



## Guideline template

### Design Brief for Artificial Grass Pitches

Version 2

#### **Summary**

This guideline template has been prepared to assist those preparing a Design and Build specification for an artificial grass pitches designed to satisfy the requirements of the FA. It includes clauses for many of the elements of the construction and gives advice on the project specific items that need to be considered and described in such a specification.

**January 2010**  
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There are many ways of designing, constructing and surfacing an artificial grass football pitch. These guidelines do not constitute any form of preference or approval from the FA on a particular form of surfacing or construction but are intended to provide information to potential consumers to allow them to make informed choices when designing and selecting surfaces, contractors, etc.



## Foreword

To help organisations wishing to install artificial grass pitches for community use the FA have produced two guideline documents to provide assistance during the design, procurement, construction and operation of artificial grass football pitches. The two parts are:

- *Guide to Artificial Grass Pitches for Community Use* which describes the many factors that need to be considered during the design, specification and construction of an artificial grass pitch. It discusses the surfacing and construction options being offered by contractors and includes advice on maintenance, life cycle costs and sinking funds.
- *Guideline Template - Design Brief for Artificial Grass Pitches for Community Use* (this document) which has been prepared to assist in the preparation of a design brief for an artificial grass football pitch where the pitch is to be procured using a design and build form of contract. This is where the body commissioning the pitch describes what they require in a design brief (also known as the Employer's Requirements) and the appointed contractor has responsibility for the detailed design and construction of the pitch to satisfy the brief.

Where a site proves particularly difficult, or a number of different facilities form a larger development being undertaken at the same time, the procurement of the pitch may be best handled on the basis of a detailed specification, with full working drawings. If this method of procurement is selected, the outline design brief can be used as the basis of the design from which the drawings and bills of quantities can be derived.

Every project and site is different meaning that it is not possible to take an "off the shelf" specification and issue it to contractors to price. Every scheme will require project specific information that needs to be incorporated into the project specification. **Sections where project specific information is required are highlighted. These should be fully completed prior to tenders / quotes been sought from contractors.**



## Design brief for the construction of an artificial grass pitch for community use and ancillary works

### 1 Project Details – Site, Employer and Project Manager, etc

1.1	Site	
	Address	
1.2	Employer	
	Address	
	Tel	
	Fax	
	E-mail	
1.3	Project manager	
	Address	
	Tel	
	Fax	
	E-mail	
1.4	CDM Coordinator	
	Address	
	Tel	
	Fax	
	E-mail	

## 2 Description of works

### Guidance note

A detailed description of the required facility shall be included here. The description should include:

- A full description of the facility required including a summary of the proposed sports to be played on the pitch.
- Details of any works to be undertaken by others in advance of the main construction works
- Details of what is to happen to spoil resulting from the works (taken off site, creation of mounds, etc.)
- Details of the proposed drainage outlet
- The type of fencing (height, mesh type and colour), gates (numbers, type and height), rebound boards/mesh (type and colour), etc
- The required levels of floodlighting performance including details of any secondary level lighting to be provided for training and other sectional pitch use
- The location of the control and switchgear for the floodlighting system
- The location of an available power supply for the floodlighting system or details of who is to provide an adequate supply
- Details of all small power, egress and amenity lighting and all control features to be provided as part of the floodlighting scheme
- Details of any landscaping works to be undertaken as part of the contract
- Details of any external maintenance access ways and footpaths etc to be constructed by the contractor.
- Details of any site specific restrictions

### Anticipated use

The pitch is to be used for the following activities. The anticipated maximum weekly usage for each activity will be as detailed:

### Guidance note

List each activity to take place on the pitch together with an estimate of weekly usage. Distinguish between full pitch play and cross pitch play

### 3 Drawings

#### Guidance note

The drawings that form part of the Design Brief should be listed here. There will normally be drawings showing:

- The location of the site, site access, working area and contractor's compound
- The topography of the existing site
- The required pitch layout including line markings, fencing heights, equipment storage areas, drainage outlet, access ways, location of floodlight power supply, etc
- Any other site of project specific requirements

### 4 General Conditions, Preliminaries, Form of Contract and Form of Tender

The Employer's specific conditions, preliminaries, form of contract and conditions of tendering are detailed in Appendix A.

#### 4.01 Contract

The Contractor shall agree to undertake to enter into a formal contract of the form detailed in Appendix A. The Contractor shall further agree that until their tender is incorporated in such a formal contract, executed under deed by the Employer, their tender together with the Employer's written acceptance thereof will constitute a binding contract between the parties.

#### 4.02 Design and Construct Responsibilities

The Contractor shall assume full responsibility for the preparation of the design, and for the construction of the whole of the project as described in the Design Brief. Any preliminary or preferred scheme detailed in the Design Brief represents a discharged portion of the design service previously commissioned by the Employer. The Contractor shall use any such scheme indicated as a basis for the development of the undischarged portion of the design.

