURE REGULATOR, AND CONTROL THE PRESSURE RIGHT AT THE VALVE.

INSTALLERS RECOMMEND THAT THE WIRE BE BURIED IN THE SAME TRENCH AS THE MAIN LINE, TAPED TO THE UNDER SIDE OF THE PIPE. THIS WILL HELP TO PROTECT THE WIRE, AND MAKE IT EASIER TO LOCATE.



IN ORDER TO PROTECT THE POTABLE (DRINKING) WATER SUPPLY FROM CONTAMINATION, MOST STATES AND MUNICIPALITIES REQUIRE THE INSTALLATION OF BACKFLOW PREVENTION DEVICES.

Controllers should be placed in an easily accessible location, in a lockable room or metal outdoor mounting pedestal. In considering the controller, it is important to remember that some systems require a pump to maintain adequate water pressure. Be sure the controller chosen for this type of system includes a pump start feature. If a pump is needed, the two pieces of equipment could be placed in the same enclosure. However, the controller should use a separate electrical circuit to reduce the possibility of damage to the controller due to power surges.

As with any electrical equipment, to prevent injury from high voltage electrical shock, it is essential to specify that a proper ground wire be installed to the controller. Consult local codes for the grounding requirements in a specific area.

WIRES

In an automatic sprinkler system, low voltage direct burial wire is used to carry the signal from the controller to the automatic control valves. The most frequently used wire for commercial applications is single strand, heavy gauge direct burial copper wire. A lighter gauge wire can be used when installing valves close to the controller, but heavier gauge wire is necessary for longer distances, and may be necessary even for short distances on higher pressure systems. An irrigation designer or consultant will specify the necessary wire size when designing the system.

Many specifiers recommend that the wire be buried in the same trench as the main line, taped to the under side of the pipe. This will help to protect the wire, and make it easier to locate. Furthermore, a wire taped to the pipe can serve as a tracer wire to locate the main line should it become necessary to do so.

Wherever control wire will be exposed, it should be installed in a protective conduit. Waterproof wire connectors should be used to connect the solenoid wires to the low voltage irrigation wire.

BACKFLOW PREVENTION

In order to protect the potable (drinking) water supply from contamination, most states and municipalities require the installation of backflow prevention devices on all plumbing systems that

are connected to the public water supply. (These devices prevent water from the system from flowing backward into the supply lines.) In planning or installing an institutional or sports field irrigation system, the designer should consult with the local water company to determine the backflow devices required and their proper installation.

Construction and Reconstruction

Like the designer, an irrigation system installer must be concerned with safety, ease of maintenance, and system longevity. A properly designed system using all of the best products available could still represent a squandered investment if the system is improperly installed. It is important to stress to installers that the designer must be notified of any necessary field changes, so that he or she can verify that the proposed changes will not affect system performance.

Begin the installation process by laying out the system according to the plans. Use small flags for sprinkler placement and marking spray paint or powdered gypsum to indicate pipe locations. Dig the required trenches and begin laying the pipe, working out from the POC, or the system supply line to the valves and then to the heads. For ease of handling, lay out the control wire in the trench when installing the main line, so the wire can be taped under the pipe.

Provide an expansion loop of wire at each change of direction to help reduce the chance of stretching or breaking the wire. For systems that will employ thrust blocks at points where the piping changes direction, make sure that the wire does not get tangled up with the thrust block.

At each valve, make a coil by wrapping two or three feet of wire around a piece of 1 inch diameter pipe prior to connecting it to valves. This will serve two purposes: in areas susceptible to lightning strikes, static and surges from nearby strikes can be released at this coiled area, helping to protect the solenoid; and when performing maintenance on the valve, removing the bonnet or solenoid is easier with the coiled wire.

Take care to install the sprinkler heads at the correct depth according to the manufacturer's specifications. This will protect field users as well as the system itself. It is also important to install the specified nozzles so that the system will operate as efficiently as it was designed to perform.

When installing the valves boxes, lay a brick base under the edges of each box to reduce settling. Set the box in place, then install a 2 to 4 inch layer of gravel in the box under the valve to provide for drainage. To further reduce the amount of dirt that infiltrates the valve box, add filter cloth below the gravel and around the box. The top of the valve box should be installed at turf finish grade. Before going on to the next box, make sure that shut-off valves and control valves will clear the box lid when the valves are in both the fully closed and fully open position.

If a pressure test is required, backfill the center of the pipe, leaving the fittings exposed so that they can be checked for leakage. This center loading will keep the pipe in place while it is under pressure.

It is much easier to make repairs and adjustments before backfilling the entire system. If the plan includes thrust blocks, install those before turning on the system. Make sure the top of the blocks will be safely below the surface, where it will not be damaged by aeration equipment or vehicle traffic later.

After the pressure test is complete, finish backfilling the trenches and compact the soil to the same degree as the neighboring soil. When setting heads to grade, check for proper height, because the heads may settle along with the soil around them.

AS-BUILT DRAWINGS AND CONTROLLER CHARTS

Because minor variances are sometimes made during the installation process, it has become customary for the installer to prepare an "as-built drawing." This is a drawing showing the actual installed location of all isolation valves, control valves, sprinkler heads, pipe (including sleeves), and wire runs. Accurate as-builts are very important; they allow the maintenance staff to locate a pipe or wire without having to dig up large areas of the field.

Isolation valves, pipe, and wire runs should be located on the drawing with measurements to two permanent reference points. At a minimum, record exact measurements for pipe and wire at each change of direction, along with their exact depth at these locations. As-built drawings should be updated frequently during the system installation.

A "controller chart" is a site plan showing valves and the zones they cover. This chart can be vital to later maintenance efforts. For quick reference, mark the drawing with a different colored highlighter for each zone, and number the area on the drawing to correspond to the station number on the controller.

WHEN INSTALLING THE VALVES BOXES, LAY A BRICK BASE UNDER THE EDGES OF EACH BOX TO REDUCE SETTLING. SET THE BOX IN PLACE, THEN INSTALL A 2 TO 4 INCH LAYER OF GRAVEL IN THE BOX UNDER THE VALVE TO PROVIDE FOR DRAINAGE.



Renovation

Before considering the subject of irrigation system renovation, it is important to establish that renovation can be useful only when the existing system was properly designed in the first place – so that when the system was in good working order, it distributed water evenly over the entire area. If the system never worked right, complete reconstruction will probably be necessary. The wrong size pipe may have been used. Too few zones may have been installed. There may not be enough pressure to operate

ACCURATE AS-BUILT DRAWINGS ARE VERY IMPORTANT; THEY ALLOW THE MAINTENANCE STAFF TO LOCATE A PIPE OR WIRE WITHOUT HAVING TO DIG UP LARGE AREAS OF THE FIELD.

all the heads in a zone. (If low pressure is the only problem, it can be corrected simply by adding a booster pump.)

For our purposes, we will consider irrigation system renovation to consist mainly of replacing parts that have worn out due to normal usage.

Renovation of a properly installed and maintained automatic irrigation system may be necessary every seven to ten years. Sprinkler heads are the parts most commonly in need of replacement, since these items are in constant mechanical operation and are subjected to possible damage by the activity on the field. Control valves can easily be rebuilt without removing the valve from the system. The valve's diaphragm and solenoid are the only parts of the valve that move and may need replacing. (Pipe and wire rarely need to be replaced, since they have no moving parts.)

When replacing heads, dig down a few inches past the swing joint so the new head can be adjusted for height. When heads are being replaced, it may be wise to replace the swing joints while they are easily accessible.

Repair Couplings. Replacing valves, or repairing a broken pipe in systems fabricated from PVC pipe, is a lot easier with a "slip fix". A slip fix is a PVC telescoping repair part, designed to replace a section of the existing pipe. Remove a section of the pipe near the existing valve (or the pipe that is broken), then remove the old valve and replace it with a new one. The slip fix replaces the section of pipe that was removed. Retract the slip fix and remove enough of the existing pipe to allow the slip fix to fit into the space. Extend the telescoping portion of the slip fix over the existing pipe. Check alignment and then solvent weld (glue) the slip fix in place.

When planning a renovation project, consider the possibility of improving the system. Older heads and valves can be replaced with the newer models that provide better performance. A good working manual system can also be upgraded to an automatic system by changing the manual control valves to automatic control valves. A controller (timer) must be installed and connected by wire to each valve to allow automatic operation.

Winterization of Sprinkler Systems

Winterization of the sprinkler system is the blowing out or draining of water to remove the possibility of it freezing within the system and breaking pipes or components. Winterization is performed in areas of the country which are subject to prolonged freezing.

If the irrigation system is drained by gravity, the process of winterization is simple. The system was installed with drains at the low points and when the water is turned off and the drains are opened, all water in the pipes drain out of the system. In these types of systems, it is critical to have an accurate "as-built" drawing in order to easily locate each drain valve.

More commonly, systems are winterized through a process of "blowing out" the pipes and components. With this method, there is less possibility of leaving water trapped in low areas of the piping. Replacing pipe which has cracked due to trapped and frozen water can be very costly.

