

The Design and Building of a Pétanque terrain

Edition 3, 2021



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All enquires will be responded to and every attempt will be made to assist you with your project.

Wishing you well and happy playing

Preface

Over the ten years since this guidance was first written, it has been a great source of pleasure for me to assist with projects around the globe, having had frequent personal contact with many builders of terrains from as far afield as the U.S.A. and Australia, as well as Great Britain.

Discussions on this subject must amuse our French cousins and cause them to shake their heads in wonder – they just move their cars off the car park and get on with it!

That said however, in the South of France where the game originated, few more temperate locations enjoy the same dry warm weather and consequently the majority of the rest of us are primarily obliged to consider drainage due to rain. My presumption here is that you are going to be outside! This is just as well, because the laying of indoor pistes is outwith my knowledge.

At the outset it has to be said, that for as many “experts” that you consult on the best way forward, you will receive just as many answers. The final objective is however the same – a hard surface with variations in level and gravel thickness which will make the game both interesting and a challenge.

It is true, “You play against the terrain, not just your opponents”. So, before you start considering construction methods, you must consider why and for whom you are building the terrain.

In general terms, the most experienced players favour the more difficult to play on terrains, i.e. those with very varied thicknesses of gravel topping, larger loose stones on top and steep slopes to act as obstacles. The basics of how you achieve this are the same and haven’t changed much since the Romans built their famous roadways i.e. Big stones on the bottom, working your way up through various layers of ever reducing sizes of stone until you reach the desired finish.

So, my second presumption is that you are building the terrain to establish a new pétanque club, which will mostly be for new players to the sport. New players will prefer smooth, “billiard table flat” terrains, as these are much easier to learn placing your boule closest to the jack. However, you will be restricting them from learning the full range of the shots required when playing elsewhere. If your aim is to popularize the sport in your area, you should not in all honesty tell new players that they should be playing on a terrain that is full of potential hazards. After all, Jack Nicklaus didn’t learn his golf on a crazy-golf course! So something in-between is ideal. Later on, any player who wishes to better themselves will soon realize they need more technique and a wider selection of shots to play in competitions in more varied locations and therefore they will go about their practice accordingly.

Eventually you will need a variety of terrains to suit the experience of the players who play at your venue and this will take the form of making judicial variations to the top surface without needing to change any of the basic structure.

At this time (2021) there are three popular venues currently being redeveloped as new pétanque terrains;

- a) Suitable open areas that is spare at the side of other sports clubs.
See the building of Moffat PC in Scotland 2021
- b) Disused green Bowls clubs.
See the conversion of the disused bowling green at Mt.Mertha Bowling Club, Melbourne, Australia.
- c) Disused clay tennis courts.
See the conversion of 7 tennis clay courts at Valley Rd, Nottingham, UK.

All of these had the advantage of already having all the other facilities associated with people being out of doors and playing sport.

The first option above (a) is the green field site and as this will require the most work, with all of the excavation and layer building described later, I will handle that in full first.

The next most accessible is b), the disused Bowling green. These playing surfaces are generally free draining and so only require the removal of all of the grass down to the drainage levels of mixed stone that were laid during the original construction. You will then probably only be required to build the two or three top layers described below.

The easiest to convert is c), the disused clay tennis court e.g. Nottingham City PC in 2011, as this only required the removal of some top soil & weeds to reveal the top of the old courts. Followed by the installation of the timber surrounds and the spreading of the chosen “friction coating” or “top playing surface”. This venue was chosen due to the fact that it needed no further work to achieve good drainage, other than the additional of three land drains between the four terrains. [It was found that the “clay tennis playing surface” was extremely thin crushed brick, over a 200mm deep layer of coarse fly-ash, which in turn had been laid over a very deep bed of compacted sand.]

