

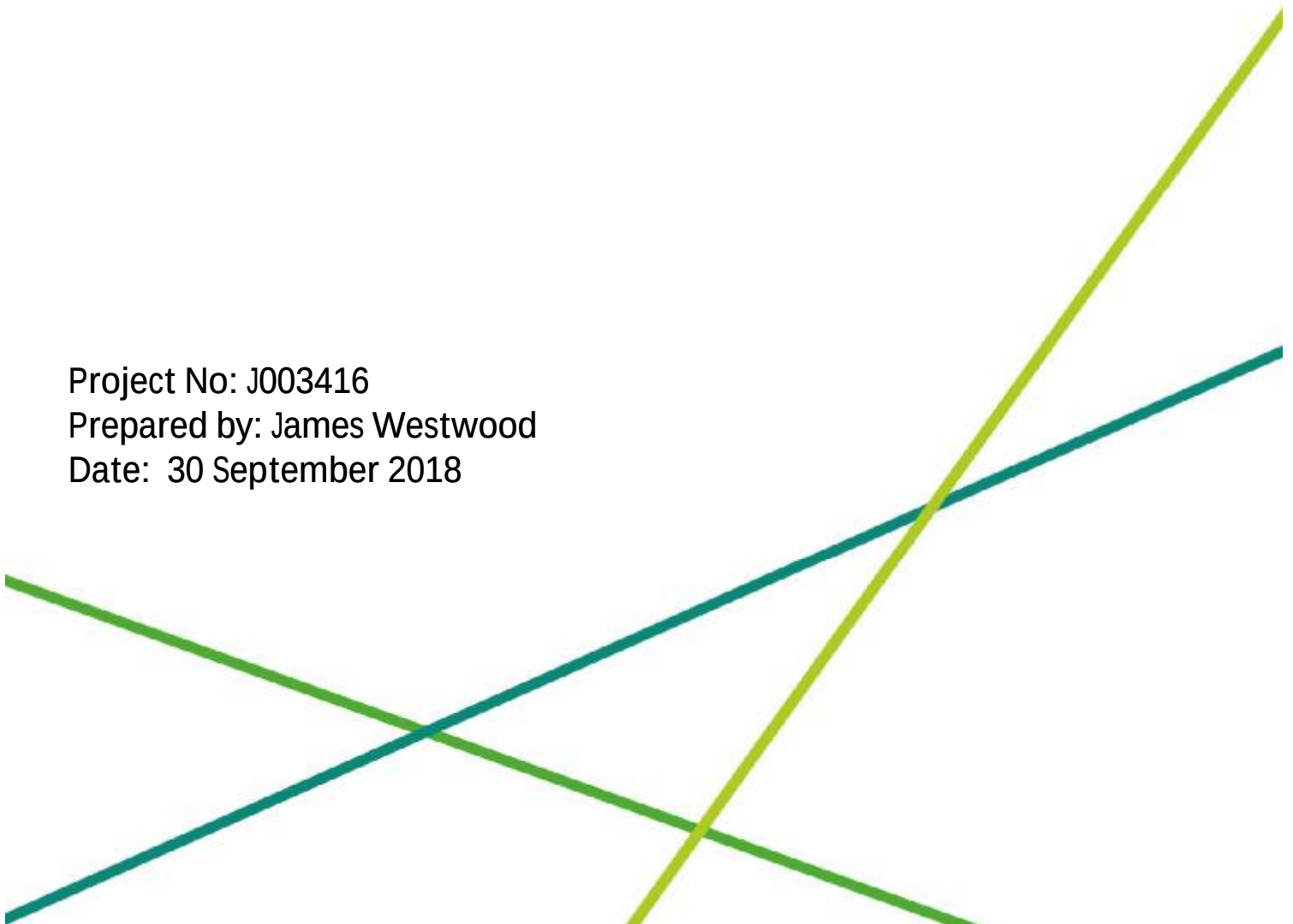


Making great sport happen

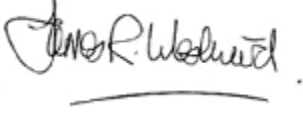
Chorlton High School South

Works Information and Employer's Requirements for the Design and Construction of a new all-weather sand dressed synthetic turf pitch

Project No: J003416
Prepared by: James Westwood
Date: 30 September 2018



Job Title	Chorlton High School South Development of all-weather sand dressed synthetic turf pitch
Job Number	STRI REF. J003416
Document Title	Works Information and Employer's Requirements
Document Reference	J003416 Specification

Prepared By Signed	James Westwood 
Date	30/09/2019
Approved By Signed Date	

Revision	Date	Description of Principal Revisions	Prepared	Approved

CONTENTS

WORKS INFORMATION	1
SPECIFICATIONS	
S100 GENERAL SPECIFICATION	3
S200 DIMENSIONS AND TOLERANCES	7
S300 SITE PREPARATION	10
S400 PITCH DEVELOPMENT	12
APPENDICES TO PITCH CONSTRUCTION	
APPENDIX 1 – SUB-CONTRACTORS	28
APPENDIX 2 – MATERIALS & SOURCES OF SUPPLY	29

S100

GENERAL SPECIFICATION

S100 GENERAL SPECIFICATION

S101 Introduction

The new Chorlton High School South is to be built at Hough End and shall become the sister school to the existing Chorlton High School.

As part of the proposed development a full sized all-weather pitch is to be constructed, this being provided with a sand dressed synthetic turf playing surface.

