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## Construction of Cricket Squares in Asia

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The construction of cricket squares is a much talked about topic in the field of cricket Curatorship/Groundsmanship. The amount of different soils and construction methods available is enormous and it should be understood that not one method works for everyone, and not one method works everywhere.

There have been some bizarre methods used to construct cricket wickets throughout the world, although on face value these methods were questionable to say the least; however they worked out to be very successful and produced wickets that played well producing excellent consistency, and still do to this day. On the other hand there has been some other cricket squares constructed and followed a more standard specification, and for one reason or another the project failed and requiring the cricket square to be rebuilt.

When planning a cricket square construction one should approach the topic with a very open mind. Consider all possible construction methods, consider all materials that could possibly be part of the final make up of the profile, and importantly talk to other Curators/Groundsman in the area that have successfully constructed cricket squares and have successfully sustained them over a long period of time. This in itself can be a powerful tool in making the right decision in what method will be used to construct or re-construct a cricket square.

The reconstruction of a cricket square can be time consuming, costly, and inconvenient. Before actually deciding if a cricket square does in fact require a reconstruction all aspects should be looked at in relation to the maintenance prior to deciding on a full reconstruction.

- Consider preparation techniques currently being used and if they can be modified to improve the performance of the cricket square
- Look at management of turf & how it can be improved.
- Consider the usage factor & if the current cricket square is being over used
- Analyze the profile & if it can be improved upon
- Discuss the performance of the cricket square with players & administrators, getting a feel for how they believe the performance can be improved
- Compare performance of wickets at the venue to other wickets in the area and how they measure up.
- Reconstruction is the last option, as a general rule of thumb; if a cricket square is performing at an acceptable level then don't change it!

When choosing a construction method along with construction materials clear objectives should be set for the project. When considering what construction method will be used firstly look at the key objectives of the cricket square:

1. The weather conditions that will be contested with during the cricket season, this has a major effect on the decision making process, the type of clay chosen, the depth of clay, base material, and grass species.
2. The format of the cricket that is going to be played, i.e. one day, two day, three day, four day, or five day cricket, this will have an effect on the type of clay chosen and the depth of clay that is decided upon.
3. The amount of cricket that will be played on the cricket square, this will have an effect on the amount of wickets that eventually makes up the size of the centre square. Generally speaking the more matches that will be scheduled in a season, the bigger the cricket square will need to be.
4. The length of the season, this will again have an effect on the amount of wickets that makes up the cricket square.
5. The turf species that will be used on the cricket square.

### **Profile Considerations**

The selection of clay for the construction or reconstruction of a cricket square is the one off most important task in the pre-construction planning. In Asia, this decision will be predominantly based around the weather conditions and the type of cricket that will be played i.e. one day, four day, five day cricket.

In relation to choosing a clay that is compatible with the local weather conditions, it is important to be mindful of not choosing a soil that is too high in clay content that will not be able to reach maximum compaction through the drying process in the case the climate is not a good drying one, particularly where humidity is a factor. On the other hand if the climate is dry, a higher clay content soil is preferred to ensure the prepared pitches will have the lasting qualities.

As mentioned, the format of the game being played is also an important factor in what type of soil will be chosen for the new construction - many of the Asian countries are still in a position where they only play one day cricket therefore the lasting qualities of the pitch are not as crucial as those constructed with the aim of playing four and five day cricket. For example, cricket squares constructed with the aim of playing four and five day cricket the clay content of the soils are generally required to be higher to ensure they have the lasting qualities to get through five days of cricket. However, in some other countries where one day cricket is played, a soil with a lower clay content can be entertained as the lasting qualities are not as crucial and potentially some of these lower clay content soils can reach higher bulk densities due to the large particle size range within these soils therefore providing better pace and bounce.

These types of clays generally have shorter preparation times, but don't have the lasting qualities for the longer version of the game, as they tend to 'dust up' or crumble as a result of the clay percentages being less. The general rule that is prescribed to Curator's/Groundsman is to have the soil tested by a certified laboratory and go with what meets the cricket wicket specification.