The Contractor shall conform to the mandatory data and dimensions indicated in the Design Brief. Any materials, fixings, foundations or drainage detail



indicated in the Design Brief are typical only and shall not relieve the Contractor in any way of any of his design or other responsibilities.

#### 4.03 Conditions of Tendering

The Contractor shall take into account and comply with any conditions of tendering or procurement stipulated by the funding agencies and notified to the contractor in these Design Brief.

The Employer does not bind itself to accept any design or tender. Contractors tendering do so at their own cost and their tender shall remain open for acceptance for a period of TWELVE weeks after the due date for submission. The Contractor shall note that after the submission of his tender he may be required to attend an interview at the Employer's office to explain his tender proposals including the methods of construction, the construction programme and management structure to be used to control and progress the works.

The Contract Sum is a fixed price and will not be subject to any adjustment saves only in respect of any provisional or prime cost items or where the Employer shall have issued a written change in design instruction.

#### 4.04 Site Access and Temporary Roads, Hard Standings etc.

The contractor shall allow for forming a suitable site access to allow the works to be undertaken during the agreed contract period. This shall include all temporary roads, hard standings, crossings and the like, necessary for carrying out the whole of the works. On completion of the works the contractor shall remove all temporary roads and fully reinstate the disturbed areas.

#### 4.05 Limitations of Working Space

The Contractor shall confine everything pertaining to the Contract within the area of the proposed works and surrounding areas, as agreed with/defined by the Employer.

The Contractors operations are to be confined to the minimum area required to carry out the works, which shall be executed carefully so as to cause minimum nuisance and inconvenience to the users of adjoining facilities.



#### 4.06 Trespass and Nuisance

All reasonable means shall be used to avoid inconveniencing adjoining owners and occupiers. No persons employed on the works shall be allowed to trespass on adjoining properties. The Contractor shall indemnify the Employer against any claims or action for damage on account of any trespass or other misconduct of the Contractors' employees.

#### 4.07 Inspection of the Site

The Contractor is recommended to visit the site before submitting their tender, as no claim due to lack of knowledge that could have been obtained by such a visit will be entertained. Permission to visit the site may be obtained from the Employer.

#### 4.08 Programme

The Contractor shall before being given possession of the site prepare and submit his proposed programme for the execution of the works for comment by the Employer. Thereafter the Contractor shall amend and revise the programme as required by the Conditions of Contract or as requested by the Employer. The programme shall be represented on a bar chart showing each primary stage of construction. When updated this shall show the percentage of works completed up to the date of reporting.

#### 4.09 Method Statement

The Contractor shall provide, prior to contract, a statement describing their proposed general and detailed arrangements and methods for carrying out the works. The document should also indicate areas of work that will be sub-contracted and detail the company that will be employed.

The Method Statement should include details of how all stages of the works will be executed. It should detail procedures to ensure the specified parameters are obtained, the appropriate climatic conditions in which the surfacing can be laid, the appropriate Health and Safety requirements and training that personnel will undergo prior to working on site.

#### 4.10 Plant, Tools and Vehicles

The Contractor shall allow for providing all plant, tools and vehicles necessary for the completion of the Works.





#### 4.11 Site Administration

The Contractor shall allow for all necessary site administration for the proper execution of the works. Prior to commencing the works on site the Contractor shall confirm to the Employer the name of the person in charge of the site together with brief details of their experience. This person is not to be changed without the prior agreement of the Employer, which shall not be unreasonably withheld.

#### 4.12 Site Security and Temporary Fencing

The Contractor shall ensure that the works and the site are properly protected and secured at all times, including any works outside the site boundary, and that the Employer is indemnified against any claim for loss, damage, theft or the like.

The Contractor shall provide for situating his temporary buildings and offices and the storing of materials etc. within the site boundaries.

On completion of the works all temporary fencing, building materials and equipment shall be removed and the site reinstated.

#### 4.13 Temporary Accommodation for use by the Contractor

The Contractor shall allow for providing and maintaining all necessary temporary services, offices, containers and compounds for storage of materials.

No offices, stores or temporary buildings shall be erected on site without first obtaining the consent of the Employer as to the position in which they are to be erected.

Sanitary accommodation for workmen and staff shall be provided, connected to existing drainage where practicable, and maintained in a thoroughly clean, deodorised and orderly condition.

All huts and other temporary facilities shall be removed, and contaminated soil disinfected and all damage made good on completion of the Contract.



#### 4.14 Safety, Health and Welfare

The Contractor shall allow for providing and maintaining all welfare and safety measures to a standard not inferior to that laid down in statutory instruments, rules and orders and subsequent amendments thereto for all workmen employed on the site including the employees of subcontractors.

#### 4.15 Maintenance of Roads Etc.

The Contractor shall maintain all public and private roads, footpaths, paved areas, boundary walls and fences on or adjacent to the site in their present condition, and on completion, make good any damage arising from the works and reinstate to the satisfaction of the Employer.

The Contractor shall keep any public, private and existing roads, drains, footpaths and paving on or adjacent to the site or used by traffic entering or leaving the site in a clean and unobstructed and safe condition state to the satisfaction of the Employer, the Police and the Local Authority.

