



Athletic Field Design

Layout and Striping of Athletic Fields

By Mike Hebrard, Athletic Field Design

Congratulations! Because of your years of loyalty and your high degree of intellect, you have been selected to layout and stripe the athletic fields this season. Also no one else knows how to do it. Now the hard part: where does the measurement of the lines begin? The middle of the line, the inside or the outside? Believe it or not all of the previous are correct, it depends on which sport you are laying out. For example, with the outside lines for football, the measurement is from the inside of the line along with the goal line, but all of the yard lines are measured from the middle. But in soccer and baseball, the line is in play so the measurement is from the outside of the line. Okay so we know our sport, let's say soccer, but you say that soccer has different size fields. Of course the soccer coach wants the widest and longest field possible. By the way, pay no attention to the manhole covers or valve boxes that will now be in play because the field needs to be 3 yds. wider for World Cup play for U-9.

Well now that I have your attention, let's be practical and realize that we are in a service business and are there to provide a service. You need to educate your coaches about the liability of keeping a manhole cover in play or running a line down a slope for that extra yardage. Don't be bashful; ask for what location and size of the field is needed. Educate yourself on what U-9 and Midget National Baseball is and what size field is needed. Have on file drawings of dimensions for the sports that pertain to you as well as others. You'll be surprised how many other grounds persons are in the same predicament as you and need a quick reference source.

FIELD LAYOUT: The easiest way to lay out a field is to start from the center of the field. Even

though you might have a common line you have to match up to. With football always start in the middle of the goal posts, (remember that not all of the goal posts are the correct distance apart; nor are they in line with each other). The width never changes; with a couple of simple guide lines every one should have the sidelines at the same spot. The tricky one is where to start the length. Measure in between the goal posts to obtain the center of the field, if you have single pole goal posts, run a string the entire length of the field from the middle of each goal post. From that spot measure 80' to each sideline, and since 80' can be used as one of our multiples in the old 3-4-5 method, you can spray an arc with an inverted spray can at 100' at each side line. Repeat at the other end. After stringing the side line, measure back from the 100' arc (which by the way is the 10 yard line) 60' to obtain the corner pins at each corner. The same method can work for soccer by using half of the width and dividing it by 4 then multiplying it by 3 & 5 to get the other measurements. See Chart. With baseball I like to put the homeplate so that it sits in the middle of the backstop and the apex is at a round number such as 15' or 30'. By triangulating the backstop or using a transit establish the middle of the field. A quick way to check or layout a field is to measure the distance to 2nd base in line with the center marking the pitcher's rubber at the same time. Then by holding the combined distance of 1st to 2nd at that spot, then by placing your finger at the proper base distance, mark that spot at the 1st base location then flip the tape to the 3rd base location and mark accordingly. Remember that outside of 1st and 3rd base sit at that spot but the middle of 2nd base is on the middle of the spot.

MARKING: There are some products available to the grounds person for the ease of marking the field. I like to use the Mark Smart system from Markers, Inc. to permanently mark the corner of the field as well as the corner and radius points for soccer. Football pylons as well as soccer flags can be inserted into the markers as well. Along with the Milburn's E-Z Right pre-marked cable I can accurately get the correct measurements and insert a marker at the correct locale.

STRING I like to use a 1/8" nylon cord on a reel that I can wind up with a cordless electric drill, Cotton can be used but it tends to lose its strength over a period of time and can break. Builders string is good for marking short distances as it absorbs the paint better and is less likely to mark the grass when moving the string. The string should be tight without any slop considering the conditions of the turf so that the holding pins won't pull out easily in soft ground. It is a good idea to bright paint any and all marking devices to ease in finding them so that they aren't left on the field, causing either damage or injury. By lifting the string, snapping it and rolling it off your fingers you can get the string as straight as possible.

PAINT: There are several paint manufactures that specialize in paint for athletic fields. When choosing a supplier, I'm sure cost is a big factor, but be careful in what you specify. Make sure you buy paint not 50% water with paint. Some paint adheres to the grass blades better and others are brighter. Availability and service support can also be a very valuable consideration. What good is it on Monday if the game was on Friday, what kind of assistance can your supplier give, dating, technical support, accessories. Sometimes the company with the best price for white can't even come close to match another companies price for 5 gallons of red. Different colors can have drastic price differences according to the quantity and ingredient. Also some colored paint can kill the grass if the formulation is not intended for that application. To insure that you have purchased a high quality color paint, stay away from the brands that are made from a tint base. With a mild frost or rain the painted turf will lose its brightness and the grass leaves will have a white cast on them. Aerosol cans have their place for layout and quick striping but can't give the clarity for the cost as mixed paint solution applied properly. When possible, mix the paint with hot water to get some of the solids in suspension easier and get a quicker drying time, especially during those cold fall and winter mornings. Also by using a weed-eater with a curved shaft, (remove the shroud & line holder) you mix the muckiest mess thoroughly in minutes. By removing the lids when mixing the paint you can more thoroughly inspect the paint and mix it as opposed to unscrewing the little cap on top. Other methods of mixing paint can be

used, such as bucket to bucket, or a paint mixing paddle on an electric drill. But by favorite is still the weed-eater because of its RPMs and being able to mix it thoroughly. Be sure to have an MSDS on file for any paint or chemical that you apply to the field. Avoid using paint that is exposed to freezing. It turns to a cottage cheese looking sludge. It can be used in a pinch but be prepared for a mess and clogged nozzles.

