



**MURRAYFIELD WANDERERS RUGBY FOOTBALL CLUB**

**RECONSTRUCTION OF NATURAL GRASS PITCHES**

**AT ROSEBURN PARK, MURRAYFIELD, EDINBURGH**

**SECTION B: SPECIFICATION OF WORKS**

**EMPLOYER**

**MURRAYFIELD WANDERERS RFC**

**CONSULTANT**

**PROFESSIONAL SPORTSTURF DESIGN  
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RUTHERGLEN  
GLASGOW  
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**May 2020**

# MURRAYFIELD WANDERERS RUGBY FOOTBALL CLUB

## ROSEBURN PARK, MURRAYFIELD, EDINBURGH

### RECONSTRUCTION OF NATURAL GRASS PITCHES

#### SPECIFICATION OF WORKS

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## 1. GENERAL

### 1.1 Description of Site

The site of the works is Roseburn Park, Edinburgh, as shown on the Location Plan.

The works shall generally involve:

- Cultivation of existing topsoil & trim to regulate levels
- Install drainage system
- Cultivate sand amelioration into surface & regulate levels
- Seed and fertilise to establish sward
- Install sand/gravel slit secondary drainage
- Ongoing establishment of sward.

### 1.2. Site Access

**Access to and from the site shall only be via the existing access road at Roseburn Crescent, Murrayfield, Edinburgh.**

**A full dilapidation survey will take place at a mutually agreed time where a photographic record of the conditions will be taken prior to any works commencing.**

All delivery of materials etc. and all carting away shall be by way of the sole means of access and the Contractor must ensure that the minimum disruption is caused to the occupants of the surrounding buildings, streets and thoroughfares and users of the adjoining all to the satisfaction of the Public Authorities. The Contractor shall provide, during the progress of the works, for efficiently watching during movement of all vehicles in connection with the Contractor's work at the point of access and for the efficient warning of the movement of such vehicles to members of the public.

The Contractor shall liaise with the employer to agree the control of site traffic and the timing of deliveries, so as to minimise any impact on the users of the facilities.

### 1.3 Working Area

The Contractor shall have free and temporary occupation of the Working Area, i.e. an area enclosing the Works to such an extent as the Employers Representative will decide. The Contractor shall within this area construct the permanent work and carry on such temporary work as is necessary for the purpose of the Contract.

**The works shall be contained within the red line on the site plan.**

It may be necessary for temporary storage to be provided for pipes and specials etc., adjacent to the site of the works, and where this has to be done, the Contractor shall make all necessary arrangements with the various owners and tenants in regard to access and for the use of the ground for temporary storage, and shall pay all charges and damage incidental thereto. The acceptance by MURRAYFIELD WANDERERS RUGBY FOOTBALL CLUB of the Contractor's offer, shall free and relieve them of all liability for claims whatever in respect of access to the site and use of the ground for storage.

#### 1.4 Existing Services

**The Contractors attention is drawn to the electricity cable which runs towards the training floodlights between the pitches.**

The Contractor shall ascertain from the various Public or Statutory Authorities, before works are commenced, the positions and depths of any mains, pipes cables and other apparatus and shall take, at his expense, any and all measures reasonably required by such Authorities for the protection of their property during the progress of the work and must satisfy the Employers Representative that the measures used are approved by the Authorities. Any sewers or services damaged during the progress of the works shall be repaired at the Contractor's expense and he shall report all damage immediately on occurrence.

**Prior to the commencement of the works, the Contractor shall carry out sufficient investigations, including the excavation of trial pits, to ascertain the exact location and level of all main sewers within the site and to the telecom cable which connects with the mast at the side of the Training Area.**

#### 1.5 Contractor to Protect Services

The Contractor shall take every precaution to avoid damage to or improper interference with the works therein referred to and he shall at his own expense, rectify any damage done and relieve the Employer of all claims in respect of any interruption or loss arising from such damage.

#### 1.6 Contractor to Maintain Rights-of-Way

The Contractor shall maintain for the duration of the Contract, either on its original route or on an agreed alternative route, all Rights-of-Way relating to this contract. Rights-of-Way shall be separated from the works by a minimum of 1.1 metre high chespale fencing and the Contractor shall take all steps necessary, including the use of signage, temporary fencing, etc., to ensure that the public is kept separate from the works.

Where a Contractor's temporary haul road crosses a right of way, adequate signing shall be erected to warn both the public and the Contractor's operatives of the potential danger. Where it is deemed necessary by the Employers Representative, the Contractor shall provide an operative at such a crossing to control pedestrian and vehicle movements. All signage, fencing, etc. shall be to the satisfaction of the Employers Representative.

### 1.7 Existing Works to be protected

The Contractor must take every precaution to guard against damage to the existing works or loss or pollution of the water belonging to the Council or to private owners and he shall bear the cost of such loss or of repairing such damage or rectifying such pollution.

### 1.8 Work to Proceed Continuously

If considered necessary by the Employers Representative for the safety of the Works, the works shall be carried on without intermission and continuously by day and night until completed. No such direction by the Employers Representative shall relieve the Contractor from any of the Liabilities for accidents, damage or otherwise undertaken by him in terms of the Contract and the Contractor shall not be entitled to claim for any additional payment over that stated in the Bill in respect of any such direction.

### 1.9 General Conditions on Site

The Contractor shall satisfy himself as to the type of the materials likely to be encountered in the excavation. He shall also satisfy himself as to the general conditions at the site of the works with regard to flow of water in watercourses, streams and ditches, or the possible infiltration of water from the surrounding strata to the excavation, the possibility of falls of rock and subsidence from soft ground or bad or broken material, sinkage and slips of ground and the possibility of floods.

In addition the Contractor should be aware that the works are to be carried out in an area where a former colliery was present and the presence of mine entries should be taken into account. The Contractor should be aware of this and should instruct his site staff to be vigilant and to notify immediately the Employers Representative should any change in ground conditions be noted.

