Phase 1 Sports Expansion Project, Christ's Hospital School, Horsham
893

Hard Landscaping Specification

REVISIONS:

REV	DATE	COMMENTS
A00	**22.07.2024**	**Planning Condition Discharge ref: DISC Batch 4**
A01	**16.10.2024**	**Planning condition amendments and construction issue.**

STAGE OF APPLICATION: On-going

APPLICATION SUBMISSION DATE:

DOCUMENTS TO BE READ IN CONJUCTION WITH THE SPECIFICATION:

Drawings –

- 893-C-(00)002_REV C00_Proposed Site Layout Plan
- 893-C-(00)101_REV C00_Boundary Treatment Plan
- 893-C-(00)102_REV C00_Proposed Fence Type Details
- 893-C-(00)103_REV C00_Proposed Gate Schedule and Elevations
- 893-C-(00)201_REV C00_Proposed Adventure Trails Plan
- 893-C-(00)202_REV C00_Proposed Adventure Trails Path Edge Details
- 893-C-(00)203_REV C00_Proposed Adventure Trails Boundaries and landscape items
- 893-C-(00)204_REV C00_Proposed Adventure Trails Root Barrier Areas
- 893-C-(01)001_REV C00_Detail Area 1 - Proposed plan and sections
- 893-C-(02)001_REV C00_Detail Area 2 - Proposed plan and sections
- 893-C-(03)001_REV C00_Detail Area 3 - Proposed Plan
- 893-C-(03)002_REV C00_Detail Area 3 - Proposed Sections
- 893-C-(04)001_REV C00_Detail Area 4 - Proposed Plans
- 893-C-(04)002_REV C00_Detail Area 4 - Proposed Plans and Sections
- 893-C-(05)001_REV C00_Detail Area 5 - New Access Road Area
- 893-C-(06)001_REV C00_Detail Area 6 - Infirmary Drive Closure
- 893-C-(07)001_REV C00_Detail Area 7 - Proposed Site Plan
- 893-C-(07)002_REV C00_Detail Area 7 - Proposed Sections
- 893-C-(07)003_REV C00_Detail Area 7 - Proposed Embankment Sections
- 893-C-(08)001_REV C00_Detail Area 8 - Adventure trails and store
- 893-C-(09)001_REV C00_Detail Area 9 - Adenture Trails
- 893-C-(09)002_REV C00_Detail Area 9 - Proposed Sections
- 893-C-(10)001_REV C00_Detail Area 10 - Proposed Plan
- 893-C-(10)002_REV C00_Detail Area 10 - Proposed Sections
- 893-C-(90)019_REV C01_Proposed Spectator Seating
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Additional information

- Pod Point Twin Charger Data Sheet
- Protek spectator fencing and gate specification

CONDITIONS OF APPROVAL:	**Responsibility:**	**Date carried out:**
N/A		

Please note any works carried out prior to the planning approval will be at the contractor/ clients risk.

Please notify Planning and LK2 of any significant alterations prior to the work being carried out on site.

SPECIFICATION

1.00 Hard Landscaped Surfaces (General)

Tarmac Car Park Surfaces and Roads

Surface - 40mm thk AC10 dense surface course 100/150 to BS EN 13108-1, on Binder - 60mm thk. AC20 binder course 40/60 to BS EN 13108-1, on Base - 100mm thk. AC32 dense base course 40/60 to BS EN 13108-1, on Sub-Base - 150mm Type 1 granular material to SHW clause 803.

Coloured Tarmac (athletics track perimeter and adventure trails running bowl area)

6mm medium textured porous macadam (Green spray coat finish) 25mm thick, on 40mm open textured macadam base course 20mm aggregate, on 50mm MOT Type 1 blinding layer, on 225mm MOT Type 3 (reduced fines) sub base on geotextile membrane