The Contractor shall use all means to prevent mud or rubbish of any kind being carried on to such roads, footpaths and paving, by vehicles belonging to himself or any other subcontractor to the reasonable satisfaction of the Employer.

Where, however, in spite of such precautions, mud or rubbish is carried on to the roads, footpaths or paving, the Contractor shall immediately clean up such mud or rubbish at his own expense by scraping, brushing, shovelling and removing to tip. Special attention must be given to prevent mud becoming embedded in the road and footpath surfaces.

#### 4.16 Removing Rubbish etc. and Cleaning Works

The Contractor shall allow for removing all rubbish, protective casings, coverings and debris from the site.

#### 4.17 Statutory Regulations

Statutory regulations shall be ascertained and the Contractor shall allow for complying with any such regulations or requirements concerning pedestrian or vehicular traffic control, the loading and unloading of or waiting by vehicles on the public highway, site ingress and egress, safety precautions and other matters affecting the works.



#### 4.18 Planning Consent & Building Regulations Approval

Appendix B contains details of the planning application and consent for the facilities. The Contractor is to allow for any necessary liaisons with the relevant planning authority, and for complying with any requirements of the planning authority, as advised by the Employer. The Contractor shall obtain any necessary statutory formal approvals for the works, as advised by the Employer.

#### 4.19 Ground Conditions & Site Investigation

A ground investigation report forms Appendix C of the Design Brief. It is the responsibility of the Contractor to satisfy himself as to the completeness of the Report to ensure he has adequate knowledge of the existing ground, and its bearing capacity to allow the required design for the project. On the award of the contract the successful Contractor will have been deemed to have undertaken any additional site investigations they consider necessary and no increase in the tender price or subsequent Contract Sum will be allowed for any costs of resulting from unknown conditions.

#### 4.20 Inspections & sampling

Where the Contractor has given notice that a particular operation or stage of the works will be ready for inspection by the Employer or his Agent on a specified date and they then find that the works are not complete on that date so that the inspection cannot be carried out or completed necessitating a further visit, any additional cost incurred, including all expenses, will be borne by the Contractor.

The Employer shall be at liberty to take samples of all materials and to have them tested for compliance with the Contractor's tender submission and the Design Brief. The Contractor shall allow for the taking of such samples and the proper recording of the location to which the samples relate, as directed by the Employer and detailed in the Design Brief. Samples for test shall be delivered within 48 hours of being instructed by the Employer. Any delay to a scheduled inspection or preparation of a report by the Test House arising from late delivery of the samples for test or from failure to keep proper records as required, shall not relieve the Contractor from his responsibility with regard to completion within the Contract Period.

#### 4.21 Failure of tests

Should any samples or intermediate stages of construction tested be found, in

the opinion of the Employer or his Agent, to be unsatisfactory or likely to produce unsound work, the defective material or the consignment which the sample represents shall be removed from the site or suitable corrective action taken, as approved by the Employer, to achieve the specified performance outcome. Notwithstanding that, any sample or intermediate work stage, which has been accepted by the Employer or his Agent, may subsequently be rejected if they shall decide that the quality has in any way deteriorated.

The Contractor shall, at his own expense, remove and replace all rejected materials, or correct any intermediate work stage shown to be outside specification. Any delays consequential upon the rejection of any sample or work stage shall not in any way relieve the Contractor from his responsibility with regard to completion within the Contract Period.

Work corrected or materials replaced for these reasons will be re-checked or re-tested by the Employer or his Agent. The additional costs of testing any material replaced for this reason or re-inspecting any work stage subjected to remedial works shall be recovered from the Contractor by an appropriate deduction from the contract sum.

#### 4.22 The Construction (Design and Management) Regulations

The Contract will be executed strictly in accordance with the Regulations. The Contractor named in the Articles of Agreement of the Contract will be deemed the Principal Contractor.

The Contractor shall allow the CDM Coordinator access to the works and afford him every reasonable facility for the performance of his duties.

The Contractor shall co-ordinate with the CDM Coordinator to execute the Health and Safety Plan and contribute as required to the Health and Safety File.

### 5. **Design & performance requirements**

The pitch shall be designed and built to satisfy the construction tolerances and performance requirements of the *FIFA Quality Concept for Football Turf - FIFA One Star* category or equivalent *International Artificial Turf Standard*.

### 6. **Pitch construction requirements**

#### 6.1 Quality of materials and workmanship

Where and to the extent that materials, products and workmanship are not fully



specified they are to be:

- (i) suitable for the purposes of the Works stated in or reasonably to be inferred from the contract documents;
- (ii) in accordance with good building and/or engineering practice, including the relevant provisions of current British Standards;
- (iii) in accordance with the *FIFA Quality Concept for Football Turf - FIFA One Star* category;
- (iv) in accordance with the *Code of Practice for the Construction and Maintenance of Artificial Grass Sports Pitches* published by the Sports and Play Construction Association.;
- (v) in accordance with the current edition of the *Institute of Electrical Engineers Wiring Regulations*.

