Guide to outdoor areas for small sided football and mini-soccer

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Contents

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Introduction

Over 4 million people play small-sided football each year in England of which 1.2 million play on a regular league or cup basis. This level of participation makes small sided football one of the largest sports in the country. Small sided football is generally used to describe any game played by less than eleven players. However, there are a number of formats that have gained greater recognition and formality than others and this guide concentrates on identifying the facility requirements for the following games:

- Five and six-a-side football
- Seven-a-side football
- Mini-soccer

For further details on the FA's Small Sided Football Development Programme, including the relevant 'Laws of the Game', please consult the FA's web site at www.thefa.com.

Mini-soccer is traditionally played on natural grass but the increasing number of artificial grass pitches has led to a number of Leagues allowing the use of these alternative forms of surface, particularly where inclement weather makes natural grass pitches unusable.

This guide has been prepared to aid facility designers and operators providing outdoor facilities for the various forms of small sided football. They detail the sizes of pitches, the types of surfaces that are commonly used and the facility infra-structure required to ensure the pitch provides a satisfactory playing environment.

There are many ways of designing, constructing and surfacing small sided football pitches. These guidelines do not constitute any form of preference or approval

from the FA but are intended to provide information to potential consumers to allow them to make informed choices when designing facilities.

In many cases a pitch has to cater for more than one sport. The design considerations for multi-use games areas (MUGA) on which small sided football is to be played are also discussed.

Pitch layouts

The layout of the pitch for five, six or seven-a-side football is shown in Figure 1.

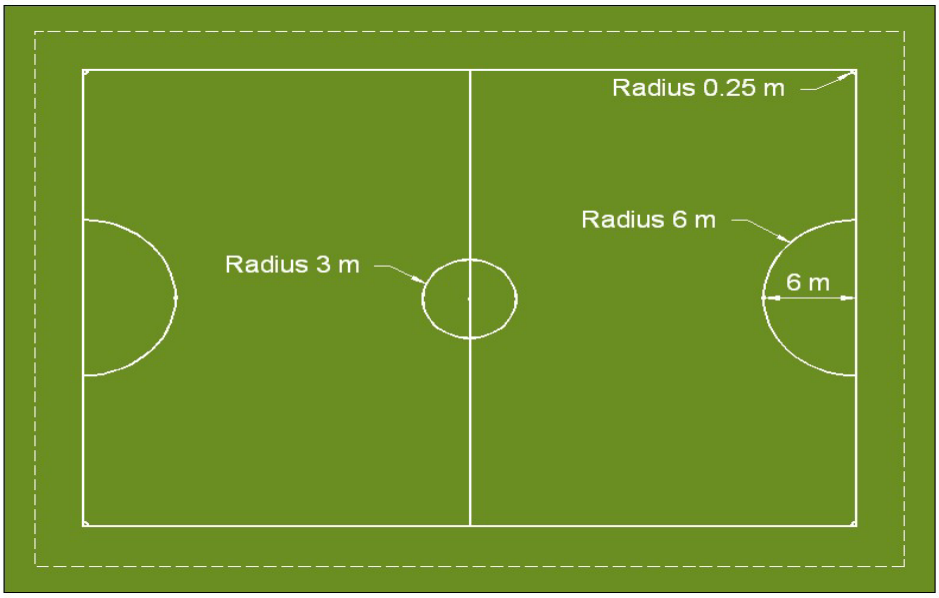

Figure 1 - five, six and seven-a-side football pitch layout
(dotted line shows boundary of run-off where pitch is not enclosed)

The pitch should be rectangular and the length of the touchline must be greater than the length of the goal line. Where possible the ratio of length to width should be 2:1. The recommended pitch dimensions are shown in Table 1.

Table 1 - Pitch dimensions				
Five and six-a-side pitches				
	Length		**Width**	
Min.	25.0m		16.5m	
Max.	50.0m		35.0m	
Run-off when applicable	Minimum	2.0m	Minimum	2.0m
	Recommended	3.0m	Recommended	3.0m
Seven-a-side pitches				
	Length		**Width**	
Min.	50.0m		30.0m	
Max.	60.0m		40.0m	
Run-off when applicable	Minimum	2.0m	Minimum	2.0m
	Recommended	3.0m	Recommended	3.0m

The layout of a Mini-soccer pitch is shown in Figure 2.