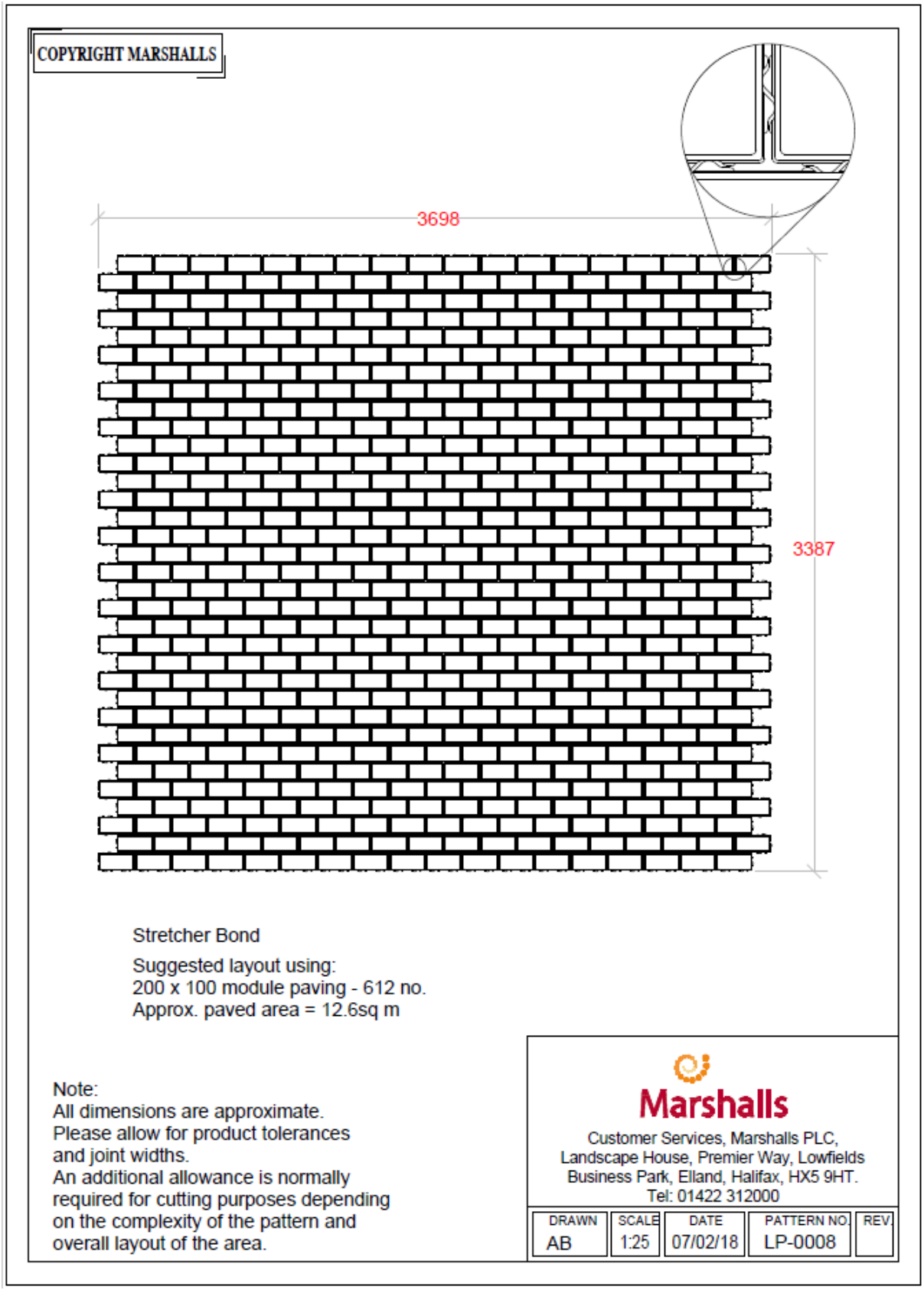
Impermeable Block Paving

Marshalls 'Standard Concrete Block Paving' (colour: natural) with standard concrete edging kerbs around full perimeter to be drained via private channel drains to engineers details

Laid in Stretcher Bond Pattern using 200 x 100mm module paving.



Sample - Marshalls 'Standard Concrete Block Paving' (colour: natural)



Proposed Laying pattern for block paving

Self Binding Gravel (parking spaces, athletics store road).