A portable air compressor which can produce a high volume of air at lower pressures is necessary when blowing out an irrigation system. Systems consisting of pipe that is three inches or less in diameter can be blown out with a 125 CFM (cubic feet per minute) at 50 PSI air compressor. Systems with pipe that is four inches in diameter or larger may require a compressor capable of producing 250 CFM or more. In no case should the air pressure exceed 80 PSI.

It is highly recommended that blowing out a large turf irrigation system be performed by some one with experience in winterizing large systems. This is a dangerous procedure and the components can be damaged if the winterization is done incorrectly.

Spring Start-up

Spring start-up after a winterization must be done carefully as well. Open the last valve in the system, or the valve closest to the center of a looped main line. Slowly open the isolation valve to allow the water to seep into the system. It is important to be patient during this process so that the water entering the system will not fill the pipe too rapidly

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AND MAINTAINED
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TEN YEARS.



WHEN PLANNING A RENOVATION PROJECT, CONSIDER THE POSSIBILITY OF IMPROVING THE SYSTEM. OLDER HEADS AND VALVES CAN BE REPLACED WITH THE NEWER MODELS THAT PROVIDE BETTER PERFORMANCE.

and cause damage to the irrigation system due to water hammer.

When the main line is fully charged with water, open the next to last valve, leaving the previous valve open. When water is flowing out of the second zone, turn off the first zone and proceed to the next valve. Continue doing this with each valve until all valves in the system have been recharged.

Inspection and Maintenance of Irrigation Systems

As with every aspect of professional turf maintenance, the importance of regularly scheduled irrigation inspections cannot be overstated. Preventive maintenance saves money and improves the health and appearance of the turf. Small problems can be spotted and corrected long before they turn into big, costly problems. On the other hand, failure to perform regular maintenance can mean that a component may need to be replaced prematurely, or that the entire system may need a renovation before the end of its normal life cycle.

Once a week, look at the overall appearance of the turf, and test the system by manually running the controller through its cycle. These two quick checks will indicate whether the system is working correctly, or whether further testing is necessary.

When appraising the general appearance of the turf, look for stress areas that indicate poor irrigation coverage. The beginnings of “donuts,” dry areas around the heads, can mean there is a pressure problem, that someone has mis-adjusted the radius adjustment screw, or that the wrong nozzle has been installed.

Controllers. Before manually activating the controller, check to see if it is keeping the correct time of day. If not, the controller may have received a power surge, or a power outage may have disrupted its programming. No display, or a default display may suggest a blown fuse caused by faulty wiring, wire connectors, or valve solenoid.

Valves. As the controller activates and deactivates each valve, check for proper opening and closing. Slow or fast opening or closing valves can usually be adjusted with the valve’s flow control, but this can sometimes indicate a problem, such as high or low pressure or a torn diaphragm, and may suggest the need for further investigation.

Sprinklers. As the different zones come on, look carefully at the spray. If the water droplets seem too large, the system may be operating at low pressure. If the droplets are too small, or if there is excessive mist, the pressure may be too high. Many times, especially if the system previously worked fine, these conditions can be corrected by adjusting the flow control at the valve.

Rotary heads which are not rotating obviously require service. Many times a non-rotating sprinkler means a dirty filter, and can be disassembled and cleaned out quickly and easily. The staff should be instructed to resist the temptation to lubricate sticking heads. Although it may temporarily improve rotation, lubrication will eventually attract dirt and make the problem worse in the long run.

Make sure the heads are at the proper height, that they are adjusted correctly, and they are setting perpendicular to the turf.

Risers. During regular inspections, remember to look for signs of broken risers beneath the sprinklers. Sometimes these signs are obvious; a broken riser will unleash water to create huge geysers. Sometimes the signs are not so obvious; a cracked riser may allow water to boil up around the sprinkler but may not be readily visible. Watch for excessively wet or unusually dry areas.

Wiper Seals. While looking for broken risers and mis-adjustments, inspect the sprinkler for flow-by. A worn wiper seal can allow water to flow out of the sprinkler onto adjacent paved or turf areas, wasting water, damaging turf, and worst of all, causing unsafe conditions. (A wiper seal is located between the cap and the sprinkler’s riser.) A very small amount of water emitting past the wiper seal while the system is running is usually acceptable, but a leaking sprinkler head must be repaired or replaced.

It is very important that broken or poorly performing sprinkler heads be replaced as soon



DISTRIBUTION UNIFORMITY (DU) IS CALCULATED BY DIVIDING THE AMOUNT OF WATER FALLING ON THE LEAST WATERED PART OF A ZONE BY THE AVERAGE AMOUNT OF WATER FALLING ON ALL THE ZONES.

as possible. When a specific sprinkler is not operating correctly, the performance of all other heads on the zone is affected. For instance, water flowing unchecked past a wiper seal will cause a loss in pressure to all heads on a zone. Because the pressure in that zone has dropped, the other sprinklers will not adequately irrigate the area.

If water is seeping past the wiper seal long after the system has turned off, the valve needs attention. A seeping valve could mean that debris is caught between the diaphragm and the valve seat, or that the diaphragm is beginning to tear. Replacing the diaphragm is a simple, fast, and inexpensive procedure. But if the torn diaphragm is not replaced, the slow seeping will waste a great deal of water, and could eventually

Distribution Uniformity (DU) Testing

If the irrigation system is currently in operation and field renovations are being considered, the system's "distribution uniformity" (the evenness with which water is distributed over the field) should be checked. Distribution uniformity (DU) is calculated by dividing the amount of water falling on the least watered part of a zone by the average amount of water falling on all the zones. An excellent DU percentage for rotors is 75% to 85%, while a good DU is 65% to 70%.

Once a system's DU is known, an informed decision can be made about whether to repair or completely replace a system (or, if the DU falls within acceptable range, simply to leave the system alone).

THE CATCHMENT TEST

In order to determine distribution uniformity, a catchment test of the turfgrass area should be performed. This is a fairly easy test to conduct and often can uncover fixable problems, even when a system appears to be functioning correctly.

The first step in conducting a catchment test is to determine existing site conditions. Draw a sketch of the field, with measurements, showing head locations. Write down all significant information, including the type of heads used and their condition. Perform an actual head-by-head inspection to determine their condition, model number and the nozzle type. While walking the field, look for signs of poor irrigation coverage, such as brown or bare spots.

Using a soil probe, take a few soil samples from different areas around the field to determine soil type and root depth. This information will be helpful later in writing an irrigation schedule for the system.

Next, turn on one zone at a time and perform a visual inspection. Adjust the radius and the arc of water flow from each head, and align all heads to be perpendicular to the turf for maximum coverage. While adjusting the heads, watch for heavy leaking at the riser seal, and for failure to rotate properly.



IN ORDER TO DETERMINE DISTRIBUTION UNIFORMITY, A CATCHMENT TEST OF THE TURFGRASS AREA SHOULD BE PERFORMED.

lead to a zone that is stuck on. If that happens at an inappropriate time, the turf could suffer severe damage.

Regularly scheduled irrigation checks will save time and money if they are performed on a consistent basis. A poorly maintained irrigation system will affect the health of the turfgrass culture and the appearance of the turf. A well maintained system will help to produce a healthy, visually appealing field which holds up well under the stress of public use, sports and other events, and contributes to safe, competitive play.

Clean any clogged nozzles, and be sure the filters are free of debris. Check for correct pressure, and for “donuts” of brown grass around the heads.

Using a rotor pitot tube and pressure gauge, check the pressure and pressure variation at the rotor’s nozzle. (Be sure to write down these pressure readings.) Variations of more than 20% from the highest pressure reading to the lowest within one zone may indicate a problem with the system, and the need for further inspection by an irrigation expert with a background in irrigation hydraulics. Frequently, pressure can be increased or decreased simply by adjusting the flow control on the valve for the zone.

Check the station start times and run times in the controller to see if there is a station with a longer run time than the others. This could indicate a problem with that particular valve or the rotors in that zone; the additional run time may be keeping the grass green and hiding the problem. Check the run times overall. Are dry spots causing longer run times? In most areas, turf will require about 1 1/2 to 2 inches of water per week in the hottest months. Calculate precipitation rates based on manufacturer’s published performance information and determine if the run times are close to where they should be.

Check Run Times

Example: The stations have a run time of 40 minutes per day, and the stations are programmed with two start times every day but Friday, Saturday, and Sunday.

Total Weekly Run Time

40 minutes x 2 start times per day x 4 days
or
 $40 \times 2 \times 4 = 320$ minutes of run time.
Then, $320 \div 60$ minutes in an hour
 $= 5.3$ hours of run time per week.

Answer

System 1 - A rotor with an approximate precipitation rate of .44 inches per hour would be putting down 2.3 inches of water per week (5.3 hours x .44 inches per hour or $5.3 \times .44 = 2.3$ inches per week).

System 2 - A rotor with an approximate precipitation rate of .85 inches per hour would be putting down 4.5 inches of water per week (5.3 hours x .85 inches per hour or $5.3 \times .85 = 4.5$ inches per week).

Chart 13-A - Station Run Times

If the turf is evenly green in both examples in Chart 13-A, the first rotor system was probably just in need of a tune-up, while the second system, which is putting down over 4 inches of water per week, indicates there may be a problem that is being covered up with overwatering. The turf is being kept healthy, but at the cost of sharply increased water usage.

