

8 May 2017

Mr M. Higgins
Bath and North East Somerset Council
Environmental Services
Lewis House (1st Floor)
Manvers Street
BATH. BA1 1JG.

Dear Mr Higgins

L.T.A. TECHNICAL SERVICES – ALICE PARK (L.T.A.T.S. REF. NR 2017/038)

Further to our recent meeting in respect of the above I now attach the initial condition survey and inspection report for your information and comment.

If you have any queries with the above, or require further detailed advice, please contact me.

When I am out of the office you can contact me on my **mobile phone - 07770 366259**.

Yours sincerely
for *SPORTS FACILITY PLANNING & DESIGN LIMITED*

LEE WEST M.R.I.C.S. M.C.I.O.B.

c.c. Mr Colin Corline – L.T.A. P.M.

ref:sfpd/cas17/club17/038alicepark/ir



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

1.00 INTRODUCTION

1.01 Sports Facility Planning & Design Limited have been commissioned to undertake a project vetting consultancy on behalf of the Lawn Tennis Association for proposed tennis court renovation and construction works to be undertaken at Alice Park.

The production of an initial site investigation and condition survey report forms part of the overall consultancy. Matters concerning health and safety are also addressed within the report where applicable.

1.02 The scope of project vetting commission is detailed as follows :-

- i) Visit to site and attend initial meeting to establish scope of court works.
- ii) Prepare site inspection and condition survey report (including indicative court layout drawings where required).
- iii) Prepare scope of works documentation to enable the Client to obtain comparable tender submissions for the court works.
- iv) Prepare outline cost plan for the court works for submission to L.T.A. Club Services department (and/or other funding bodies if required).
- v) Comment on tenders received and the subsequent formal resolution of any queries identified.

1.03 Existing porous macadam court Nrs 1 – 6 were subject to detailed inspection and trial section investigation (i.e. to establish sub-base construction).

2.00 EXISTING COURT NRS 1 – 2 : OVERALL AREA 36.35M LONG (MAXIMUM) & 36.34M LONG (MINIMUM) X 33.00M WIDE (MAXIMUM) & 32.95M WIDE (MINIMUM)

EXISTING COURT NRS 3 – 4 : OVERALL AREA 36.45M LONG (MAXIMUM) & 36.38M LONG (MINIMUM) X 36.60M WIDE (MAXIMUM) & 36.58M WIDE (MINIMUM)

EXISTING COURT NRS 5 – 6 : OVERALL AREA 33.00M LONG (MAXIMUM) & 32.95M LONG (MINIMUM) X 31.10M WIDE (MAXIMUM) & 31.00M WIDE (MINIMUM)

NOTE : ALL MEASUREMENTS TAKEN FENCE TO FENCE

EXISTING COURT TYPE : POROUS MACADAM PLAYING SURFACE

PROPOSED COURT TYPE : POROUS MACADAM PLAYING SURFACE



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

2.01 INSPECTION COMMENTS

- a) The existing porous macadam court Nrs 1 – 6 were considered to have been constructed in excess of 20 years ago.

The existing porous macadam surface course to court Nrs 1 – 6 is generally subject to a moderate to high level of fretting, pitting and aggregate loss.

The upper playing surfaces to court Nr 1 – 6 is noted as being subject to a build-up of dirt, debris and detritus. Moss and algae growth present to the upper surface.

Vegetation and weed growth present to the outer perimeter of the court block.

The existing porous macadam surface course to court Nrs 1 – 6 is considered to be relatively stable with no major settlement, cracking, heave or displacement.

No frost heave bumps present.

Colour coating subject to wear.

Perimeter edging comprises brick paviour which is subject to degradation in some instances.

The macadam surface course to court Nrs 1 – 6 inclusive is also subject to signs of significant cracking and aggregate loss along the outer edges of the 50mm wide court markings (notably the side and base lines). This type of cracking and aggregate loss is commonly associated with older courts where the successive application of line marking paint causes contraction at the upper surface leading to aggregate break down. There is no long term remedial action to this type of cracking and aggregate loss other than to resurface the courts (in the short term larger holes may be filled but this will not be successful in halting further aggregate loss). As voids are created to the outer edges of the line markings they will eventually affect ball bounce characteristics requiring the court to be resurfaced.

The current level of cracking and aggregate loss to the court markings will affect play on the courts but is not considered to be a trip hazard at present.

- b) Perimeter fencing to court Nr 1 – 6 generally comprises angle section fence posts and r.h.s. section posts to the Northern run back elevation.

ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

The existing angular fence posts are subject to rusting, are of small section (i.e. 40mm x 40mm) and are considered to be in appropriate for a public park site. Evidence of previous post repairs (i.e. existing posts bolted to newer stub post) present at lower level.

The chainlink mesh is generally subject to ballooning and distortion with loose or broken straining wires.

- c) The L.T.A. overall minimum dimensions for a Club two court block are 34.75m long x 31.70m wide and recommended (or full-size) dimensions 36.58m long x 33.53m wide.

The L.T.A. Club court minimum dimensions are as follows :-

- i) outer side run dimension is 3.05m ;
- ii) intermediate side run dimension 3.66m ;
- iii) run back 5.49m.