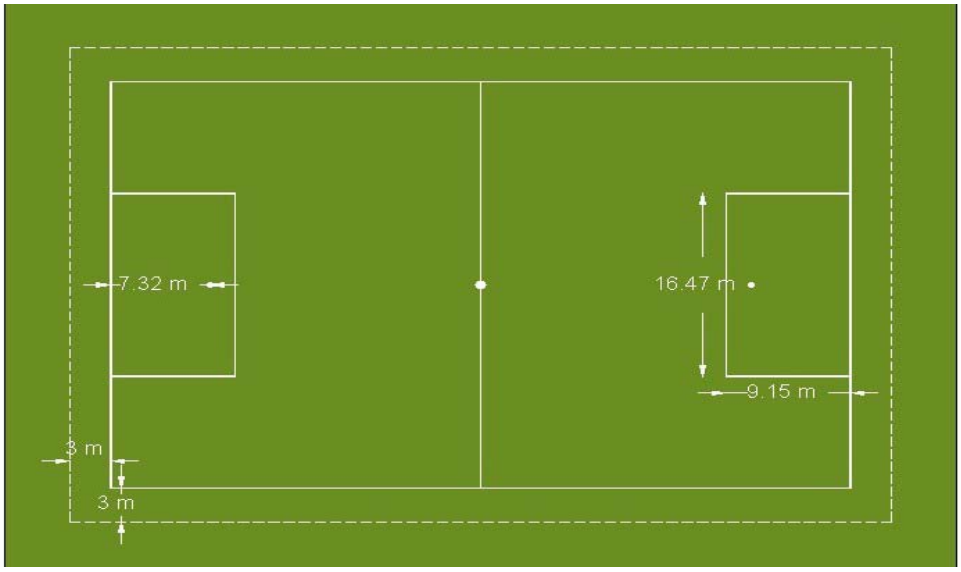

Figure 2 – mini-soccer pitch layout
(dotted line shows boundary of run-off where pitch is not enclosed)

Table 2 - Mini-soccer pitch dimensions		
Under 10s / 9s		
	Length	**Width**
Min.	45.75m	27.45m
Max.	54.90m	36.60m
Run-off	3.0m	3.0m
Under 8s / 7s		
	Length	**Width**
Min.	27.45m	18.30m
Max.	45.75m	27.45m
Run-off	3.0m	3.0m

Run-offs

Where pitches are located within enclosed areas run-offs should be provided to ensure players do not injure themselves by running into surrounding fencing, hoardings, spectators and other obstacles. The run-offs should be surfaced with the same surface as the playing area.

Where the pitch is sited on an open area (e.g. a grass playing field) run-offs should also be marked so that spectators, team officials, etc do not stray too close to the pitch. This can be done by marking additional lines or using portable cones to designate the outer boundaries of the run-offs.

Pitch markings - five, six and seven-a-side football

The pitch is marked with lines that should be 8cm wide. Lines should preferably be coloured white or yellow.

The two long boundaries are called touchlines; the two shorter lines are called goal lines. Where barriers or fences are used to enclose the pitch and form the

boundaries of the playing area it is not necessary to mark the touchlines or goal lines.

The pitch is divided into two halves by the halfway line. The centre mark is positioned at the mid point of the halfway line. A circle with a radius of 3.0m (diameter 6.0m) is marked around it (irrespective of the pitch size).

The penalty area for each goal is formed by a semi-circle of radius 6m (irrespective of the pitch size) measured from the midpoint of the goal line. The extremities of the semi-circles should reach the goal line, barrier or wall regardless of whether or not the goal posts encroach into the playing area. The penalty mark should be 6m from the mid point between the goal posts and equidistant from them.

Pitches that are not enclosed by barriers or fences (and have run-offs) should have corner arcs marked. These are quarter circles of radius 25cm from each corner of the pitch drawn inside the pitch.

Pitch markings - mini-soccer

The pitch is marked with lines that should be 10cm wide and preferably white or yellow in colour. The pitch is divided into two halves by the halfway line. The centre mark is positioned at the mid-point of the halfway line. The penalty area for each goal is formed by a rectangle measuring 9.15m by 16.47m wide.