## 6.1 Formation

### 6.1.1 Design criteria

In the absence of any site specific geotechnical requirements the prepared formation shall be trimmed to a tolerance of  $\pm 25\text{mm}$  and have a minimum California Bearing Ratio (CBR) of 5%. If required this requirement shall be achieved by the use of geotextiles, or stabilisation methods as considered appropriate by the designer.

### 6.1.2 Construction criteria

The area of the works shall be stripped of all vegetation and topsoil and the ground trimmed and levelled using cut and fill techniques as required. Any filling should be carried out in layers not exceeding 150mm thickness, and each layer should be compacted before the next is spread.

The formation shall be free from mud or slurry and will have no areas of freestanding water. Any loose, fragmented or soft materials or any soft spots shall be excavated and replaced with imported crushed rock, free from detritus material, in accordance with the relevant clauses of the Department of Transport Specification for Highway Works.

The prepared formation shall be treated with a total weed-killer selected to



minimise the risk of future weed growth within the construction and applied strictly in accordance with the manufacturer's specified application rate

A geotextile membrane shall be laid over the formation. Joints shall overlap by at least 300mm. The membrane shall be a non-woven type and have a minimum tensile strength of 20kN/m when tested in accordance with BS EN ISO 10319 and a static puncture strength of at least 2.0kN when tested in accordance with BS EN ISO 12236.

## 6.2 Drainage

### 6.2.1 Design criteria

The drainage system shall be designed and install to:

- (i) Ensure that all surface water is removed from the pitch at a rate greater than 100mm/h and to ensure that no surface flooding will occur during heavy storms, or the facility will not be lost either through rain at the highest intensity which may be expected to occur once every five years or through continuous rainfall of 50mm over a 24 hour period.
- (ii) Protect the installation from the effects of ground or surface water from the areas surrounding the pitch.
- (iii) Ensure no water remains present in the construction so that it may result in a reduction of the load bearing capacity of the formation or damage to the constructions from the actions of frost.

### 6.2.2 Construction criteria

The drainage system shall comprise a perimeter drain (minimum 160mm diameter) tied to lateral drains installed at (minimum 80mm diameter), which shall be fully connected via 'T' piece connectors.

Drainage trenches shall be a minimum of 450mm deep by 300mm wide and be back filled with clean graded round/sub-rounded gravel. Perforated drainage pipe shall comply with BS 4962 and be laid to a minimum fall of 0.5%. Pipe bedding materials shall be clean, durable 10mm to 20mm single size stone.

Flexible pipes shall be laid on a bed of 75mm (minimum depth) of compacted granular materials and the trench filled with similar granular materials above the barrel of the pipe. Pipe jointing shall be carried out strictly in accordance

with the manufacturer's instructions. All pipes shall be tested for effectiveness before haunchings or backfilling.

Rodding eyes or catch-pits, with covers, shall be installed at each corner of the pitch. Pre-cast concrete manholes and soak-away type structures shall be circular and comply with BS 5911-3. Units that bed onto bases shall be manufactured so that the full wall thickness is in contact with the base.

Pre-cast soak-aways shall be perforated with rows of 50mm diameter holes at nominal 450mm horizontal and 300mm vertical centres. The lowest row shall not be less than 150mm above the base of the soak-away.

Existing drains cut through during the construction of the pitch shall be re-connected into the new drainage system.

### 6.3 Perimeter Edgings

Edgings shall be ~~900mm x 150mm x 50mm~~ precast concrete kerbs or other approved edgings, well haunched in concrete with movement joints at appropriate spacings. The maximum gap between the outer kerb face and any adjacent perimeter fencing shall be 10mm. Kerbs shall be laid to a true line and level with adequate up-stand for the subsequent fitting of the artificial grass surfacing system.

Precast concrete kerbs shall be hydraulically pressed complying with the requirements of BS 7263 - 1. They shall be bedded in accordance with BS 7263 - concrete foundation. The minimum dimensions of the edgings shall be 150mm x 150mm/125mm

### 6.4 Sub-base

#### 6.4.1 Design criteria

The sub-base shall be designed and constructed to:

- (i) Resist the effects of frost or drought that may be expected to occur in a return cycle of once every 50 years
- (ii) Provide adequate stability that it does not move outside the tolerances for surface regularity over a period of 8 years
- (iii) Have an insitu density of not less than 95% of the maximum dry density





when tested in accordance with BS 1377 Part 4 (2.5kg method).

The sub-base shall be laid to a tolerance of  $\pm 10$ mm of the design profile for this phase of construction.

The installed sub-base shall have a compacted density of 95% of the maximum dry density when tested in accordance with BS 5835. The minimum bearing capacity of the sub-base when determined using a plate method in accordance with BS1377 or a PRIMA falling weight deflectometer, or similar device, shall be 60Kpa; unless other-wised agreed..

