FIFA

FIFA ARENA MINI-PITCH PROJECT

Guideline code of practice for the construction of pitch bases

Version 2 - June 2025

Contents

1. Introduction

The FIFA Arena Project is an initiative aimed at creating small-sided football pitches (referred to as mini-pitches) to promote accessible, inclusive, and safe spaces for football that are available for communities around the worldwide. Designed to support grassroots development, these modular arenas will provide opportunities for youth engagement, physical activity, and local football programs, aligning with FIFA's goal of making football truly global. FIFA has pledged to build 1,000 mini-pitches around the world.

The construction of the FIFA ARENA mini-pitches is spilt into four packages:

i. The construction of the base. Responsibility for this lies with the local Football (Member) Association. This will be undertaken by the local construction company appointed by the local FIFA Member (Football) Association.

ii. The manufacturing and supply of a perimeter fencing system (rebound boards, ball stop netting and entrance gates). This will be undertaken by a specialist fencing company appointed by FIFA.

iii. The installation of the fencing system. This will normally also be undertaken by the construction company building the base.

iv. The supply and installation of the synthetic turf playing surface. This will be undertaken by a specialist turf manufacture who is a member of the FIFA Quality Programme for Football Turf.

To ensure a mini-pitch meets the expectations of the local football community, the synthetic turf playing surface needs to be laid on a platform that is structurally stable and does not have any ridges or depressions and, when appropriate, aids the flow of rainwater from the playing surface. The construction of the base should be based on good civil engineering principles, which consider:

- the ground conditions
- the local climate
- intended use

This guideline code of practice describes the recommended design and construction requirements for pitch bases. They are provided as general guidelines, but it is important the construction of a base adheres to applicable national and local standards and regulations.

2. Definitions

The following definitions are used in this guide:

Base – the construction on which the synthetic turf surface is laid

Blinding (or sealing) layer – a layer of finely graded unbound aggregate that is laid above the sub-base to provide a smooth platform on which the football turf surface can be laid

Formation – the prepared surface of the subgrade on which the pitch is constructed

Geotextile – a membrane that is used to separate layers of construction from each other or the native soils. They may be permeable to allow water to percolate through them or be impermeable to prevent water percolating into the layers below

Planarity – the smoothness or flatness of the construction layer, normally checked by measuring the size of depressions and high spots under a 3m straightedge

Sub-base – a layer of unbound aggregate that provides the load-spreading and (when required) frost insulation properties, required to protect the weaker, more susceptible soils forming the subgrade

Subgrade – the native ground on which the field is located

Topsoil – the upper portion of the native soil that has a high content of organic material

3. Types of mini-pitch base constructions

Understanding the ground conditions on which a mini-pitch is to be located is fundamental to ensuring a good quality, stable, long lasting base construction. The cost of the facility will be greatly influenced by the ground conditions; costs will be much higher when engineering a difficult site and it should be recognised that on some sites solutions such as soil stabilisation may be required, whilst on others it may just not be cost effective to develop it as a football mini-pitch.

By careful selection of the site and methods of construction, costs can be reduced. Based on experience, the most cost effective options are:

Type of base	Benefits
Using an existing paved (asphalt or concrete) area (e.g. school playgrounds, parking lot, disused basketball or tennis courts etc – see Figure 4).	Minimal works required, simplest and cheapest option
Laying purpose made modular synthetic turf base panels over a suitably prepared subgrade (see Figure 5, 6 and 7)	Designed specifically for mini-pitch construction Simple construction, easy to install Reduced foundation depths Ensures the base is suitable for the synthetic turf installation

Type of base	Benefits
Crushed stone foundation (see Figure 8 and 9)	The traditional method of building a sport field base. Best undertaken by experienced sports field contractors

If, for whatever reason, a Member Association wishes to propose an alternative design or method of construction to those detailed in this guide, they should advise FIFA at an early stage so the suitability of the alternative design can be assessed.

4. Pitch layout and base dimensions

FIFA Arena mini-pitches have a playing area measuring 40.0 m x 20.0 m. Recessed goals are provided at either end, these each measure 3 m x 1 m.

To provide adequate space for the surround fencing, etc the footprint area of the base should extend beyond the boundaries of the mini-pitch by at least approximately 1m on each boundary.