WET WEATHER: If the grass is wet there are a couple of last minute techniques that can be used to insure a better quality line. Use a gas powered blower to remove the larger water droplet off of the grass blades. When the paint makes contact with those heavy droplets it will dilute the painted line. Also a long PVC 1/2" pipe or hose whipping across the turf will knock the water off too. The hot water may help with the wetter surface also use a little heavier concentration of paint could help. If the paint is applied properly before it rains it has a better chance of lasting, so timing is of the essence. Yes you might have work through a scheduled break to beat the weather, but in the long run it will be worth it.

PAINTING: It is best to paint a light coat first and let it dry if time permits. This will act as a primer base and allow for a brighter line. Don't paint too quick or you will dilute the line with added water in the paint being applied and lose some of the brightness. There are several ways of applying paint to the turfgrass, the standard way is to use a powered painter. A low pressured application is usually around 30-50 PSI with the pressure derived from CO2, electric pump, hand pump, gear pump or piston pump. By far the most professional method is with an airless type painter. This allows you atomize the paint during application for a quicker drying time, thus applying a 2nd coat or another color quicker. Airless painters develop anywhere from 1500 - 3000 PSI, so more safety concerns are present. Also with an airless painter, one can shoot the paint into the soil leaving sealed barrier at the crown of the plant causing turf damage. It is best to paint along the string so as not to soak the string with paint and causing painted string marks in the turf or drip marks. But the easiest and quickest method is painting directly on the string. Other painting techniques that can be use is a painter with a 4"

shield to prevent any drift out side of the desired line thickness, the use of a 4" paint brush along a string, (don't laugh some groundspersons swear by it), and a 20' long aluminum stencil board for the most perfect 4" line that can be painted as used by George Toma's Super Bowl Grounds Crew and several other stadium professionals. Different spraying nozzles can be an option. Stay away from the cone type, they leave a hollow spot in the middle of the spray and don't offer good density. The fan tip nozzles are the most popular and can have several patterns and angles to choose from, so check with your local supplier. Nozzles should be replaced when the spray pattern becomes distorted. Be sure to use a filter to prevent clogging, as one little grit can quickly alter a near perfect line. I have had some success with a twin type nozzle, that sprays out of two orifices painting on both sides of the grass on one pass. A special tooth brush looking brush can be purchased to aid in quickly cleaning the plugged nozzle. Always remove the nozzle after painting, as some of the paint residue may still be in the line and settle into the lowest spot in the line plugging it up. It is also advisable to have other nozzles available in case of a plugged or different angle is needed.

STENCILS: More and more stadiums are trying to let it be known they have the best marked field. However with a little planning and some constructing, anyone can make their field look like the " Game of the week". Numbers can be made from scrap plywood or other materials. Be careful with using some of the plastic stencils during a drizzle or rain as it will re dilute the paint and make for a messy job. It doesn't take that much more time or paint so I recommend using the biggest numbers possible which is 6' and using the arrow pointing toward the goal from the 40's on in. The numbers can also be highlighted with the teams' colors, which can become very labor intense and costly. I developed a guide for yard marks that can be UPS'd . This allows one or two people to near accurately apply the several yard marks on the football field to give that professional look. All of these marks on the football fields aren't just for looks, there are some underlying advantages that also take place. Besides building up an atmosphere and excitement by the players and student body, there are statisticians,

announcers, coaches, fans, radio, TV and game officials that value these markings to help with the overall administration of the game. I'm not a big fan of painting logo's in the endzones at the high school and small college level for a couple of reasons. First, most of the seats are in the middle of the field and not that high up, and second, the amount of paint and area to cover can become very costly if done correctly. I like to use a standard football helmet stencil in the middle of the field, that is where most of the turf damage takes place and sometimes with a big logo in the middle of the field it can cover some of that wear. By outlining any logo or letter with a pin line to 4" contrasting color, it will give it more definition. If using a prepared stencil with different colors use the proper color with an aerosol can when applying it so you know what dot goes where. Another highlight that will help your field stand out more for not much money and time, is paint on each side of the 20's and 50 yard lines with one of the school colors. This really gives you a perspective of where the ball is. Be prepared to take a lot of photographs, what better way to dress up your office or school than a large picture of your hard work. There are now companies that can be hired to take air photo's using a large blimp with remote control to fly over the field and take pictures. By properly communicating with athletic department or booster club, the labor force for moving the stencils can be provided by the students with the coaches supervising your instructions.

Remember, I learn every time I mark a field, so keep your eyes and mind open. There is always a better way to do something in someone else's eyes, it just might fit your style.