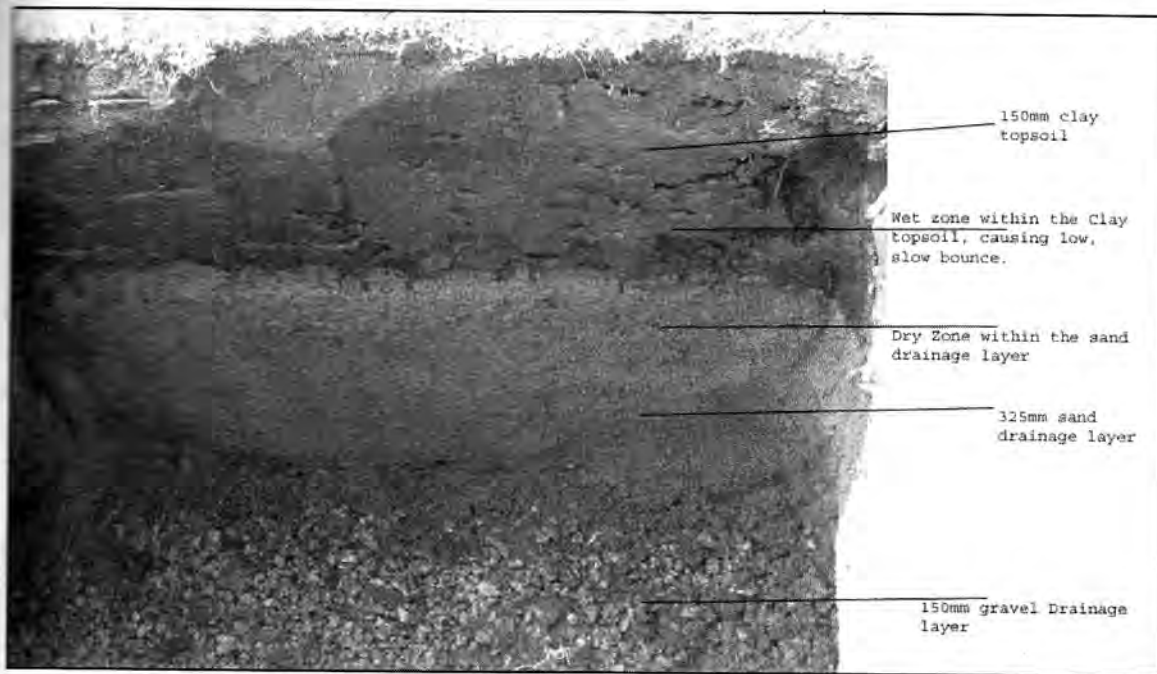
In Asia, soils are tested like everywhere else for suitability, however, the theory of "If it works, use it" is employed and is seen as being equally important as the test itself. One of the bigger issues that is faced within Asia is finding a consistent source. Suitable sources are more readily available, but do vary considerably.

When considering construction of cricket squares generally, there are two methods used more often than others; the first involves using a suitable clay overlaying a sand base, supported by 7 -10 mm aggregate and sub-surface drainage. The second is a more simplistic view where a suitable clay is placed on a firm and compacted sub-base that supports the clay medium.

The theory behind constructing cricket squares on a sand layer is to increase the drainage capacity, to provide a 100% consistent base, and to provide an avenue to flush salts out of the profile. Generally speaking, in this situation when sand is used as base material it is teamed up with a gravel layer than lies directly underneath the sand that further aids drainage and creates an avenue to install the drainage pipe work.

In the past, mistakes have been made using this method where the sand and gravel chosen has either been too different in particle size causing some perching of water at the clay/sand interface and as a consequence the clay remains damp and therefore holding excessive moisture resulting in the prepared pitches playing low and slow. When this occurs it also leads to slow grass recovery after each pitch has been prepared and finished with.

The second issue that has arisen from this construction method is in some cases the sand has been laid too deeply and consequentially the sand dries out at depth, resulting in the sand becoming hydrophobic therefore becoming soft and 'shifty'. When this occurs the clay surface will not have a firm base under it to support rolling and can also cause some perching of moisture in the clay profile as a result of the sand being so dry that an extreme difference will be evident at the clay/sand interface and resulting in a prominent difference between the clay and sand texture, which can also cause some perching of water.



*A square cross section.*

It is important that the sand used as a base material in construction is compatible with the clay chosen for the construction. The same also applies to a sand/ gravel relationship. When the relationship between the clay, sand, and gravel in this construction method is right, the gravel and sand can act as an extension of the clay layer in this profile and provide the basis for successful construction as it has done in many situations, particularly in Australia.

Generally speaking in Asia the cricket seasons are conducted through winter, where the winters are usually relatively cool, but dry, with next to no rainfall for a large part of the season. The start and finish of the season can however be overshadowed with extreme rainfall and humid conditions, therefore producing poor drying conditions. Dealing with these conditions calls for a cricket square that can be constructed evenly and consistently that works well in a varying climate, and irregular drying conditions.