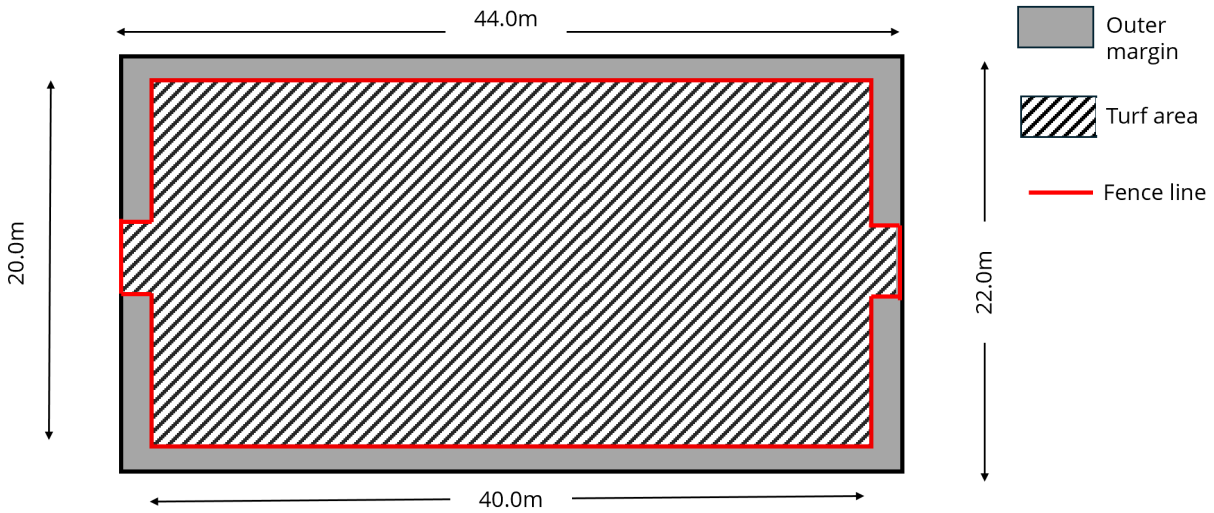


Figure 1 - layout and dimensions of mini-pitch

Figure 2 – recessed goals

5. Gradients and profile

The profile or slope of the base will depend on the local climate and also the topography of the site. In areas where rain can be expected, the base should have a profile that aids the movement of water from the playing surface. This is normally achieved by having a slope of between 0.5% and 1% (1:200 and 1:100), that ideally falls across the width of the pitch, but falls along the length or diagonally from corner to corner can also be used.

In arid or low rainfall areas, the slope can be reduced or be eliminated so the pitch is flat.

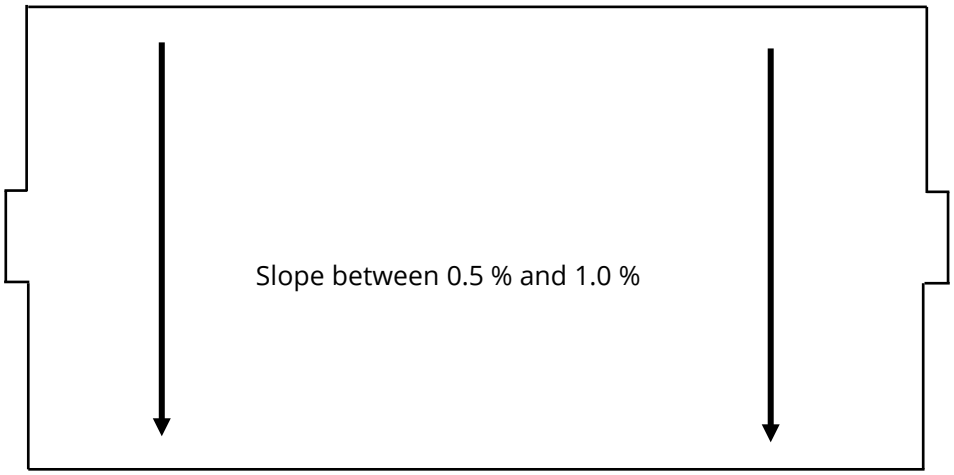


Figure 3 - typical mini-pitch profile

6. Base construction options

1.1. Existing hard paved (asphalt or concrete) areas

Using an existing concrete or asphalt area is the lowest cost and simplest way of providing a base for a new mini-pitch.

Figure 4 - conversion of existing paved area

When considering such areas it is important that they are inspected by a suitably experienced construction engineer. The key considerations are:

- Is the area large enough to accommodate the mini-pitch and surround fencing
- Is there suitable access to allow the necessary construction machinery onto the area
- Is the surface structurally in a good condition, without signs of breaking up, cracking, ground movement, tree root damage, etc?
- Does the area have any undulations that may adversely affect the quality of the mini-pitch. Undulations may either take the form of depressions or high spots.

Surface cracks

If there are any significant cracks it is advisable to determine what has caused them to ensure further deterioration will not adversely affect the new mini-pitch.