8mm Limestone Self Binding Path Gravel 0/40 Ga 85 to BS EN 13242



Sample - 8mm Limestone Self Binding Path Gravel

Athletics Track Surface

World athletics approved/certified polyurethane based green texture sprayed, porous track surfacing. Herculan National or Conipur SW or similar approved (Colour Green), on 25mm thick AC10 open graded porous asphalt 100/150 binder grade to BS EN 13108-7, on 40mm thick AC20 open graded porous asphalt 100/150 binder grade to BS EN 13108-7, on 50mm thick 6mm nominal size washed angular aggregate (blinding layer), on 225mm thick open graded crushed rock (OGCR). Physical properties as per Table 1. Grading as per Table 2, on 1mm thick waterproofing membrane, high performance UGD by Visqueen or equal approved, Membrane to be welded in accordance with manufacturer's specification to achieve watertight joints. Note: Taped or any other form of non-welded joint will not be permitted. The membrane should be surrounded on both outer and inner faces with a protective fleece Note: Formation to be prepared in accordance with the DfT Specification for highway Works and shall be free of protrusions and any sharp objects, on Lime stabilised formation to achieve a minimum CBR value of 15%. Thickness to be confirmed by specialist.



Gravel Pathways over and around tree root protection areas

Golpla Gravel retention system (640x330x38mm) with 6-10mm angular gravel infill, on 25mm sharp sand, on Treetex Geotextile membrane for separation, on Cellweb 75mm cellular confinement system filled with clean angular stone type 4/20 or 20/40 with 25mm stone overfill, on Treetex Geotextile membrane for separation.

Paths to be enclosed with 150 x 50mm precast concrete pin kerb in concrete haunching

2.00 Hard Landscaped Surfaces (Adventure Trails)

Gravel Paths

38mm thick Golpla gravel retention matting filled with 6-10mm clean angular crushed rock (use flint gravel), on 25mm sharp sand on MOT type 3 sub base all to specialist details.

Path edges lined with 150mm Kinley Bison Steel Pin Kerb on compacted MOT Type 1 haunch to engineer's details.

Artificial grass shock pad surfaces

AHS Artificial grass surface with 2no. layers of 45mm thick polyethylene Shock Pads to meet critical fall height of 3m in accordance with BS EN 1177:2008.

Path edges lined with 150mm Kinley Bison Steel Pin Kerb on compacted MOT Type 1 haunch to engineer's details.

Coloured tarmac – As above Specification

Path edges lined with 150mm Kinley Bison Steel Pin Kerb on compacted MOT Type 1 haunch to engineer's details.

Athletics Track Running Surface – As above Specification

Path edges lined with 150 x 50mm precast concrete pin kerb in concrete haunching

Sand pits

380mm depth of sand pit sand - Tarmac Topsport or similar approved, on 600x600mm or 450x450mm p.c.c. paving slabs with 50mm wide open joint to base of landing pit, on 100mm MOT Type 3 reduced fines sub base.

60mm wide Aco Sport (or similar approved) white rubber topped edging kerbs to landing pit c/w. internal corners bedded in concrete foundations

3.00 Gabion Retaining Walls – Supplier Specification

1) DIMENSIONS IN MMs UNLESS OTHERWISE SPECIFIED.
This drawing is based on the information shown on the supplied information and drawings.

2) GABION BASKET
MACCAFERRI 4mm WELDED WIRE MESH

3) INSTALLATION:
Please refer to standard Maccaferri installation guidelines.

4) FILL FOR GABION BASKETS:
Class 6G Gabion Stone as described in the 'Series 600', Specification for Highway Works. The stone fill should be hand placed to a high standard with hand pitched facing stones to minimise voids. Given the requirement for a flush face a minimum of 6no. braces should be used per 1m2 of face.

PLANNING CONDITION NOTE -

5) BACKFILL TO GABION WALL:
The backfill for the wall is to be compacted Class 6N or 6F2 fill to front element. This material is assumed to have the following characteristics: Phi' = 35 degrees, Gamma = 18 kN/m3 and c' = 0kPa, compacted in accordance with SFHW Series 600. Backfill areas are to be locally sourced, recycled hardcore. The Principal Contractor is responsible for the selection of this material to ensure compliance with the geotechnical characteristics as shown on the relevant drawings and in the design documents/calculations.

6) FOUNDATION FOR GABION:
To achieve a suitable foundation for the Gabion baskets, excavation must take place down to the levels indicated on the drawing and allow for the placement and compaction of a minimum 150mm thickness of selected granular material (Class 6F2 with assumed properties of Phi' = 35 degrees, Gamma = 18 kN/m3 and c' = 0 kPa).