Surface options

Smalls-sided football and mini-soccer is played on a range of surfaces that include:

- Natural grass
- Long pile artificial football grass

- Sand filled synthetic grass and needle punch surfaces
- Polymeric surfaces
- Macadam

Whilst natural grass may still be considered to be the best playing surface for football the need for pitches to sustain high levels of use has meant that the various forms of football below the eleven-a-side game have, for many years, been played on a range of artificial surfaces. This section describes the various types of surface that are commonly used and details the performance and construction tolerances that should be achieved by pitches surfaced with each.

Long pile synthetic turf surfaces

The increasing market demand for artificial surfaces that simulate the playing qualities of natural grass and can accommodate the use of studded football boots has led manufacturers to develop new forms of synthetic grass often described as long pile (or third generation) artificial grass. These surfaces have a much longer pile than the previously used sand filled surfaces and are normally partly filled with rubber and sand mixes, although a small number have no fill. The enhanced playing qualities of these surfaces has led to their rapid acceptance within the football world and stimulated much interest from the game's governing bodies. It is therefore recommended they be installed in dedicated indoor football facilities wherever possible.

There are many different types of synthetic turf construction with a range of properties, advantages and disadvantages. Variables include the pile yarn, pile height and pile density, infill type, use of shockpads, etc. Detailed guidance on long pile synthetic turf is given in the FA's Artificial Pitch Guidelines (http://www.thefa.com/GetIntoFootball/Facilities/Artificial_Pitches).

Although primarily referring to full size pitches the FIFA Quality Concept for Football Turf defines the parameters considered necessary for long pile football

surfaces to provide a satisfactory playing environment, together with the necessary levels of durability required to help ensure the surface is able to withstand the wear and tear of everyday use. The FIFA Quality Concept has two categories of surface; the FIFA One Star category has been designed for community use pitches and is therefore the relevant one for small-sided and mini-soccer pitches. The FA recommends that only surfaces that have been tested and shown to satisfy the laboratory test requirements of this category be used.

As even the best quality synthetic turf surfaces will not performance correctly if poorly installed it is recommended the performance of the pitch is tested following installation. As the FIFA Quality Concept for Football Turf is based on full size pitches it is not applicable to small-sided football, but British Standard BS EN 15330 contains similar field test requirements to the FIFA standard and applies to all sizes of pitch.

Recommended test criteria for long pile synthetic turf surfaces	
Product test requirements	FIFA Quality Concept for Football Turf – FIFA 1 Star category
Field test requirements	BS EN 15330 (as a surface designed for football)

The maintenance of long piled synthetic turf surfaces is vitally important if the pitch is to retain acceptable performance and be long lasting. The contractor's guarantee will also usually be conditional on the recommended maintenance requirements being carried out with reasonable diligence. It is therefore essential that this vital aspect of the pitch's management is not over looked. A typical maintenance programme will comprise:

- Drag matting / brushing to redistribute infill

- Brushing to lift the pile that will flatten through the actions of play. Failure to do so will result in a faster surface and more fibrillation and

matting of the carpet's pile with a deterioration in performance

- The localised topping up (penalty spot, centre spot, corner kick areas etc) of fill materials to ensure consistent ball and foot responses from the surface and to provide support to the carpet's pile

- The removal of litter, leaves and other debris from the surface

- Removal of moss or weeds particularly around the edges of the pitch where it is harder to get mechanical brushes into

- Periodic decompaction of the infill.

The frequency of such maintenance will vary but is likely to be at least weekly and on regularly used pitches more frequently.

Sand filled artificial grass & needle-punch carpets

Sand filled synthetic turf and needle-punched surfaces are probably the most common forms of surface used for small -sided football. British Standard BS EN 15330 defines the parameters considered necessary for sand filled and needle-punched surfaces to provide a satisfactory playing environment, together with the necessary levels of durability required to help ensure the surface is able to withstand the wear and tear of everyday use.