#### 6.4.2 Construction criteria

The depth of the sub-base shall be determined to satisfy the specified design criteria and taking into account the findings of the ground investigation survey. In all cases the depth shall be equal to or greater than the minimum requirements of *SAPCA Code of Practice for the Construction and Maintenance of Artificial Grass Sports Pitches*.

Sub-base aggregates shall be a reduced fines grade of crushed rock aggregates, complying with the requirements of the Department of Transport Specification for Highway Works specification for Type 1 sub-base materials. Recycled materials shall only be used with permission of the Employer. All aggregates shall be porous and frost resistant; test certificates shall be provided by the aggregate supplier.

#### 6.4.3 Base

Where specified or offered as part of the construction for the pitch unbound bases shall be formed from interlocking but free draining blinding aggregate.

Where specified or offered as part of the construction for the pitch, storage or spectator areas, macadam binding and surfacing courses shall be produced and laid in accordance with the *Code of Practice for the Construction and Maintenance of Artificial Grass Sports Pitches*.

The base shall be laid so the maximum undulation under a 3m straightedge when tested in accordance with BS EN 13036-7: *Irregularity measurement of pavement courses – The straightedge test* is 10mm.

#### 6.5 Artificial grass surfacing system



### 6.5.1 Design criteria

The artificial grass surfacing system shall be a surface that will allow the completed pitch to be certified to the *FIFA Quality Concept for Football Turf - FIFA One Star* category

### 6.5.2 Shockpad

- \* The surfacing system shall incorporate a shockpad.
- \* The surfacing systems may incorporate a shockpad within its construction.

Guidance note
* delete as appropriate – if not preference is held allow companies to offer systems incorporating shockpads if they wish

In situ shockpads shall be laid to the contractor's specified depth. No joint should vary in level by more than 2mm. Throughout installation the contractor shall take samples of all materials as detailed in Schedule 1 and arrange for them to be sent to an independent test house for testing. The test laboratory's report shall be submitted to the Employer prior to any interim application for payment for the shockpad. All samples shall be coded and the areas of installed materials from which they came recorded so any defective materials can be identified and removed - failure to do this may result in an entire section of work be replaced.

The contractor shall have responsibility for appointing the test house to test the pitch. The contractor shall notify the Employer's of the proposed test house, for approval, prior to the tests being made. The test house shall be accredited by FIFA for the testing of artificial grass pitches.

Schedule 1 - samples required for testing – artificial grass surfacing materials			
Component	Sampling	Tests / test methods	
Shockpad	Three 300mm x 300mm samples per day of installation	Thickness	BS EN 1969
		Tensile strength	BS EN 12230
Sampling should be scheduled to ensure samples are fully representative of those installed over the whole pitch. Samples should be coded so any defective materials can be located and replaced on site. Samples should be left for at least 48 hours on site exposed to the elements so they experience the same climatic conditions as the installed materials			

The tensile strength of the shockpad when tested in accordance with BS EN



12330 shall be  $\geq 0.15$  MPA.

Prefabricated shockpads shall be adequately dimensionally stable that rucking, creasing or movement does not occur. They shall either be inter-locking, ribbon bonded to the base or seamed along side / head joints.

At any location on the pitch thickness of the shockpad shall be no less than 90% of the manufacturer's specified thickness.

The combined design of the shockpad and carpet backing shall ensure that slippage and creep of the artificial grass carpet does not occur.

The regularity of the installed shockpad shall ensure the maximum undulation under a 3m straightedge when tested in accordance with BS EN 13036-7: *Irregularity measurement of pavement courses – The straightedge test* is 10mm.

#### 6.5.3 Artificial grass

The artificial grass surface shall be laid in full widths across the pitch, other than where longitudinal rolls are laid to include tufted sideline markings. The method of jointing / seaming, including all in-laid line markings, shall be such that no ridge, groove or crease shall be wider than 3mm apparent.

No seam shall be within 300mm of any permanent inlaid line.

Bonded joints shall be formed using jointing tape of not less than 400mm wide and polyurethane glue applied evenly to either side of the tape to a minimum total of 300mm.

There shall be no loops in the tufts, random long tufts, loose tufts, tears, holes or melted areas, undulations, pile height variations or any other visual or manufacturing defects. If replacement of defect carpet is deemed necessary by the Employer or his agent, this shall involve full replacement of a length and width of a carpet roll (as designed and manufactured). No patching whatsoever will be allowed.

#### 6.5.4 Infilling & brushing

The contractor shall carry out as many filling and brushing operations as required to fill the carpet to the required depth and to provide the specified performance. The Contractor shall carry out re-dressing of the whole pitch at

six months; this should be allowed for in the tender price, it is anticipated that 15 – 20 tonnes of rubber will be required for this operation.

The Contractor shall make due allowance for providing extra rubber/sand to the Employer at the hand over of the contract, these bags will be used for local topping up.