Base to be formed on original firm-stiff CLAY (WEALD CLAY FORMATION) with a minimum safe bearing resistance in excess of 80kPa. Any soft, loose or unsuitable material (such as made ground, alluvium or organics) present at or below formation level must be fully excavated out down to firm-stiff gravelly CLAY with a minimum safe bearing resistance in excess of 80kPa and replaced with compacted Class 6F2 granular fill.

We recommend that several trial pits are excavated along the proposed line of the gabion wall to check for the presence of a soft/ loose material that may not have been encountered during the site investigation.

We suggest the Principal Contractor appoints a local geotechnical specialist to inspect and test the ground at formation to ensure it is suitable. Plate bearing tests or hand shear vane tests are carried out and proposed formation level. Plate Bearing tests should be carried out to comply with BS1377-9 Incremental load test to CI4.1.6.4.2. A minimum 600mm diameter plate should be loaded to at least 200kPa in 40kPa increments. If original cohesive material is found at foundation level, hand shear vane tests could be carried out to confirm a minimum undrained shear strength (cu) of 50kPa. Construction should not commence until the Principal Contractor has confirmation in writing that the ground at formation level is suitable. If any material with an undrained shear strength of <50kPa is left in place at or below formation level, excessive settlement and/ or global instability may occur.

7) SITE / IN-SITU SOILS :
Foundation: assumed original firm-stiff CLAY (WEALD CLAY FORMATION). This material is assumed to have the following minimum properties: phi' = 26°, γ = 19 kN/m3 and c' = 0 kPa.

Retained/foundation: assumed to be variable MADE GROUND. These materials are assumed to have the following minimum properties: phi' = 25°, γ = 19 kN/m3 and c' = 0 kPa.

8) TYPICAL BATTER/ FRONT FACE STEP:
The seating the wall is to be constructed at 6° batter, with a 150mm step at the face of each course.

9) TEMPORARY STABILITY
This retaining wall solution is for the permanent works only, and is issued on the basis that a safe system of works is provided for construction. The Principal Contractor must produce a method statement and risk assessment for the works to be approved by the Principal Designer.
Temporary stability during excavation/construction is outside the scope of this design and must be confirmed by others. The temporary cut slope must be drained and any flows or seepage must be directed to a suitable outfall prior to construction of the wall.

10) HEAVY CONSTRUCTION TRAFFIC OPERATING CLOSE TO THE WALL
Construction traffic/machinery should not traffic at the crest area of the wall, as this can cause movement of the Gabions. If construction plant is to traffic at the rear of the walls, a suitable haul road design must be undertaken. All plant should also be set back an adequate distance from the rear of the Gabion wall.

11) DRAINAGE
Minimum 100mm O PVC perforated drainage pipe is to be installed at the rear of the wall connected to a positive outlet. Pipe to be fully roddable and regularly maintained.

12) PEDESTRIAN PROTECTION ON TOP OF THE WALL
It has been assumed that a maximum 1.1m high metal handrail will be installed as pedestrian protection on top of the wall (design and details to be confirmed by others). The fence posts are to be fully concreted into sleeves pre-installed into the backfill, the sleeve sizes are to be minimum 0.8m long and 0.3m O. These must be confirmed to Geoman for review prior to proceeding with construction as high fences can impart high lateral wind loading which would need to be accounted for in the wall design.

13) BUILDINGS AND STRUCTURES ON THE RETAINED SIDE OF THE WALL

Proposed building foundations (designed by others) at the rear of the wall must be placed to such a level so as to ensure that no loads are transferred to the Gabion wall**. The structure's foundations must not rely on the wall for support, and are outside the scope of this design.**

The Gabion system must not be responsible for providing any support to the building if it is to be constructed at a later date.

14) SETTING OUT
Setting out to be provided by scheme designer. Wall line shown on plan is as per drawing provided (LK2 drawing number 893(10)001C00). Fenceline is offset from toe of wall as shown on sections - any required correction to toe line to accomodate to be confirmed prior to construction.