To provide the correct levels of performance a sand filled artificial grass or needle-punch carpet is normally laid over a shockpad typically around 15mm thick. The most common types of shockpad are made from rubber crumb/shred mixed with a resin binder, either manufactured as prefabricated rolls or mixed and laid in-situ. To ensure adequate long-term durability the tensile strength of the shockpad should be greater than 0.15 MPa when tested in accordance with BS EN 12330.

Recommended test criteria for sand filled synthetic turf surfaces	
Product test requirements	BS EN 15330-1
Field test requirements	BS EN 15330-1 (as a surface designed for multi-sport use)

Recommended test criteria for needle-punched surfaces	
Product test requirements	BS EN 15330-2
Field test requirements	BS EN 15330-2 (as a surface designed for multi-sport use)

The maintenance of sand filled and needle-punched surfaces has similar principles to long piled synthetic turf modified to suit the sand infill. Failure to maintain these forms of surface will result in deterioration in performance and a shortening in the surface's service life.

Polymeric Surfaces

Polymeric surfaces are made from rubber granules (normally recycled tyres) bonded together with a binder. The surface is laid in a continuous layer across the area, and colour coated to provide a shock absorbing, porous and relatively

durable surface Wear of the colour coating can result in the surface becoming slippery, however when wet or damp and the coating needs to be periodically reapplied. The frequency of this will depend on the intensity of use, cleanliness of the pitch and the degree of contamination from surrounding features (trees etc). For pitches subjected to high levels of use or contamination the frequency of recoating may make the use of this surface inadvisable.

British Standard BS EN 14877 defines the parameters considered necessary for polymeric surfaces to provide a satisfactory playing environment, together with the necessary levels of durability required to help ensure the surface is able to withstand the wear and tear of everyday use.

Recommended test criteria for polymeric (synthetic) surfaces	
Product test requirements	BS EN 14877
Field test requirements	BS EN 14877 (as a surface designed for multi-sport use)

The maintenance of polymeric surfaces is similar to macadam surfaces, although the need to recoat is likely to be more frequent.

Macadam

Historically one of the most common forms of surface used for small sided football areas, macadam provides a durable relatively cheap playing surface. The surface is hard, unyielding and abrasive and can result in injuries when players fall on it. Despite these limitations the FA acknowledge that in areas of high potential vandalism or abuse or where budgets are limited macadam may be the only viable form of surfacing and, working on the basis that a macadam playing area is better than no playing area, we support the use of the surface.

Macadam may be of a dense, medium or porous grade. Whilst dense macadam provides the strongest and most durable surface and is typically laid on school playgrounds etc; its inability to drain is a major constraint on its sporting use.

Medium grade macadam will allow a limited degree of water percolation through its structure, but does not always ensure puddles will not form on the playing surface. For this reason porous macadam is considered the most suitable and is used on many sports facilities.

Many macadam sports areas are painted with specially manufactured coatings that are spray applied to improve the appearance of the pitch. The use of the correct type of paint is critical if the pitch is to retain acceptable levels of slip resistance in wet/damp conditions for a reasonable period of time and experience has shown water based polyurethane paints are best suited to areas used for football. Colour coatings should be applied in accordance with the Code of Practice published by the Sport and Play Construction Association (www.sapca.org.uk).

Construction & performance requirements for macadam football areas		
Property	**Test method**	**Requirement**
Slip Resistance	BS EN 13036-4	Greater than 60 dry or wet
Permeability (porous macadam)	BS EN 12616	Greater than 100mm/h
Surface regularity	EN 13036-7	≤8mm
Gradients & profile	Porous macadam	Single plane with fall no greater than 1% (ideally ≤0.83%)
	Medium & dense macadam	Single plane with fall of 1%

The maintenance of macadam surfaces comprises:

- removal of leaves and other detritus from the playing surface
- power washing of porous surfaces to remove the dirt and debris that collects within the macadam surface

- application of moss killer when required on porous surfaces

- re-colour coating, where appropriate, approximately every three - five years

Goals

The recommend sizes of goals are for five, six and seven-a-side football and mini-soccer are 3.66m wide by 1.83m high.

