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Baseball Field Layout and Construction

The following page answers many questions about baseball field layouts including field dimensions, construction tips, and materials necessary for building a baseball field.



"The ball field itself is a mystic creation, the Stonehenge of America." - Roger Kahn in A Season in the Sun (1997)



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Baseball field design, baseball field dimensions & baseball field construction.

Baseball Field Layout and Construction ⁽¹⁾

by Grady L. Miller ⁽²⁾

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Properly laid out and constructed baseball fields are paramount to the game. Whether you are a parks and recreation type, work for a local school system, or just want your own regulation backyard baseball field, knowing a few basics is necessary before you can build your own field. The following instructions are designed to help set up a field from a relatively level, open area of ground. In addition to the field set-up requirements, keep in mind that to have a quality turfgrass playing surface, sports fields must have the following:

1. adequate water drainage
2. properly designed, installed and maintained irrigation systems
3. a sound maintenance program to address turf and clay conditions
4. the necessary field equipment (bases, pitching rubber) and surrounding structures such as fences.

Baseball and softball are the only major sports that are played on fields that have both turf and exposed soil for a playing surface. Since about 66% of the game is played on the infield, "skinned" areas should receive as much attention as the turf areas. The concept of clay management is similar to turf management in that it is difficult to write a maintenance program for all infield skinned areas due to diversity among infield soils. One thing that does not change though, is the basic layout.



Figure 1. Baseball Infield Dimensions
([click here for a full size image of Figure 1.](#))

The following list is a basic 13-step program for laying out a baseball field (Figure 1). If you can follow these basic 13 steps, you can build your own field of dreams. In addition to the steps, a few tips and suggestions were also included. A few basic tools such as shovels, rakes, a couple of measuring tapes, a small sledge hammer, a tamp or roller as well as some supplies such as stakes, string, paint (inverted aerosol spray cans), pitching rubber, bases, and home plate are needed to complete this project. Power tools and some extra hands will make the project go much faster.

Basic Baseball Field Layout

1. Start with a flat, open area. If some elevation is on-site, it should be in the infield area. Ideally, the open area has a good, dense stand of turf or with a little help one can be rejuvenated. If that is not the case, plan a turf management program to coincide with the construction of your ball field. It is helpful to mark out the components of an infield with paint as outlined below to visualize the field before you actually start removing turf.
2. Placement of home plate determines layout of the field. Be sure to plan for some type of backstop to contain stray pitches and to protect fans from tipped balls. If it is truly a backyard field and fans behind the batters box are not likely, planting shrubs about 60 feet (minimum required for high school and college fields) behind home plate may prevent errant balls from rolling too far away from the field.
3. Using the apex of home plate (back corner), cut out turf in a 13-foot radius.
4. The next step is to locate second base. Measure from the back tip of home plate to a distance of 127 feet and 3 3/8 inches (see Table 2 for distance between bases for other leagues). Mark with a wooden stake. When installing base pads, this will be the center of second base.
5. With the tape measure still in place, it is easiest to go ahead and mark the location of the pitching rubber at this time. The placement can be marked by measuring from the back tip of home plate along a string stretched to second base. The pitching rubber should be at 60 feet 6 inches.
6. The easiest way to find first and third base is to use two tape measures. Stretch one tape from second base stake toward the first base line and the second tape from the back tip of home plate toward first base area. The point where the two tapes cross at the 90-foot mark is the back corner of the bases. Repeat this step to find third base. A baseball diamond is actually a 90-foot square.
7. First and third base fit within the square, but second base is measured to the center of the bag. Improperly placed second base is one of the most common mistakes made when setting up a baseball field.
8. To make a "slide area" around the bases, cut out turf around bases by measuring a 13-foot radius within the 90-foot square. You can leave the base paths grassed if you like, or you can turn them into skinned base paths.
9. Next, turn your attention to the pitcher's mound. The diameter of a pitcher's mound clay is 18 feet, with 10 feet from the front of the rubber, toward home plate and 8 feet from the back of the rubber.
10. The top of the mound consists of a plateau that is 5 feet wide.
11. A regulation pitcher's mound is 10 1/2 inches high (compared to surface level of home plate). Miscalculation of the pitcher's mound height is probably the second most common error in setting up a baseball field. A transit or field level is best for setting the height, but in a pinch, other methods may also work. I once saw a guy peering through a cheap scope clamped to a carpenter's level on a makeshift tripod. Another option is to use your stakes with taut string and a ruler. A standard pitcher's rubber is 24 inches by 6 inches.
12. Building a pitcher's mound is as much an art as it is a science. Build the mound from ground up, 1 inch at a time keeping in mind the mound's slope (see next step). As you add each layer, tamp or roll the soil.
13. Beginning 12 inches in front of the pitcher's rubber and measuring toward home plate, for every one foot of distance the slope will fall one inch (until the slope meets ground level).