15) INSTALLATION
Gabions to be constructed in accordance with BS14475:2006(E). Some settlement (compression) gabion units can occur, but a high standard of installation will ensure settlement does not exceed the recommended tolerance of 5%.

16) STATUTORY APPROVAL
We assume the gabion wall is not subject to any approvals. This should be confirmed by the Principal Contractor/Client´s Consulting Engineer prior to construction and progressing them is outside our scope. Please advise us prior to construction if Approvals are required as the design may need to be altered. Any Approval in Principles, etc. must be submitted and approved by the appropriate authority prior to construction commencing.

Construction of this wall shall not commence unless and until the Client/Client's Consulting Engineer has considered the Geoman Design Submission Document (24-5408-F1) to ensure there are no errors, omissions or conflict with the scheme design.

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5.00 Boundary Treatments – Fences and Gates

Fence Type 1 & 2 – Metal estate fencing

New 1.2m high, 4 bar metal estate Fencing to match existing.

75mm x 75mm corner posts with ball finials on top where fence line turns a corner or adjoins a pedestrian gate.

4 bar Metal Estate fencing, painted black finish to match existing.

Post foundations to structural engineer's details

Fence Type 3 – Protek Spectator Railing to Athletics Track

Panels

- Mesh Size 200 x 500mm

- 1 x 6mm vertical and 2 x 8mm horizontal wire
- Manufactured to BS 4102 and galvanized to BS EN 10244-2:2002 class D
- Weld strength is 75% of the minimum tensile strength of the wire (tensile range 540-690 N/m2

Posts

- Dig-in posts. Post size 1.8m high (0.6 into the ground)
- Post material manufactured to BS EN 10210-2:1997 and galvanized to BS EN 10346:2009
- Supplied with plastic cap

Railings

- Railing diameter 48mm

Fixings

- Clamp bar: 40 x 5mm (full length of mesh panel)
- M8 X 40 Fourtress tamper resistant hardened steel security screw
- Rubber back stops are available for all fixings for anti vibration

Finishings

- Panels, posts and railings are galvanized before being powder coated to BS EN 13438:2005 (min 100 micron)
- Finish colour: Black RAL 9005.

Options

- Panels can be replaced with an 868 rebound pane;l for extra ball return properties
- Optional kickboards for hockey and cricket

Gates

Designed to complement the look and continuous run of the Protek Spectator Rail, as well as ensuring the safety of all sports fans. Single and double leaf gates make an attractive and vital addition to your sports area, allowing for pedestrian and vehicular access. Mesh is welded onto the frame.

Mesh panel wire manufactured to BS 4102 and galvanised to BS EN 10244-2:2001 class D, weld strength is 75% of the minimum tensile strength of the wire (tensile range 540-690 N/m2)

- Post material manufactured to BS EN 10210-2:1997 and galvanised to BS EN 10346:2009
- Panels & Posts are powder coated to BS EN 13438:2005 (min 100micron)

- All welding carried out in accordance with BS EN 1011-1 and BS EN 1011-2 by suitable personnel qualified according to BS EN 287-1

Fence Type 4 - Metal Blade Railings for edge protection

1.1m high metal blade railings to provide edge protection at the top of retaining structures.

Metal railings providing edge protection at the top of retaining structure to ensure min barrier loading strength of 3.0kN/m in accordance with BS 6180: 1982 'Code of Practice for protective barriers in and about buildings'.

50x10mm RSF Horizontal rails. 40x8mm RSF vertical rails.

50x10mm RSF support posts fixed into foundation to structural engineer's details.

All metal railing manufacture to comply with BS1722 part 9.

All horizontal and vertical bars to be galvanized to BS EN ISO 1461 (1999) and powder coated Black RAL 9005.

Railings to be spaced to ensure a 100mm sphere cannot pass through any openings.

Fence Type 5 – Timber Post and Rail Fence

1.2m high timber post and rail fence in post foundations to engineers details.

Single and Double Cross Timber Gates

200x200x1200mm high timber post with rounded head for hanging vehicle and pedestrian gates

All to be 5 Bar Hardwood Timber Double Cross, Double Field gate.

Material - Oak Hardwood Osmo oil oak UV Protection oil

Ironmongery - Access Control Magloc connected to intercom buzzer/keypad Galvanised Field Gate hinges.