The remaining decision you are required to make at this point will depend on the area that is available and your finances. Generally speaking compared to most other sports, preparing a terrain for pétanque does not require a high initial outlay and maintenance is minimal once it is established. The area required for each game is called a piste. For International competition and National Championships the minimum dimensions for a single piste is 15m x 4m, with a further metre outside this area before any upright solid barriers ie a wall or fence, so for one full size piste you will need an area 17m x 6m. The requirement for the 1 metre margin is to allow for backward arm swing and can be reduced to half a metre if there are no obstructions. Multiple pistes adjacent to each other do not each require the extra 1 metre surround area and the rules allow for the jack to cross the piste dividing strings. However, these dimensions are frequently altered for club and leisure situations to take account of limited space available. Many club terrains are built to have 12m x 3m pistes.

Before you go any further, Permissions?

Do you require Planning Consent?

The answer is invariably “Yes”, so prepare your area development plan, including any additional car parking and your technical drawings + material specifications. Then get acquainted with your local Planning officer, show them what you are proposing and ask their advice on how best to proceed. Follow the advice given.

Do you need to inquire from the Environment Agency if your plans are acceptable?

Again, the answer is invariably “Yes”, so prepare your area development plan and your technical drawings + material specifications, in particular show how you are going to handle the water run-off in regard to any close-by water courses.

Then again get acquainted with your EA Officer, show them what you are proposing and ask their advice on how best to proceed. Follow the advice given to the letter!

You will also need to refer the installation of any floodlights you are proposing to the Environment Agency. They can be very strict with this area of their general brief and again legal enforcement will need to be followed to the letter.

You are also advised to approach the Highways Agency.

Inform them of your plans and again asking them for their advice in regard to vehicular access, the extra activity, car parking, signage, etc. Again follow any regulations they bring forward to the letter, as they will check back on your activities and might just bring you to a halt if you have not carried out their wishes.

Do NOT take an “educated guess” or fondly believe that all will be OK.

Check beforehand and follow what you are told to do.

You have been warned!

Construction

The most involved scenario is the first option above – starting from scratch on an undeveloped piece of ground. An experienced local builder will be able to provide advice on the structure and natural drainage quality of local ground conditions and should it turn out that the ground is very clay i.e. one which doesn't drain well, then you will have to start with:-

Stage 1. This is an excavation 200mm (8") deep across the whole of the proposed playing area. If you encounter clay soil before you reach down to this level, then you will need the addition of a 200mm (8") deep trench 250mm (10") wide right around the perimeter of the excavated hole. This is to take a land drain, which in turn should be graded and lead into a soak-away pit off to one side of the terrain(s). As there are several methods for making a land-drain, again the local builder will be able to advise you on the best method for this to be achieved in your area. Check on your local Planning Permission for this type of construction and you may also need to refer to your local Environment Agency, particularly if you are near a water course.

Stage 2. This is a layer of hardcore across the whole of the excavation to a compacted depth of 88mm (3½"). Use 35mm crushed old brick, re-claimed concrete or local crushed quarry stone; this material in the UK is frequently referred to as MoT Type 2, and it should have an open consistency to allow water to pass through it easily. Use a heavy roller or vibrating compactor over this layer until a hard firm surface is achieved. The use of water at this stage to help with the compaction is perfectly normal.

Stage 3. This stage uses smaller stones, which act to keep the larger ones underneath from rising to the surface. However the step in sizes must not be too large. You need to reduce the size of the stones being used in gradual steps until you arrive at the smallest playing surface grit. The reason for this is that if you use stones that are too fine at this step, then the smaller stones, under the actions of foot-fall, boule vibration and frost, fall through the gaps in the lower larger stones and will then act as levers to raise the lower larger stones from below. Do it wrong and you will finish up with an upside-down terrain!

So this layer uses 20mm crushed Carboniferous Limestone (Dolomite) to a lightly compacted depth of 50mm. Dolomite Limestone is always the preferred option as it is both hard and resists crushing but absorbs water. Do not use granite in any of these stages during this layering process because although it is hard it is also impermeable. Completion of this stage marks the completion of the drainage base.

Stage 4. Now the building of your final playing surface can commence!

You will have noticed that the depth of the compacted layers given above has always been in the ratio of 2½ times the size of the stone being used in that layer?

The GOLDEN RULE IS; -NEVER EXCEED 2.5 TIMES IN DEPTH THE AVERAGE DIAMETER OF THE STONES YOU ARE LAYERING. The thinking behind this Golden ratio is, if you exceed the depth you are running the dual risk of a) the layer never settles down, but worse still, when it gets wet it may also turn thixotropic.