The development shall also include the provision of floodlighting, together with the construction of separate MUGA facilities and the conversion of part of the existing playing field into paddock areas for the grazing/exercising of horses, these works being carried out under a separate contract.

S102 Site Location

The area of land on which the new school is to be developed comprises an existing playing field lying approximately 400 m to the east of the existing High School complex, this being under the ownership of the Greater Manchester Police. The site is located just under three miles to the south-west of Manchester city centre.

The playing field is situated immediately to the south-west of the Hough End Centre and to the north-west of Broughton Park Rugby Club. A section of the Metrolink tram line runs along the south-western edge of the existing playing field.

Access to the site is gained via an existing entrance directly off the Mauldeth Road West at a traffic light controlled junction. The postcode for the Hough End Centre is M21 7SX.

S103 Existing Conditions

The Pitch Contractor is required to familiarise himself with the ground conditions on site, prior to submitting proposals for the construction of the synthetic turf playing surface.

The existing playing field is roughly rectangular in outline and accommodates two full sized football pitches. Over the south-eastern third of the playing field, there are three adjoining paddocks used by the GMP for grazing horses.

The proposed all-weather pitch is to be developed at the south-eastern corner of the playing field and shall incorporate two of the existing paddocks and the southern two thirds of the eastern most football pitch.

There is a slight fall across the existing section of playing field on which the all-weather pitch is to be developed, this being approximately 1:325 (0.31%) in a westerly direction.

There is a generally a 150-200 mm cover of a sandy topsoil overlying a paler brown clayey subsoil.

The Pitch Contractor shall refer to existing topographical surveys of the site and geotechnical reports where available as part of the design process.

S104 Design Brief

The Pitch Contractor is required to design and construct a Sand Dressed Synthetic Turf Pitch in line with current specifications complying with a Type 5 Classification, as stated in the Sport England Design Guidance Note 'Artificial Surfaces for Outdoor' and BS EN 15330 Parts 1 & 2. The playing surface is also to be suitable for hockey and shall comply with FIH Multi-Sport category of hockey field.

The objective is to construct a synthetic turf pitch with a durable, safe playing surface suitable primarily for both football and hockey matches, as well as training purposes. The Pitch Contractor should demonstrate that the proposed construction and playing surface system will meet these requirements with previous examples of the proposed construction. Where required, the Pitch Contractor shall provide testing certificates confirming compliance with these requirements with the tender submission.

Notwithstanding this, the whole facility should be constructed using proven methods and materials to the highest standards of workmanship and quality to provide and maintain a high level of performance for the normal life of the synthetic surface installed. The design should take account of maintenance requirements of the synthetic surface and the Pitch Contractor should provide clear recommendations for maintenance with the tender submission.

The pitch will be tested after a specific period use to assess continued compliance of the installation.

The Pitch Contractor must confirm that the products offered do not infringe any patents which may exist for similar or equivalent systems.

S105 Scope of Works

The objective is to install a durable synthetic turf playing suitable for football/hockey matches and training sessions.

The pitch shall conform to the dimensions specified in this document and the contract drawings to provide the specified clearance around the perimeter from surrounding fencing, buildings and other infrastructure.

The Pitch Contractor shall undertake all necessary investigations and design works to prepare the detailed specification for the synthetic turf pitch surface material and shockpad to meet the specifications, performance and durability requirements set out in this document.

The scope of works and the main operations for the synthetic turf pitch are summarised below:

Earthworks	Strip topsoil, reduce and re-grade the subsoil to design levels to prepare a formation surface.
Kerb edging	A pre-cast concrete pin kerb edging shall be constructed on concrete haunching around the perimeter of the pitch.
Pipe drainage	Pipe drains shall be laid in trenches cut into graded formation surface.

Geotextile	A geotextile separator membrane shall be laid over the graded formation surface between the backfilled drain trenches.
Stone base layer	Layer(s) of aggregate will be placed over the full extent of the pitch formation surface to provide a firm and stable sub-base with water infiltrating from the pitch surface into the aggregate layer and into the underlying pipe drains.
Pitch surfacing	The pitch surface will be completed with a shockpad system and a synthetic turf carpet with sand infill material to provide the required playing performance characteristics in accordance with both BS EN 15330 Parts 1 & 2 and FIH Multi-Sport category hockey fields.
Goal posts	A set of full sized portable goal posts for football shall be supplied together with three sets for Mini-Soccer goal posts, plus a set of for hockey.
Fencing	A 3.6 m high weldmesh panel fence will be constructed around the outer perimeter the pitch with gates fitted for access and ball retrieval.
Boot cleaning facilities	Install boot cleaning and wash down facilities at the main access gate.
Outer margins	Topsoil shall be replaced over the associated cut/fill embankments and outer margins, this being cultivated and seeded.
Floodlights	To be designed and installed by others

S106 Working Hours

The normal working hours within the site shall be Monday to Friday between 08:00 and 18:00 and 08:00 to 13:00 on Saturdays with no working on Sundays or public holidays. Working beyond these hours will not be permitted without the approval of the Main Contractor. Such approval shall be requested and given in writing and this ruling applies equally to nominated sub-Contractors and other operatives for whom the Contractor is responsible. A minimum of 10 days' notice is required from the Contractor when seeking such consents.

