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1. Choosing the correct turf:

EPS Turf is specially designed and produced for Ewing by Challenger Industries Inc. and has the most complete range of golf products in the industry. Choosing your turf is one of the most important decisions you will make about your facility. Understand WHAT you are getting and WHY you are getting it.

Guide lines for choosing your turf:

If you want a putting green for mainly putting and small chip shot inside of 30’, any of our short pile textured surfaces will work.

**Pro’s:** These surfaces gives you the best putting surface available with minimal maintenance.

**Cons:** These surfaces will not hold a golf ball very well. In other words: shots hit into them from more than 30 yds out will bounce and release to the back of the green.

If you want a putting green that will hold a ball from longer distances out you will need our PP sand filled surfaces.

**Pro’s:** These greens will hold a ball from any distance and will give you the full golf experience provided you have the space to hit balls into it from a distance out.

**Cons:** These surfaces need a bit more maintenance up to 3 times per year (depending on where in the US you live).

Call the EPS Turf Specialists at (706) 913-8053 today to learn more

EPS Turf
EPSTurf.com
2. **How to prepare the area:**

Once you know the size of your facility and where you are placing it, take regular ground paint (available from any home improvement store) and mark the area on the ground.

### VERY IMPORTANT: Always work with a rectangle or square. In other words, DO NOT try to mark the area in the way your green will be shaped. ALWAYS build your base 1’ – 2’ bigger than the area you intend to turf on all 4 sides for proper compaction.

**Let’s use a green that is going to finish up at 24’ x 30’:**

Although your finished product will measure at 24’ x 30’, you should build your base to measure 26’ x 32’. Your EPS turf products come in 15’ widths. Always figure your measurements based on the widths of the turf materials and the pile direction you want the turf to face. This will ensure that you:

- Know exactly how much base you will need
- Ensure you have proper compaction *past the outer edges of your facility*. Incomplete compaction (past the outer perimeters of the intended install area) WILL cause these areas to begin to collapse on the outer perimeters, making your installation look bad and the turf will wrinkle in those areas.

### If You Have an Odd Shaped Area:

Divide the area into squares or rectangles sitting side by side.

**Note:** For short pile putting green products the best installation plan is over a solid base (i.e. glue down over concrete). This will fully eliminate any issues with wrinkling or movement of the short pile turf over time. The information contained below is if you choose to build over compacted base.
3. How to calculate the amount of base you need:

Here are the formulas you will need to calculate the amount of base needed:

\[
\text{Square feet of your square or rectangle} \\
\times \text{depth of the base} \\
\div \text{by 200} \\
= \text{tonnage needed}
\]

You will always need 2 types of base:

- Under base – also called rock base
- Top Base – also called the skin or leveling layer

Example of base calculation:

Using an example of 30’ x 30 putting green:

- **Rock base needed:** 30 x 30 = 900 square feet x 8” of depth (for deep freeze area) = 7200 divided by 200 = 36 tons of rock base
- **Skin needed:** 30 x 30 = 900 square feet x 2” of depth = 1800 divided by 200 = 9 tons of base

What if your green needs heavy slopes and undulations:

- Let’s use an example where a green will be 4” above ground level in the front and 18” high on the back: Take the 2 numbers (4” & 18”) and add them together.
  - Then divide it by 2 (4 + 18 = 22) divided by 2 = 11. Base your calculation on this number of 11” to determine the amount of base needed: 9” will be rock base and 2” will be skin.

**ALERT:** Be sure to keep the skin thinner than 2” if you are building in an area with deep freeze lines. This material holds more ice than rock base which could make the base mushy in the Spring.
**VERY IMPORTANT:** Golf practice facilities planned correctly will ALWAYS HAVE A FRINGE/COLLAR. Not only is it authentic golf, it is also the correct way to install a green to last for many years to come. Don’t be talked into a green without fringe. Which green below would you prefer?

**IMPORTANT TIP:** Authentic synthetic putting greens are built just like the real thing - higher than ground level to allow for proper water run off/drainage.
4. **Tools needed for base building:**

Most of the time shovels and a wheel barrow could come in handy. Be sure to have those available if you should need them.
5. Building the base:

- **Step 1:** Paint the rectangle or square on the area where you are going to work. Make sure these lines are in the actual place.

- **Step 2:** Before you begin to cut your base make sure of the following:
  - There are no sprinkler heads or sprinkler lines under the area. An easy way to check for this is to simply bump your sprinkler system manually. Mark all heads which pops us and make sure to cap those AS WELL AS the water line feeding the sprinkler head.
  - Be sure to check for any electrical or gas lines.