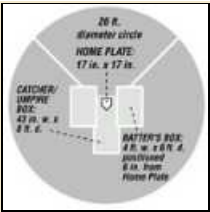


Figure 2. Batting Area Detail
([click here for a full size image of Figure 2.](#))



Figure 3. Pitching Mound Detail
([click here for a full size image of Figure 3.](#))

The mix used to build the pitcher's landing area (and often the batter's box and catcher's box) should have a significant concentration of clay to provide the necessary stability to resist degradation from increased traffic. A good material will be about 40% sand, 20% silt, and 40% clay. If necessary, you can mix individual components together. Just be sure that individual components are evenly distributed throughout the material.

A quality infield material will have a lower concentration of clay than the pitcher's mound. The infield skin should be moist and firm, not hard and baked dry. To achieve firmness, an infield mix should not be too sandy. An infield mix with greater than 75% sand causes unstable footing for ballplayers and increases infield skin maintenance problems. A sandy infield will create low spots more quickly and is more likely to create lips at the infield skin/turf interface. Ideally, the infield mix should be between 50% and 75% sand and 25% to 50% clay and silt. A combination that has been successfully used is a 60% sand, 20% silt, 20% clay base mix (sandy clay loam to sandy loam). The silt and clay give the mix firmness. If the mix contains too much silt and clay, compaction and hardness become a problem.

Well, now you have your field of dreams. If you have some big hitters, you may want to erect your outfield fence. This distance varies with the level of play. Confer with League Officials for data listed and recommended placement of outfield fences. Refer to Table 2 for a summary of base, pitching rubber, and outfield wall distances.

Tables

Table 1. Suggested Tool and Supplies for Building a Baseball Field

| Tool and Supply List | Number |
|-------------------------|--------------|
| Shovel | 2 |
| Rake | 2 |
| 200 Foot Measuring Tape | 2 |
| Small Sledge Hammer | 1 |
| Tamp | 1 |
| Roller | 1 (optional) |
| Stakes | 5 |
| Aerosol Paint | 1 |
| Pitching Rubber | 1 |
| Bases | 3 |
| Home Plate | 1 |
| Chalk Box and Chalk | 1 |

Table 2. Distance between Bases, from Pitching Rubber to Home Plate, and from Outfield Wall to Home Plate for Various Levels of Play.

| Field Use | Base to Base | Pitching Rubber to Home Plate | First to Third or Home to Second | Home to Outfield Wall |
|------------------|--------------|-------------------------------|----------------------------------|-----------------------|
| Baseball | 90' | 60' 6" | 127' 3 3/8" | Varies |
| Little League | 60' | 46' | 84' 10 1/4" | 180' radius |
| Pony League | 75' | 54' | 106' 3/4" | 250' radius |
| Babe Ruth League | 90' | 60' 6" | 127' 3 3/8" | 300' radius |

Footnotes

1. This document is ENH 159, a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: June 2001. Revised: July 2001. Please visit the EDIS web site at <http://edis.ifas.ufl.edu>.

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Do you have any tips & tricks of your own for baseball field construction? Share your experiences on [Baseball Fever](#) today.

Did you know that the average ballpark field (Major League only) contains ninety-thousand (90,000) square feet between the foul lines?

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