If problems are discovered in this inspection, make corrections and adjustments before proceeding. Once all adjustments and nozzle and head corrections have been made, and it has been established that the system is operating at the sprinkler manufacturer’s recommended pressure, the catchment test itself can be performed.

CHECK THE AMOUNT OF WATER BEING APPLIED TO THE FIELD, ONE ZONE AT A TIME, USING SMALL CATCH CANS. ALL OF THE CANS SHOULD BE THE SAME SIZE AND SHAPE, AND SHOULD BE PLACED AT ABOUT THE SAME HEIGHT ABOVE THE TURF.



PERFORMING THE CATCHMENT TEST

Check the amount of water being applied to the field, one zone at a time, using small catch cans. All of the cans should be the same size and shape, and should be placed at about the same height above the turf. Place several catch cans throughout the zone you are testing, marking the location of the cans on the sketch. A catchment test should not be conducted when the wind will cause a distortion in the spray pattern.

Turn on the zone, and allow it to run for 10 to 30 minutes, until the cans have collected on the



VARIATIONS OF MORE THAN 20% FROM THE HIGHEST PRESSURE READING TO THE LOWEST WITHIN ONE ZONE MAY INDICATE A PROBLEM WITH THE SYSTEM.

average of at least two to three tenths of an inch of measurable water, or until the rotors have made at least five rotations. Write down how long each zone was allowed to run. Measure the amount of water in each can, and log the results on the sketch next to each can location. Note which zone is affecting the can's volume, and do not empty the catch can between tests if that can is collecting water from more than one zone. Repeat the test for each zone.

To determine the zone's distribution uniformity, list the catch can results from highest to lowest. Add up the lowest 25% of the numbers and divide by the number of cans in the lowest 25% to get the average reading in the lower quartile. Divide this number by the average of all of the catch cans on that zone.

Scheduling Water Usage

Ultimately, the goal of the turfgrass manager is to apply only the amount of water needed, and to apply that water only when it is required. Plants have an effective root zone (RZ), and water in the soil below that root zone is unusable by the plants. The effective root zone for turfgrass is about 6 inches to a foot deep.

A basic truth of plant irrigation is this: Irrigation is not meant to water the plants; rather, it is meant to refill the reservoir from which those plants will draw the water they need.

If the reservoir gets too "empty," the plants begin to wilt. When they are deprived of water for too long, a "permanent wilting point" is reached, and lasting plant damage occurs.

If the reservoir is allowed to get "too full," the soil may reach "field capacity" at levels below the plant's effective root zone, and water would go unused. Field capacity is the upper limit of storable water in a layer of soil after the water has drained through.

It might seem that a slow and constant supply of water would be the best way to fulfill the watering requirement. However, in most circumstances, daily watering is wasteful. Water evaporates quite rapidly from the top few inches of soil; the rate of evaporation can reach as much as 50% per day. The deeper the moisture level in the soil, the lower the daily evaporation rate.

Available Water Holding Capacity. It becomes important then, to manage the amount of water in the root zone to maximize application efficiency. When scheduling irrigation, the turf manager's job is to provide enough water, at the proper times to keep the moisture level at the root zone between the permanent wilting point and the field capacity.

This level of moisture is referred to as "available water holding capacity" (AWHC), and is the water that can be used by the plants. Generally, AWHC is expressed as "inches of water available per foot of soil," or inches/foot.



A BASIC TRUTH OF PLANT IRRIGATION IS THIS: IRRIGATION IS NOT MEANT TO WATER THE PLANTS; RATHER, IT IS MEANT TO REFILL THE RESERVOIR FROM WHICH THOSE PLANTS WILL DRAW THE WATER THEY NEED.

Multiply the result by 100 to obtain the percentage. The formula is:

$$\text{DU \%} = \frac{\text{Average reading in the lowest quartile} \times 100}{\text{Average reading over-all}}$$

Chart 14-A - Distribution Uniformity

Using this formula, it is possible to calculate the DU for a zone, or for the entire system. As noted earlier, a DU of 75% to 85% is excellent, while good distribution is 65% to 70%.

In order to properly manage the AWHC level and program the controller with the correct watering schedule, the turf manager needs a few pieces of information:

- The amount of water needed for the turf to be healthy.
- The acceptable level of depletion of the AWHC.
- The precipitation rate of the irrigation system, in inches per hour.
- The efficiency of the irrigation system.

With this information and some simple math, the turf manager will have the tools to properly schedule the application of water to the turf area.

AMOUNT OF WATER NEEDED

Evapotranspiration Rate. The amount of water needed by a plant is the sum of the amount lost through the evaporation of moisture at the soil’s surface and the transpiration of water through the plant. The daily evapotranspiration or “ET” rate for a specific area may be available from the local extension agent or weather service, or can be determined using the approximate daily values in Chart 15-A.

Crop Coefficient. Different plants have specific watering requirements. The “crop coefficient” allows for the expression of this variation in moisture needs. Chart 15-B provides a guide of the crop coefficients for turf areas as compared to other common plants.

WHEN SCHEDULING IRRIGATION, THE TURF MANAGER’S JOB IS TO PROVIDE ENOUGH WATER AT THE PROPER TIMES TO KEEP THE MOISTURE LEVEL AT THE ROOT ZONE BETWEEN THE PERMANENT WILTING POINT AND THE FIELD CAPACITY.

Climate Type *	DailyLoss (in inches)	Climate Type *	DailyLoss (in inches)
Cool Humid	0.10 - 0.15	Warm Dry	0.20 - 0.25
Cool Dry	0.15 - 0.20	Hot Humid	0.20 - 0.30
Warm Humid	0.15 - 0.20	Hot Dry	0.30 - 0.40

These evapotranspiration (ET) rates are approximate. Actual ET rates may be obtained from an extension agent. If the rate is expressed as a monthly figure, divide the number by 30 for the average daily rate.

* Cool applies to areas with average high summer temperatures in mid-summer of under 70° F. Warm refers to mid-summer highs between 70° F and 90° F. Hot indicates mid-summer averages over 90° F. Areas in which the average relative humidity is over 50% in mid-summer qualify as Humid, while under 50% is considered Dry.

Chart 15-A - Potential Evapotranspiration Rates for Various Climates*

Vegetation Type	Crop Coefficient
Mature Trees	0.80
Shrubs (taller than 4 ft)	0.70
Shrubs (shorter than 4 ft)	1.00
Warm Season Turf	0.50 - 0.70
Cool Season Turf	0.60 - 0.80

Chart 15-B - Crop Coefficient (K_c) For Turf and Other Common Plants



THE AMOUNT OF WATER NEEDED BY A PLANT IS THE SUM OF THE AMOUNT LOST THROUGH THE EVAPORATION OF MOISTURE AT THE SOIL’S SURFACE AND THE TRANSPIRATION OF WATER THROUGH THE PLANT.

AVAILABLE WATER HOLDING CAPACITY (AWHC) DEPLETION

It is best to irrigate as infrequently as possible because of the high evaporation rate at the surface of the soil. Deeper, less frequent watering gets more water to the root zone. However, to avoid damage to the turf due to AWHC falling to a permanent wilting point, the turf manager must schedule irrigation run times before all of the AWHC is depleted. The acceptable level of depletion, called "Management Allowable Depletion" (MAD), can vary by soil type, compaction, root depth, and the stress tolerance of the plant. In most applications, a MAD of 50% of the AWHC will sustain healthy turf. Chart 16-A provides an AWHC guideline for a few soil textural classes.

THE ACCEPTABLE LEVEL OF DEPLETION, CALLED "MANAGEMENT ALLOWABLE DEPLETION" (MAD), CAN VARY BY SOIL TYPE, COMPACTION, ROOT DEPTH, AND THE STRESS TOLERANCE OF THE PLANT.



APPLICATION EFFICIENCY (EA) IS A MEASURE OF HOW MUCH OF THE APPLIED WATER IS AVAILABLE FOR USE IN THE EFFECTIVE ROOT ZONE. IT IS ALSO AN INDICATION OF HOW WELL THE SYSTEM WAS DESIGNED AND INSTALLED, AND HOW WELL IT HAS BEEN MAINTAINED.

Available Water Holding Capacity	
Soil Texture Available	Inches of Water per Foot of Soil
Sandy Soil	0.50 - 1.00
Loamy Soils	1.00 - 1.75
Clay Soils	1.75 - 2.5

Chart 16-A - AWHC for Various Soil Textures

PRECIPITATION RATE

The "precipitation rate" (PR) for an individual sprinkler or an entire sprinkler system is the depth of water applied in a given area, expressed in inches per hour. The precipitation rate of a sprinkler is determined by multiplying the gallons per minute output of that sprinkler by a conversion factor of 96.25 (which converts cubic inches of water to inches per square foot per hour), and then dividing by the area the sprinkler covers. The precipitation rate of an irrigation system is found by multiplying the total gallons per minute of the system by 96.25 and dividing by the total area the system covers.

$$\text{Precipitation Rate} = \frac{\text{GPM} * \text{Applied} \times 96.25}{\text{Area Covered}}$$

Chart 16-B - *Gallons per minute can be approximated using the manufacturer's published nozzle data.