This latter condition is particularly true with the finer grades of stone + dust. I always recommend Carboniferous (Dolomite type) Limestone, as this type of material will lightly bind together without gluing itself together too tightly, thus preventing water from percolating through itself later on. It is a dark grey colour and not to be confused with the non-carboniferous variety of limestone which is much more yellow. The yellow variety is cheaper and great for making roads and pathways, but not pétanque pistes!

Start by layering with 10mm > 0 sized, (MoT Type 1 in the UK) Crushed Carboniferous Limestone [Specification: BS EN 13285], remembering to keep below 2½ x 10mm in depth (see golden rule above) i.e. 25mm compacted depth. The coverage rate is approx. 2.3 Tonnes per Cubic Metre. Prices will vary across the UK, but can generally be about £15/tonne delivered to site. Using a vibrating roller or plate, hammer this layer down firm.

Through experience building several pistes, I feel that I must add the following warning in regard to stone materials. You will have noticed I have made constant reference to Crushed Carboniferous (Dolomite type) Limestone and this for the very good reason that it has a jagged outline and will therefore tend to bind into a pervious layer much better than rounded pebbles. NEVER use pea gravel or washed river bed sand (as most available sand is from ancient deposits of glacial melt water) because both these materials being spherical never bind. In particular, if these two items are mixed, as they frequently mistakenly are as a finishing top layer, then the top layer will forever be loose and too deep to play in a proper fashion. Therefore, to repeat myself, **never** use pea gravel with or without sand mixed in, anywhere in the construction of pétanque pistes.

Stage 5. Next is a layer of 6mm > 0 sized, Crushed Carboniferous Limestone and again remembering to keep this layer below 2½ x 6mm in depth, i.e. A Maximum therefore of 2½ x 6 = 15mm deep and say a Minimum depth of 5mm. The desirable technique at this point is to “rough cast” this layer manually across the area to produce variations in the depth of the material. Doing so from two sides of the terrain, with two people doing that at the same time, will produce desirable undulations. Again vibrate this layer down firmly – possibly watering before you do so, dependent on how damp the material is, as it needs to bind together as the compaction process proceeds.

The coverage rate is approximately 2.2 Tonnes per Cubic Metre. Prices will vary across the UK, but can generally be about £16>£20/tonne delivered to site.

Note: before you commit yourselves to the purchase of this material, have a sample delivered or go and view the source, to ensure an even distribution of grit to the dust in the mixture. It should be about 60% grit to 40% dust. You need the dust to make a bind between the stones, after all limestone dust is very close to cement!

Stage 6. Finally, the actual playing surface!

The point about top dressing is that it should be just deep enough to provide the boule with some grip on landing, but not so deep that the boule sinks into it to any extent. When the top surface is too deep it is impossible to play the game properly. The ideal top dressing depth is about 6mm.

So proceed with a fine layer of 4mm to 6mm Crushed Carboniferous Limestone [Specification: BS EN 13242] and again remembering to keep this layer below 2½ x 3 or 4 MM in depth. This layer should not be compacted and should remain loose.

Again, it is good technique at this stage to “rough cast” this layer across the area to produce variations in the depth of the material. A Maximum therefore of $2\frac{1}{2} \times 4\text{mm}$ = 10mm deep and say a Minimum depth of 6mm. The depth should finish up at between 3mm & 6mm and there should be all sorts of the desirable undulations in the surface. The coverage rate is approximately 2.10 Tonnes Per Cubic Metre. Prices will vary across the UK, but can generally be about £15>£19/tonne delivered to site. Again, before you commit yourselves to the purchase of this material, have a sample delivered or go and view the source, to ensure an even distribution of grit to the dust in the mixture. It should be about 80% grit to 20% dust.