- **Step 3:** After your area has been marked out and you have done all the checks, begin to cut out or clear out the area. You want the area to look something like this before you bring the base material in:

Notice the rectangular shape as well as the 6” of depth into the earth. This particular green was built in SD (deep freeze lines). The area was compacted before any base material was brought in.
Step 4: Once the area is ready, begin to spread the rock base in 2" layers and compact each layer before you bring in the next layer.

IMPORTANT BASE BUILDING TIPS:

✓ Always spread the base in 2" layers and compact it BEFORE you bring in the next layer. If you do not do this in layers you WILL end up with a green that becomes wrinkled during the next Spring. Even & solid compaction throughout the base (from the ground up) is essential to the putting green being the best it can be.

✓ While working with the rock base, you do not have to do precision work; in other words, do not spend a lot of time trying to ‘set’ your base to the slopes & undulations you need.

✓ For example: if your green is 4" in the front and 12" in the back, try to create a base that is approximately at those measurements, get the rock base to within 1" – 2" of where you need it to be.

✓ You will have time to fine tune it with the skin when you work with it next.

✓ Trying to do a perfect final set with the under base will slow you down unnecessarily; do not allow this to happen.
6. **Adding Slopes & Undulations:**

Slopes & undulations explained:

- **Step 1:** Bring the skin in all at once and spread it evenly over the rock base to what you believe is a 1” – 2” spread using the large landscape rake.

- **Step 2:** As soon as you have the first spread done, compact the skin. You are going to do this process 2 – 5 times.

- **Step 3:** After the first compaction of your base is complete, take the hard bristle broom, pulling it behind you; go over the whole base to smooth it out.

- Once this is done you will have your first ‘look’ at what the base looks like.
7. **Testing your base:**

- Using either a basketball or a tennis ball, roll the ball across the green from all sides.

- The rolling ball will leave a track mark behind ‘showing’ you the slopes and undulations.

- A tennis ball will break half as much as the golf ball will do and a basketball will break a quarter as much as the golf ball will do.

- This will give you a clear indication whether your base is ready or not. If you feel the base is where you want it to be, continue to compact the skin.

- This process will show you if there are low spots or high spots hidden in the base.

- You should compact the skin 20 minutes for every 300 square feet.

- If after 2 – 3 passes you are comfortable that the base is set, you are now ready for the final fine tuning.

- Dragging the broom behind you, go over the complete facility several times. You want to see a surface which resembles the smoothness of concrete:
8. **Installing the cups:**

**Always use the EPS Pro Cup Assembly system.**

This system is made up of 5 parts:

- Cup
- Sleeve
- Top
- Pole
- Base

**IMPORTANT TIP ABOUT PLACING YOUR CUPS:** Take the sleeves and place them (on top of the base) where you think they should go. Be sure to have a clear understanding of where your putting surface ends or you might place the cup too close to the edge of the putting surface. Walk around the green (or even roll a tennis ball towards the sleeves from all sides) to make sure the cups is where you want them to be. Make sure your sleeves are placed no less than 1’ away from any seam.

- **Step 1:** Using a small hand shovel and a long screw driver, dig a hole in the spot where the sleeve was.
- **Step 2:** You will need to go at least 10” into the base/earth since the sleeve is that long.
- **Step 3:** Once the hole is deep enough, place the sleeve in the hole and make sure it is level.
- **Step 4:** Take the rock base and skin you dug up and pour it back into the hole (on the outside of the sleeve).
- **Step 5:** As you put the base material back into the hole, use a long screw driver to compact the base around the outside of the sleeve again.
- **Step 6:** Once you have compacted the base with the screw driver, lift the sleeve to about 1” above ground level.
- **Step 7:** Collect some base material around the sleeve to form what will look like a 1” tall ‘pimple’ around the sleeve.
Installing the cups

- **Step 8:** Use the hand tamper and tamp the sleeve and the base material around it down to the desired height to match the base.

**IMPORTANT TIP:** If you are going to make a mistake here, make sure you leave a ‘pimple’ around the sleeve rather than a dimple. To correct a pimple is much easier than correcting a dimple.
9. **Tools needed for turf installation:**

- Using the correct tools is the beginning of successful seaming.

- Avoid these tools, they trap & rip the turf which will cause bad seams.
10. Getting the turf ready for installation:

- **Step 1**: Roll the putting surface out on a hard & firm surface. Whenever possible try to do this on a drive way or any concrete/asphalt surface. If it is not possible to work with the turf on concrete/asphalt, roll the turf out on the base. Take special care to not disturb the base too much while preparing the turf.