In tendering for the work the Contractor shall be deemed to have provided for these and all other such contingencies in the rates entered in the Bill of Quantities.

### 1.10 Site Communications

As a minimum, the Contractor will provide his site staff with telephone services and will maintain them for the duration of the Contract.

### 1.11 Welfare and Safety

The Contractor shall provide and maintain at his own expense, the welfare and amenities and safety measures required for the scope of this Contract, all as required under or by virtue of the current provision of any enactment or regulations such as The Construction (Design and Management) Regulations 2007, etc. together with the relevant Codes of Practice & Guidance Notes) and such expense shall be held to be included in his tender.

Locations for welfare facilities shall be in positions to be agreed with the Main Contractor and Employers Representative prior to the commencement of work on site.

**The successful Contractor will be required to submit to the Employer (a) a written 'Method Statement' and 'Relevant Risk' assessments in respect of the safe execution of the contract works and (b) a copy the Contractor's Health & Safety Policy prior to the commencement of work on site. The successful Contractor will also be required to submit a Construction Phase Plan which must be approved by the Principal Designer.**

#### 1.12 Power of Employers Representative

The Works will be carried on under the direction of the Employers Representative whose direction in all points relative to the mode of carrying on the works, or to the nature and quality of the materials, used, or workmanship executed, are to be received and acted upon by the Contractor. He is to have power to reject and condemn any materials or workmanship that he may deem unsuitable and any materials or workmanship rejected or condemned shall be promptly removed from the works and replaced by the Contractor at his own expense. In any case, where the Contractor shall consider that the representative unjustly or unnecessarily condemns or rejects any work or materials, he may appeal to the Employers Representative whose decision shall be final and binding, but the Contractor, his agent or workmen shall under no circumstances proceed with any work so condemned or rejected, until the Employers Representative's decision is obtained.

There shall be no additional works which incur cost unless approved in writing by the Employers Representative.

#### 1.13 Power of the Clerk of Works

Where a Clerk of Works is appointed by the Employers Representative, his special duty will be to see that the works are executed in strict conformity with the General Conditions, Specification, Drawings, Bill of Quantities, or as the same may be altered by the Employers Representative. The Clerk of Works has no power to permit any deviation from the Specification, Bill, Conditions, Plans, Drawings, or may the same be altered by the Employers Representative nor may they order any extra or additional work. Such additions or alterations can only be authorised by the Employers Representative (or his agent) directly and must be confirmed in writing after sanction by Client, prior to commencement of any such works.

#### 1.14 Facilities for Statutory Undertakers

The Contractor shall comply in every respect with the Factories Acts and the Health and Safety at Work Act 1974 and particularly with Acts concerned with safety, first aid equipment and sanitary arrangements. Any instructions which may be given to the contractor by HM Inspector of Factories shall be complied with immediately.

#### 1.15 Police Regulations

The Contractor shall ascertain the requirements for the appropriate Police Authority concerning matters which may be affected by the works. The Contractor shall comply with any such requirements and shall allow in his Tender for any costs arising from such compliance.

#### 1.16 Overtime and Bonus

If the Contractor determines, for any reason, to work overtime on Sundays or on any public, trade or other holiday or at night, or to operate any form of incentive payment scheme, he must include for the cost in his Tender.

#### 1.17 Notification

The Contractor shall notify the Employers Representative, allowing three clear days of any intention to operate working at weekends or on holidays.

#### 1.18 Plant and Materials

Unloading, storing and distributing materials and plants during the period of the landscape work and during the maintenance period will be the Contractor's responsibility and the tenderer must include for all necessary plant to carry out this work.

#### 1.19 Damage to Existing Trees and Hedges

The Contractor is to take all precautions against damage to existing trees and hedges. Any damage caused shall be rectified to the satisfaction of the Employers Representative and at the Contractor's own expense either by tree surgery or by a specialist or by replacement of the tree or hedge concerned with a species to the satisfaction of the Employers Representative.

#### 1.20 Protection of Existing Works, etc.

Special care shall be taken to ensure that no damage is done to affect the stability of existing work and the contractor is to take particular precautions regarding the non-disturbance of ground by virtue of superfluous excavation or by the excessive movement of heavy plant around the site.

The Contractor is to acquaint himself with the positions of all underground services.

In the event of existing works being disturbed through any cause whatsoever the contractor shall immediately draw the Employers Representative's attention, verbally and subsequently in writing to the nature of this disturbance in order that the Employer may be informed forthwith.

The Contractor shall further more avoid nuisance to neighbouring owners and occupiers by keeping the amount of noise to a minimum and at reasonable hours, and shall reduce the amount of dust by suitable timing of his operations and/or by keeping the site watered as necessary.

All existing grass areas shall be kept free of damage by soil, vehicles or other materials or machinery in use by the Contractor.

#### 1.21 Method of Works

All operations may be carried out by machine or by hand as appropriate. Where machines are used, care shall be taken not to damage existing surfaces or levels and any damage so caused shall be made good at the Contractor's expense.

#### 1.22 Contamination

Care shall be taken not to contaminate the top soil with sub soil, cement, petrol or any other alien matter.

#### 1.23 Handing Over

On completion, the works shall be handed over in a sound condition approved by the Employers Representative. Subsequent maintenance by the Contractor must be allowed for until the expiration of 12 months from completion.

#### 1.24 Materials and Workmanship

All goods and materials used in the execution of the Contract shall be produced as far as is practicable either in the United Kingdom or the European Union.

Where an appropriate British Standard Specification or British Standard Code of Practice issued by the British Standards Institution is current at the date of Tender, the Contractor is required to ensure that, as the case may be, all goods and materials used or supplied and all workmanship shall be at least in accordance with that Standard. In all cases, the standard of workmanship is to be to the satisfaction of the Employers Representative.