Incorrectly used goals can kill so goal post safety should always be of paramount importance to designers, builders, operators and users of pitches. Goals should be certified as complying with BS 8462: *Specification for Goals for Youth Football, Futsal, Mini-soccer and Small-Sided Football* and they should be purchased, installed and maintained in accordance with *BS 8461: Football Goals – Code of Practice for their Procurement, Installation, Maintenance, Storage and Inspection.*

When selecting goals and other sports equipment consideration should be given to the precise uses of the pitch so that changes in activity can take place with the minimum of effort and inconvenience. Goals can be freestanding, and therefore easily moved, although it is important to make proper provision for their storage when not in use. This must not be on the run-offs of the pitch.

Rebound boards and fencing

Five, six and seven-a-side football pitches are normally enclosed. Where rebound boards (permanent or portable) are used these should be at least 1.2m high. The use of mesh fencing behind and above the boards is also common to protect the boards and ensure balls remain within the pitch area and do not interfere with activities on adjacent areas.

Fencing heights vary but 3.0m is often used with 4.5m or higher behind goals or where the site requires as many balls as possible to be retained within the playing area (typically adjacent to roads, etc).

There are many factors that need to be considered when designing a fencing system and site developers should undertake an assessment of the site, its proposed use and adjacent properties. The local planning authority will also often have requirements and conditions which need to be met and early consultation is advisable.

Typically football areas are enclosed by 50mm square weld mesh panels or rolls that are suspended from box section posts. Weld-mesh is used, as it is better suited to the repeated impacts of footballs than chainlink mesh. The use of more closely spaced 358 gauge weld-mesh is worthy of consideration behind and alongside goals etc (on pitches where rebound walls are not required) as it offers even greater resistance to the repeated impacts of footballs. Steelwork should be galvanised to minimise premature corrosion and can be plastic coated to improve its appearance and provide a bright colourful appearance.

Where appropriate, on small sided football pitches, rebound walls can be installed. These are normally 1.2m high and constructed from a variety of materials (normally exterior grade timber panels that are stained or painted, homogenous resin based exterior grade boarding, timber planking or block/brickwork). Whilst the use of exterior or marine grade timber panels and pressure treated timber planks will extend the life of the boards, cracking and delamination can occur in the longer term meaning periodic replacement will be required and this needs to be budgeted for in the life cycle costs of the facility.

If timber planks or slats are used they should be smooth planed to a minimum thickness of 20mm. Mounting bolts for planks and panels should be roundhead on the inside face of the pitch. Suitable provision for expansion and contraction of the boards or planks should be allowed for in the design.

The repeated noise of balls rebounding from the boards can also be a source of great annoyance to neighbours of small sided football pitches and is often a contentious issue when planning approval is being sought. The use of rebound fencing manufactured from dense (358 gauge) weld mesh panels seems to reduce the noise generated by balls striking the fence and also overcomes many of the cracking and delamination problems associated with timber panels. The

open nature of the mesh allows full viewing of the pitch which can be advantageous on sites where bullying or vandalism may occur.

Access gates and doors should open outwards to ensure the safety of players. Single gates should be at least 1.2m wide to allow sport wheelchair access and gate thresholds should be level or slightly ramped (i.e. not stepped). Gates should also be positioned so they do not to create congested gathering points.

Multi Use Games Areas (MUGA)

To maximise the benefits of a sports area it is common to use it for more than one sport. In most cases small sided football is one of the primary sports and the dimensions and surfacing information detailed in these guidance notes may be used as the basis of establishing the design requirements for the MUGA. Many other sports governing bodies provide similar information about the needs of their sports. Sport England has also published a number of guides that describe good practice in the design of MUGAs; these are available on www.sportengland.org.

Figures 3 and 4 shows examples of a MUGA layout based on small sided football. Figure 3 shows two pitches for small sided football and one for futsal. On this design provision has also been made for recreational basketball, although markings for netball, mini-tennis, roller hockey and tag rugby could be incorporated. Due to the need for the Futsal goals to be free-standing (to allow their removal when cross pitch play or basketball takes place) the layout is only suitable for sites where management of goals can be ensured.

On sites where goals may be subject to misuse or vandalism it is recommended they be fixed permanently into recessed areas as shown in Figures 4. This layout has pitches for small sided football and provision for recreational basketball practice. The side recesses on both designs may be used to form the Small Sided Football goals or free standing goals (suitably secured in use) can be stored in the recesses when not in use.