**IMPORTANT TIP:** Make double sure you roll the rolls of putting surface out in the same direction to ensure the grain goes in the same direction. If the grain does not go in the same direction the rolls of turf will look like they are different colors. We strongly recommend you mark the direction of the grain as you unroll the rolls of turf:

- **Step 2**: Once you have the rolls of turf laying side-by-side, flip the sides that are going to be cut over. Pull the turf back approximately 3’- 5’ over itself to expose the backing:
• **Step 3:** Once you have the backing exposed, take extra care to ensure the turf is pulled back evenly down the whole length (same amount of backing showing all the way) down the roll. **Alert:** When you have the backing exposed, make sure the turf is laying down flat: no buckling or ripples showing in the backing which is exposed.
11. **How to prepare for successful seaming:**

**The concept of successful seaming is this:**
Seaming 2 perfectly straight lines to each other.

- **Step 1:** Cut the factory edge off of the turf.
- **Step 2:** With the backing exposed (regardless of which backing you are working with), use your chalk line to ‘shoot’ a perfectly straight line all the way down the length of the roll.
- **Step 3:** Remember you are busy drawing a perfectly straight line, the 1st of two straight lines you will be seaming together.
- **Step 4:** This line should be no more than 1” into the turf. Making this line any deeper into the turf will waste too much turf.
- **Step 5:** Make the same markings on the other roll of turf.
- **Step 6:** Use your **STRAIGHT EDGE & CARPET KNIFE** to make a perfect cut on this line all the way down.
  **ALERT:** Make sure you do not push the blade all the way through the turf on the bottom. Cut slowly and achieve the correct cutting depth so you only cut the turf on the top.
- **Step 7:** Take your time and make a perfect cut, this is process that **CANNOT BE RUSHED**.
- **Step 8:** Once you have one side of one roll cut, repeat this process on the next roll.
- **Step 9:** **DO A DRY RUN WITH YOUR SEAMS:** the way the seams look now is how they will look when you do the permanent seams.
12. **Shaping the putting green & fringe:**

- **Step 1:** Place the rolls of putting surface in the exact place they belong on the base.
- **Step 2:** Use chalk to draw the shape of your putting green on the turf:
  
  ![Image of putting green with chalk markings](image_url)
  
  Be sure to draw more than one shape to ‘see’ different options.

- **Step 3:** Check the placements of your cups one last time to ensure they are in the correct position.

- **Step 4:** Using the loop pile cutter begin to shape the putting surface.

- **Step 5:** After the green is shaped check the putting green to putting green seams one last time, they need to be a perfect fit at this time. **Make sure the backing touched the backing on every inch of the seam.**

- **Step 6:** Using the shaped putting surface as a template shape the fringe as shown:
Shaping the putting green & fringe

Step 1: Cut the fringe into the desired sizes and place each piece where it belongs.

Step 2: Lay the shaped putting surface over the fringe.

Step 3: Use the putting surface as a template and shape the fringe following the shape of the putting green.

Step 4: Remove the waste and MAKE SURE you have a perfect fit.
13. **Do a dry run BEFORE seaming begins:**

- Always do a dry run – DO NOT BEGIN THE SEAMING PROCESS without this process.
- Put all the pieces of turf in place and going over every inch of the seam ensure you achieve the following:
  - Interior seams – putting green to putting green: You are looking for the backing to touch
  - Exterior seams – putting green to fringe or fringe to fringe: You are looking for backing to touch backing whenever possible. This will NOT always be possible, if you have no less than ¼” separation here, your seams will be perfect

**ALERT:** Taking your time with this process will ensure a successful seaming process. The way your seams look & sit during the dry run is what they will look like when they are done - guaranteed. Take the time to set the seams to perfection now, from here on in it only gets more difficult to ‘reset’ a seam.

- Once you are satisfied that all seams are perfect, use 60D nails and secure all the fringe pieces by driving the nails through the turf into the base. This will ensure the fringe pieces do not move during the seaming process.

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14. **Seaming:**

- **Step 1:** Fold the interior seams back about 3 feet.
- **Step 2:** Cut the seaming tape to the desired length to cover the entire length of the seam.
- **Step 3:** Always do & finish all interior seams **BEFORE** you begin working with the exterior seams.
- **Step 4:** If you have multiple interior seams **ALWAYS WORK FROM THE CENTER SEAM** to the outer seams.
- **Step 5:** Apply the glue to the tape as prescribed by manufacturer.
- **Step 6:** Gently lay **BOTH** pieces of putting surface back in place into the glue.
  