#### 1.25 Burning of Waste

**No burning of materials or fires shall take place on any part of the site at any time.**

#### 1.26 Noise Control

The Contractor shall comply with the contents and recommendations of British Standard 5288: Code of Practice for Noise Control on Construction and Open Sites, insofar as they are not superseded by the following Sub-Clauses.

All plant used on the works shall be subject to the approval of the Employers Representative and shall be the quietest of its type practicable for carrying out the work required and shall be maintained in good condition with regard to minimising noise output. The use of all plant shall be confined to between 08.00 hours and 20.00 hours from Monday to Saturday inclusive and shall not be permitted outwith this period unless approved in writing by the Employers Representative.

All necessary measures including the use of mufflers on pneumatic tools, the use of non-reciprocating plant and the provision of sound reducing containers or huts for plant shall be employed to ensure that all plant operates with the minimum noise.

The total sound level, resulting from the noise generated by any part of the Works and the ambient noise combined, and measured at a point 1 m outside any adjacent noise sensitive building, shall not exceed, in the period 08.00 hours to 20.00 hours Monday to Saturday inclusive an equivalent continuous A - weighted sound pressure level over the whole 12 hour period ( $LA_{eg}$  (12 hour)) of 75 dB (A).

In considering any requests by the Contractor to work out with the hours and days stated above, the Employers Representative will require arrangements to be made to substantially reduce the noise below these levels, to the Employers Representative's satisfaction.

The Contractor shall provide the Employers Representative with all necessary assistance in controlling the noise levels on and adjacent to the Site. At any time during the Contract when requested by the Employers Representative, the Contractor shall supply, construct, maintain, move or remove such equipment or structure as may be required by the Employers Representative to enable the Employers Representative to measure the level of noise on or adjacent to the Site.

#### 1.27 Control of Construction Traffic

Tracked construction plant shall not run on existing carriageways or footpaths that are to be retained, or on new carriageways or footpaths on which the wearing surface has been laid.

#### 1.28 Roads and Footpaths to be kept Clean

The Contractor shall take every precaution that may be required by the Employers Representative to prevent dirt and mud or other material being dropped or spread by traffic from the Works on roads or footpaths in public use, or on roads being part of the Works, which are made available for use by Works traffic. Particular attention shall be paid to the loading of lorries carrying bulk materials into the site and spoil from the site to ensure that these are not overloads, or loaded in such a way that spillage is unavoidable. Any dirt or mud adhering to the tyres or chassis of any vehicle shall be thoroughly cleaned off by high pressure hose before the vehicle is permitted to leave the site. In the case of delivery to the site, before the vehicle leaves the point of collection it shall be thoroughly cleaned. The Contractor shall be equally responsible for vehicles of his sub contractors and suppliers.

While the intention of this Clause is to prevent the spillage of dirt and mud, nevertheless the Contractor shall also be required to remove any such dirt and mud which is unavoidably split by traffic travelling to and from the site in connection with the Works, whether such traffic is the Contractor's or his sub-contractors' or his suppliers'. The roads and footpaths are to be kept in a clean condition at all times and to achieve this, especially when earth moving operations are taking place, the Contractor will require to provide suitable mechanical sweepers assisted by manual labourers. The Contractor may be directed to carry out such cleaning work between 20.00 hours and 07.00 hours or at such other times as will reduce interference with public traffic.



### 1.29 British Standards

British Standards and British Standard Codes of Practice referred to in the Contract shall be deemed to mean the editions of each Standard current at the time of tendering.

### 1.30 Excavations and Earthworks

The Contractor is deemed to have satisfied himself by inspection tests or otherwise as to the exact nature of the materials to be encountered in the parts of the site where excavation is to take place and shall include for this in his price.

The description for final disposal shall be deemed to include for all wheeling, multiple handling or re-excavation from temporary spoil heaps of materials as may be necessary preparatory to filling in conveyances for removal and in addition to the foregoing, the description "remove from site" shall be deemed to include the finding by the Contractor of any off site tip and removal of surplus material thereto.

Excavations shall be carried out to the depth on or implied in the drawings or to such greater or less depths as the Employers Representative may direct. The Contractor shall supply and fit all shoring, sheeting, strutting and walling required to maintain the sides of excavations as long as necessary and to remove them as required. No claim shall be entertained for either bulking or compacting and all quantities shall be measured net from the drawings.

**All excavated material to be disposed of on - site, unless otherwise directed.**

### 1.31 Inspection of Works

No part of any work is to be buried or covered without having been first inspected and approved by the Employers Representative. The Contractor's liability is not absolved by such inspection and if it subsequently becomes apparent to the Employers Representative that defects or imperfections have arisen or that the Works have not been constructed, completed or maintained in accordance with the Contract, or that damage or accident with the Contract, or that damage or accident has happened to the Works, materials and plant, a general requisition by the Employers Representative to the Contractor to repair and make good the defects or imperfections or to re-execute, reconstruct, complete or maintain the Works in accordance with the Contract, or to repair or make good the damage or accident, shall be sufficient, and the Employers Representative shall be under no obligation to specify the defects or imperfections which exist or the cause of the damage or accident which has happened or the Works necessary for making good the defects or imperfections or for reconstructing, completing or maintaining the Works, or for repairing and making good the damage or accident as the case may be.

### 1.32 Measurement of Works

All measurement shall be taken jointly by the Contractor and the Employers Representative or his representative.

### 1.33 Sub-Contractors

The Contractor shall inform the Employers Representative of the names of all sub-contractors who are to be employed in connection with the said Works and shall make available to the Employers Representative without delay copies of all orders to sub-contractors and manufacturers.