S200

DIMENSIONS AND TOLERANCES

S200 DIMENSIONS AND TOLERANCES

S201 Dimensions

S201.1 Pitch Dimensions and Areas

DIMENSIONS AS PER DRAWING	
Description	Size (m)
Dimensions of football pitch	100 m x 64 m
Dimensions of hockey pitch	91.4 x 55 m
Dimensions of cross pitches	64 m x 32 m
Outer main pitch margin	6 m
Total synthetic turf dimensions	112 m x 76 m
Synthetic turf area	8,512 m ²
Total length of 3.6 m perimeter fence	376 m

S201.2 Drawings

The following drawings are included to assist with the design development of the pitch:

Drawing No	Title
J003416-001	Topographic survey of existing site
J003416-002	Proposed drainage layout and finished levels
J003416-003	Section through pitch profile & fence detail
CHS-BDP-ZZ-ZZ-DR-EF-50_30-0101	Foul and surface water GA (Sheet 2)

S202 General Tolerances

The position of the internal face of any pipeline shall not deviate from that detailed in this document.

Each operation or layer shall also be subject to confirmation that the requirements have been met in accordance with the specified tolerances. Tolerances of the upper surfaces of the specified layers are measured deviations under a 3 metre straight edge.

Adjoining surfaces shall marry smoothly at all interfaces except where required to accommodate kerb edgings and other structures.

S203 Sub-formations CBR Testing

Where required in-situ tests shall be carried out on the formation for the pitches based on CBR tests or an equivalent test to confirm the stability of the formation surfaces in locations defined by the Main Contractor or his/her delegates. The number of testing locations on these surfaces shall be based on an average of one test for every 1,000 m².

Results of testing on the formation surfaces shall be submitted to the Main Contractor prior to the placement of any pitch construction materials.

Notwithstanding the above testing regime the formation surface shall be subject to inspection by the Main Contractor or his/her delegates. Material that is considered by the Main Contractor to be soft or unstable and unsuitable for the preparation of a satisfactory formation shall be removed and replaced with suitable material at the Pitch Contractor's expense.

S300

SITE PREPARATION

S300 SITE PREPARATION

S301 Access

1. The Pitch Contractor shall prepare and maintain a suitable access throughout the Contract Period for all equipment and materials, together with all necessary traffic and pedestrian management measures including warning signs.
2. The Pitch Contractor shall be responsible for arranging security for equipment and materials during the works.
3. The Pitch Contractor shall carry out reinstatement of the access to the original condition on completion of the works.
4. The Pitch Contractor shall provide adequate protection to prevent damage to all surfaces, service boxes and inspection chambers on the access route to the pitches.
5. The Pitch Contractor shall provide adequate protection to prevent damage to all structures and infrastructure on the access route to the pitch and adjacent to the working area.

S302 Storage Compound

1. The Pitch Contractor shall provide and maintain throughout the contract period a storage compound for equipment and materials within the site area at a location agreed with the Main Contractor.
2. Allowance shall be made for fencing around the compound for the duration of the works using Heras or other approved site fencing. The Pitch Contractor shall carry out full reinstatement of the compound area to the original condition on completion of the works.

S303 Topsoil Removal

1. The Pitch Contractor shall allow for stripping off the existing topsoil cover from the working area of the pitch and stockpiling this on site at a location as agreed with the Main Contractor.
2. Sufficient quantities of topsoil shall be retained for spreading over the associated cut/fill embankments and outer margins on completion of the works.

S304 Subsoil Removal

1. The Pitch Contractor shall also allow for the excavation and removal off site to tip of surplus subsoil required to accommodate the installation of the full pitch construction profile.

S400

PITCH DEVELOPMENT

S400 PITCH DEVELOPMENT

S401 Materials

S401.1 General

Samples of materials to be used in the construction of the pitch profile shall be supplied to the Main Contractor from the source of supply prior to commencement of works. All samples shall be clearly labelled indicating the description, designation, source, supplier and date. Any material that is not clearly labelled shall be rejected.

All materials for a specific purpose shall be supplied from the same source. Approved materials shall not be changed without first obtaining written consent. Where appropriate samples of materials for approval shall be submitted with the manufacturer's recent data sheet specifying performance, Health and Safety requirements and methods of handling, installation and disposal.

Samples of bulk drainage aggregates and rootzone materials taken from the site shall be submitted for testing from bulk supplies throughout the construction period to ensure conformity with the requirements set out.

S401.2 Testing

Materials for construction of the pitch shall be submitted for approval before commencement of the works. The Pitch Contractor shall submit a list of the suppliers from whom he proposes to purchase materials necessary for the Works and shall forward full details of the materials together with test certificates confirming the suitability where these are appropriate and available. Certificates for proposed synthetic turf systems or materials such as the carpet, shockpad or infill material shall be provided from tests carried out by an independent Accredited Test Institute.

General materials and standards used in the construction of the synthetic turf pitch shall conform to the following requirements as a minimum standard. Where specified elsewhere the higher standard shall apply.

The Pitch Contractor shall allow for the costs associated with the laboratory testing and approval of the pitch construction materials, as required for the duration of the works.

Item	Parameter	Tolerance	Requirements and or properties
A	Formation Requirements	± 10mm 3m straight edge	The bearing capacity shall have a CBR value not less than 5% after including special measures if needed for the Contractors Design i.e. the installation of geogrid', additional granular stone or soil stabilization as necessary to achieve a stable formation.
B	Geotextile Membrane		Geotextile used to separate formation from stone and or construction layers or similar approved. The membrane should be a woven type and have a minimum tensile strength of 20kN/m ² .
C	Drainage Requirements	Min 1:200 falls on all pipes	Drainage proposed below the synthetic turf pitches shall be designed to cope with a 1 in 100 year rainfall event plus 30%.
D	Sub-base Fill Requirements	± 10mm 3m straight edge Minimum depth of 300 mm Minimum Infiltration rate of 3,000mm per hour	<i>Materials</i> ; The sub-base shall be porous and frost resistant crushed rock aggregates (certificates required from supplier) <i>The Bearing capacity</i> to be determined by testing the laid and compacted material using a plate bearing tests method in accordance with BS:1377 or a falling weight deflectometer method; minimum bearing capacity shall have a CBR value of 5%.