To calculate the precipitation rate on a particular field, use the measurements taken during an irrigation catchment test. Add the total (in inches) of all catch cans and divide by the number of catch cans. Then divide that number by the run time of the test (in minutes), and multiply by 60 minutes to obtain inches applied per hour. This is the average precipitation rate for the field.

$$\text{Average Field PR} = \frac{\text{Total Inches in All Catch Cans}}{\text{Number of Catch Cans} \div \text{Run Time} \times 60}$$

APPLICATION EFFICIENCY

Application efficiency (EA) is a measure of how much of the applied water is available for use in the effective root zone. It is also an indication of how well the system was designed and installed, and how well it has been maintained. Application efficiency is determined by dividing the amount of water in the root zone by the amount of water applied.

A perfect irrigation system where all of the water sprayed out goes directly and evenly to the turf's root zone is unachievable. In fact, while it is feasible to achieve an application efficiency (EA) rating as high as 80%, an irrigation system

with an efficiency rating of 70% is considered very good. Irrigation water can be lost through excessive evaporation (watering during the heat of the day), wind drift, incorrect adjustments, improper designs, high pressure, low pressure, runoff, percolation past the effective root zone, or through the use of the wrong size nozzles or other equipment.

There are several steps and calculations needed to determine irrigation system EA. While these calculations can be very accurate, because of the effects of wind, temperature, humidity, water pressure, soil type, and root depth, EA remains an informed estimate. For general purposes, a manager can expect to achieve an EA of 60% to 80%.

CALCULATING THE IRRIGATION RUN TIME

We now have all of the information necessary to schedule the application of water. The following is a recap of the values that are used in the

Scheduling Equation Values	
RZ	Root Zone is the effective depth, in feet, of the roots (0.5' to 1.0' for turf).
ET	Evaporation of soil surface water plus Transpiration of water through the plant. (Chart 15-A)
K _c	Crop coefficient is the specific water requirement of the plant. (Chart 15-B)
AWHC	Available Water Holding Capacity is the moisture level in the soil (expressed in inches per foot) which is above the plant's permanent wilting point, and below the soil's field capacity. (Chart 16-A)
MAD	Management Allowable Depletion of water from the AWHC. In most applications, a MAD of 50% will sustain healthy turf.
PR	Precipitation Rate is the depth of water per unit of time. (Multiply the total gallons per minute of the system by 96.25 and divide by the total area the system covers.) (Chart 16-B)
EA	Application Efficiency is a measure of the overall efficiency of the sprinkler system. (60% to 80%)

Chart 17-A - Scheduling Equation Values

scheduling equation:

Frequency. The frequency (F), or "how often to irrigate the turf," is calculated using the following

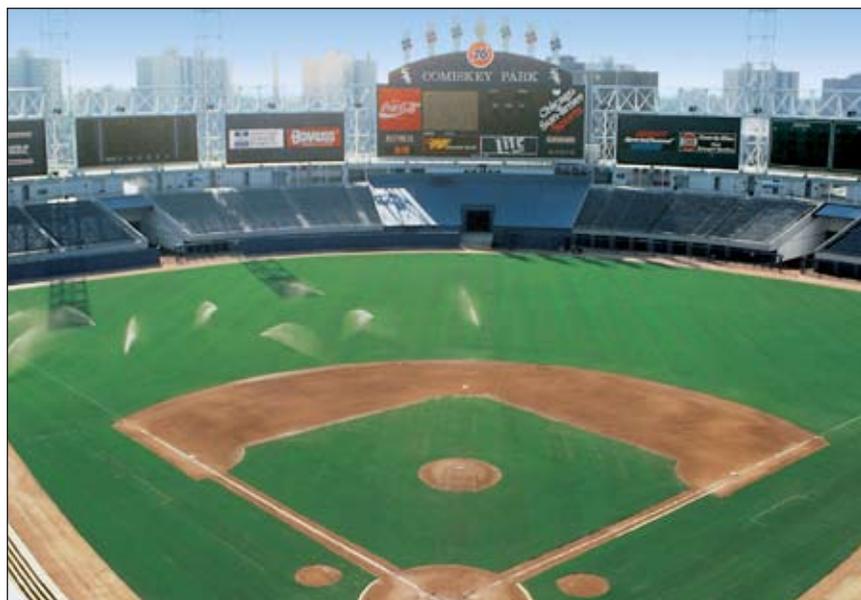
$$\text{Frequency} = \frac{\text{AWHC} \times \text{RZ} \times \text{MAD}}{\text{ET} \times K_c}$$

The amount of run time (RT) is calculated:

$$\text{Run Time} = \frac{60 \times F \times \text{ET} \times K_c}{\text{PR} \times \text{EA}}$$

Chart 17-B - Run Time Formula

PROPER IRRIGATION TECHNIQUE IS IMPORTANT IN DEVELOPING A DEEP ROOT SYSTEM. REPLENISHING THE AWHC WITH FREQUENT LIGHT WATERING IS THE WORST POSSIBLE WAY TO WATER TURF.



Run Time Examples	
Example:	A valve in your system is irrigating warm season turf which is growing in a sandy loam. The average precipitation rate is 0.49 inches/hour. The system is located in San Marcos, CA, where the daily moisture loss (ET) to be replenished is 0.20 inches. The system application efficiency is approximately 65%.
Answer:	
Watering Frequency	$F = \frac{1.0' \times 0.75' \times 50\%}{0.20 \times 0.70} = \frac{1.0 \times 0.75 \times 0.50}{0.20 \times 0.70} = \frac{0.375}{.14} = 2.68$
	The answer is a 2 or 3 day watering interval. The turf manager may decide to use a 3 day interval (water on day #1, wait day #2 and day #3, and then begin the watering interval again on the next day), and monitor the turf's condition.
Run Time per Frequency	$RT = \frac{60 \times 3 \times 0.20 \times 0.70}{0.49 \times 65\%} = \frac{180 \times 0.14}{0.49 \times 0.65} = \frac{25.2}{0.319} = 79$
	Irrigate 79 minutes each watering.

Chart 17-C - Run Time Examples

IF THE WATER IS APPLIED FASTER THAN THE INTAKE RATE, THE WATER WILL RUN OFF AND BE WASTED, AND MAY CAUSE DAMAGE TO THE TURF.

formula:

Soil texture will provide a general idea of the rate at which water can be absorbed without runoff. Many times, the precipitation rate and run time will be more than the soil intake rate. As the soil reservoir is refilled and reaches field capacity, the additional, or free water is pulled through the soil by gravity and capillary action. If the water is applied faster than the intake rate, the water will run off and be wasted, and may cause damage to the turf.

In order to determine if the watering run time must be cycled into multiple run times, look at the precipitation rate and compare it to the rate in Chart 18-A.

In the previous example, the precipitation rate was calculated as 0.49 inches per hour. Comparing that to the soil intake chart, the reader can see that one cycle may or may not soak into the sandy loam before runoff, and the turf area in this example should be monitored. If runoff is evident, the 79 minutes should be broken into two 40 minute applications on the same day.

Reprogram the controller at least seasonally to the appropriate run times. Consider performing a catchment test on a periodic basis to reevaluate the system's efficiency.

Proper irrigation technique is important in developing a deep root system. Replenishing the AWHC with frequent light watering is the worst possible way to water turf. This method never allows the soil profile to be wetted to any depth, encouraging shallow root growth and leading to turf which is easily damaged and dependent on frequent watering.

The best method of producing turf with a deep root system is through cyclical watering as described in this booklet. Deeply rooted turf is less susceptible to damage from stress due to high midsummer temperatures and evaporation rates. Parks, sports fields and other large turf areas with deeply rooted turf will be less vulnerable to damage, and will recover faster from the demands of public use and the playing season.



THE BEST METHOD OF PRODUCING TURF WITH A DEEP ROOT SYSTEM IS THROUGH CYCLICAL WATERING AS DESCRIBED IN THIS BOOKLET.

Soil Texture	Soil Intake Rate inches per hour
Sandy Soil	0.50 - 1.00
Loamy Soils	0.25 - 0.50
Clay Soils	0.10 - 0.25

Chart 18-A - Soil Intake Rates for Various Soil Textures



Hunter Industries

Hunter Industries is among the world's leading manufacturers of irrigation equipment for turf and landscape. Hunter's complete commercial systems – including controllers, gear-driven rotors, spray heads, valves and accessories – are designed for use on residential, large commercial and institutional projects. The irrigation equipment of choice on turf sites around the world, Hunter systems can be found everywhere, from local parks and public areas to professional and collegiate baseball, football and soccer facilities.

Controllers. Thanks to its modular design, a Hunter controller can be custom-tailored to the irrigation requirements of any site. Convenient snap-in modules allow you to expand the controller's operations to handle the particular number of zones you require.

Rotors. From small areas to large expanses of turf, Hunter's entire line-up of rotors boasts heavy duty construction that can stand up to high traffic, yet each is exceptionally easy to service. All rotors also include Hunter's continuously-improved, water lubricated gear drive backed by years of proven reliability...a wide array of nozzle choices to accommodate both typical and specialty needs... integral rubber covers that stay put (as well as some of the smallest exposed sprinkler surface areas in the industry) to keep play areas safe. And most Hunter rotors include the added durability of stainless steel risers as either a standard or optional feature.