### 1.34 Commencement and Programme

Prior to commencement of any work, the Contractor will submit a detailed programme showing the methods by which and the times by which he proposes to carry out the various parts of the works and as the contract proceeds will review this programme as necessary.

### 1.35 Personal Protective Equipment

The Contractor shall provide all necessary Personal Protective Equipment to allow the safe execution of the works by his operatives.

### 1.36 First Aid

The Contractor shall provide and fully maintain a First Aid Outfit similar to that required by the Factory and Workshop Act. He shall employ among his workmen or supervisory staff at least one man holding a certificate of competency in First Aid in charge of the Outfit.

### 1.37 Fencing, Watching, Lighting (including Traffic Signals)

The Contractor shall provide adequate fencing and lighting facilities at all times for the protection of the general public and for the protection of each area of the works.

Where a trench is excavated adjacent to or on any public or private road, warning signs and at night time warning lights - should be provided and maintained as required by the body having jurisdiction over the road. The recommendations of the Traffic Safety Code for Road Works, prepared by the Scottish Development Department and Ministry of Transport, should be followed.

### 1.38 Artificial and Temporary Lighting and Power

The Contractor is to provide all artificial and temporary lighting and power required for the proper execution of the works (including safety lights on any hoardings or gantries projecting on to or over the public road and/or footpath) and is to pay all charges in connection therewith.

#### 1.39 Access to the Site

The Contractor will be responsible for all expenses in connection with maintaining the sole means of access to the site and for all restoration of fencing and land in connection therewith.

#### 1.40 Damage to Roads and Property

The Contractor will be responsible for all repair restoration or surface, damage to, or compensation in respect of public or private roads, or footpaths affected in gaining access to the site or in carrying out the work. The Contractor shall at all times, until the expiration of the period of maintenance, keep the roads and footpaths reinstated to the satisfaction of the Authority responsible.

#### 1.41 Temporary Roads

The Main Contractor will be responsible for the provision of all temporary roads or other means of access required enabling him to carry out the complete work in accordance with the Contract conditions.

#### 1.42 Notices to Authorities, Companies and Others

The Contractor shall give all notices required by any law or any custom, or as directed by the Employers Representative; and whether notice shall be so required, or shall be so directed or not, shall in all cases give due and sufficient notice to all companies and all other bodies and persons such as water, gas, electric power and lighting or other companies services, British Telecom Scotland, O2 and all persons and all authorities having charge of the water and other pipes, sewers, drains, watercourses, highways, roads, pavement and other previous to and at the completion of any work under this Contract, in order that the proper bodies or persons in respect of the matters aforesaid may be enabled to attend and see that the highways, water pipes, pipes, road, sewers, conduits, pavement, wires and other works within their jurisdiction, and all matters and things incident and appertaining thereto are secured, re-laid, or reinstated in a proper and satisfactory manner; and that such bodies and persons may be enabled to attend and secure shore up, alter and position of, remove, relay and reinstate the sewers, pipes mains, plugs, wires and all other works and things belonging to them; but the Contractor notwithstanding any notices given as aforesaid, shall be held chargeable and restoration of all and every matters and things herein referred to.

The Employers Representative will make available to the Contractor, free of charges, sufficient copies of the relevant plans that he requires for the purpose of giving such notices.

Should any of these services be damaged for any reason whatsoever, by the Contractor or his suppliers, the Contractor shall repair and make good the same at this own expense.

Alternatively the authority concerned may elect to carry out the repair itself and the cost incurred will be debited against the contractor.

1.43 Repair of Fences, Roads and Footpaths

All fences, walls, roads, footpaths or routes which may be damaged during the execution of the works shall be properly restored at the Contractors expense to the satisfaction of the Employers Representative, and the owner, occupier or their agents.

1.44 Water

The Contractor is to pay all charges for water required for the works and supply all tanks, temporary service pipes, stopcocks connections etc. as required and clear away on completion.

1.45 Insurance

The Contractor shall insure and indemnify the Employer against all claims by third parties and for all injuries to workmen or others in the National Health and Workmen's Compensation Act.

1.46 Coins, Antiquities, etc.

Any coins, relics or antiquities found on the site are to remain the property of the employer and are to be handed over to the Employers Representative.

1.47 Clearing of Site

All scrap metal, timber, etc. to be collected and removed from the site to a place provided by the Contractor and approved by the Employers Representative. All stone, concrete and excess material to be removed to the satisfaction of the Employers Representative on the completion of the works.

## **2. CONCRETE MATERIALS AND CONSTRUCTION**

### **2.1. Cement**

Cement shall be Portland Cement of British manufacture, of an approved brand and complying with BS EN12. It shall be delivered in the original packages of the manufacturers, plainly branded, or with approved of the (Pitch Consultant) in bulk. Cement must be stored in a watertight shed on a floor raised at least 150 mm from the ground, or if supplied in bulk, storage must be in a suitable silo. Any cement damaged by water or otherwise defective, must be removed from the site immediately.

### **2.2. Fine Aggregate**

Fine aggregate shall comply with BS 882 and consist of hard siliceous sand or other approved insert material with similar characteristics, having clean, hard, uncoated grains, free from lumps, soft or flaky particles, shales, crusher dust, silt, alkali, loam, organic matter or other deleterious substances. The grain shall be uniformly varying in size and must pass through a screen with a mesh 5 mm square measured in the clear and not more than 10% shall pass through a Nr 100 BS sieve.

### **2.3. Coarse Aggregates**

Coarse aggregate shall comply with BS 882 and consist of gravel, crushed stone or other approved material with similar characteristics, having clean, hard, uncoated particles, free from soft, friable, porous, elongated or laminated pieces, crusher dust, alkali, loam, organic matter or other deleterious substances.

### **2.4. Water**

Water shall be clean and free from oil, acid, alkali, earthy, vegetable or organic matter, or other deleterious substances in suspensions or in a solution and shall conform in every respect with the requirements of BS 3148.

