

Installation of Polypropylene PP 50 and Tiff Poly

1. Layout of Green and Existing Ground Preparation

- Step 1: Determine the size and shape of your green as well as any chipping stations and/or sand traps.
- Step 2: Measure the length and width you determined from Step 1 on the ground and using irrigation flags or stakes and landscape marking paint, outline the designed shape. Check for irrigation heads and be sure they are all capped off or relocated. Also check the electrical lines, leech fields and make sure you have proper drainage.
- Step 3: Once the green is outlined you are ready to remove any existing sod. If your existing ground is not sod covered, skip to Step 4. Utilizing a bob cat or sod cutter remove the sod from the staked green area plus an additional 1' to 1 1/2' around the perimeter. Set the depth of the sod cutter to between 2 and 3 inches.
- Step 4: You now have the green area laid out and have removed any sod from the area plus an additional 1' outside. Rough grade the area using a landscape rake, then using a water hose and nozzle, lightly wet the area and then compact using either a 2 ton double drum roller or 19" plate compactor depending on the size of the green and equipment availability. Make 2 passes over the area to ensure sufficient compaction.
- Step 5: Spray the entire area with a strong weed killer.

2. Base Installation

- Step 1: Remove the irrigation flags used in the layout of the green as you will be utilizing them again in this procedure.
- Step 2: Base installation will involve two different types of base material. The first layer of base will be between 2 and 4 inches thick (northern installations should be 6"- 8") and consist of 1"-2" fines aggregate material. The second layer should not exceed 3 inches thick and will consist of screenings or other fine material, depending on what is available in your area. The base material is measured by the cubic yard and the following calculation is utilized to determine the quantity of material.
a) Calculation of a 5" compacted base; $Sq\ Ft\ of\ the\ Green \times 34 / 2000 =$ Tonage. Round the final measurement up to calculate for any waste.

- Step 3: Using a shovel and rake, place base material evenly over the green area. As you install the first layer of aggregate material, build up the base by doing this in layers check the elevations with your level until you have achieved the desired pitch and the beginning of the undulations.
- Step 4: When you have finished the first layer of base and are satisfied with the undulations you should have between 4 and 5 inches of material installed.(northern installations 6"-8") You are now ready to compact this layer. Using the water hose and nozzle thoroughly wet the entire area but do not overly saturate it. Then begin compaction with the 2-ton double drum roller or 19" plate compactor. You should make even passes over the area and repeat at least 2 times to ensure sufficient compaction.
- Step 5: As you install the second layer of base you will incorporate the green undulations into this installation by adding thicker layers of base in certain areas to create breaks. To aid in this, install irrigation flags or stakes on each side of the green down the entire length. The flag/stake spacing should be about 3 to 5 feet apart and directly across the green from each other. You will also need a laser or site level and tripod set up at one end of the green or a 8-10 foot long 2"x 4" with a level attached. A normal slope between sections of the green is about 1" and a more challenging break would be a 2" inch fall (example 6 inches down to 2 inches over a 36' length)
- Step 6: After compacting the first layer of base recheck your undulations with the level and then rough the entire area with a landscape rake.
- Step 7: Begin installing the screenings/fine material about 1" deep at a time . Remember to maintain the contours you created with the first layer and evenly install the second layer at a uniform thickness. You should only need about 2 inches of material with a maximum of 3 inches.
- Step 8: Using the back of the landscape rake, large squeegee, or push broom gently smooth the surface of the base and wet thoroughly but not overly saturated. Compact with either the 2 ton double drum roller (if the green is over 1000sq ft) or 19" plate compactor (if it is under 1000sq ft) with even passes over the base. Compact the entire green at least twice.

3. Hole Installation

- Step 1: Roll a basketball or rubber ball on the green to determine the effects of the undulations you have installed. This will help in determining where to install the cups depending on the desired breaks you wish to create. Experiment by placing the cups on the base and rolling the ball to each location until you have the desired locations.(Have the owner involved in this procedure.)
- Step 2: After locations are determined use a cup cutter and cut through your base 10" to insert a sleeve.

- Step 3: Once the sleeves are inserted (check for levelness) into the holes the turf can be laid directly over the finished sub base.

4. Turf Installation

- The turf comes in 12 foot widths. Any green that is wider than 12 feet will have to be constructed of two or more 12 foot pieces of turf seamed together.
- Step 1: Before installing your turf, unroll it and lay it out flat on top of the base to let it relax from being rolled up. To unroll the turf, place the roll or rolls on one side of the green and gently roll turf out over the base. Do not drag the turf across the surface of the base. If you do not have 2 pieces of turf to seam together move on to Final Shaping.