If cracks are more than 3 mm in width or more than 100 mm in length, they should be infilled using a suitable screeding material.

Surface undulations

If noticeable undulations are found, they should be assessed using a 3m long metal straightedge, as shown in Appendix B, to determine this magnitude. Any undulations greater than 10 mm should be repaired. Low spots and depressions can be infilled using suitable screeding or levelling materials, humps can be rolled out or planned off.

If a number of undulations are found it is advisable to determine what has caused them as it may indicate ongoing problems with the ground, meaning it will be inadvisable to build a mini-pitch on the area.

Surface drainage

Unless the mini-pitch is being built in an arid region, consideration also needs to be given to how rainwater can drain from the mini-pitch. The area should have a suitable fall to aid the flow of water from the playing surface and in wet regions a suitable drain should be installed along the lower boundary of the pitch to take rainwater away from the pitch to a suitable outlet.

1.2. Modular base panels

If a pitch requires a new base, modular base panels[1] provide a simple to build solution for smaller synthetic turf areas. The easy to lay panels, are ideally suited to those who have not built a synthetic turf mini-pitch before. Additionally, the panels will enhance the player comfort properties of the synthetic turf surface, meaning a shockpad underlayer is not normally required.

[1] e.g. EasyLock Panels by RSI Sports Group, Ultra Base System by The Recreational Group, or similar

Figure 5 - installation of modular base panels

The panels need to be installed in accordance with the manufacturer's instructions.

The panels need to be installed laid on suitably prepared ground that can provide adequate stability and load-bearing capacity to support the pitch during its construction and use. Therefore:

- All vegetation and topsoil should be removed and the ground trimmed and levelled, using cut and fill techniques as necessary, to the required profile.
- Any soft spots should be excavated and backfilled using a suitable granular fill material.
- Depending on the site, it may be preferable to install a perimeter edging (kerb) to contain the based panels and any sub-base foundations. The edging can be cast concrete, precast concrete kerbs, timber battens or other suitable materials.
- The ground should be rolled to ensure the ground is adequately compacted. Following compaction, the prepared formation should not have any undulations (low or high spots) that exceed 10 mm under a 3m straightedge.
- Unless the pitch is being built in an arid location, a perimeter drain should be constructed along the lower side boundary of the pitch. This should contain a 200 mm (or larger) perforated plastic drainage pipe that will capture any rainwater flowing down from the playing surface and through the base panels. The drainage pipe should connect into a suitable outlet (soakaway, ditch, dyke etc.).
- To ensure water cannot soak into the ground beneath the pitch and cause longer term structural problems, an impermeable geotextile membrane[2] should be laid over the prepared ground and also line any drainage trenches beneath the pitch.
- Subject to the manufacturer's agreement, in low rainfall areas the panels can laid directly onto the impermeable geotextile membrane (see Figure 6).

[2] E.g. Stansa 161 www.kingnonwovenproducts.com/en/products/stansa-161, or similar

- In areas that experience frequent of heavy rain, a 50 mm – 75mm depth of no-fines crushed stone (10mm – 1mm) should be laid over the impermeable geotextile to aid the movement of water from the playing surface and trough the base panels. This should be overlaid with a permeable geotextile on which the base panels are laid.

Figure 6 – modular base construction – low rainfall regions

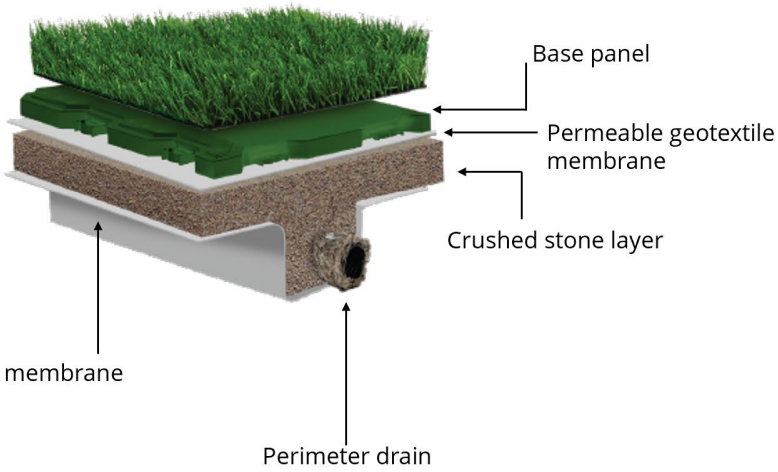


Figure 7 – modular base construction – wet rainfall regions

1.3. Traditional crushed stone base construction

Most full-size synthetic turf football pitches are built using a crushed stone base, and these can also be used for mini-pitches. The design and construction of such a base is best undertaken by a specialist contractor who has experience of designing and building sports fields.