Or

Roger Technology SMARTY4/HS 36v BRUSHLESS Electric Gate Kit or similar all to specialist details - Double with Galvanised Field Gate Hinges

Or

Loop over catch with coach bolt staple receiver & Knobs Galvanised Field Gate Hinges.

Metal Farm Gates

4200mm wide x 1145mm high 7-rail galvanised steel farm gate. Provide spring bolt into slotted post with galvanised eye bolts on hinges. Provide additional galvanised post and hold open latch for gate in open position.

Metal frame automatic rising arm gate

Newgate Metal frame automatic rising arm gate. Frame in steel with stainless steel top cover and aluminium arm. Fitted with built in automatic opener as manufacturers details, Provide pole mounted CCTV linked to school System. Include wireless operation and pole mounted intercom/fob/keypad/remote receiver system. Sensor Exit system or similar all to specialist details - see drawing (00)104

Metal pedestrian gates

1.2m High x 1.2m Wide EnviroRail® Vertical Bar Single Leaf Gate Kit – colour black Ral 9005. Mag lock to be fitted and linked to access control point next to gate. Provide Hydraulic Lockey GC200 Pedestrian Gate Closer or similar. Provide 1.2m high gate posts both sides of gate for hinge connection and maglock. Gate posts to link into estate fence.

6.00 Lighting Column Design.

CAR PARK AND PATHWAYS FLOODLIGHT COLUMNS

5m (pathways) or 6m (access roads) root mounted static street light columns – see drawings.

7.00 M&E Furniture

CAR CHARGING POINTS

28No. Pod Point 7KW twin chargers to new car park complete with guard rail as indicated on the drawings. Refer to data sheet for further details

SWITCH ROOM AND FEEDER PILLARS

All in GRP enclosures as indicated on the site plans

8.00 Tree Pits (taken from Ramsay and Co Specification

TREE PLANTING

The optimum period for tree specimen planting is between October & December when the soil is still warm / moist and most likely to encourage new root acclimatization / development. If required, trees can be planted from January to March depending on weather. All trees will be supplied with irrigation system [where specified], stakes, ties, strimmer guards [where specified], mulch and advance provision for watering. The first year following planting is critical for the establishment of new trees and therefore special care is required. A maintenance programme incorporating weeding, mulching, checking tree protection/ tree support and watering is imperative. It is anticipated the appointed landscape contractor will be instructed with a 1 year [minimum - preferably 2 -5 years] full maintenance and defect

replacement contract. A formal assessment of young tree health and development is to be carried out annually.

Planting Stock

All tree specimens are to fully comply with *BS 8545 [2014): Trees: from nursery to independence in the landscape- Recommendations.* During transport crowns and roots shall be wrapped to prevent desiccation. All trees shall be checked for any damage immediately following delivery, minor damage incurred during transport can be rectified by pruning. Trees that are severely damaged or that do not meet the required *BS 8545* specification shall be rejected and returned. The length of time trees are held in temporary storage is to be the absolute minimum, trees are to be stored in an upright position and appropriately irrigated until planted out.

Site Preparation

Tree planting areas are to have 300mm depth (minimum) of suitable (loosened) subsoil overlain with 300mm (min) multi purpose topsoil' as defined within *BS3882: 2015 'Specification for Topsoil'.* The sub-soil and topsoil shall have good physical structure, be friable, retentive of moisture and well drained [It is recommended existing topsoil [and subsoil] to be reused is fully tested / analysed for suitability by an appropriately qualified / accredited soil testing laboratory with any recommendations implemented in full]. On sites where this is lacking, or the ground is heavily compacted professional advice should be sought regarding cultivation, soil improvers, drainage etc. A 750mm [minimum] diameter weed free area shall be provided around the tree planting area. [To include the removal of all turf].

Tree Pit

The planting pit design is to be square and to be nominally 800 x 800 x 500mm [or 25% larger than existing rootball] and to be backfilled with excavated topsoil. Final depth is to be no deeper than the existing rootball [or container depth] and shall have a diameter of > 100mm than the external diameter of the existing root system. During excavation of the tree pit, the soil shall be placed to one side separating topsoil and subsoil as far as is practical. Tree pit sides which have compacted, glazed or smeared sides are to be scarified. The base of the tree pit is to be broken up with a shallow mound constructed to the base of the rootball [to aid drainage].