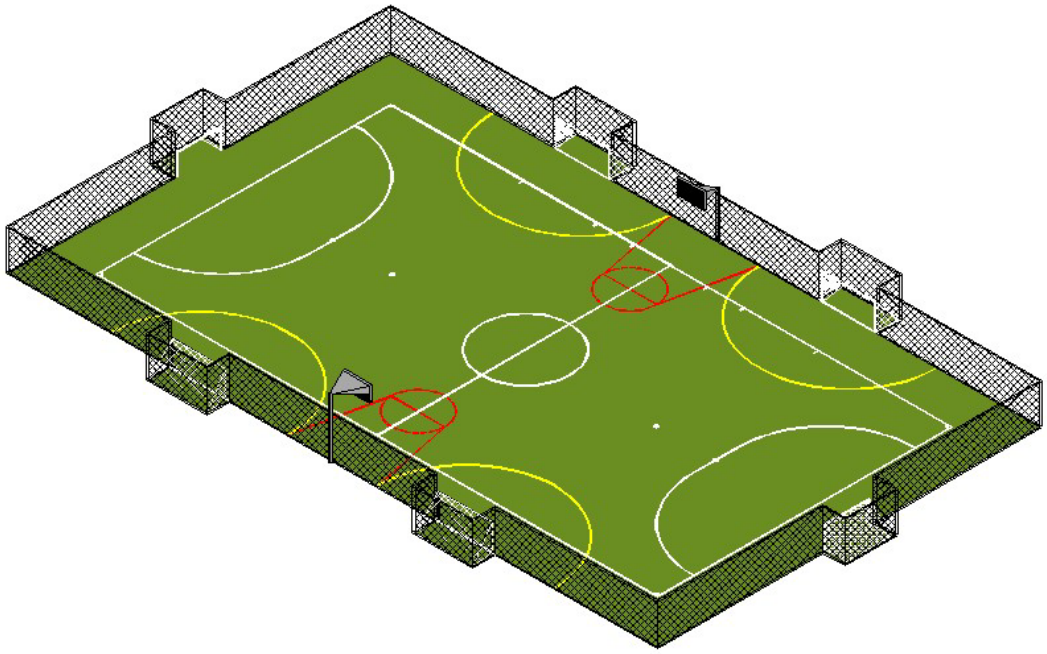

Figure 3a - MUGA with facilities for Futsal, small sided football and recreational basketball (note this design requires free standing Futsal goals)