The Employer's Representative reserves the right to inspect the proposed materials at source for the purpose of inspecting and witnessing required testing and sampling or obtaining samples of the materials. Alternatively the Pitch Contractor shall arrange for delivery of the samples of the materials to the Main Contractor's office or to a laboratory nominated by the Main Contractor. Samples shall be taken in accordance with the relevant British Standard or European Standard where applicable.

Materials subsequently used throughout the works shall be consistent with the samples tested and approved by the Main Contractor. Where it is necessary for the samples to be submitted to the Main Contractor, the Pitch Contractor shall ensure that samples are supplied to the Main Contractor in sufficient time for them to be satisfactorily tested. No sources of supply shall be changed without the Main Contractor's prior approval. Representative reference samples of approved materials shall be retained on site by the Pitch Contractor for comparison throughout the Works.

Below is a summary of the constructional requirements of the project:

Material	Test	Comments
Pipes and fittings for drainage and service ducts.	Product certification BS 4962 (5), BS4660 or BBA Standards	Product certification scheme applies
Drainage aggregate	Product certification BS 882 (6)	Product certification scheme applies
Manhole covers	Product certification B125 with BS EN 124 (8)	Product certification scheme applies
Gullies and pipe junctions	BS Standards	Product certification scheme applies
Kerbing	BS 7263; Part 1 (14)	Product certification scheme applies
Sub base	BS 812; Part 103	Department of transport specification for Highway works for type 1 base (except graduation which shall be modified to comply with the requirements of section 7).
Separator Membrane	Product certification	Department of transport specification for Highway works Clause 609 base (except graduation which shall be modified to comply with the requirements of section 7).
Shock Pad (if used)	Product certification scheme applies	Testing by an Accredited Test Institute
Synthetic carpet	Product certification scheme applies	
Bituminous Macadam (if required)	BS4987; Part 1(13)	Product certification scheme applies

S401.3 Sub-Base Materials

BS SIEVE SIZE	PERCENTAGE BY MASS PASSING
63mm	100
31.5mm	75-99
16mm	43-70
8mm	23-50
4mm	12-40
2mm	6-25
63µM	<3
This particle size distribution shall be determined by washing and sieving using the methods given in BS 812: Part 103. The Contractor may provide an alternative if it can demonstrated that the porosity and stability of the materials is equal to that given here.	

Following spreading and consolidating the sub-base materials the Pitch Contractor is required to carry out testing to demonstrate that the percolation rates meet the drainage performance requirements stated in the. The results should be provided to the Main Contractor before proceeding with the next stage of work.

Once spread and consolidated, the stone base layer is to provide sufficient attenuation to accommodate a 1 in 100 year rainfall event plus 30%.

S401.4 Shockpad and Synthetic Carpet

1. The synthetic turf pitch profile should incorporate a shock pad system to meet or exceed the playing performance standards of the synthetic carpet.
2. The shockpad, synthetic turf and sand dressing shall primarily provide a playing surface for football and hockey complying with BS EN 15330 Parts 1 & 2 and FIH Multi-Sport hockey fields.
3. The Contractor shall provide all necessary performance data from testing carried out by an Accredited Testing Institution to support the proposals with samples. A sample of the shockpad and carpet will be provided to the nominated test house prior to installation.
4. Samples of the shockpad, carpet and sand dressing taken during the construction shall be subject to laboratory testing to confirm that the materials conform to the BS EN 15330 Parts 1 & 2 and FIH Multi-Sport specification.

S402 Field Testing

1. The Contractor shall allow for the installed synthetic turf and the pitch system to be tested by an accredited Field Test Institute to meet the specified requirements. The manufacturer shall provide laboratory test reports to the approved laboratory prior to the field test being carried out.
2. The Main Contractor reserves the right to be present when testing is carried out.
3. The surface must comply with the testing criteria after a stated period of usage, but also for the need to conform to testing criteria before after an extended period of usage, and after an extended period of usage.
4. When tested a pitch shall fully satisfy the requirements in any position on the field using the methods of test specified. The field shall be tested in the positions specified in the BS EN 15330 Parts 1 & 2 and FIH Multi-Sport guideline for sand dressed pitches. Field tests should not be made on joints or inlaid lines, other than ball roll that will cross them.
5. Maintenance of the field shall not be undertaken during a field test.

S403 Formation Surface

1. The formation surface shall be dressed and consolidated to produce a satisfactory surface prior to continuing with the next phase of pitch construction. If the Pitch Contractor encounters ground during preparation of the finished formation surface which he considers unsuitable or if the finished surface is damaged or allowed to deteriorate, the Pitch Contractor shall excavate the unsuitable material, fill and make good the formation surface with imported crushed stone or other fill material. Site won materials shall be assessed by the Pitch Contractor for their suitability for earth working purposes as fill materials to be re-used to augment the formation on the pitch. It is the responsibility of the Pitch Contractor to make due allowance for this in their tender.