### **2.5. Mixing**

An approved mechanical mixer shall be used unless the quantity of concrete is small, when hand mixing shall be permitted. The mixer and mixing platform shall be suitably protected from the wind to prevent loss of cement. The aggregate and cement shall be first mixed dry, then after the addition of water, mixing shall be carried out until the concrete is of even colour and consistency throughout, but in no case for less than two minutes.

The quantity of water used shall be the minimum consistent with practical workability and shall be carried out as required to suit the moisture content of the aggregate and produce concrete having the specified slump. Cement content shall, for the first batch, be increased by 25% to allow for losses due to coating of the mixer and handling plant shall be thoroughly washed out.

## 2.6. Ready Mixed

Where the use of ready mixed concrete is proposed, details of the supplier and the location of the batching plant shall be submitted for the Engineer's approval prior to the placing of any orders. All concrete shall conform to the requirements of the specification. All concrete shall be delivered in vehicles of a type approved by the Engineer.

## 2.7. Moving and Placing

Concrete shall be moved to the point of use from the mixer as rapidly as possible ensuring that no segregation of the mix occurs due to excessive vibration, dropping from a height or use of chutes of an excessive length. In no case shall concrete be used if more than thirty minutes has elapsed since the concrete was discharged from the mixer.

## 2.8. Tests

Slump tests shall be taken at the site of placing the concrete and the slump shall not exceed 40 mm. Three test cubes shall be taken by the Contractor of each batch of ready mix or at three separate times during a day's concreting using a site mix. Cubes shall be of 150 mm side and shall be properly cured in a tank prior to testing. One cube shall be tested at 7 days, one at 28 days and one spare. All cubes shall be marked by the Contractor with the date of casting and shall keep records of the cube number, date cast, location where used in the works, outside temperature at time of placing and any other information which may be requested by the Engineer. The testing of cubes shall be carried out by an independent testing station approved by the Engineer.

## 2.9. Temperature

No concrete shall be deposited when the temperature is below 36° F on a falling thermometer, except when specially approved precautions have been taken. In frosty weather, all newly placed concrete must be kept properly protected.

## 2.10. Protecting

After being placed, concrete shall not be jarred, walked on otherwise disturbed during setting. All concrete shall be kept thoroughly damp for at least a week after concreting and special precautions shall be taken to prevent it drying out too quickly. Protection shall be afforded to the freshly placed concrete to prevent damaged caused by heavy rain.

## 2.11. Damage

Any concrete damaged during setting for any reason whatsoever shall be cut out and replaced by the Contractor at his own expense.

### 3. EARTHWORKS

These works shall be governed by the relevant sections of the "Manual of Contract Documents for Highways Works - Specification for Highway Works (Volume 1 May 2017), hereafter referred to as the Highways Spec. – and by the following additional requirements:

#### 3.1. General

The Contractor is deemed to have satisfied himself by inspection tests or otherwise as to the exact nature of the materials to be encountered in the parts of the site where excavation is to take place and shall include for this in his price.

#### 3.2. Final Disposal

The description for final disposal shall be deemed to include for all wheeling, multiple handling or re-excavation from temporary spoil heaps of materials as may be necessary preparatory to filling in conveyances for removal and in addition to the foregoing, the description "remove from site" shall be deemed to include the finding by the Contractor of any off site tip and removal of surplus material thereto.

**All excavated material to be disposed of off-site to contractor's tip, unless otherwise directed.**

Where material is to be disposed of on-site, the area designated will be stripped of topsoil and the topsoil banded for re-use. On completion of the filling, the excavated topsoil shall be re-spread over the whole area, cultivated, trimmed and seeded to the satisfaction of the Engineer.

#### 3.3. Excavations

Excavations shall be carried out to the depth on or implied in the drawings, or to such greater or less depths as the Supervising Officer may direct. The Contractor shall supply and fit all shoring, sheeting, strutting and walling required to maintain the sides of excavations as long as necessary and to remove them as required. No claim shall be entertained for either bulking or compacting and all quantities shall be measured net from the drawings.

#### 3.4. Bulk Earthworks

The area shall be levelled to the levels shown on the detail plans by cut and fill in suitable weather conditions. Care shall be taken to suitably consolidate any areas of fill and at no stage shall infill material be spread in layer thicker than 200 mm without consolidation. The Contractor must be aware of the weather and subsoil conditions and ensure that works only proceed when conditions allow.

#### 3.4. Trimming

The new formation will be trimmed to ensure that the surface is evenly graded to the required levels.

## **4. DRAINAGE SYSTEM**

### **4.1 General**

These works shall be governed by the relevant sections of the “Manual of Contract Documents for Highways Works - Specification for Highway Works (May 2017), hereafter referred to as the Highways Spec. – and by the following additional requirements:

- 4.1.1 Drain trenches should be excavated true to line as shown on the drawings and at the specified width, depth and gradient. Prices shall include for excavating in any materials and for the supply, fitting and dismantling of any necessary planking, strutting, shoring and walling.
- 4.1.2 The base of the excavated trenches must be clean, smooth and free from loose material. The base shall be cleaned if deemed necessary by the ER. If necessary the specified permeable backfill shall be used to provide pipe bedding prior to the pipe laying operation. Any over excavation shall be made good at the Pitches Contractors (PC) expense using specified backfill material.
- 4.1.3 The spoil shall be removed as excavated via an elevator attached to the drainage machine or, if an excavator or approved equivalent is used, placed directly into a dumper for transport to the disposal area. All vehicles must be tracked or fitted with wide or low ground pressure tyres.
- 4.1.4 A laser grade shall be used at all times during the installation of the drainage system.
- 4.1.5 Any existing drains encountered during the excavations shall be connected into the existing system using a suitable connector. Refer to drawings for probable locations of existing drains. All drains encountered must be brought to the attention of the ER.
- 4.1.6 The drain lines shall be backfilled as specified with permeable material. The backfilling technique must avoid damage or displacement of the drainage pipe and ensure sufficient consolidation to avoid settlement.
- 4.1.7 The inspection chamber shall be constructed to act as a silt trap with the internal base 200mm below the invert of the outfall pipe. It shall be rounded pre-cast concrete units of the dimensions indicated on the drawing. The base shall comprise 100mm depth of concrete. A pressed steel cover shall be fitted to be 25mm below ground level. Refer to detail drawing.
- 4.1.8 Inlet/outlet pipes of inspection chambers/silt traps shall be rigid and frost resistant.