#### 6.5.5 Line Marking

- \* Line markings shall be inlaid / tufted.
- \* Line markings shall be painted.
- \* Straight lines shall be inlaid / tufted, curved lines shall be painted.
- \* Line marking shall be formed in accordance with the supplier's recommendations.

Guidance note
* delete as appropriate – if not preference is held allow companies to offer their preferred option

Line markings shall be in accordance with the relevant rules of the game. Unless stated in the rules, all lines shall be 125mm wide and (when measured with a steel tape) within 20mm of their specified position. Markings shall not deviate by more than 10mm from a line joining their ends, nor include any sudden steps. Line edges shall be parallel and uniform.

For a period of five years following Practical Completion each straight line marking shall remain straight to within +/- 100mm of a tensioned string line joining its ends and all lines shall remain within +/- 150mm of their original position as measured at Practical Completion. Furthermore, no line shall exhibit any sudden irregularity or deviation greater than 75mm over a distance of 1 metre.

## 6.06 Fencing

All fencing works shall be undertaken in accordance with the appropriate sections of BS 1722 and the *SAPCA Code of Practice for the Construction and Maintenance of Fencing Systems for Sports Facilities*.

Unless specified otherwise mesh shall be 3mm (minimum) 50mm x 50mm square weldmesh, corner posts shall be hollow section measuring a minimum of 60mm x 60mm x 3mm and intermediate posts shall measure a minimum of 60mm x 40mm x 3mm. All posts shall be set in concrete footings of minimum size 450mm x 450mm x 850mm, increased as required for local ground conditions. Heights shall be as detailed by the Employer.

All mesh and posts shall be galvanised in accordance with BS EN ISO 1461. Post caps shall be fitted to tops of all hollow section posts. Where required, powder coating shall be in accordance with BS EN 6497

There shall be no protruding fence (or other) fixings within the pitch boundaries. All fixing bolts shall be assembled with heads inside and bolts trimmed to within 6mm of the nut. The trimmed ends should be burred and treated or shear head nuts used. On low level fencing no mesh ends or straining wire shall cause hazards to players, or spectators, particularly children.

Gates in high fencing shall have a lintel above to the fence height. All gates shall be hung plumb, level and secure for full opening without interference. Gate lathes shall include provision for padlocks. Gate hinges shall permit gates to open outwards through 180° and have stops to prevent reverse opening. Bolts on gates shall be captive and lockable both shot and withdrawn. Bolt sockets shall be set in concrete.

## 6.7 Floodlighting

### 6.7.1 Floodlighting design criteria

The floodlighting system shall meet the specified lighting and uniformity levels as detailed below and be in full compliance with any conditions of the planning approval for the project:

<b>Guidance note</b>
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Specify the level of lighting required as detailed in the FA Guide to Artificial Grass Pitches
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The works shall include the provision of all luminaries, columns, mains distribution switch gear, sub-circuit protective devices, metering and control devices and the associated cabling, trenching, ducting & draw pit installation, back filling and making good.

All works shall be carried out in accordance with the latest edition of the IEE Wiring regulations.

#### 6.7.2 Floodlighting column bases

The Contractor shall take full account of the ground conditions, as detailed in the ground investigation report (Appendix C), when designing the bases for the floodlighting columns.

Base plates shall be arranged to ensure all fixing bolts are concealed and cannot constitute a trip hazard.

#### 6.7.3 Floodlighting system protection

System protection shall include Mccbs, rated for the prospective load of the proposed installation and selected to match the required fault level. The arrangement of the power distribution at the distribution point shall provide short circuit and excess current protection for all sub-circuits. Adequate discrimination between main Mccb and sub-circuit protective devices shall be included.

#### 6.7.4 Floodlighting earthing

All necessary earthing and cross bonding shall be provided in accordance with the current edition of the IEE Wiring Regulations.

#### 6.7.5 Floodlighting system management

Individual Mccb protection shall be provided for each control circuit.

A master time clock with battery back up shall be provided to turn off the floodlights at the programmed time. The clock shall allow for the seasonal changeover for day light saving time. A key switch for manual override shall be provided.

The management system shall include a system of visual warning to warn users the cut-off time is approaching. This shall be achieved by switching a flashing beacon mounted on the floodlight column. One beacon shall be installed for each operational section of the pitch. The beacons shall be programmed to operate five minutes before the cut-off time. They shall only operate if any element of the floodlighting is in use. The management system shall ensure one luminaire on each operational portion of the pitch remains in operation for five minutes after cut-off of the main pitch lighting. A set of manual override switches shall be provided for test and emergency control of the lights.

A Kwhr meter shall be provided to monitor the total power used by the floodlights. An 'hours run' facility shall also be provided to identify the cumulative time each group of floodlights serving the pitch has been in operation.

#### 6.7.6 Floodlighting cables

Cabling at the central distribution point and to columns shall be carried out in correctly sized XPLESWA cable. All necessary control cables shall be provided for the connection of controls within column gear trays to the main switchgear position.

Cables in the soft ground shall be buried in trenches to a minimum depth of 500mm. Where applicable (as detailed in the IEE Wiring Regulations) cables shall be laid on a bed and surround of sand 150mm thick.