Sprays. Hunter offers an institutional-grade spray head built to withstand the harshest environments. No need to substitute a residential grade product when there's a sprinkler built tough as a rotor to handle commercial, institutional and public area applications.

Valves. Available in heavy-duty plastic or solid brass, Hunter valves have been solidly built to deal with exceptionally high flows and extreme levels of water pressure, both far in excess of what a typical site will ever have to offer.

Sensors. Hunter offers a wide array of weather sensors to deal with virtually every climatic condition, including rain, wind and freezing temperatures. Each product has been carefully crafted to identify a particular weather event and then shut the irrigation system down so it does not

operate at a time where doing so would either waste water or create a hazardous situation. In addition, Hunter has a flow sensor, which automatically shuts down a system if an overflow condition – such as a pipe rupture or broken head – occurs.

Central Control. Rounding out the product roster, Hunter provides the capability to manage multiple systems at a single site or an entire network of systems scattered across different parts of town. Our irrigation monitoring tools put you in control of all your Hunter components from a single central location, saving time, water and money.

All Hunter products are available from local authorized irrigation distributors.



HUNTER TECHNICAL SERVICES

The Hunter Technical Services Department is available to answer any questions you may have about the installation or service of Hunter irrigation equipment. Technical Services has a toll free number for the U.S. (800-733-2823). A service representative is available to answer your questions Monday through Friday 8 a.m. to 5 p.m. (PST).

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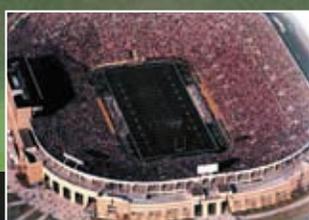
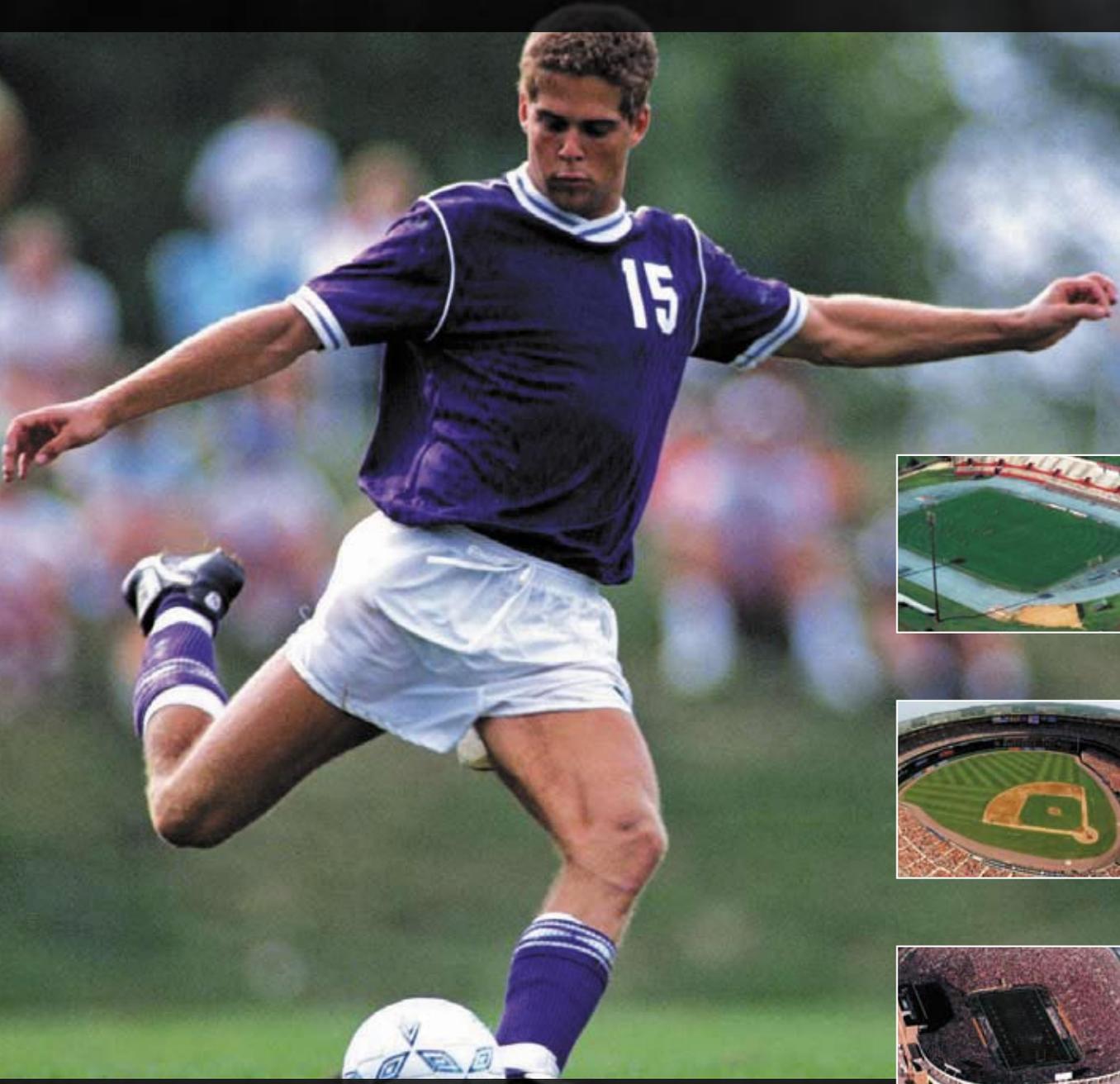
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Sports Fields & Grounds

**Solutions to make
your turf the best it can be.**



EDUCATIONAL SERIES

INTRODUCTION



Your fields have unique needs. Toro can help you meet them.

Whether it's a field that hosts some of the world's elite athletes or one at a park down the street, Toro helps by providing equipment and information you need to create great looking sports fields.

Here, you will read about some of the many facilities that have benefited from Toro products and expertise. Some you have heard of, others you may not have. But you'll definitely find that no matter how well-known a sports field is, the challenges facing those who care for it are the same you've faced too.

From compaction to disease, to simply keeping fields cut, the challenges are familiar. And some of the solutions to these challenges may apply to your sports field. Toro's product line goes wherever you need it – infield and outfield, fair and foul, inside the park and out. The facilities you'll read about here have found Toro solutions that have helped them, and using these solutions just might help make your sports fields healthier, safer and better looking, too.





National Sports Center

1 - 2

Battling Compaction

With more than 9,500 games played annually at the world’s largest amateur sports facility, keeping the 52 athletic fields in shape can be a big challenge.



Washington Nationals

3 - 4

Major-League Field Switching

D.C.’s RFK Stadium hosts both Major League Baseball’s Washington Nationals and Major League Soccer’s DC United – at times within hours of each other.



The University of Notre Dame®

5 - 6

An Irish Shade of Green

The grounds crew at Notre Dame is responsible for managing all the athletic turf for the university – including that at storied Notre Dame Stadium.



City of Eagan, MN

7 - 8

Covering Ground Well

With lots of acres, high citizen expectations, intense use, and a lean work force, the City of Eagan is constantly challenged to keep up with turf growth.



Manchester United Football Club

9 - 10

Top Quality Turf on Heavily Used Fields

Carrington Training Grounds, practice facility of Manchester United football club, sees a lot of action year round. See how they maintain their turf.



Poway Unified School District

11 - 12

Field Safety

Keeping the school district’s students safe is the goal of the grounds staff members, day in and day out.



BATTLING COMPACTION



National Sports Center

The National Sports Center (NSC), by the numbers, is staggering. The 700-acre complex in Blaine, Minnesota, is comparable in size to New York's Central Park, and its 52 fields make the Center the world's largest amateur sports facility.

Since its opening in 1990, the National Sports Center has played host to more than 22 million visitors, many of whom have returned because of the great condition of the fields. But it's not without challenges. Constantly battling compaction and the stress of game upon game upon game on the turf, grounds crew members work hard to keep it in great shape.