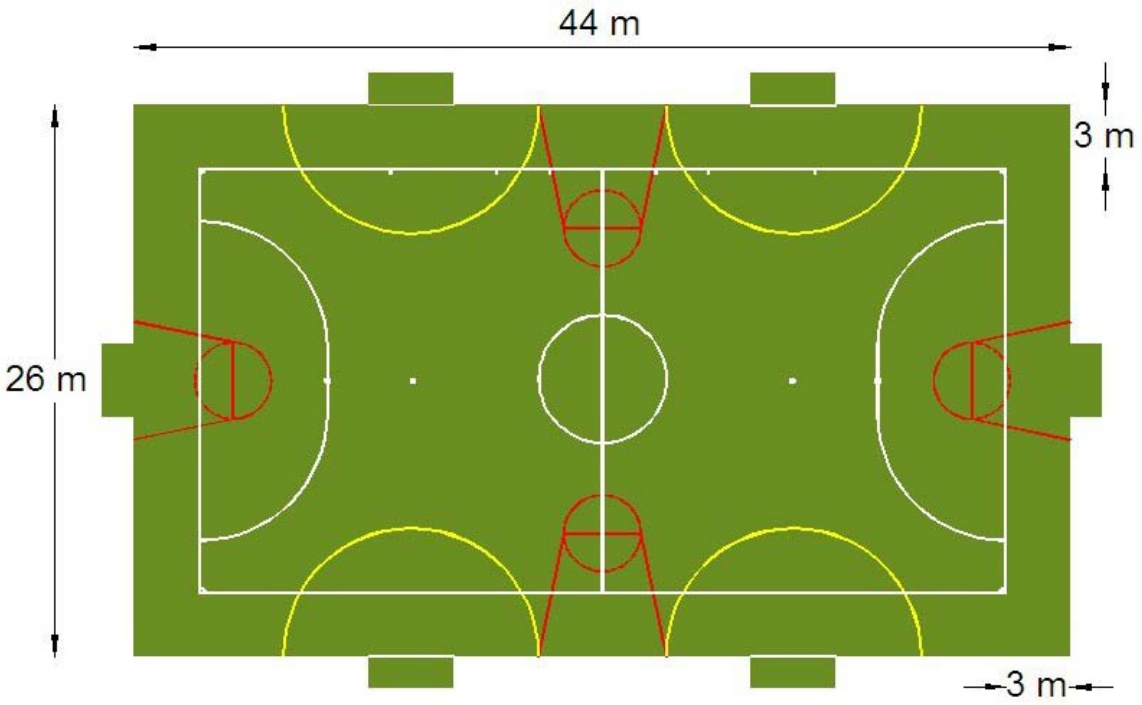

Figure 3b - Dimensions of MUGA with facilities for Futsal, small sided football and recreational basketball

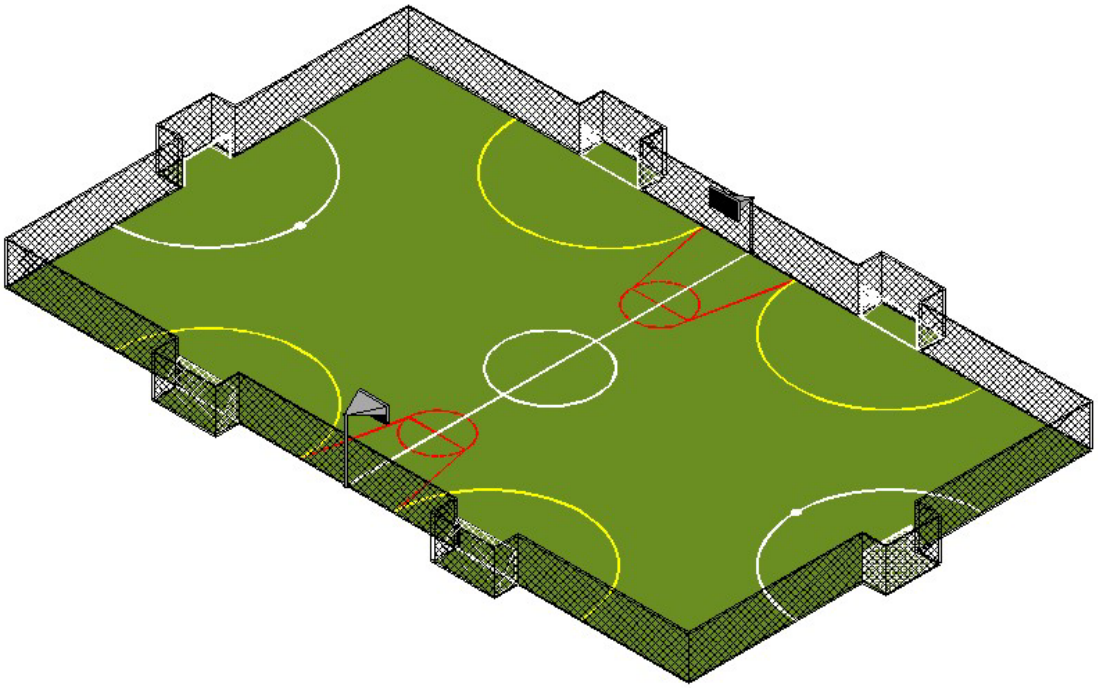

Figure 4a - MUGA with facilities for small sided football and recreational basketball practice