2. If ground conditions dictate, the Pitch Contractor shall allow in his design for the installation of geogrid, additional granular stone or soil stabilization measures as necessary in order to achieve a stable formation surface.
3. During construction, the working surfaces of excavations shall at all times be maintained on such a gradient that water can drain away freely from the workings and they shall be free from localised low places in which water can be retained.
4. The Pitch Contractor should allow for CBR testing and all other testing of the adopted platform to ensure it meets the performance requirements immediately following the preparation of the formation surface.
5. The Pitch Contractor shall carry out final trimming and consolidation using laser guided grading equipment to produce the required finished levels.
6. The formation surface will be constructed to the specified tolerances.
7. The associated cut/fill embankments around the outer margins shall be finished with a maximum grade of 1:3.

S404 Pitch Drainage System

1. Design and install a pipe drainage system into the completed formation surface with perforated lateral drains connected to perforated main drains in accordance with the layout shown on the Drawing with a maximum spacing of 10 m between the drains. The drainage system shall discharge into a surface water inspection chamber located at the north-western corner of the all-weather pitch.
2. Trenches shall be excavated using an approved chain trencher or a hydraulic excavator if necessary, cutting a clean trench with smooth sidewalls. Spoil shall be removed as works proceed and removed off site to a licenced tip facility.
3. The trench bases shall be shaped to bed, fit and secure the pipes centrally at the required invert depths.
4. Trenches for main drains shall be excavated to provide the drain invert depth below the prepared formation specified in the drawings, adjusting the depth where required to form a smooth junction with the main outlet drains.
5. Trenches for lateral drains shall be excavated to provide a smooth even fall along their line at the drain invert depth specified on the Drawings. All loose soil falling into the trenches shall be removed prior to laying pipes on a firm bed.
6. All primary drains invert depths are indicated on the drawings.
7. All trench arisings shall be removed off site to a licenced tip facility.

S405 Pipes and Backfill Materials

1. Twin walled pipes shall be twin-wall high density polyethylene pipes manufactured to BBA industry standards or an equivalent approved product. The pipes shall have a smooth internal wall and corrugated outer wall and shall be fully perforated pipes except where specified on the drawings. Certificates will be required. Flexible perforated plastic pipes shall conform to BS 4962
2. All joints and junctions in the drains and connections between the primary and main drains shall be made using purpose made fittings of appropriate size to form closely fitting joints between the pipes with no gaps.
3. Technical specifications of all pipes, junctions and backfill materials to be installed shall be provided prior to commencing work.

S406 Pipe Installation and Backfilling

1. The lateral drains shall comprise a minimum 80 mm diameter perforated plastic pipes installed at the required invert depths below the sub-formation surface to maintain a minimum gradient of 1:300 installed. The main collector drain shall be shall comprise a minimum 100 mm diameter perforated plastic pipe laid at the required invert depth below the sub-formation surface to maintain a minimum gradient of 1:200.
2. Pipe laying and backfilling shall proceed as trench excavation progresses, ensuring that pipes are laid on a clean firm bed, located centrally in the trench. Trenches shall not be left open overnight. Pipes will be laid on a firm and even bed trimmed to form a smooth and even gradient.
3. Where the trenches are excavated in stony ground the bed of the trench shall be covered with 75 mm of approved drainage aggregate.
4. Pipes laying and backfilling of drain trenches shall not be carried out in temperatures less than those specified by the pipe manufacturer.
5. All joints in the line of the drains shall be made using purpose made connectors and between drains shall be made with purpose made connections of appropriate size to form a tightly fitting secure connection as per manufacturer's instructions.
6. Purpose made end caps shall be fitted and secured to the upper end of all open pipes to prevent ingress of soil or aggregate materials.
7. Within the playing field platform area all main and lateral drain trenches shall be backfilled with the approved aggregate ensuring that it is adequately firmed with no voids in the trenches. On completion the drain trench aggregate shall protrude above the adjacent formation surface by a minimum of 25 mm.
8. Backfilling shall be carried out without disturbing or damaging pipe drains or junctions. Where any haulage routes cross drains previously installed, protective boards should be placed over the drain trenches to prevent damage or contamination with subsoil material. Drain trenches that are subject to traffic shall be made good to comply with the specification.

9. The Pitch Contractor shall exercise care during excavation and filling to ensure that existing sewers are not damaged or blocked during the works. Any damage resulting directly from the Pitch Contractor's operations shall be rectified at the expense of the Pitch Contractor to the satisfaction of the Main Contractor.
10. All pipes to be inspected and tested for the line and gradient before completion of backfilling or carrying out any further work.

S407 Silt Chamber

1. The Pitch Contractor shall excavate for and construct an inspection silt chamber with minimum internal dimensions 900 mm x 600 mm and invert depth of 300 mm below the outlet at the location shown on shown on the Drawing.
2. The chamber shall be set on a 150 mm thick concrete (1-3-6 40 mm aggregate) base and constructed with purpose made reinforced precast concrete units to BS5911-200: 1994. Each unit bedded and pointed in cement mortar.
3. Allowance shall be made for building in inlet and outlet pipes and for pointing and sealing around all units and pipes to ensure efficient waterproofing.
4. Following construction of the chamber, the surrounding ground shall be reinstated by placing and consolidating subsoil in 150 mm thick layers.
5. The inlet and outlet pipes shall be maintained at the required gradient and invert levels during backfilling.
6. The chamber shall be covered with class B125 cover in accordance with BS EN 124:1994. The cover shall be set 25 mm below the adjacent ground level.
7. Topsoil and subsoil arisings to be disposed of as specified for drain trench arisings.
8. The chamber shall be fitted with a flow control device to restrict the outward flow of water through the outlet pipe to a maximum of 5 l/s.