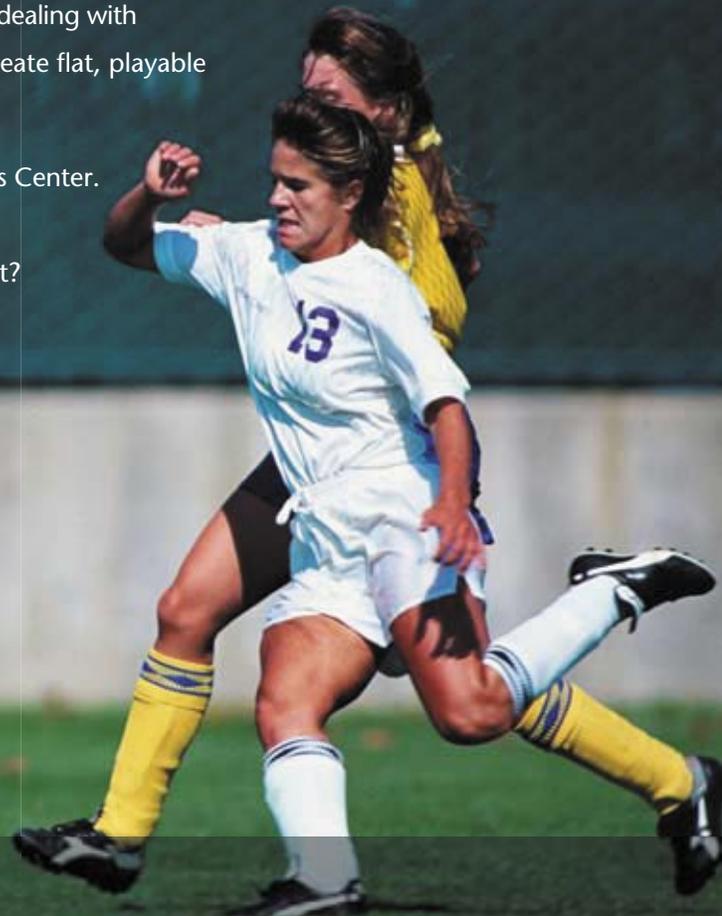
FACILITY HIGHLIGHTS

- *The National Sports Center annually hosts the Schwan's USA Cup, a youth soccer tournament in which more than 950 teams from more than 20 countries compete*
- *Approximately 9,500 games are played at the complex per year*
- *More than 75 miles of irrigation pipe lie beneath the entire amateur sports complex*
- *Between 500 and 600 of the complex's 700 acres are maintained turf*

The Challenges

To say the fields see a lot of action at the National Sports Center is an understatement! Throughout the summer, teams pack the fields from dawn to dusk, so dealing with compaction is a must. Staffers aerate, top dress and much more to create flat, playable and safe fields.

Turning over fields quickly is all but uncommon at the National Sports Center. Throughout the course of a season, one field could be used for soccer, rugby, lacrosse and cricket. How do the grounds crew keep it straight? Effective communication with NSC management and coaches.



The Details

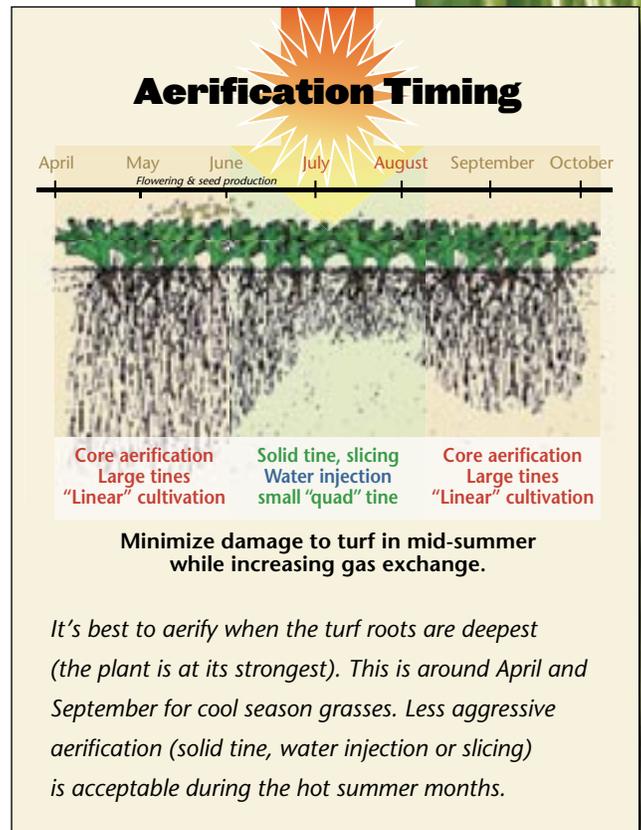
Established on what once was a sod farm, the native soil was largely peat. Over time, organic build-up in the peat has led to compaction. Crew members are constantly working to modify this soil by introducing a lot of top dressing. The topsoil mix they feel best holds up to the strain the fields face is between 60 and 70 percent sand.

As for height of cut? The fields are typically mowed to 2½ inches, though for major tournaments the staff reduces that to 2 inches. Their turf is largely Kentucky bluegrass with some perennial ryegrass blended in as well.

Practices & Results

With a complex as busy as the NSC, the only way to handle the challenges is to proactively address them. And that's exactly what the staff does. To battle compaction, they aerate and top dress. And they have the luxury of periodically resting fields, although that is difficult with the demands of their schedule.

The staff employs various aeration techniques multiple times a season, and typically top dress three times a year. They are rewarded with flat, safe fields on which to play. Compliments are scarce in groundskeeping, but the staff members pride themselves on the safety and aesthetics of their fields. With many of the teams returning year after year, the message they get is appreciation for a job well done.



MAJOR-LEAGUE FIELD SWI



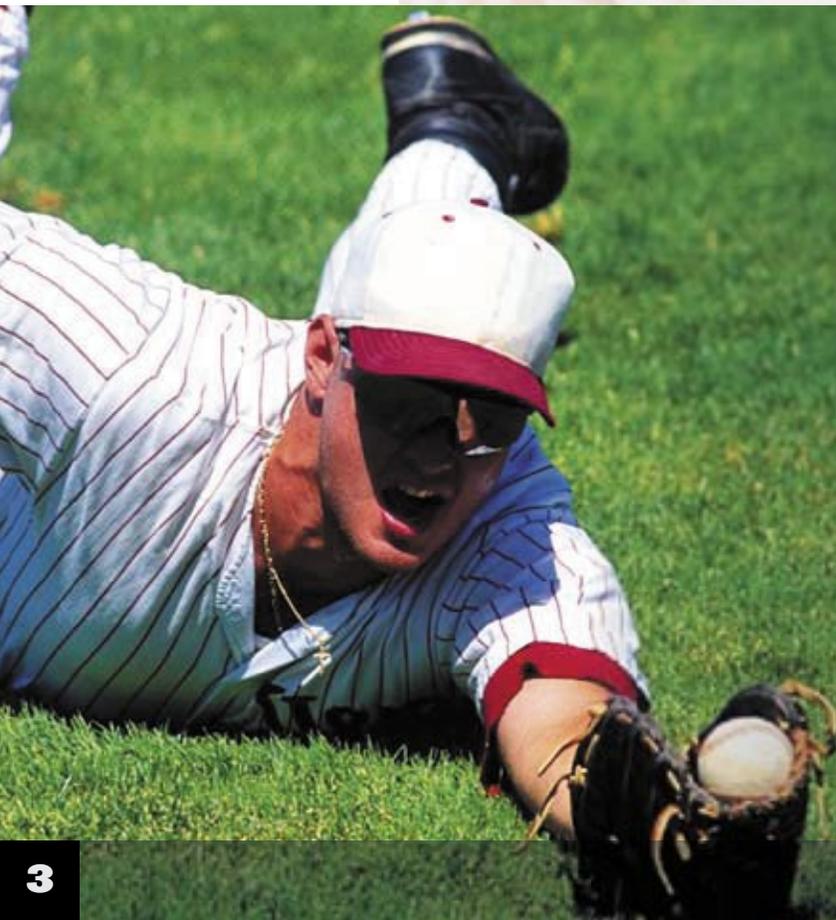
RFK Stadium

Since it opened in 1961, Robert F. Kennedy Memorial Stadium has hosted world championship events and thousands of professional sports games. Currently, MLB's Washington Nationals and MLS' D.C. United call RFK home. The seats frequently fill with fans expecting a big-league experience, right down to every blade of grass.

In a professional sports world where field-caused injuries are simply not acceptable, grounds crew members at RFK need to make sure the field is constantly in perfect playing condition. Hosting two professional sports leagues that currently play on the same field isn't always easy, but at RFK, they make it work.

FACILITY HIGHLIGHTS

- *Currently houses both Major League Baseball's Washington Nationals and Major League Soccer's D.C. United*
- *Seats more than 46,000 fans*
- *Roughly 100,000 square feet must be expertly maintained*
- *Has hosted World Cup Finals games and Olympic soccer matches*



The Challenges

About 12 times a year, crew members at RFK make the labor-intensive switch from the skinned infield dirt of a baseball diamond to the full-grass soccer field. Because of close schedules, it often needs to be done in one day. Making a smooth transition from the sod placed over the infield skin to the outfield sod is difficult, especially when you're dealing with professional level sports.

Today's professional teams also expect aesthetically pleasing striping on the field. This is one more detail that needs to be considered when the turf is cut. At this field that means twice a day during the active growing season. Lastly, different sports dictate different line painting configurations. There is no easy way to manage that situation but it's critical to execute it to everyone's satisfaction.

The Details

Even at the professional level it is important to get equipment that is capable of doing more than one job whenever possible. The Quick Attach System (QAS™) on the Toro Infield Pro® makes it easy for the grounds crew at RFK to switch from one attachment to another. This enables them to get a smooth finish on the skinned area one minute and move some infield mix from high to low spots the next.

Since the field gets mowed twice a day and striping is required the grounds crew uses a five-deck Reelmaster® 5200-D in the outfield and the Greensmaster® 1600 for the fine work around the infield skin.