### **4.2 Excavations**

- 4.2.1 The PC is deemed to have satisfied himself by inspection tests or otherwise as to the exact nature of the materials to be encountered in the parts of the site where excavation is to take place and shall include for this in the price.
- 4.2.2 The description for disposal off-site shall be deemed to include for all wheeling, multiple handling or re-excavation from temporary spoil heaps of materials as may be necessary preparatory to filling in conveyances for removal.



- 4.2.3 Excavations shall be carried out to the depth on or implied in the Drawings, or to such greater or less depth as the ER may direct. The PC shall supply and fit all shoring, sheeting, strutting and walling required to maintain the sides of excavation as long as necessary and to remove them as required. No claim shall be entertained for either bulking or compacting and all quantities shall be measured net from the Drawings.
- 4.2.4 Notwithstanding the general description for the type of materials to be excavation, if original bed rock is encountered during these excavations which can only be removed by blasting or compressed air tools, this work shall only be undertaken when authorised in writing by the ER.
- 4.2.5 During excavation it is expected that the PC will take every prudent step or precaution such as tests or borings in order to prove the nature or type of material underneath the ground bearing capacity in order to protect his workmen, plant or machinery employed in these operations.
- 4.2.6 In the event of the PC excavating below the proper levels or otherwise in excess of the dimensions given, he shall at his own expense remove all loose excavated material and replace the soil excavated in error by concrete or an approved mix as directed by the ER. Where after excavation unsuitable material is revealed, this shall be removed and the void filled with an approved material.
- 4.2.7 If in the opinion of the ER, the bottoms of any excavation or any material to be excavated become unsuitable due to the PC's operations, the Contractor shall, at his own expense, carry out any necessary additional excavation and make up in a similar manner to the above.
- 4.2.8 Prices for excavations shall include for working under or around pipes, cables, and the like and the provision of all necessary temporary supports; for grubbing up any roots, disused drains, wall foundations and small isolated obstructions met during the excavations, disinfecting the ground where necessary and filling the voids with hard dry materials. It shall include the removal of these materials to the disposal area.

### **4.3 Drainage System**

- 4.3.1 Main drains: The main drains shall be installed true to line as specified and shown on the drawings. The gradient shall be as indicated on the drawing and the excavated trench shall be no less than 50mm wider than the pipes external diameter. Pipe of the indicated diameter shall be used and the trench backfilled as specified.
- 4.3.2 Lateral drains: The lateral drains shall be installed true to line as specified and at centres as shown on the drawings. They shall be connected to the main drains using connectors manufactured for that purpose. Specified and approved perforated Twin Wall uPVC pipe of 100mm O.D. shall be installed at a minimum gradient of 1:250. The trenches shall be backfilled as specified. A minimum of 200mm cover is required over the lateral drain pipe to the formation level.
- 4.3.3 Backfilling: The backfill used for the main and lateral drains shall comprise of the specified and approved 6 – 10mm (capped with 50 mm of 2-6mm) gauge gravel or equivalent.

#### 4.3.4 Sand/Gravel Slits:

Sand/Gravel slits shall be 300mm deep and 60mm wide.

Where detailed, sand/gravel slits shall be drainage channels excavated and backfilled as per dimensions in Bill of Quantities and/or indicated on plan. Slits shall in all cases be channels excavated using only a trenching machine either chain or Whizz Wheel type and the tracks be left open to enable inspection. Under no circumstance will slits be installed by forcing a channel through the top soil and sub soil.

The slits shall only be installed on an approved established sward and only in conditions suitable for the works, avoiding unnecessary compaction or damage to the pitch surface. When excavated each junction with the backfill over lateral drains will be inspected to ensure a clear interface and Contractor must allow for hand clearing of contaminated gravel where necessary.

Backfill to slits shall be as detailed and care taken to clear any overspill from the sward. Gravel and sand approved prior to importation shall be clean, rounded washed gravel, grit and/or coarse sand and medium/coarse sand and shall be evenly consolidated to avoid settlement.

Contractors must allow in their rate for the removal of stones encountered and reinstatement of disturbance caused by such removal, infilling any voids with sand/soil mix (3:1).

These slits shall be 300 mm deep and 60 mm wide and shall be excavated by an approved 'Whizz Wheel' or Chain Trencher. The slits shall be carefully cleared to ensure a minimum interface of 50 mm with the drainage backfill. The slits shall be backfilled in two stages with 225 mm of 3 – 6 mm gravel then to the surface with a medium/coarse sand all materials approved prior to importation. The medium/coarse sand shall have the equivalent of 3 g of specified grass seed mix and 6 g of 10.15.10 granular fertiliser added per metre prior to backfilling.

#### **4.4 Trimming and Geotextile**

4.4.1 The formation level shall be trimmed to true line and level as necessary following installation of pipe drains. The Contractor shall allow for all works including the use of approved spoil to eliminate any ruts between the drain lines.

4.4.2 If instructed by the ER, the Contractor shall install a geotextile over the formation level stopping at, or lapping down the sides of, the drain trenches. The geotextile shall be Terram 2000 or approved equivalent.