S408 Drain Outlet

1. The drainage system shall discharge via an unperforated pipe (minimum diameter 100 mm) to the nearby inspection chamber connected the site wide surface water drainage system as shown on Drawing No: CHS-BDP-ZZ-ZZ-DR-EF-50_30-0101. It is the Pitch Contractor's responsibility to confirm the depth and connection required for the pitch drainage system. Allowance shall be made for building in a rigid inlet pipe and pointing and sealing around all units and pipes to ensure efficient waterproofing.

S409 Geotextile separator membrane

1. A geotextile separator membrane shall be installed to protect the integrity of the sub-base. The membrane shall meet the requirements set out in S401.2.

2. Immediately following final trimming of the formation surface, after drain installation and prior to the installation of the sub-base, the geotextile separator shall be installed across the foundation and between all pipe trenches. A sample of geotextile will be submitted to the Main Contractor. The source and supply shall not be changed without his approval.
3. The method of installation shall ensure that the geotextile is in continuous contact with the surface on which it is to be placed and it shall not be stretched or bridged over hollows or humps. Operation of construction plant directly on the installed geotextile will not be permitted. The geotextile shall not be installed within or over any drainage trenches.

S410 Kerb Edging

1. The Pitch Contractor shall allow for the supply and installation of perimeter precast concrete kerbs to contain the pitch profile in accordance with BS 7263: Part 2 (14), on a graded ST1 concrete foundation. The dimensions of the edgings shall be 150 mm x 50 mm nominal.
2. The surface of the concrete kerb edging shall be 10 mm below the finished surface of the pitch surfaces.
3. The kerbing must be approved before commencement of the next stage.

S411 Aggregate Sub Base

1. The sub-base material shall be provided spread and consolidated to meet the requirements of the specified tolerances. Allowance for associated testing should be made.
2. The material will be transported, placed and compacted to achieve the consolidation and the specified surface tolerances.
3. The Pitch Contractor will allow for testing and certification of the sub-base construction prior to any further works taking place. All test results will be provided to the Main Contractor.

S412 Porous Macadam Base

1. The pitch construction shall be provided with an engineered base consisting of an open textured bituminous macadam using either a single or two layer construction.
2. A single layer construction shall consist of a 40-50 mm layer of open textured bituminous macadam. A two course construction shall include a binder (base) course of 40 mm depth containing 10 mm or 14 mm nominal sized aggregate open-graded macadam with a surface (wearing) course of 25 mm depth containing 6 mm nominal sized aggregate open-graded macadam.
3. The aggregate shall comply with BS EN 13108-7.
4. The finished macadam layer shall be installed to a tolerance of 6 mm beneath a 3 m straight edge. The surface shall also be required to have no step like irregularity, which will cause the synthetic carpet to have a joint or step like feature greater than 2 mm.

S413 Shock Pad

1. The shock pad should be installed to achieve the performance requirements and tolerances. Samples of the shockpad material shall be taken for testing by an accredited Field Test Institute to ensure that the performance requirements are achieved uniformly over the full extent of the pitch.

S414 Synthetic Carpet

1. The carpet provided shall meet the requirements for a sand dressed synthetic turf pitch as stated in BS EN 15330 Parts 1 & 2 and FIH Multi-Sport category of hockey field. The Contractor shall provide samples for testing by a during the installation period.
2. The Contractor will ensure that the carpet is stored in an appropriate manner prior to installation. Synthetic turf rolls that have to be stored on site or elsewhere for more than one week (7 days), should be stored ensuring that the synthetic carpet is supported off the ground.
3. The synthetic carpet must be laid in accordance with the manufacturer's instructions and in accordance with the installation instructions below.
4. Individual cut panels of the carpet shall extend the full length or width of the pitch and run-off margins (kerb to kerb). All panels must be similar such that no head joints will be within the playing area as defined by the line markings. There shall be no seams within 300 mm of any permanent inlaid line.
5. It is expected that all taped joints shall be glued using broad non-woven geotextile tape not less than 400 mm wide using non-sensitive polyurethane glue.
6. Colour must be consistent throughout with no colour variation in the form of streaks or blemishes and consistent with all adjacent panels and the reference sample.
7. There shall be no loops in the tufts, loose tufts, random long tufts, tears, holes or melted areas, bumps, pile height variations or any other blemish in the carpet.
8. There shall be no pronounced patterns in the turf through, resulting from trafficking, tyre treads or other means and no tracks, gaps or other irregularities in the carpet.
9. All materials shall match the specification requirements and there shall be no alternative materials incorporated into the backing. The backing shall be smooth with no wrinkles and no delaminating present. The carpet shall be fully perforated to allow water to percolate through at the specified rate. Where variations or deviations are noted the carpet will be subject to approval of the Employer's Representative.
10. A panel of synthetic carpet is defined as a full length of carpet extending from kerb to kerb and a full width not less than 3.5 m. All panels shall be the same dimensions generally except where essential to conform to the pitch dimension.
11. If replacement is deemed necessary by the Main Contractor, this will involve full replacement of a length and width of a roll (as designed and manufactured) and no patching whatsoever will be allowed.

12. The synthetic turf shall be laid as specified by the manufacturer and tensioned or 'loose' laid accordingly.
13. The synthetic turf shall be installed in suitable weather conditions to ensure that the carpet is laid satisfactorily and to prevent failure of the joints in the carpet.
14. Following installation the surface shall be free from ruts, tracks, and wrinkles, shall be consistent in performance characteristics and above all be safe to play on.