It is also to be noted that the material you choose should not be too light in colour as during those occasional periods of bright sunshine, the piste will reflect light and make playing conditions very uncomfortable

For the Option of building your terrain on a disused Bowling green

An old bowling green has many advantages when converting to pétanque play as they usually have the advantage of being well draining. However it has the disadvantage of being too flat! In this regard do NOT be tempted to replicate the flatness – pétanque is best played on a “testing” uneven surface including irregularities on the playing surface. Most likely you will be using an area which measures approximately 20 metres x 20 metres, you will therefore have 4 or 6 pistes, marked out with polypropylene string. Furthermore, as you are dealing with a square area, you will have the luxury of marking it out in both directions, which will have the additional advantage of evening out the wear and providing another desirable variation to the playing surface for your players.

Planning Consent for a “conversion of use” is usually much more straightforward too and you will not have the worries with the Environment Agency as the previous owners did that for you. Floodlighting will still have to be a strong consideration and you will be obliged to go through all the usual channels when adding those to your plans

Furthermore, you can ignore Stages 1 to 3 above.

However, you will need to test for water percolation. Make a test dig about 500MM square anywhere on the old green. Carefully making two edges vertical so that you can note to which levels down where the structure of the soil changes. I expect that you will find that for the top 50 to 60MM the soil will both contain grass and fine loam, quite fibrous too. Then I expect the structure to start to contain small stones + soil. Then below that, there should be larger stones, which form the drainage base. It is a matter of judgment, but I would probably stop excavation at the level which is at the top of this larger stone layer. Now fill the hole you have made with water and observe how quickly it drains away and how completely. If it doesn't drain away completely in 15 minutes, then you have to excavate deeper until you can feel fairly certain that these drainage conditions can be met. Obviously, repeated water drainage tests done on the same day can confuse, so step out your tests over a number of days or make a series of holes. Once you are satisfied that you are down to a good draining strata, stop.

Now the building-up towards your final playing surface can commence.

Commence with Stage 4 onwards from above until you reach the top playing surface.

In this case, you will still not be level with the top of the previous turf banking that goes around a bowling green. Also the turf wall at the sides may be sufficient to act as the stopping sides, but if these are not suitable and start to fail under the action of the steel boules hitting them, then you will have to consider surrounding the area with timber, say 100MM x 50MM pressure treated softwood screwed to timber (or better still, plastic posts). One of the advantages of doing this anyway is that you can attach hooks to the timber for the strings you need to mark out the pistes.

Your conversion work is now finished.

For the Option of building your terrain on a disused clay tennis court

This Option is the most straight forward of the 3 I have mentioned, as it dispenses with the need for Stages 1 to 5 and with very little preparation, you are ready to apply the top surface almost immediately.

The 7 clay tennis courts at Nottingham given to NCPC by the City of Nottingham had been disused for about 25 years and on decommissioning had been covered in 2" of soil which had given way to grass and weeds. The contractors only had to remove this covering down to the previous red topping, remove the anchor post holes used for the nets and install the new timber posts for the timber surrounds. The 7 courts converted into 28 International sized terrains.

The top 100mm of a clay tennis court is invariably hard ash or clinker and this has excellent drainage. As our location is directly beside a local stream, it was considered prudent to install a series of interconnecting land drains, which flow into a surface soak pond. In turn, this area is now surrounded by a wild flower meadow and the whole scheme acts to slow down the effect of such a large surface from dumping to quickly the rainfall water into a very small stream on our boundary.

It was found that the action of the diggers that scraped off the grass covering and the various lorries that went backwards and forwards all over the surface to take that away, gave rise to many undulations. Certainly after a vibrating roller was used on the now exposed ash NCPC have enough undulations to fox even the most skillful players!

There then followed the installation of the 16 floodlights (200Lux at the playing surface for those that are wanting to know such things) and when all the timber posts had been installed, the contractors went straight to Stage 6, with the same material I have advised above and the NCPC playing surface was then complete.

The ground posts and the softwood surrounds were all pressure treated with environmentally friendly water based preservative. It should also be noted that the surrounding timbers were kept 25mm above the pistes to allow for any surface water to freely drain.

Once again, your conversion work is now finished.

Whichever was your starting point, you will all have reached the same finish together and you will each now have a raw pétanque piste. The tricky bit is that you will not quite know what you have, until the weather acts on it for a couple of winters! But whatever you do, DO NOT RAKE IT – EVER! This only tends to lift the larger stones from the lower layers and should be avoided, particularly as you have taken so much trouble to avoid that happening. Keep the playing surface in good condition by dragging an old rug (furry side down) across the surface and occasionally the use of a manual garden roller.