#### **4.5 Outfall Drain**

4.5.1 The main carrier drains shall be connected to the new soakaway infiltration trench, as detailed.

#### **4.6 \*\*Alternative Pipe Drain Specification\*\***

Where approved the Contractor shall allow for installing the pipe drainage system as a mini pipe system by trenching the drainage channels through the sand amended and trimmed topsoil. The trenches shall be 550 mm deep and be at 4 m centres in the same layout as shown on plan. The pipes shall be 60 mm uPVC drain

The trenches shall be backfilled with approved gravel to 200 mm from the surface and then capped with an approved fine gravel or grit to 150 mm from the surface. The trenches will then be brought to the surface with selected sand amended topsoil and consolidated.

The Contractor should allow for cultivating the surface once more to a depth of 100 mm to remove tracking and compaction and thereafter trim and grade to the required seed bed.

#### **4.7 \*\*Alternative Slit Drainage\*\***

The Contractor should provide a cost for installing Koro Topdrain Slits over the surface if instructed. These slits will be installed after the pipe drains have been installed at 4 m centres and the surface has been re-cultivated and trimmed. The Koro Drains shall be installed at 90° to the piped drains and at 400 mm centres and be 225 mm deep providing a clean connection with the backfill over the piped drains.

The Koro Slits will be backfilled with a medium/coarse approved sand. The surface shall regulated on completion to remove and wheel or machinery impact to the surface and the seed bed shall be approved by the Pitch Consultant prior to seeding.

#### **4.8 \*\*Alternative Sand Banding\*\***

The Contractor shall allow for sand banding the pitches using a Blec Sand Bander or equal approved at 90° to the sand slits. These bands shall be forced through the topsoil after slitting (dependent on conditions could be held over until end of season renovations) and be backfilled using and approved medium sand.

The Bands shall be at 250 mm centres and be a minimum of 150 mm deep. The sand over fill shall be brushed into the sward after installation

## **5. TOPSOIL PITCH – SAND AMELIORATED CONSTRUCTION**

### **5.1 General Natural Grass Pitch Construction**

#### 5.1.1 Herbicide

The surfaces of the pitches shall have as much vegetation removed as possible following which the surface shall be treated with a systemic herbicide. This treatment shall 14 days prior to works commencing on the surfaces.

#### 5.1.2 Cultivations

In conditions approved by the ER cultivate the surface of the pitches by a combination of harrows, rotovators, and plough turning in the topsoil to its full depth, 225 mm. The surface shall be trimmed and harrowed on completion. The graded formation level shall be decompacted after drainage has been installed by sub soil cultivating the entire area to a depth of 400 mm at 900 mm centres using an approved finned sub soil parallel to the lateral drains. The surface should then be roughly harrowed to produce a surface granular in texture which is graded to a tolerance of  $\pm 15$  mm over a 3 metre straight edge.

#### 5.1.3 Topsoil

Following cultivation, the topsoil shall be trimmed and regulated to the required levels and gradients.

The PC shall remove all stones and other detritus with a dimension greater than 20 mm and create sufficient topsoil to cover all the areas to be ameliorated to a depth of 250 mm.

#### 5.1.4 Trimming of Topsoil

The top soil shall be trimmed following both initial cultivation and installation of drainage.

The top soil shall be rolled in two directions with a flat agricultural roller weighing 500 Kg to consolidate the material and achieve the required depth. The contractor must allow for this consolidation when importing the topsoil.

Prior to being consolidated the top soil will be graded using tractor drawn implements to achieve the required tolerances of  $\pm 10$  mm over a 3 metre straight edge.

#### 5.1.5 Partial Amelioration

The contractor shall then supply and spread a consolidated depth of 50mm of medium fine sand. The sand shall be as specified or equal and approved. In conditions approved the sand shall be carefully cultivated into the top 50 mm of the topsoil using approved powered cultivators.

### 5.1.6 Sand/Gravel Slits

These slits shall be sand/gravel slits installed over the surface of the general pitch areas once the sward has been established. These slits shall be as specified in Item 4.3.4 of this Specification and shall be installed in suitable weather conditions after the sward has been approved.

### 5.1.7 Top Dressing

The PC shall allow for topdressing the sand slit pitches on 3 occasions allowing 8 kg/m<sup>2</sup> on each application. The sand shall be as used for amelioration and shall be applied in suitable conditions using an approved mechanical means. The surface of the pitches to be drag brushed in 2 directions following application.

## 5.2 Pitch Establishment and Maintenance

### 5.2.1 General

- a) The Contractor shall be solely responsible for day to day maintenance of the pitches from sowing until handover to the Client which will at agreed time following establishment. The pitches will be handed over on a programme to reflect the different start times – all notes following here are as guidance and should be followed for the programmed period.
- b) On the topsoil based pitches it is envisaged that the PC (Pitch Contractor) shall maintain the sward until the surface is established enough to have the sand/gravel slits installed and he should complete an additional 8-10 cuts following installation of these slits. In this case the PC should allow for 30 cuts and a minimum of 5 granular fertiliser applications

### 5.2.2 Operational Requirements

- a) The PC shall provide sufficient personnel to ensure that the service is provided at all times and in all respects to the specification, the needs of the pitch and in accordance with bringing the pitch into play.
- b) The PC shall ensure mowing and all other equipment including appropriately sized tractors/power units and attachments (spreaders, sprayers, spikers, vertidrain etc.) plus appropriate hand tools shall be available when required to undertake the works according to the specification and daily needs of the pitch.
- c) It is expected that during the initial establishment that a minimum of one operative shall be present on site each day (5 days a week) to tend to the needs of the establishing sward.
- d) The operative responsible for undertaking the majority of maintenance operations on the pitches should be experienced in the skills of groundsmanship. The PC shall submit the Curriculum Vitae of the proposed operative in charge to the ER for approval.