S415 Line Markings

1. Line markings for the football pitch shall be white and either woven or cut into the carpet. Where required, the line markings for the Mini-Soccer football pitch markings shall be yellow and the hockey pitch markings shall be blue. The Contractor shall allow for supply of line marking details and methodology at tender stage. The line markings shall be restricted to the main football and hockey pitch configurations only to the dimensions indicated in S200 and as shown on the drawings.
2. If required, secondary line markings shall be permanently marked by painting the lines using a two part PU system. The line markings are expected to be durable therefore an indication of the life expectancy and replacement cycle of the line marking paint is required with the tender.
3. The Pitch Contractor shall allow for a minimum of two applications of paint to each line installed. The Pitch Contractor shall also allow for two visits to be made; one to initially install the lines and the second to carry out remarking at six months and this should be allowed for in the tender price.
4. The Pitch Contractor shall ensure that line markings are accurately set out and installed. The top surface of all line markings shall be within a tolerance of plus/minus 2 mm of the adjacent carpet surface when measured under a 300 mm straight edge regardless of type.

S416 Carpet Infill

1. The sand used for dressing the synthetic turf carpet shall consist of non-abrasive, non-staining, well-rounded and dust-free particles (sub-angular or sub-rounded sands will be rejected) and shall match the reference sample as supplied. No chemical treatments are permitted to either bleach or coat the sand. Material with an alternative grading may be approved by the Main Contractor who reserves the right to reject any sand fill medium either to be supplied or found on-site.
2. The Pitch Contractor will note that all infill materials must be approved before placing orders.
3. All infill materials must be inert, i.e. they must not leech out contaminants which would find their way into local water courses, drains or affect users playing on the surface. The constituents should be demonstrably safe to use.

S417 Topdressing

1. The Pitch Contractor shall allow for a minimum of two applications of the sand dressing; one to initially brush the carpet in the first four weeks of operation which will include top dressing as necessary to ensure that the pitch performs as intended very early in the life of the facility.
2. The Pitch Contractor shall carry out re-dressing of the whole of the pitch at six months.
3. The Pitch Contractor shall provide extra infill material to the School at the time of handover to be used for local topping up.

S418 Field Performance Testing

1. The Pitch Contractor shall allow for the installed synthetic turf and the pitch system to be tested by an Accredited Field Test Institute to meet the specified requirements. The manufacturer shall provide laboratory test reports to the approved Laboratory prior to the field test being carried out.
2. The Main Contractor reserves the right to be present when testing is carried out.
3. The surface must comply with the testing criteria after a stated period of usage, but also for the need to conform to testing criteria before and after an extended period of usage.

S419 Handover and Maintenance

1. The Pitch Contractor will supply the necessary maintenance equipment needed for the daily, weekly and monthly maintenance of the surface. The School's maintenance staff will be fully trained in the use of this equipment. The Pitch Contractor must state at interview what equipment he proposes to supply.
2. The equipment provided by the Pitch Contractor must allow the School to adhere to the warranty arrangements in terms of carrying out the required maintenance without deterioration of the playing surface.
3. The required maintenance equipment shall be available for inspection by the test institute at the time of the field test.
4. The equipment provided by the Pitch Contractor must enable the School's maintenance staff to maintain the pitch surface in accordance with manufacturer's instructions. The equipment provided will be certified and approved by the Pitch Contractor in terms of ultimate loadings to protect the surface from deformation.

S420 Pitch Contractor's maintenance responsibilities and programme

1. The Pitch Contractor shall prepare a clear maintenance programme for the surface which will include specialist cleaning (if necessary) on a yearly basis during the defects liability period of the surface. All costs associated with this should be included.
2. The warranties required as detailed must not be affected by the maintenance activities of either the Employer or the Pitch Contractor. The pitch shall be tested at the stated intervals

to ensure continued compliance with the performance standards.

S421 Training

1. The Pitch Contractor shall allow for training of the maintenance staff in respect of the use of the facility, its limitations, maintenance required to maintain the pitch. The Pitch Contractor shall also allow for training of the maintenance staff to carry out regular checks on the surface which can be documented.
2. The Pitch Contractor shall ensure that the training of the School's maintenance staff will include written documentation on how often cleaning or specialist "rejuvenation" equipment is to be used and topdressing with rubber to keep them in good condition.
3. The Pitch Contractor shall provide a document which allows the School's maintenance staff to record usage of the pitch, maintenance activities and quality checks on the pitch.

S422 Goal Posts

1. The Contractor shall supply one set of portable, reinforced aluminium, internally weighted football goals including all associated fittings and netting with dimensions of 7.32 m x 2.44 m.
2. The Contractor shall supply one set of portable, reinforced aluminium, internally weighted football goals including all associated fittings and netting for Mini-Soccer usage with dimensions of 3.66 m x 1.83 m.
3. The Contractor shall supply one set of portable, reinforced aluminium, internally weighted hockey goals including all associated fittings, transport wheels, backboards and netting with dimensions of 3.66 m x 2.14 m.

S423 Other Equipment

The Contractor will allow for the supply of the following items:

QTY.	DESCRIPTION
2	Sand storage bins
1	Line marking kit
2	Brush Boot-scraper

S424 Access and Disabled Access

The requirements for the access of disabled persons to the facility have to be fully considered and where access arrangements are provided they should take account of The Disability Act 2005.

S425 Footwear Cleaning Area

A facility for cleaning footwear shall be installed directly in front of the main entrance gates to the pitch. The facility will comprise of a footwear grate, and an area of synthetic grass with two footwear brushes.

Base construction and Drainage.