Based on these climatic challenges, methods in constructing cricket wickets in Asia, are based around more simplistic methods where a suitable clay is placed on a firm and compacted sub-base that supports the clay medium. It could be said that this method is carried out in a similar fashion to the construction of a road, where the importance is placed on forming a solid base, so that the clay topsoil has a firm based to be laid on, which later is the foundation to support good pace and bounce of the prepared pitches.

This is a simplistic view that prevents over complicating the constructed profile; therefore there is less to go wrong. Soil scientists will argue that drainage is compulsory when constructing cricket squares to ensure that the clay root zone of the turf is not saturated, and to ensure that there is not a build up of salts within the profile. However, the infiltration and percolation rates of these types of clays in question is so low, it is rare to see any excess moisture discharge out the bottom of the profile, either during irrigation or

continuous rainfall. It is very rare that growing turf on a cricket is a problem when managed right, regardless if the clay has high salinity levels.

Depending on the clay chosen and the format of cricket being played, these type of constructions are based typically on excavating the site to around 150mm – 200mm in depth, shaping the sub - base to either a 0.5% or a 1% fall from the centre to the edge. Thoroughly compacting the shaped sub-base to ensure it is impermeable not allowing any water to go through it, at the same time ensuring that there is a firm base in place to lay the clay on top that will aid pace and bounce of the prepared pitches when eventually prepared. Like most constructions the final result is only as good as the underlying base and its establishment. The success or failure of this method revolves around ensuring the base is of a firm, consistent nature.



*Site excavation.*



*Completed sub-base.*

Once the sub-base work is complete the laying of the chosen clay commences by laying the clay in layers of no more than two inches (5cm) and consolidated with a heavy roller. This process is repeated until the final levels are reached.

Prior to the laying of first and subsequent layers of clay, the final level of each layer is indicated by setting of string lines indicating where each new layer of clay needs to finish prior to consolidation. This ensures each layer goes down in a systematic fashion and due to labor being inexpensive in Asia, it allows this type of work to be done by hand which allows for the up most accuracy.



*Laying of black clay.*

Depending on the clay type, rolling of each layer is carried out for about two hours in all different directions with at least a three ton roller. At the completion of rolling each layer and prior to the next layer being laid, the next layer is 'keyed in' by disturbing the previous layer to ensure the next layer 'marries' into the previous layer. This is found to be very important to ensure that there is no separation of layers later once the wickets are being prepared resulting in uneven pace and bounce.



*Final rolling.*

The accuracy of the final levelling of the newly constructed cricket square is absolutely crucial. The surface falls must be very accurate to ensure that the base levels are mirrored and the movement of water from rainfall and irrigation to the perimeter of the cricket square is carried out efficiently. To achieve maximum efficiency when conducting the final levels the accurate & proven methods of the 'peg and rail' system is used. This involves setting up two continuous metal straight edges 10 feet wide across each wicket, along the length of the cricket square.

The top of the rails need to be set according to the final levels – i.e. if a wicket has a 1% sideways fall, one rail is set one percent higher than the other, referring to the reference point set out at the commencement of the project. Once these rails are set, the loose clay is used to fill the area in between the rails and screened with a straight edge stretching across the two metal rails until the final levels are reached and the surface falls are even and consistent. Final consolidation by roller is done and a final levelling completes the process. An accurate method, but very labour intensive. Again, in Asia there is no shortage of hired help.



*Taking levels.*



*Final levelling.*

Selecting a suitable grass for a cricket square is the most simple task of the project regardless of the location – a turf variety simply needs to be selected that works, weather it be of a warm or cool season nature it doesn't matter as long as it is suitable to that environment, ensuring the selected grass can handle the local conditions, can handle rolling, and it has good recovery abilities. It is easily possible to fail the construction or reconstruction of a cricket square through choosing the wrong grass species



*Grass planting.*

In summary, it should be remembered that there are many ways to construct quality cricket squares and no one method works for everyone. Many conclusions & similarities can be drawn from different Countries, but there will be always differences. The simpler things can be kept, the less likely things can go wrong.

It is important to understand your own situation well, understand your own requirements & needs, work within your boundaries, and work with good materials. Always remember to do your research, conduct trials, talk to colleagues, and ensure you have the data behind you to make sure the next cricket square you construct is a success. Take in good advice, but at the end of day you are responsible for the project, so stick with what works for you.



*Finished product!*