Practices & Results

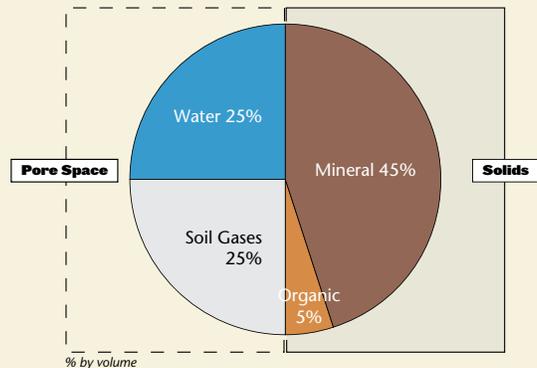
Currently switching from soccer to baseball and back involves a lot of work painting lines. Traditional paint removing chemicals were found to be too harsh on the turf. Larry DiVito, the head groundskeeper at RFK, prefers to paint over the white lines with green paint. This saves a lot of time and labor, and has proven to be acceptable to both the baseball and soccer players and coaching staff.

Removing the remaining dirt left behind by the sod that was placed on the infield is a breeze using the Finish Grader attachment for the Toro Infield Pro. Even better the QAS makes it quick work to change from one attachment to another.

Reel mowers provide the highest quality of cut possible which is a priority at this professional venue. You'll find the vast majority of professional athletic fields use reel mowers for the ultimate in professional appearance and the Washington Nationals are no exception.

Root Zone Pore Space

Composition of an ideal loamy soil:



- Half the volume of a soil is pore space.
- Under ideal conditions $\frac{1}{2}$ of the pore space is filled with water at field capacity, the other $\frac{1}{2}$ is filled with air.

Having 50% of the soil volume to be Pore Space as shown above gives the turf the right amount of room for both water and gases which are both needed for good root development.



AN IRISH SHADE OF GREEN



FACILITY HIGHLIGHTS

- *Notre Dame employees cultivate and maintain 30 acres of practice and game fields*
- *Notre Dame Stadium seats 80,795 spectators*
- *The first football game at the stadium was played in 1930*
- *Since 1973, every game has been sold out*

The University of Notre Dame®

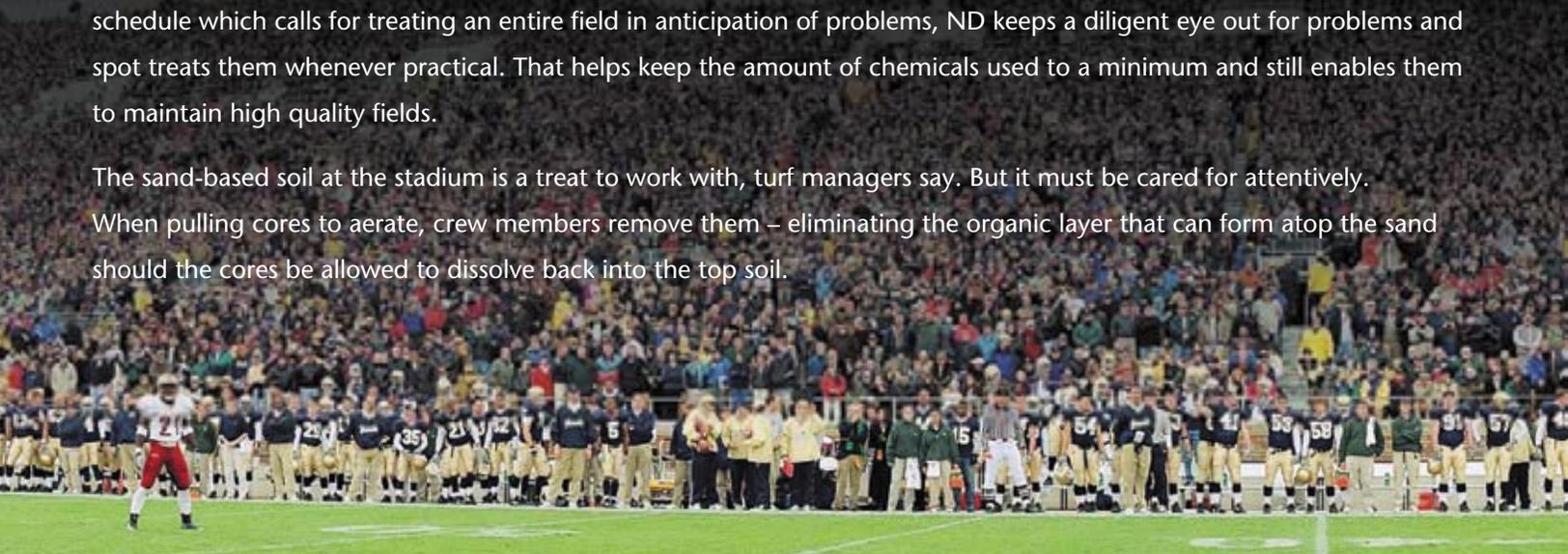
Like at many other colleges, sports turf managers maintain Notre Dame's dozens of varsity practice and game fields. And while each field has its own challenges, none is as storied or as visible as the football field in Notre Dame Stadium. With roots nearly as deep as the University itself, Notre Dame has a history all its own.

More than 80,000 spectators pack the stadium on autumn Saturdays. The field gets more attention than perhaps any other in Division I-A because nearly every Notre Dame home game is nationally televised. So, as you can imagine, healthy green turf is a must.

The Challenges

Notre Dame puts a real emphasis on the environment. While this is a great and noble cause it does present a few challenges. Fields at Notre Dame are kept up differently depending on use. Game fields are preventively maintained – turf managers proactively look for potential problems before they start and follow a schedule of application practices. Practice fields, meanwhile, are dealt with on an environmentally conscious, problem-by-problem basis. Rather than a fixed schedule which calls for treating an entire field in anticipation of problems, ND keeps a diligent eye out for problems and spot treats them whenever practical. That helps keep the amount of chemicals used to a minimum and still enables them to maintain high quality fields.

The sand-based soil at the stadium is a treat to work with, turf managers say. But it must be cared for attentively. When pulling cores to aerate, crew members remove them – eliminating the organic layer that can form atop the sand should the cores be allowed to dissolve back into the top soil.



The Details

Situated in northern Indiana, Notre Dame is a cool season grass campus. The football stadium as well as the other athletic fields consist primarily of Kentucky bluegrass and perennial ryegrass. The height of cut varies depending on the field and the time of year, but is generally around 2".

While there is no doubt that reel mowers give the highest quality of cut (because of the scissor action of the reel and bed knife), even the finicky sports fields managers at ND feel the Toro Groundsmaster® 3500-D and 4500-D rotaries provide the quality of cut a venue of this level requires. These products also do a great job of providing the turf striping that people around the world expect to see while watching a home Notre Dame game on a Saturday afternoon in the fall.

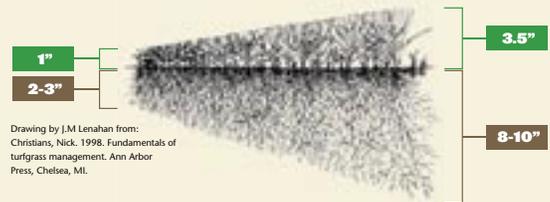
Practices & Results

In order to prevent an organic layer from forming above the sand-based soil, Notre Dame uses the Toro® Pro Sweep® 5200 to collect pulled cores. Preserving the soil's makeup, they say, is easier than trying to amend it later.

Though Notre Dame Stadium houses one of the most famous American athletic programs, its issues are as common as those in sports fields across the nation. The biggest problem, according to the turf manager, is *Poa annua*, the same weed battled throughout the Midwest. The field takes abuse, and returning it to perfect shape is always the top priority of the off-season.

Notre Dame's efforts are familiar ones: aeration, irrigation and pest control as necessary. The legacy that is Notre Dame Football doesn't increase the pressure, employees say. It's a simple goal: Do high-quality work and pay close attention to detail.

Turf plant stress increases with:



Lower heights of cut...

- Has greatest effect on rooting depth
- Can reduce rhizome and stolon production
- Increases susceptibility to environmental stresses
- Reduces wear tolerance
- Increases disease (dollar spot, leaf spot, rust)



COVERING GROUND WELL

City of Eagan, Minnesota

Like most Cities, Eagan has a large investment in its City facilities and grounds including athletic fields, general park areas and the boulevards that line the streets and roads.

The turf at each has special needs, necessitating the use of a variety of cultural and maintenance practices. In total the City provides intensive maintenance of nearly 500 acres of turf and over 80 miles of boulevards.

Even among the athletic fields there is a wide variety of needs. From the over 70 softball diamonds and baseball fields to the nearly 45 soccer fields, the requirements and challenges are unique. The most important aspect is to provide and maintain the high quality Eagan is known for while accommodating the hectic schedules of games and tournaments. Great parks and athletic fields are part of the reason Money Magazine in 2006 named Eagan the 12th most livable City in America.



MUNICIPALITY HIGHLIGHTS

- 500 acres of turf
- 80 miles of boulevards
- 54 parks
- 65,000 residents, 12,000 participants, 2000+ games
- 800 acres of other park land to maintain

The Challenges

As soon as the snow melts in the spring, teams are looking to get out on Eagan's fields. The heavy demand makes scheduling time to rest a field, even for a month, a real challenge. Maintenance personnel must make the best use of any available time to mow, aerate, fertilize and top dress. Some sites can only be mowed nights and weekends.