The Contractor is required to provide a design and install a system that will ensure that the base construction and drainage system will provide a stable free draining base and meet the Performance Requirements for a period of 25 years.

Synthetic Turf

The Contractor shall provide a written warranty in respect of the manufacture, installation and performance of the synthetic turf and materials placed in the permanent works.

All terms, guarantees, warranties, liabilities and obligations implied by statute (including terms as to merchantable quality and fitness for purpose) shall be limited to the warranty offered by the Pitch Contractor but shall be not less than a minimum of 5 years from the date of installation.

The warranty will be such that the Pitch Contractor will indemnify the client for all aspects of the works whether sub-contracted or not. In the case of the synthetic turf system the manufacturer will be expected to produce a special warranty with regard to the manufacture, installation and performance of the synthetic turf.

The Pitch Contractor warrants that the fibre used in the synthetic turf pitches will retain the following characteristics for a minimum period of 5 years from the date of installation:

1. Colour

There shall be no significant loss or change of colour of the synthetic turf.

2. Pile Height

There shall be no disproportionate decrease in pile height in any single year compared with a proportionate or gradual decrease in pile height.

3. Dimensional Stability

There shall be no deviation of inlaid lines from a straight line measured between the corner points of the inlaid lines on the pitch surface in excess of 12 millimetres and one year from the date of installation, and a graduated annual deviation thereafter to a maximum of 25 millimetres five years from the date of installation.

This warranty is given subject to the following:

Carpet infill material (if applicable) shall be maintained at the type, grade and quantity specified by the Contractor based on the carpet manufacturer's guidelines at all times.

Footwear and sporting equipment shall only be as recommended or specified in the tender by the Contractor.

Use of the synthetic turf surface is only for the sporting activities specified in the tender.

The synthetic turf surface is not removed from where it is originally installed.

This warranty does not apply to the immediate threshold to any gate or access point onto the pitch.

The Pitch Contractor is required to provide a design that will ensure that material and workmanship quality meet the Performance Requirements during this period to provide trouble free operation subject to normal use and maintenance, renovation and repair of wearing parts and the warranty for any individual component manufacturer's warranty which is likely to be less.

S427 Perimeter Fencing

1. The fencing shall be to the required specification and shall be 3.6 m in height around the pitch perimeter.
2. All fencing and components shall be in galvanized with a green coated finish.
3. The fence shall be constructed of galvanized welded mesh supplied in panel form which is 50 mm x 200 mm with wire sizes as vertical 6 mm, 2 x horizontal 8 mm wire. Where panels abut they shall be square and flush if the overlap they should be suitably clipped and trimmed to remove unsightly overlaps, trimmed ends should be treated to prevent corrosion of the non-galvanized core all cut faces should be positioned such that they do not cause injury to fingers. The fence will be supported on line wires and fence posts shall be set at a maximum of 3.00 m centres all in accordance with BS 1722-10:1999.
4. The fence posts shall be 60 mm x 40 mm (or suitable local alternative) designed to support the fence complying with BS 1722-10:1999. These will be set in concrete foundations suitably designed to take account of the local soil conditions of the site. The minimum dimensions of the bases for the posts shall be 450 mm in width and 900 mm in depth.
5. All corner posts, gateposts and intermediate strainers shall be of a suitable size to support the fence and be braced. All gates shall be designed to match the general construction and colour of the fence. All holes in fence posts etc. shall be sleeved using plastic grommets, all posts to have end caps to prevent ingress of moisture. All these and other fittings shall comply with BS 1722-10:1999.
6. Gate positions shall be as shown on the contract drawings and shall be in accordance with BS 1722-10:1999.

2 No. Main Double Access gate 3000 mm wide within perimeter fence.

7. Allowance shall be made for the installation of a minimum 300 mm wide mowing strip around the outer edge of the pitch extending from the outer edge of the perimeter fencing. The mowing strip shall be formed from a concrete slab laid on a granular stone base (minimum depth 150 mm).

S428 Outer pitch margins

1. On completion of the main pitch works, the Contractor shall allow for final trimming up and shaping of the graded fill embankments around the outer edges of the pitch plateau and

peripheral areas, ensuring that these carefully marry in with the adjoining undisturbed ground.

2. On the prepared formation surfaces spread the preserved topsoil to provide a minimum uniform, firmed depth of 200 mm on completion. The topsoil shall be married smoothly into the surrounding undisturbed ground levels.
3. The Contractor shall allow for cultivation of the topsoil to relieve compaction and produce a good working tilth.
4. Allowance shall be made for carrying out a final seedbed preparation to produce a firm, smooth and evenly consolidated surface together with an application of a pre-seeding fertilizer with an analysis of 8:12:8 or similar approved applied at a rate of 35 g/m².
5. Supply and sow a low maintenance, conservation type grass seeds mixture based seeds for sowing of the prepared embankments and surrounds at a rate of 35 g/m² and lightly rake into the immediate surface.

APPENDIX 1

SUB CONTRACTORS

Particulars of Works to be sub-let	Name and Address of Sub-Contractor

APPENDIX 2

MATERIALS AND SOURCES OF SUPPLY FOR THE WORKS

The Pitch Contractor shall confirm the sources based on the following schedule adding any additional suppliers required.

<i>Materials</i>	<i>Source of supply</i>
<i>Pitch Construction</i> Silt Chamber Manhole covers Drainage pipe Drainage backfill aggregate Sub base aggregate Kerb edging <i>Playing Surfaces</i> Shock Pad Synthetic turf carpet for pitch Sand dressing Equipment Football/hockey goal posts/flags Maintenance Equipment Fencing	