Buried cables shall be identified along their entire length with yellow marker tape installed 150mm from ground level. The marker tape shall be labelled *DANGER – ELECTRIC CABLE BELOW*.

#### 6.7.7 Floodlighting ducting & draw pits

Cable ducting shall be installed in all hard landscaping so, in conjunction with draw pits, they provide an underground containment system to allow the future re-cabling of the lighting system.

Unless otherwise specified ducting shall comprise 100mm diameter minimum rigid plastic ducting pipe, with flexible ducting where necessary. All ducting shall be buried to a minimum depth of 450mm and cable warning marker tape shall be laid 150mm above all ducting. Service ducting and draw pits shall include secured draw ropes.

Draw pits shall be installed at each floodlight column and at all changes of direction. They shall be pre-formed, be a minimum of 450 diameter or 450mm by 450mm square and have lockable removable lids. They shall be installed prior to the installation of the ducting. Where stacked plastic sectional draw pits are used duct entries shall be drilled to avoid weakening of the structure.

#### 6.7.8 Small power

Single socket outlets, common key controlled and RCD protected, shall be provided to at least two floodlight columns (or more if specified by the Employer). Each shall be terminated within the base of the column. The fitting shall be of a proprietary make and weatherproof. Where columns are sited outside the perimeter fencing of the pitch, provision for passing plugs through the fence from the pitch to the columns shall be made.

#### 6.8 Sports and maintenance equipment

The Contractor shall supply and erect the equipment detailed below as part of the contract.

Description	No. Required	Type
Goals (full size)		
Small sided football goals		
Corner flags		

##### **Guidance note**

List all sports equipment to be supplied as part of the construction contract. This shall include division nets if required.

Full size goals shall be certified as complying with BS EN 748. Unless otherwise specified they shall be folding goals or have integral weights.

Small sided goals shall be certified as complying with BS 8462. Unless otherwise specified they shall have integral weights.



## 6.9 Reinstatement

On completion of the works site shall be left in a clean and tidy condition. All damage caused to surrounding areas and surfaces shall be reinstated in full to the satisfaction of the Employer using similar materials to the existing.

## 6.10 Pitch Testing

On completion of the works the pitch shall be certified as a FIFA One Star quality pitch (or equivalent IATS). Testing shall be undertaken within three months of handover.

### Floodlighting

In addition to testing of the electrical installation by the Contractor (as required under the IEE Wiring Regulations) the Employer will arrange for illumination tests to be carried out, after dark, on the pitch to establish the specified illumination levels have been achieved. These tests shall establish the initial level(s) of illuminance and uniformity and shall be related to the maintained levels specified.

Practical Completion shall not be deemed to have been achieved until the Test House confirms satisfactory performance of the pitch and floodlights.

### Test house

- \* The Employer shall appoint the test house to test the pitch. The contractor shall notify the Test House of when the pitch will be ready for testing and provide all necessary information assistance required by the test house. .
- \* The contractor shall have responsibility for appointing the test house to test the pitch. The contractor shall notify the Employer's of the proposed test house, for approval, prior to the tests being made.

<b>Guidance note</b>
* delete as appropriate



## 6.11 Maintenance

The contractor shall supply all necessary maintenance equipment, instructions and maintenance logs to allow the surface to maintain in accordance with the manufacturer's instructions. This shall include the type of brushes and drag mats to be used by name.

## 7. **Warranty**

### 7.1 Artificial grass pitch - performance

Subject to adequate maintenance and agreed levels of use the pitch shall satisfy the performance requirements of the *FIFA Quality Concept FIFA One Star* category throughout the Defects Liability Period and for a minimum of at least a further XX\* years.

Guidance note
* to be defined and agreed with the surface supplier/manufacture

Prior to handover the Contractor provide a written warranty for the durability of the artificial grass surfacing (including any shockpad) and fill materials, as advised (in writing) together with any agreed limitations and conditions. The minimum durability warranty period shall be five years and the Contractor's warranty shall be supported by the manufacturer's guarantee.

### 7.2 Repairs under warranty

The Contractor shall undertake as part of the Warranty that any remedial work or repair necessary under the terms of the Warranty in respect of failed seams or joints, or loss of adhesion will be completed within 14 days of notification in writing by the Employer that remedial work is required. The Contractor shall further undertake as part of the Warranty that any other remedial work or repair necessary under the terms of the Warranty will be completed within 28 days of notification in writing by the Employer that remedial work is required and repairs will be carried out with materials identical to the original installation and at such times as may be agreed with the Employer such that the planned programme of activities shall not be affected.



## Form of Tender and Contract Sum Analysis

To (Employer).....

For: construction of artificial grass pitch and ancillary works at

.....

From (Contractor): .....