The L.T.A. overall minimum dimensions for Park recreational play two court block are 33.75m long x 30.20m wide.

The L.T.A. Park Court Recreational Play dimensions are as follows :-

- i) outer side run dimension is 2.55m ;
- ii) intermediate side run dimension 3.16m ;
- iii) run back 4.99m.

The one block of two doubles court comprising court Nrs 1 - 2 were measured and found to be in excess of the L.T.A. Club court minimum length and width dimensions.

The one block of two doubles court comprising court Nrs 3 - 4 were measured and found to be in excess of the L.T.A. Club court minimum length and width dimensions.

The one block of two doubles court comprising court Nrs 5 - 6 were measured and found to be in below the L.T.A. Park court recreational play minimum length and in excess of the LTA Club play minimum width dimensions. S.F.P.D. considered that court Nrs 5 – 6 had been originally constructed East to West in their length and had then been subsequently rotated 90 degrees to the North to South orientation.

ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

The existing dimensions would be maintained in the proposed renovation works or may be reduced to the L.T.A. Recreational Play Park Court dimensions as recommended during the site inspection.

- d) S.F.P.D. enclose layout drawing Nrs 2017 – 038 A.P. – 001 which indicates L.T.A. minimum and recommended dimensions for outdoor two court blocks for Club competitive play.

S.F.P.D. enclose layout drawing Nrs 2017 – 038 A.P. – 002 which indicates L.T.A. minimum dimensions for outdoor two court blocks for Park Court Recreational play.

Drawing Nr 2017 – 038 A.P. – 004 - 006 indicates the existing indicative court block layout's for court Nrs 1 - 6 inclusive.

2.02 TRIAL SECTION INVESTIGATION

- a) A number of trial sections were taken by S.F.P.D. through the court blocks to establish the nature of the existing sub-base construction to court Nrs 1 - 6.

Court Nr 1 : The trial section taken within the central intermediate side run area revealed the following court construction :-

- i) 25mm depth of 6mm diameter porous macadam ;
- ii) 15mm depth of grey-green surfacing i.e. fine graded bitumen bound aggregate ;
- iii) 30mm depth of 14/20mm diameter aggregate chippings ;
- iv) At least 100mm depth of ash and clinker (which had been subject to substantial degradation i.e. dense mass of fine particles).

Court Nr 3 : The trial section taken within the central intermediate side run area revealed the following court construction :-

- i) 25mm depth of 6mm diameter porous macadam ;
- ii) 15mm depth of grey-green surfacing i.e. fine graded bitumen bound aggregate ;
- iii) 40mm depth of 14/20mm diameter aggregate chippings ;



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

- iv) At least 100mm depth of ash and clinker (which had been subject to substantial degradation i.e. dense mass of fine particles).

Court Nr 5 : The trial section taken within the central outer side run area revealed the following court construction :-

- i) 30mm depth of 6mm diameter porous macadam ;
- ii) 30mm depth of 6mm diameter porous macadam ;
- iii) 30mm depth of 20mm diameter aggregate chippings ;
- iv) At least 100mm depth of ash and clinker (which had been subject to substantial degradation i.e. dense mass of fine particles).

The trial sections taken revealed that the court Nrs 1 – 6 have not been constructed with a suitable type and depth of non-frost susceptible aggregate sub-base (i.e. carboniferous limestone or granite chipping's) when compared to modern standards of court construction.

The L.T.A. minimum compacted depth of aggregate sub-base is 300mm where there is a plastic clay sub-grade conditions as known to be present in the general area.

The trial section indicates that the court Nrs 1 – 6. may have been originally constructed as shale or grey green courts then converted to porous macadam by the installation of a relatively thin aggregate 'blinding' layer and/or a single layer of porous macadam and resurfaced a number of times. Alternatively the porous macadam courts may have been originally constructed with an ash and clinker sub-base. No substantive aggregate sub-base layer has been installed above the ash and clinker material to court Nrs 1 – 6.

This reflects a low cost budget decisions by the Client (or site owner/developer) in the conversion of the courts to porous macadam.

Ash and clinker has been utilised within the sub-base material arising from previous court construction. The ash and clinker was noted as being particularly subject to substantial degradation and generally comprised a particulate mass. As previously advised on site ash and clinker is a frost susceptible material and a very poor quality foundation material for porous macadam tennis courts.



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

The presence of this type of court sub-base material will eventually give rise to the effects of frost action to the porous macadam surface i.e. general displacement, numerous humps and depressions are usually created which eventually leads to cracks being formed. Ash and clinker also degrades to a particulate mass over the passage of time which leads to additional settlement and drainage problems.

Where ash and clinker is to be retained on site, usually arising from previous shale or grey-green court construction, a suitable depth of non-frost susceptible aggregate sub-base should be overlaid together with the installation of a separating geotextile membrane. I consider a 'suitable' compacted depth to be in the order of at least 225mm where a firm sub-grade is present.

