

Stage 1—supervised training manual

This is a 4-day course designed to give clients a clear understanding of the installation of Ecobunkers.

At the end of the course the attendants will obtain accredited status and a certificate to build Ecobunkers under licence.

Prior to Arrival

To ensure that a prompt start is made to construction, it is advisable to strip all the old bunker sand out of the bunker and store it close to the bunker. This sand can usually be used to provide backfill to the ecobunker wall. More time can be saved if the benching is roughly cut in advance. The photos below show examples of how bunkers should be prepared before our arrival to reduce the chance of delays.

In addition, if there is any drainage work required, please inform us in advance, and this can affect the programme of work.



	Morning	Afternoon
Day 1	Introduction Job description Bunker excavation and shaping Benching preparation	Turf cutting and laying Shaping base layer Wall build up and slope consistency Backfilling
Day 2	1st bunker completion Top layer with "Vees"	Top turfing and completion
Day 3	Second bunker start Client to proceed under supervision Excavation, shaping and benching	Client supervised build
Day 4	Client supervised completion Sod cutting and finishing	Overview Review Q and A.

The product

Ecobunker forms permanent realistic looking bunker walls with layered (riveted) sand filled astroturf.

As with all projects preparation is the key.

1 JOB DESCRIPTION

Ecobunker is fast becoming the recognised way to permanently solve the age-old problem of bunker edge and face erosion.

This patented product can deliver very long lasting, beautiful, natural looking bunker faces and edges, without any maintenance.

Ecobunker is also formed from 100% recycled materials so it is highly sustainable and good for the environment.

This document provides detailed guidance on how to construct our bunkers correctly.

The purpose of this training is to learn how to correctly install Ecobunkers so that they form a perfectly natural looking permanent face to your bunker.

During the first two day's we will go through the process with Ecobunker taking the lead and showing you all aspects of the job.

Please feel free to ask any questions as we go along. On the last 2 days' we will observe you building your own bunker under our supervision.

Health and safety

Sounds obvious but must be adhered to at all times.

As the lead contractor for this work, Ecobunker Ltd is responsible for the Health and Safety in the area of work around the bunker. All staff working on the project must follow safe working practices as directed on site by our construction manager.

Firstly, work cannot commence if there is a danger of golf balls flying in the area. The club must agree to divert play from the working area.

Secondly, all staff must have appropriate clothing (work boots, cut resistant gloves, wet weather clothes and steel toe capped waterproof boots).

Thirdly, lone working will not be permitted at any time.

Finally, no work shall take place during extreme wet weather, snow or lightning. The Ecobunker construction manager will have the final say on with regards to weather conditions.

2 BUNKER PREPARATION

As with most jobs preparation is the key. You will only be doing this once so it is worth spending some time and some extra expense getting it right. **Then you will never have to do it again!**

Bunker face cut to desired shape.

Preferably at the desired face slope to a preferred range of 60 - 75 degrees.

Small alterations can be made during the build, however, the more accurate the preparation the quicker the build.

Smooth bench created on bunker base around bunker perimeter (following line of the proposed bunker edge). Bench width is typically 400mm.

The smoother the alignment of the base the better the finish.



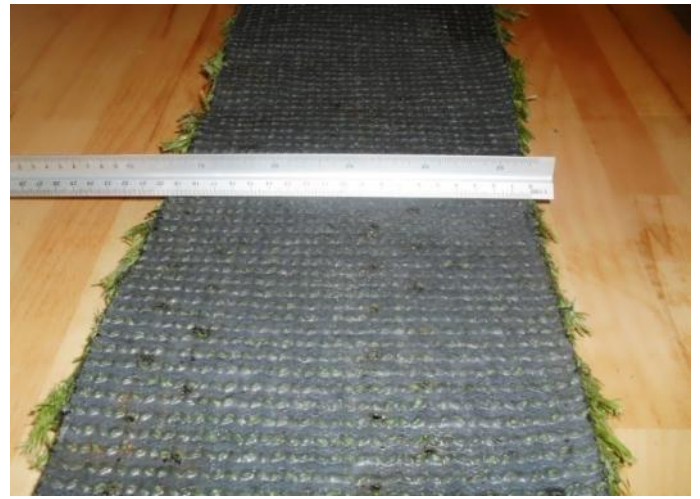
Turf stripped around bunker perimeter .

Drainage, if required, should fall to the centre of the bunker in a bowl shape or away from the face.

To include either a perforated drainage pipe or soakaway.