Stage 7. Finishing off with a protective surround.

With a bit of pre-planning and a bit of good fortune the playing surface should now be back up at the previous surrounding surface level and you will need to provide a protective surround, mostly for the safety of any spectators.

This usually made of wood as this material best absorbs the impact of the boules. The use of concrete edging will only damage the boules and into the bargain, the concrete will break up after only a few seasons giving you the job of replacing it all. Also, the use of re-claimed railway sleepers is not recommended due to the continual leakage of tar onto their surface which when it gets onto the boules which then gets onto your hands. To a lesser extent the same comment is true for reclaimed telegraph poles. However reclaimed scaffold boards are a suitable source of supply.

Ensure that they are well fixed as a boule can hit them with considerable force. The top of the terrain surround should be at least 125mm high and ideally it needs to be 50mm thick. However, timber which measures to these dimensions is expensive, so it is acceptable to use the much more reasonably priced 100mm x 50mm rough sawn timber and to raise the bottom edge of the timber away from the ground 25mm to 50mm. This method has the added benefit of keeping the lower edge of the timber dry and will assist in the long levity of the timber edging. It is a good idea to leave a space for entry into or onto the terrain by providing a gate or ramp to assist disabled players to gain easy access – it also allows easier entry for the garden roller when you need to use it!

Now that you have finished the building, there will be an urge to play on it straight away! Try to keep that temptation at bay, however hard that is. This is understandable, because we did exactly that at Nottingham. As Opening Day was less than a week after the top coating had been applied it was a very dusty affair so it is not to be recommended. It either rains on the finished terrain a couple of times or you will have to water it extensively with a sprinkler and let it dry, before you use it for the first time. You will have spent a lot of time and not an inconsiderable amount of money up to this point; so don't let your enthusiasm spoil it. Give it a chance to settle down and bind together as a cohesive unit ready for your best endeavours.

What I have written is based on my experiences and I hope will be of assistance to anyone contemplating the building of a pétanque terrain and that your club will receive back from your terrain many years of pleasure.

Yours aye, *Brian Forbes 2021*

Types of Gravel

Frankly speaking, unless you are intent on immersing yourself into all of the technicalities of aggregate, it is an unnecessary consumption of your time. Besides, I do not know all the various national classifications for this product from around the world !

What I can do is point you at the following website for illustrated descriptions. Using your favourite search engine, go to

<https://www.grangequarry.co.uk/products/aggregates/>

and follow the tab for "Products" and look at these;-

- 1) CRUSHER RUN, BASE 0>100. This is a suitable drainage layer at the bottom.
- 2) TYPE 1 SUB BASE. Product Size: 0-40mm This is suitable for the intermediate layer.
- 3) WASHED GRIT 4 - 6MM. Product Size: 4 – 6mm This is suitable for the intermediate layer.

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This picture illustrates a 0-5 granite gravel / dust.

This NOT A SUITABLE material, as it contains too much dust causing poor drainage.



This image illustrates 2-6mm Carboniferous limestone Chippings (washed) and is my recommended top playing surface gravel.

Nottingham City 2011

28 International sized pistes built on 7 disused clay tennis courts.



Top Left

Top Right

Middle Left

Middle Right

Bottom Left

Bottom Right

Trial dig

Work starts to strip off soil & weeds

Work commences to establish terrains

Rolling sub layer & laying top layer, rough casting by hand

Finished 1st 7 pistes ready for dividing strings

OPENING DAY with the promising rainbows!

Down Under !

Mount Martha Bowls and Pétanque Club Jan – Feb 2021

This is a prime conversion example of a disused bowling green into a first class Pétanque facility. I cannot here give all the pictures I have been sent, so I would ask you to use your favourite search engine and search for:-

<https://mountmartha.bowls.com.au/news-archive/>

The club also has a Facebook page, which has both construction and current news and competition pictures.

If you not able to find exactly what you need, then please email me when I will try to assist.

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