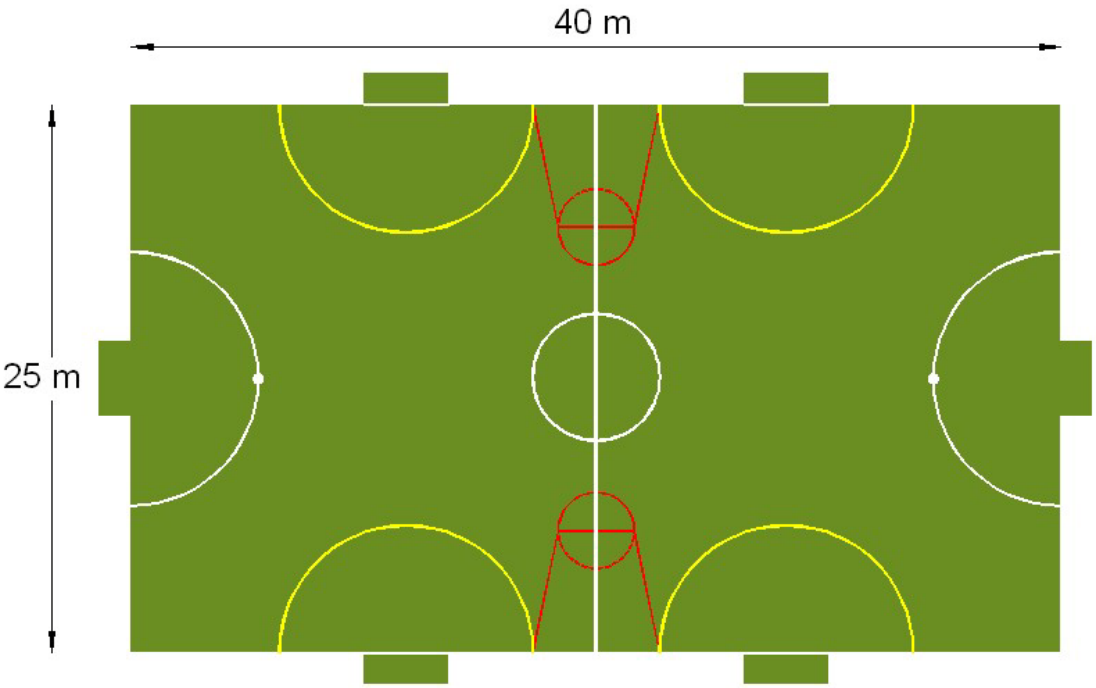

Figure 4b - Dimensions of MUGA with facilities for small sided football and recreational basketball practice

Lighting

Based on British Standard BS EN 12193 The FA and Sport England recommend that for areas on which small sided soccer will be played the lighting system be designed to achieve the performance detailed in Table 3. Class 2 refers to regional and or club competitions and Class 3 refers to general training and recreational/school competitions.

Table 3 – performance requirements for lighting		
Property	**Requirement**	
	Class 2	**Class 3**
Maintained average luminance	200	75
Uniformity (Min/Ave)	0.7	0.6

To minimise the running costs a Class 2 lighting system may be designed to also provide a lower level of lighting for recreational play and training etc. This should be no lower than a maintained average luminance of Class 3.

References and sources of information

The FA's Artificial Pitch Guidelines
(www.thefa.com/GetIntoFootball/Facilities/Artificial_Pitches)

FIFA Quality Concept for Football Turf
(www. fifa.com/aboutfifa/organisation)

BS 8461: Football Goals – Code of Practice for their Procurement, Installation, Maintenance, Storage and Inspection.

BS 8462: Specification for Goals for Youth Football, Futsal, Mini-soccer and Small-Sided Football

BS EN 12193: Light and lighting. Sports lighting

BS EN 14904: Surfaces for Sports Areas: Indoor Surfaces for Multi-sports Use – Specification.

BS EN 14877: Surfaces for Sports Areas: Specification for synthetic surfaces

BS EN 15330: Surfaces for Sports Areas: Synthetic turf and needle-punched surfaces primarily designed for outdoor use – Specification for synthetic turf

SAPCA Construction and Maintenance of Synthetic Turf Sports Pitches
(www.sapca.org.uk)

SAPCA Guide to Maintenance of Synthetic Sports Surfaces
(www.sapca.org.uk)

Construction and Maintenance of Fencing Systems for Sports Facilities
(www.sapca.org.uk)

SAPCA Cconstruction and Maintenance of Tennis Courts (guidance on the construction of macadam areas) (www.sapca.org.uk)

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