Planting & backfilling

It is vital trees are planted at the original root collar soil depth as indicated by the soil mark on the stem with a suitable allowance made for anticipated soil settlement following planting. The tree root system is to be wetted prior to planting. At no time shall trees at the planting site be left with their root systems exposed or made vulnerable to any drying out. Any broken or damaged roots to be cut back to sound growth point with a sharp knife or secateurs - heavily coiled roots [girdling] on container grown plants can be eased gently from the root ball or cleanly cut. Bare roots shall be gently spread out evenly in the planting pit. Backfilled soil shall [as far as is practicable] replicate the horizons within the original sub/top soil profile. Backfill will be added gradually, in layers of 150mm to 230mm depth [at all time ensuring the tree is held upright] and firmed [by careful] treading to eliminate any air pockets under and around the root system. Care must be taken not to excessively compact the soil layers. The final layer of backfilling shall not be consolidated but shall be of a sufficient depth to allow for settlement and mulching. Immediately following planting, the tree pit shall be saturated to field capacity (unless water levels are already at field capacity).

Stakes and ties

All trees are to be secured [staked] until the roots sufficiently develop. Tree staking is to be single-staked for standard select tree specimens. The stake is to be positioned close to the tree on the windward side and driven 300mm (minimum) into the bottom of the pit at a slight angle. The stake is to extend above ground level to a distance between 0.75 and 1.0 metre. The top of the stake is to be no more than 40 mm away from the stem of the planted tree. The tree is to be firmly secured with two adjustable rubber lock ties plus spacer collars with 25 mm long galvanised clout nails securing the ties to the stake ensuring excessive movement is prevented. The stakes should be free from bark, snags, pests and diseases and should be of sufficient diameter [nominally 60mm] to withstand the weight of the tree crown when subjected to the normal prevailing wind associated with the planting site. All stakes, tree ties and spacers should be checked four times a year for the first 2 years. Tree ties should be fitted so that the tree is stable without any chafing or rubbing. Replace and refit rubber tree ties / stakes if necessary. All tree stakes / ties are to be collected and removed 3-5 years (approx) following successful establishment.

Mulching

Organic mulch comprising well-composted organic material, wood chips, or bark is to be free of pests, disease, fungus, weeds and foreign material. The organic mulch is to be matured for a minimum of 16 weeks. Organic mulch is to consist of graded fines to a maximum particle size of 40 mm with approximately 70 % particle size 5 mm to 40mm, 30 % particle size less than 5 mm. Clear all weeds, water soil thoroughly and mulch all planting pits to an even depth of 75mm after settlement. Mulches shall be 75mm in depth and applied to 750mm Ø leaving a collar of 10-12 cm around stem clear of mulch to prevent trunk from rotting. (Mulch placed against the stem is likely to retain moisture, which can result in disease / damage.) Mulches shall only be applied when the soil is moist ensuring mulch does not touch the base of the tree stem. Pit planted tree positions are to be mulched around the base of the trees to a 750mm [min] diameter circle and levels maintained for 2 years from planting date by checking and topping up as required [Spring and Autumn].

Watering

In order to establish newly planted Standard-Select Trees, they should be watered fortnightly in May, June, July, August and September for the first two years with the tree irrigator bag filled to capacity. Subsequent watering in years 2-5 to be undertaken during prolonged dry spells as required.

Protection

Where rabbits are known to be present, tree specimens are to be protected with mesh guarding: Height: 600mm (min): Support: one bamboo cane - to have rubber cap stake topper / protector to prevent accidental injury. Native tree mesh guard shelters are to be carefully placed around the tree stem and the entire base of the tree to prevent mammalian browsing. All tree mesh guards are to be collected and removed 3-5 years following successful establishment.

Formative pruning

Formative pruning shall be carried out in accordance with *BS 3998 (2010): Tree work-Recommendations;* as required throughout the early years of a tree's life in the landscape. Some of the nursery-prepared branching structure may be temporary, and formative pruning shall continue until a permanent structurally sound scaffold system of branches typical of the species and appropriate to the site circumstances has developed.