Residents and participants have come to expect top-notch turf at all of the 75 City properties including 54 parks. With a full time maintenance staffs of 9, plus seasonal workers, extraordinary planning and coordination are required to ensure an efficient operation.



The Details

The primary workhorse is the Groundsmaster® 4700-D which has seven cutting decks. With a 12.5' width of cut, the 4700-D can mow 6.5 acres per hour! And the ground-following Contour™ Plus decks minimize scalping, keeping their fields looking great.

While reel mowers still give the ultimate in after-cut appearance, rotary mowers are preferred for their ability to cut longer grass (greater than 2"). With 1,000 acres to mow, sometimes the grass can get long, even in Eagan, where planning is continuously reviewed. For non-athletic park areas, the Groundsmaster 580-D and its 16' width of cut is another asset the city frequently utilizes.

Practices & Results

Because the City of Eagan is a municipality, it is bound by government regulations in keeping up its athletic complexes. For instance, there are stringent regulations toward insect and weed control. And when sprinkling bans are enacted, the city's parks must follow them, too. Droughts and dry summers can be even more troublesome. But still, staffers fertilize three times a year. They top dress. They aerate. They do whatever they can to maintain well-groomed turf.

Limitations often breed creative solutions. For the City of Eagan, it's creativity designed to maintain healthy, playable fields.

Mowing Capacities

Assuming 5 m.p.h. mowing speed, and 15% reduction for overlap, turning, etc.

Width of Cut	Acres per Hour
5'	2.6
6'	3.1
9.1'	4.7
10.3'	5.3
11'	5.7
12.5'	6.5
16'	8.2





Manchester United Football Club Training Ground

Carrington Training Ground is situated on the outskirts of Manchester in northwestern England. Here, the likes of World Cup stars Cristiano Ronaldo and Wayne Rooney work out and perfect their skills before their matches for Manchester United – the world’s most famous soccer club. United was crowned English Premiership champions for the ninth time in 2007.

The Center was opened in 2000 and provides everything the demanding manager, Sir Alex Ferguson, and coaches need to train their players throughout the season, which runs from July to May. Of the 14 fields, three have under-soil heating, so training can take place on real grass, even on cold and frosty mornings.

FACILITY HIGHLIGHTS

- 45 acres of sports turf maintained to the highest standard
- 14 full-size soccer fields, plus practice areas
- Used every weekday of the season by the First, Reserve, Youth and Academy teams for training. Youth team matches are played most weekends.
- Hosts the Manchester United Premier Cup, every other August. The surface takes a pounding, as 24 teams from across the world, train and compete over a short six-day period.

The Challenges

Looking after the playing surfaces at Carrington is not easy for head groundsman Joe Pemberton and his team. The site is very exposed, and the wind can blow strong and hard across the fields. Add to this a climate that often provides too much rain, and the challenge to provide a perfect training surface day in, day out, is clear to see.

The amount of use the fields receive is phenomenal. Training sessions are held every day of the week during the season, and in summer carry on into the evening. The Academy, which develops the talents of the club’s 11- to 15-year-olds, is also based here, and makes full use of the facilities.

On the weekends, there is a program of competitive matches for the five youth teams. There are only four Sundays in the year when no games are played.

The grounds staff work hard to keep on top of all the jobs that need doing across such a large site. High quality machinery and tools help them meet their daily deadlines.

The Details

The fields are sand-based construction. Underground drainage pipes prevent waterlogging in wet weather, and an irrigation system prevents the surface from drying out during the summer. The turf consists of a hard-wearing perennial ryegrass.

Practices & Results

With such a tough schedule of training sessions and matches, and the high rainfall, the playing surface could very quickly get damaged from over-use in damp conditions. Head groundsman Joe Pemberton works closely with the coaches – briefing them each morning on the state of the grounds. They decide together the best places for training each day.

During a normal growing season the grass grows every day from April to October. Daily mowing is essential to maintain a surface the manager and players are happy with. They use two Toro mowers – the Reelmaster® 6700-D and the 5500-D to provide the high quality of cut they need.

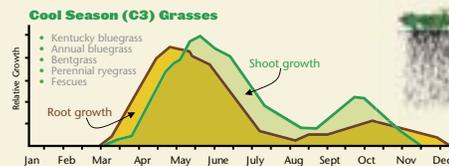
During the summer the turf is cut down to 1.10 " – but left a little longer in winter to give added protection in wet conditions.

The grounds staff also find their Toro® Workman® utility vehicle very useful. This multi-purpose unit is ideal for moving top dressing, fertilizer and tools efficiently around the large 45 acre site.

Annual Growth Cycles

Considerations for aeration:

- Vigor for recovery
- Root respiration



It's best to aerify when the plant is strong and can recover quickly (early spring and fall for cool season grasses). Fall is best to avoid bringing up weed seeds to the surface which would give them a better chance to germinate.

"These are good, reliable machines that do a great job," says Joe. "What's more, the rear roller at the back leaves a great pattern on the surface – so the presentation is first-class."

Joe Pemberton
Head Groundsman



FIELD SAFETY



Poway Unified School District

Roughly 34,000 students do their playing on fields maintained by the Poway Unified School District – much of it year-round. From the “play fields” at elementary and middle schools to the premier fields at district high schools, the fields are seeing nonstop action.

Aesthetics are important here – as indicated by the awards the district has received for some of its high school fields – but on the grounds crew’s priority list, one thing ranks above all else: Safety. Keeping the district’s students injury-free is the goal of all grounds personnel.

SCHOOL DISTRICT HIGHLIGHTS

- *Approximately 250 acres of athletic turf, and more than 1,000 acres of total turf*
- *More than 34,000 students use district fields*
- *27 employees maintain 120 fields on 35 sites*
- *About 10 acres of fields are synthetic turf*

The Challenges

The Poway Unified School District maintains 120 fields total. Finding the time to care for the fields can be nearly impossible. But it’s time the fields badly need in order to remain playable and safe.

Compaction makes it difficult, staffers say, mainly because people don’t realize the strain they are putting on fields. Many fields host football, soccer and lacrosse successively – keeping them in constant use from August to May. Restoring them is incredibly important for safety and health purposes.

Being in sunny California certainly has its advantages, but it also creates an irrigation challenge. With virtually no rainfall between May and September, and only 9” for the entire year, irrigation is a must for safe and playable fields. Without water, compaction problems would be magnified and fields would become too hard for play.



The Details

Various types of grass grow on fields in San Diego, depending on field usage. For the play fields, tall fescue typically is grown. Other fields are strictly bermuda or a bermuda/rye mix.

With both warm-season and cool-season grasses, a wide range of mowers is required. Grounds personnel use Groundsmaster® 455-Ds and 580-Ds; an incredibly durable Toro 450 that dates back 20 years; and, to maintain the 5/8" to 3/4" cut found on the district's premier bermuda fields, staffers use the Reelmaster® 6500-D. The tall fescue elsewhere in the district is maintained at a 2" to 2 1/2" cut.

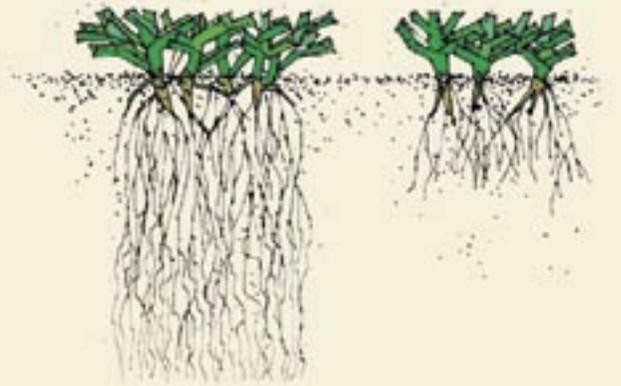
Practices & Results

It all starts and ends by putting extra focus on the details. Especially any issues that can improve field safety. It's a simple philosophy. Enacting it on 1,000 acres of total turf is a challenge. Grounds crew members core aerate twice a year, top dress once a year, and fight for every bit of rest they can get a field. On the premier fields and some others, the cores are swept after being pulled. For other fields, they are simply mowed back in.

Soccer and football fields, because of the seasons in which they are most frequently used, have a bermuda/rye mix. There is some overseeding, but mainly the bermuda is allowed to go dormant while the rye stays green all year. Bermuda is the only thing you'll find on baseball fields, where the hard work definitely doesn't go unnoticed. A ranking of baseball fields in San Diego County lists both of the top two at Poway Unified School District high schools.

Root Training...

- Deep infrequent watering encourages deeper rooting which is more efficient at "mining" water.
- Roots extract water from shallow zones first, then increasingly deeper.
- Root training is done most effectively in the spring during active growth by waiting as long as possible for the first irrigation, and by allowing soils to dry to near-wilt between watering cycles.



"Keeping our fields safe for youth activities is our top priority. We know that the healthier our turf is, the safer it is."

Mike Tarantino
Director, Maintenance and Operations





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