Figure 8 – example of crushed stone base construction

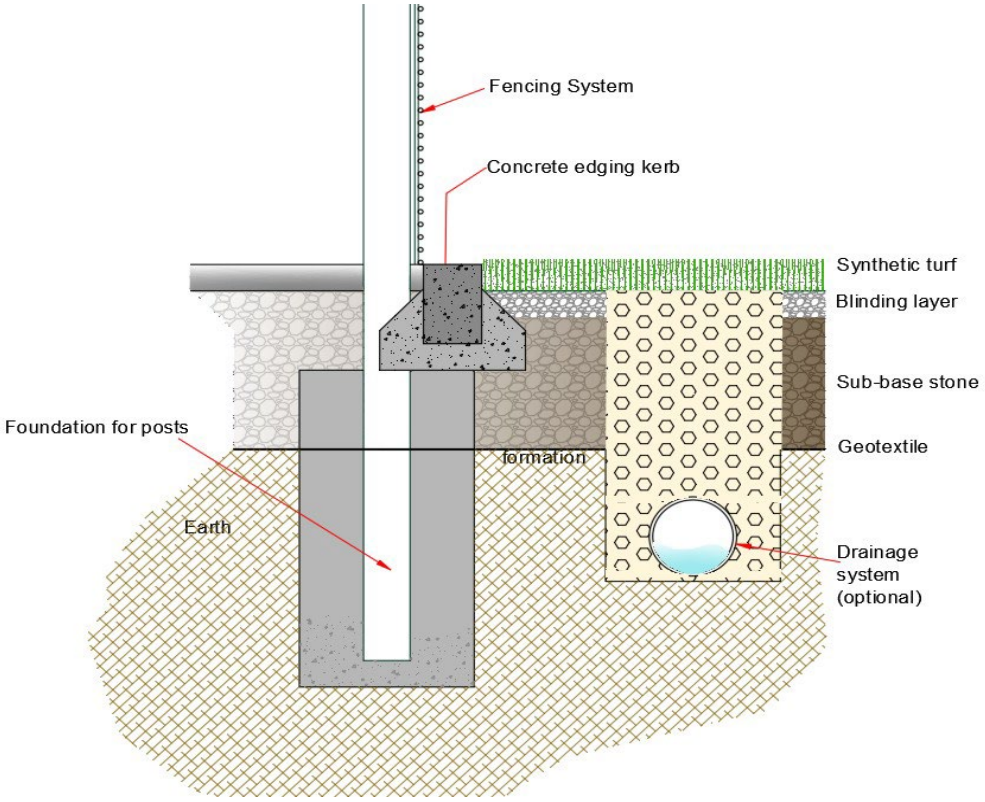


Figure 9 – crushed stone base construction

Ground preparation

All vegetation and topsoil should be removed and the ground trimmed and levelled, using cut and fill techniques as necessary, to the required profile.

Any soft spots should be excavated and backfilled using suitable granular fill material. Back filling should be carried out in layers not exceeding 150mm, and each layer should be compacted before the next is spread.

A suitable geotextile membrane should be laid over the prepared formation to separate the native subgrade soils from the overlying base construction.

The prepared formation should have the same profile as the finished mini-pitch.

Following grading and compaction, the formation should not have any undulations (low or high spots) that exceed 20 mm under a 3m straightedge.

Note: Experience has shown that the prepared formation should have a California Bearing Ratio (CBR) value of at least 5% to ensure adequate long-term stability is provided. Testing to verify suitable compaction has been achieved is NOT considered necessary, unless a site is considered to have specific complications (e.g. being on landfill, etc). When the native ground conditions mean that this cannot be ensured the use of civil engineering stabilising techniques (geo-grids, cement stabilisation, etc) should be used.

Perimeter edgings

The base should be retained within a perimeter edging. This may either be formed from cast in-situ concrete or precast concrete kerbs set on a suitable haunching. The edgings should be laid to a true line

(± 25mm from a stringline joining their ends) and be level, with an adequate up-stand to finish flush with the synthetic turf surface.

Drainage

In regions where heavy or persistent rain may be anticipated, consideration should be given to installing a perimeter drain along the lower boundary of the mini-pitch. This is particularly important on sites where the native soils are unlikely to allow rainwater to quickly percolate into them.

If a drain is required, it should be designed to take any water flowing across the playing surface away from the pitch. It will typically comprise a 150 mm – 200 mm diameter, perforated drainage pipe, laid in a drainage trench with suitable free draining aggregate back-fill. The drainage pipes should be centrally located in the trenches and the pipe bedding materials should be a clean, rounded gravel or similar. Flexible pipes should be laid on a bed of 75mm minimum depth and the trench backfilled to a minimum depth of 150mm above the crown of the pipe.