2.1 BEFORE WE START MAKE SURE WE HAVE:

- Gloves
- Knives and cutting table
- Suitable protective clothing
- Buckets, Shovels, rakes
- Ecoturf is near the bunker
- Suitable backfill in or near the bunker
- Water supply for wetting the turf



Turf cutting

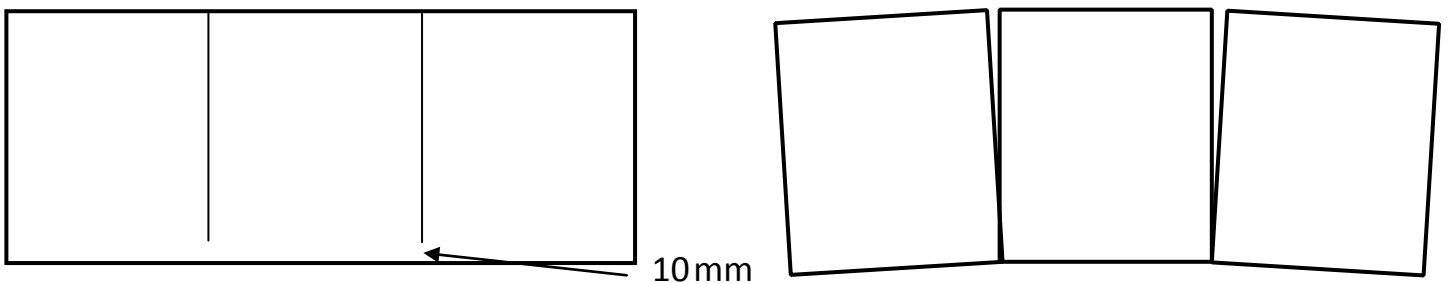
The ecoturf needs to be cut on site to form to the desired shape of the bunker.

This **cannot** be done in advance as it becomes unstable to transport and will curl at the edges and become difficult to lay.

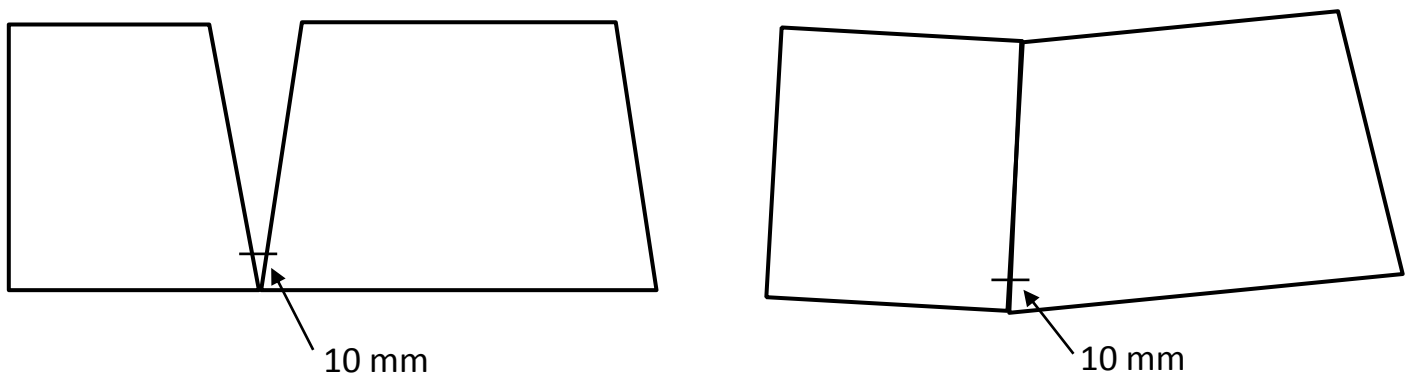
Great care should be taken when cutting the turf.

Blades should be changed regularly to avoid hacking and injuries.

Slits for concave walls allowing the turf to “curve”



Vee for convex walls allowing turf to turn.



Bunker Liners (if not already installed)

Material should be tough so as not to wear when Ecobunker is installed and should also be well-draining.

Liners should be installed as per manufacturer's guidelines.

Getting Started

Ecoturf should be placed in or near to the bunker. This will save a lot of time in carrying turf to the point of installation.

The turf should be cut up on a steady firm table or truck bed and on a mat to avoid damage to the blades and the table.

Place the cut turf near to where they will be laid for speed of installation.

Usually in stacks of 5 to avoid tipping over.

Be careful when handling to avoid dropping which will loose sand.

When laying the first row agree the slope beforehand, be mindful of playability. Stand back and check the shape looks correct and the curves look smooth with no flat spots or sharp bends.

Start a little away from the wall to avoid too much digging back later.



2.2 BUILD UP YOUR WALL

Begin to build up the layers, checking the slope regularly.

The turf can be adjusted slightly as we go.

(demonstrate)



Backfill behind the wall with old bunker sand, root zone or good quality granular material. Make sure there is no clay or stones. Rake, level and stamp in as you go. When using the EcoBunker Advanced method, backfill will be mixed with a small quantity (5%) of ordinary portland cement (OPC)



The final layer should be finished with VEE's which should be packed with sandy loam or rootzone to encourage root development.

Judging the slope of the finish takes experience. Remember to allow space for 50mm of sod and 50mm of top turf to give the finished level.

Build your bunker and landscape to it.



2.3 COMPLETION

Cover to final layer of ecoturf with a 50mm upturned sod of turf.

This provides stability and depth to support root growth.



Drape turf sod over the top.

Select a good quality drought resistant turf.

Please ask our advice if you are not sure.

Wet thoroughly. After roots have established the turf can be trimmed to produce a crisp clean edge.

2.4 AFTERCARE

Hand water with a matrix type wetting agent during dry periods. We have found PRIMO select to be successful as tested at S.T.R.I..





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