- e) The PC shall supply approved mowing equipment (e.g. cylinder mowers and ride-on triple mower) to the site throughout the maintenance period solely for use on the site. This equipment shall remain on site throughout the maintenance period, other than removal for servicing or repair. It shall be stored in the accommodation provided. Other equipment including appropriately sized tractors/power units and attachments shall be brought in as required.
- f) All consumable materials brought to site must be stored in accordance with all current legislation (COSHH etc.).

### 5.2.3 Initial Establishment

- a) When the grass has reached 40mm in height the areas shall be inspected and any stone or other deleterious material with dimensions greater than 12mm shall be removed. The areas shall then be lightly rolled, to encourage tillering, using a flat agricultural roller or cylinder mower of approved weight in conditions or other means approved by the ER.
- b) The first cut shall be when the grass has reached 50mm in length – the grass being tipped with an approved rotary mower. The height of cut shall be set to 38mm. The second cut, again by rotary mower, shall be carried out when the grass has reached 50mm and the height of cut again set to 38mm.
- c) It is envisaged the first cut will be some 20-24 days after seeding (subject to weather conditions and sowing date). The following cuts shall be advised and will be designed to optimise the establishment of the sward on the run up to hand over.
- d) Fertiliser applications shall commence immediately after the first cut, as directed by ER.
- e) Shortly after the fourth cut, when directed by the ER, mowing the sward with a cylinder mower shall commence.
- f) Granular fertilisers will be added and there shall be 5 No between seeding and hand over – (these will be advised from the list above).

### 5.2.4 Mowing

- 5) The cylinder mowers supplied to maintain the pitch shall be approved by the PC and are envisaged to comprise of the following:
  - i). A pedestrian 36 inch, 8-blade Dennis, Allitt or Ransomes Mastiff.
  - ii). Ride-on triple with 8-blade cylinders (e.g. Toro 2000-D)

- iii). 2 no, pedestrian wheeled rotary mowers with collection bags/boxes.
- 5) The pedestrian cylinder mower shall be used during the initial establishment to assist in tightening the ameliorated surface. The ride-on triple mower will be used at certain times for speed of operation when cutting frequency is high.
- 5) The mowing specification is a performance quality type as opposed to a frequency based specification where the mowing standards to be achieved at all times are stated. It is these standards that must be the minimum achieved by the PC to ensure that a pitch of the required standard is produced.
- 5) Grass height limits for various times in the year are given but it is essential the PC takes into account other factors influencing mowing operations (e.g. climatic conditions etc.). The PC must make his own, accurate assessment of the frequencies likely to be required to maintain the grass area within the specified limits at all times.
- e) The PC shall ensure that immediately prior to each mowing operation, any litter/debris shall be collected from the grass surface and immediately removed off site.
- 5) When cuttings are to be boxed off, which will be the case for most mowing operations, the PC shall ensure cuttings are deposited off site to an approved tip. Under no circumstances shall cuttings be left in piles on perimeter tracks or bags of cuttings left unattended.
- 5) Any grass cuttings falling onto adjacent hard surfaces shall be immediately collected and disposed of at the end of the mowing operation.
- 5) The timing of mowing operations shall be such that mowing proceeds the marking of the pitch to ensure markings are not adversely affected.
- 5) The PC shall not refuel or service mowers on the grass area under any circumstances.
- j) The mowing performance standard for the pitch shall be:
  - i). Initial establishment – as per section 6.3.
  - ii). As per table below:

<b>Period</b>	<b>Min. Height (mm)</b>	<b>Max. Height (mm)</b>
Lead up to Practical Completion	25	32
Establishment	30-32	32-36

- k) In addition, no more than one third of the leaf shall be removed in a single cut.

- l) The following mowing frequencies could be expected on the pitch but actual numbers will be influenced by weather conditions and other factors influencing growth rate. In view of the programmed development of pitches allow 34 No Cuts before hand over. The table below gives some indication of the possible/suggested mowing regime – however we may achieve handover before a full cycle.

<b>Month</b>	<b>No. of Cuts</b>
Jan	0
Feb	1
Mar	2
April	4
May	5
June	6
July	6
Aug	6
Sept	6
Oct	4
Nov	2
Dec	1

- m) It is emphasised that all grass cuttings shall be disposed off site and the PC will require to arrange for disposal by skip throughout the establishment period.

#### 5.2.5 Fertiliser

- a) The PC's operatives on site shall apply solid and/or liquid fertilisers to a programme prepared by the ER. It is envisaged that the programme will be based on solid fertilisers (see below for typical annual programme) with liquid fertilisers being occasionally applied between to boost nutrient status and sward vigour. The PC shall be responsible for all fertiliser applications until handover to the Client.
- b) The solid fertilisers shall be applied via a pedestrian operated spreader with the total application subdivided into two parts so that the fertiliser can be spread in two directions. It is critical on a new sand based pitch for the applications to be made uniformly to avoid striping and also minimise incidence of fungal disease.
- c) The PC must take all appropriate precautions to avoid spillage of excess fertiliser onto the grass surface.
- d) The fertiliser programme shall be based on the fertilisers indicated below and it is emphasised the objective will be to provide low rates of fertiliser at frequent intervals. Typically 250kg to each pitch at 42 day intervals during the peak growing season. The ER will discuss and agree the actual fertiliser programme with the PC during the establishment period.



- e) The following fertilisers available from Evertis, Rigby Taylor or approved equal, shall be used at rates and frequencies agreed with the ER. Refer to the BoQ.

<b>Fertiliser</b>	<b>Formulation</b>
Basal Fertiliser	0.20.20
Pre seed Fertiliser	10.15.10
General	12.0.12
General	6.0.27
General	9.7.7

It is likely that there will be only 5 No granular fertiliser applications made after seeding prior to hand over these to be advised from list above.