  **Alert:** Stop the turf from falling over and the fibers getting into the glue

- **Step 7:** Begin at one end and place yourself above the seam with your face no more than 8” – 12” away from the seam.
- **Step 8:** Using your thumbs, pull the fibers apart which will allow you to see the backing. You want to ‘place’ the backing back to where backing touches backing.
- **Step 9:** Once you have covered 12” – 18” use the seam roller to roll that finished area thoroughly.

  **Alert:** If you see areas where there is too much separation, lift the backing out of the glue and kick the turf with your carpet kicker until you have stretched the turf enough to fill in the ‘gap’. This process will need 2 – 3 people to do correctly.

- **Step 10:** When you are done rolling the area, gently drive sod staples through the putting surface. **THE STAPLES MUST STRADDLE THE SEAM.** The staples will ‘hold’ the seam in place while the glue is curing.
- **Step 11:** Repeat this process until all interior seams are done.
- **Step 12:** For the next 3 – 4 hours be sure to check every inch of the interior seams every 20 – 30 minutes. Outside factors such as wind, temperatures, tension etc. can cause the
seams to move during the time the glue is curing. If you check the seam regularly you will have time to ‘reset’ the seams if needed.

- **Step 13:** With all interior seams completed, begin the seaming of the exterior seams: putting green to fringe.

- **Step 14:** Cut 4’ – 6’ pieces of seaming tape and place them (in place) all the way around the green. Make sure you have all the pieces of seaming tape in place BEFORE you begin spreading the glue.

- **Step 15:** Spread glue on 3 – 5 pieces at a time and lay those under the putting surface & fringe.

- **Step 16:** After 3 – 5 pieces are in place, stop spreading glue. Begin the final set of the seam where you just placed the seaming tape.

- **Step 17:** Pull the fibers of the fringe back and with your face 8” – 12” away from the seam, make sure you place the backing no more than ¼” apart into the glue.

- **Step 18:** Every time you finish this 3’ – 5’ section, drive sod staples trough the turf. The sod staple MUST STRADDLE the seam.

  **ALERT:** It is recommended to cover this exterior seam (with the sod staples in place) with sand bags.

**IMPORTANT TIP:** If you spill glue on the turf use regular gasoline on a cloth to wipe off the turf. Our products are petroleum based products and gasoline is the best way to clean the turf.
The infill process:

What is the purpose of the infill sand?
The infill sand ONLY SERVES A WEIGHT purpose, it does not influence the performance. The correct type of infill sand combined with the correct amount will weigh the backing of the turf down to follow the slopes and undulations correctly. This will prevent buckling and wrinkling of the turf.

Always use a drop spreader, not a broadcast spreader. The broadcast spreader does not have the ability to spread the sand evenly.

- **Step 1:** Fill the spreader and drop the sand in even lines across the putting surface. Repeat this process until you have the whole green covered with 2 – 3 layers of sand.
• **Step 2:** Use a plate compactor to vibrate the sand into the outing surface. A broom can also help this process.

![Plate compactor on turf](image)

• **Step 3:** Repeat this process until you have all the infill sand in the putting surface.

• **Note:** You will often need to add more infill a few weeks after installation once the weather allows sand to fully drop and removal of any static.

**WARNING:** Always complete the infill process for the putting green BEFORE you start the infill process for the fringe. The weight of the sand and the plate compactor will make the turf ‘grow’ on the outer perimeters. If the fringe has infill sand in it, you could see buckles where the putting surface and fringe meets. The infilling of the fringe is one of the very last processes.
16. **Cutting the cups into the putting surface:**

- **Step 1:** Locate the sleeves under the turf.
- **Step 2:** Use a carpet knife to cut an ‘X’ into the turf using the inside of the sleeve as a ‘stopper’ for the blade.
- **Step 3:** Take any of the 4 pieces of ‘pie’ left by the X and cut one piece at a time. **ALWAYS CUT AGAINST THE BACKING, DO NOT ATTEMPT TO CUT THROUGH THE FIBERS.**

- **Step 4:** Use the inside perimeter of the sleeve to achieve a perfect cut. The backing of the putting surface should ‘rest’ on the lip of the sleeve.
• **Step 5:** Insert the cup into the sleeve. It will slide in easy in the beginning but get tighter as you go deeper. Once the cup is about 3” above the putting surface, use the sole of your shoe and gently push it all the way down. The cup is in position once the top of the cup is *halfway between* the tips of the fibers and the backing of the turf.

Do the following to finish the facility:
- **Step 1:** Spread infill sand in the fringe and use the plate compactor to vibrate the sand in.
- **Step 2:** Bury the edges of the fringe 4” into the earth.
- **Step 3:** Sprinkle the complete facility lightly with water to ‘wash’ it...

**Play away!!!**