Sirs,

I/We having read the Conditions of contract and Design Brief delivered to me/us and having examined all drawings referred to therein do hereby offer to execute and complete in accordance with the Conditions of Contract the whole of the Works described within ..... weeks from the date of possession for the sum of:

£..... (VAT exclusive)

I/We undertake to enter into a formal contract in the form specified. I/We agree that until this tender is incorporated in such a formal contract, executed under deed by the Employer, this tender together with your written acceptance thereof will constitute a binding contract between us.

I/We confirm that if our tender is accepted we will require a period of ..... weeks prior to works commencing on site.

I/We further agree that this tender remains open for consideration for twelve (12) weeks from the last day of submission of tenders.

I/We note that you do not undertake to accept the lowest or any tender and that the Contractors tendering do so free of charge.

I/We declare this tender to be a bona fide tender intended to be competitive and that I/We have not fixed or adjusted the amount of the tender by or under or in accordance with any agreement or arrangement with any other person.



I/We confirm that the Annual Renewal date of Insurance as supplied by me/us and referred to in the Conditions of Contract is

.....

We confirm that we have visited the site and made all necessary investigations before submitting this tender.

Dated this ..... day of ..... 20.....

For and on behalf of: .....

Signed:.....

Registered address:

.....

.....



## Tender sum analysis

The Contractor shall enter costs against those items specifically listed below.

Item		Cost
Preliminaries & site establishment		
Site strip and preparation of formation		
Installation of sub-pitch drainage & outlet		
Pitch edgings		
Pitch sub-base (including geotextile)		
Macadam layers, if applicable		
Shockpad, if applicable		
Artificial grass, infilling and line markings		
Fencing & gates		
Floodlight columns and local switchgear		
Floodlight fittings		
Floodlight power distribution cabling and connection		
Floodlight system management		
Power socket provision		
Reinstatement & landscaping		
Sports equipment		
Maintenance equipment		
Any items not specifically included above (list)		



Total carried to form of tender	
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### Value Added Tax

The Contractor is set out below a provisional indication of the amount of Value Added Tax the Employer will be called upon to pay under the VAT Agreement.

£.....

### Extra-over costs (excluding VAT)

Item	Cost
Excavation and back filling of soft spots per m <sup>3</sup>	

### Assignment of sub-contracting

The contractor is to state in the following schedule the names of **all** the sub-contractors that he will employ on the works and their stated trades.

Company	Trade

## **Appendix A - Employer's specific conditions, preliminaries & form of contract**

### **Guidance note**

Appendix A should contain:

- The Employer's specific conditions of contract
- The Form of Contract and Appendices to the Form of Contract to be used
- The Contract Preliminaries
- Any specific contract or site conditions
- Any conditions of tendering or procurement stipulated by the Employer or external funding partners

## **Appendix B - Planning Approval**

### **Guidance note**

In order that the contractor is aware and may comply with all planning conditions Appendix B should include a copy of the original planning application (including all supporting information), the notification of planning approval and any conditions attached.

## **Appendix C - Ground investigation report**

### **Guidance note**

Before commencing the design of the pitch the design team will require as much information as possible about the site and its surroundings. It is therefore essential that adequate resources are budgeted at an early stage of a project as this greatly reduces the risk of unforeseen problems (and increased costs), during, construction or even later. Of greatest importance is an understanding of the ground conditions, as the largest risk of unforeseen problems and additional cost normally occurs here. A specialist geo-technical survey should be undertaken where boreholes or trial pits are excavated to allow a detailed examination of the substrata across the proposed site.

This report shall form Appendix C.



## **Appendix D - Schedule of information to be included in Contractor's Proposals**

The Contractor shall supply the following information with their tender:

- A fully detailed method statement, giving the methods and sequence of construction operations.
- Specifications for all proposed materials.
- Drawings indicating the proposed construction, the anticipated finished levels of the playing surface and surrounds, the arrangements for drainage works, together with anticipated invert levels, lines and depths of all ducts and cables and any proposed modifications of any existing services.
- An independent test report detailing the performance of the precise construction being proposed and its ability to satisfy the FIFA One Star category laboratory test requirements
- Details of at least three pitches of similar construction, including date of installation and reference contact
- Fencing design
- A computer plot showing the anticipated floodlight values of Horizontal Illuminance over each playing area at each level of illuminance.
- Computer plots of horizontal and vertical illuminance showing the predicted floodlight light spillage of the proposed system extending at least 50m beyond the pitch perimeters.
- Specification and details of the make and types of floodlight equipment, including details of the characteristics of the type(s) of lamp offered
- The proposed locations and height of floodlight columns
- Details of the dimensions of the floodlight column bases and the calculations on which these are based.
- The start-up and running power loadings (Kva) for the floodlight scheme and the predicted running cost per hour.



- The floodlight manufacturer's warranty
- Details of at least three pitches with similar lighting systems, including date of installation and reference contact
- An outline programme for the construction works in the form of a bar chart showing the main sequence of the works.
- Details of warranty being offered
- Specifications of all sports equipment being offered including manufacturer and their reference number
- Specifications of all maintenance equipment being offered including manufacturer and their reference number.