Consideration should also be given to ensuring water from the surrounding land cannot flow onto or under the base of the mini-pitch.

When drainage is required, a suitable drainage outlet point should be identified. This can include connecting the drain into an adjacent storm water sewer, culverts or rivers, etc. If the drainage outlet is into a culvert or river and the peak river level may rise to the height of the outlet pipe, consideration should be given to fitting the pipe with a hinged backflow non-return cover.

Foundations

The base normally comprises two layers of granular aggregate materials. The lower layer (often called the sub-base) generally consists of graded aggregates (e.g. basalt, granite or limestone) typically used for highway base constructions. Appendix B shows a typical aggregate grading. The sub-base should be constructed from aggregates that are readily available locally.

Above the sub-base is a blinding (or sealing) layer; this regulates the sub-base and provides a smooth platform for the synthetic turf. This blinding layer is normally formed from finer graded unbound aggregates (10mm down to dust).

Ensuring that the depth of the base is adequate for the site and local climate is critical to ensuring the long-term stability of the construction, especially in regions that may experience penetrating frosts. The depth of a base often has to be a compromise between best engineering practice and cost.

The finished profile of the base should be smooth so that when assessed under using a 3m straightedge there are no undulations that are greater than 10mm.

Table 2 shows typical minimum base thicknesses used for football mini-pitches.

Table 2 - Typical minimum base thicknesses

Climatic region	Base layer	Minimum depth
Arid regions	Sub-base Blinding layer	150 mm 20 mm
Temperate and monsoon regions	Sub-base Blinding layer	200 mm 20 mm
Sub-temperate regions / areas likely to suffer penetrating frosts	Sub-base Blinding layer	250 mm 20 mm

Notes:

1 Ensuring that the depth of the base is adequate for the site and local climate is critical to ensuring the long-term stability of the construction.

2 In areas prone to frost and thaw, the depth of the base should always be determined by assessing the risk of penetrating frosts and the shrink/swell characteristics of the native subgrade soils. If there is any doubt about the specific needs of a site, a suitably experienced civil engineer should be consulted

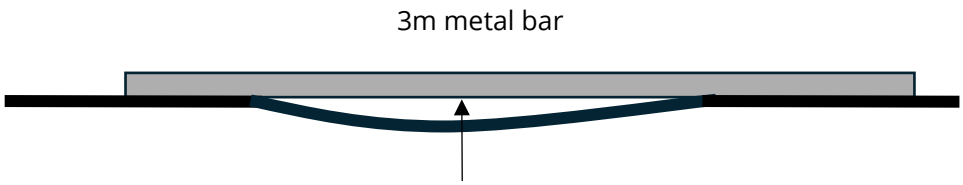
3 If the aggregates used to construct the base have a low water infiltration rate or are likely to be prone to swelling or shrinkage with changes in moisture content (e.g. laterite or clay materials), the base should be sealed with an impervious separation membrane that prevents water percolating into the base. Mini-pitches with such base designs should have an external perimeter drain or gulley channel along the low side of the pitch to capture and remove any rainwater flowing off the synthetic turf playing surface.

Appendix A – Typical sub-base aggregate grading

Provided for guidance only

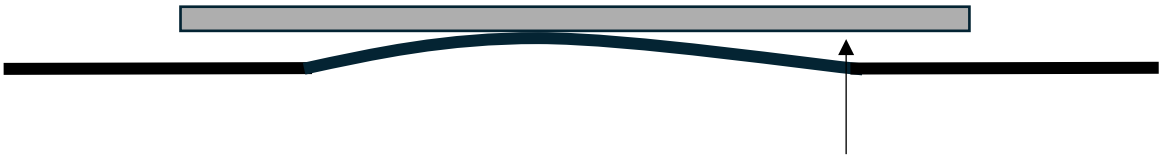
Table 1 - typical aggregate grading for sub-base constructions	
Sieve size (mm)	Overall grading range Percentage by mass passing
80	100
40	80 – 99
20	50 – 78
10	31 – 60
4	18 – 46
2	10 – 35
1	6 – 26
0.500	0 – 20
0.063	0 – 5

Appendix B – Assessing planarity using a 3m straightedge



Maximum gap between base of the depression and the bottom of metal bar should not exceed 10 mm

Figure C1 - assessing height of any depressions



Maximum gap between top of hump and bottom of metal bar should not exceed 10 mm

Figure C2 - assessing height of any humps