5. Seaming

- Step 1: Now that you have both pieces rolled out onto base, you will need to overlap the two edges that will be seamed together. Make sure the overlap is at least 3 inches. Now you will have part of one piece on top of the other and they will be referred to as top piece and bottom piece for this procedure.
- Step 2: Take the top piece and flip it back over and you will be able to see the stitches from the back side go in about two inches from side and cut directly between two stitches. Stay between the two stitches so you will not have too many fibers or a gap between the two pieces of the turf once they are seamed.
- Step 3: After the top piece is cut put it back on top of the bottom piece. Now mark the bottom piece between two stitches were the top piece lay.
- Step 4: Pull back the bottom piece and cut between those two stitches that were marked.
- Step 5: Now that both pieces of turf have been cut, lay them next to each other and make sure that the seam is tight with good pressure applied.
- Step 6: At either end of the seam continue in the direction of the seam off the end of the turf and draw a small line in the base. These lines will be used to set the hot seam tape in the proper alignment after the turf edges are rolled back.
- Step 7: Seam together using a seaming iron and hot seam tape. When the iron is hot enough the tape will start to smoke and iron will slide along the tape with minimal pressure. Once you have slid the iron ahead make sure the turf behind the iron has adequate pressure to seam together. Once the turf is seamed together use a seam roller on a 45 degree angle and pull the fibers together. While moving ahead it is recommended you use the tray of your tool box to lay on the seam for weight. Continue the process to the end of the seam doing a 8" – 10" section at a time.

6. Final Shaping

- Step 1: With the turf laid out on the base draw a chalk line in the outline of the final desired shape of your green.
- Step 2: With a shot follower carefully cut out the turf along the chalk line. Be sure to have replacement blades available for the knife

7. Border Installation (PVC Channel and Cap)

- Step 1: Measure around the perimeter of your green to determine how many linear feet of border will be required.
- Step 2: Using a flat shovel dig a 6 inch deep trench by pulling back the dirt from around your finished green. When digging the trench you must stay as close to the green as possible without disturbing the base material or you will cause the green to cave in.
- Step 3: The channels are available in 12 foot lengths. Place a piece of the channel into the trench. Install the channel so that the top of it is level with the surface of the turf. Holding the channel with one hand, backfill with dirt tightly behind it. But each piece of channel snugly against the previous piece. If you have to cut a piece to make it fit use a hand saw. Make sure the channel is taped with a masking tape so you do not have dirt fall into the top.
- Step 4: After the channel has been installed, place sod to finish the other side of the channel. The cap will cover both the green and the sod. You can cut the putting green to the channel.
- Step 5: The cap is available in 108 foot lengths so have it pre-cut when you order to your required linear footage. To install the cap, place it on top of the channel, fit it into the groove and tap into place with a rubber mallet.
- Step 6: When you return to you starting point of installation you will need to cut the end of the cap to fit with the beginning. Overlap the channel and mark your cut line and then using a sharp utility knife, slowly cut the cap. Tap the end down into place.

8. Cutting the holes

- Step 1: Locate the sleeves underneath the turf and then find the center of the sleeve using your thumb. Cut a small X in the center using a sharp utility knife. Step 2: Insert the knife into the X and carefully cut until you reach the edge of the sleeve. Gently hold the turf up at the X and cut tightly around the inside edge of the sleeve.
- Step 3: Once the turf is removed from over the sleeve, carefully insert the cup into the sleeve with PVC glue on the interior wall of the sleeve and the exterior of the cup.
- Step 4: Be sure the cup is below the top of the putting surface and high enough to cover the backing of the turf.
- Step 5: Fill the cup with a bag or anything that will not allow the infill to get into the cup

9. Sand Infill (approximately 6 lbs. – sq ft.)

- Step 1: Going against the grain use either a drop spreader, hopper, or shovels and put down your first layer of sand. You will use approximately a third of the sand for the first layer.
- Step 2: Once the area is covered with the sand (depending upon the size of the area) use a sit down or walk behind street sweeper, a Shindaiwa Powerbroom, or a stiff brisseled push broom to drive the infill into the fibers. For a local shindaiwa dealer go to www.shindaiwa.org/data/zip.htm
- Step 3: Next continue the infill process stated in Step: Make sure that it is even throughout the entire area. Use the machine or broom to infill the turf the same way going against the grain. You will do this as many times as needed to completely fill the putting surface. You should have no more than 1/8" of the fibers showing when you have completed your infill process.
- Step 4: Vigorously roll the turf with a 1 ton set down roller or a 4' water roller. Continue rolling the fibers for about 1-2 hours depending upon the size. This is bending the fibers and enabling you to have a smoother putting surface.