- d) For your general information modern tennis courts (porous macadam and sand-filled synthetic turf) constructed over a plastic clay sub-grade should have a geotextile membrane, at least 300mm minimum compacted depth of non-frost susceptible aggregate sub-base and a 65mm total combined compacted depth of macadam binder and surface course's (i.e. a total 365mm minimum compacted depth of non-frost susceptible court construction). The installation of a geotextile membrane prevents the upward movement of the sub-grade material into the clean aggregate chipping sub-base.

2.03 TECHNICAL RECOMMENDATION & BUDGET COSTINGS

- a) The existing court sub-base construction to court Nrs 1 – 6 inclusive is considered to be defective on a technical basis in respect of the existing type and depth of aggregate sub-base material when to current standards of court construction.
- b) If the Client wish to continue with the porous macadam renovation project then on a technical basis the future stability of the court Nrs 1 – 6 should be ensured so that the new macadam surface course playing surface will not be affected by the further possible action of frost heave or changes in sub-grade moisture content.

I do not consider that the existing court construction to court Nrs 1 – 6, on a purely technical basis, provides a satisfactory foundation for the installation of a new single layer of macadam surface course only.

My minimum scope of works would be for the existing porous macadam court construction to be strengthened with at least a binder course and surface course of macadam being installed (and supplemented with additional non-frost susceptible aggregate sub-base material where funds are available which would be my technical recommendation as set out below). This may provide adequate stability for a period in the order 5 to 6 years for the installation two layers of macadam.



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

This may provide adequate stability for a period in the order 12 to 15 years for the installation of additional aggregate sub-base material together with two layers of macadam or possibly longer depending on the depth of aggregate sub-base adopted to be installed by the Council i.e. the greater the depth of aggregate sub-base the further the risk of frost heave will be reduced.

I note that most Client's have relatively limited funds available and the Client may wish to consider the production of a scope of works tender document (i.e. Employers Requirements) on the basis of obtaining costs for a range of budget options.

The first tender option is for the court to be overlaid with a surface course of macadam (Option 1) with alternative costs provided for the installation of a binder course of macadam (Option 2) and an additional suitable uniform depth of aggregate sub-base material (Option 3) with Option 4 comprising full reconstruction. Please note that the installation of a single layer of macadam (i.e. Option 1 : 25mm total additional depth of construction) can only be considered as a short term option as the new layer of porous macadam would still be at risk of frost heave and changes in sub-grade moisture content in the future.

However the application of the new layer of porous macadam would provide an acceptable playing surface at a relatively low level of financial expenditure. Due to the compaction of the existing surface and the filling in of low areas, before the new porous macadam layer is laid, heave and displacement may not be visible to the new surface for 6 to 12 months but this is not guaranteed.

The three options with the project tender documentation for court Nrs 1 – 6 are further detailed as follows :-

Option 1 (A budget scope of works) to produce tender documentation based on resurfacing the existing porous macadam courts with single a layer of porous macadam (i.e. power wash, pierce to form drainage holes at regular centres, compact the existing surface, application of bitumen emulsion, installation of a surface course of porous macadam, application of colour coating and line markings, new court fittings and forming a chase to perimeter edgings).

This would increase the general height of the court surface in the order of 25mm above the existing court level.

The budget cost of Option 1 would be in the order of £ 11,000 plus V.A.T. per court for the porous macadam renovation works.



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

Option 2 (Enhanced scope of works) to produce tender documentation based on an enhanced resurfacing of the existing porous macadam courts (i.e. power wash, pierce to form drainage at regular centres, compact the existing surface, application of bitumen emulsion, installation of a binder course and surface course's of porous macadam 65mm combined compacted depth, colour coating, line markings together with a new perimeter edging and court fittings).

This would increase the general height of the court surface in the order of 65mm above the existing court level.

The budget cost of Option 2 would be in the order of £ 17,000 plus V.A.T. per court for the porous macadam renovation works.

Option 3 (Enhanced scope of works for technical recommendation) to produce tender documentation based on partial reconstruction of the existing porous macadam courts (i.e. power wash, pierce to form drainage holes at regular centres, compact existing surface, installation of a minimum 150mm depth non-frost susceptible aggregate sub-base, installation of a binder course and surface course's of porous macadam 65mm combined depth, colour coating, line markings together with a new perimeter edging and court fittings).

This would increase the general height of the court surface in the order of 215mm above the existing court level.

The budget cost of Option 3 would be in the order of £ 23,000 per court for the porous macadam court reconstruction works.

In addition to the works set out above S.F.P.D. would also require any areas of the root ingress heave, cracking and settlement to court Nrs 1- 6 to be reconstructed as set out below.

S.F.P.D. would recommend that these areas are reconstructed by excavating to a depth of 340mm, installation of geotextile membrane, 300mm depth of non-frost susceptible aggregate and 40mm depth of binder course macadam. The Client should establish a budget in the order of £ 70 – 80 per square metre for the reconstruction of displaced areas.

The above budget costs exclude V.A.T., design risk (i.e. contingency), inflation and professional fees.

ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

NOTE : All the above costs are based on executing the works during the hottest Summer months when lorries would be able to traffic the adjacent areas of soft landscaping/internal macadam pathways and directly access the site. Execution of the works out side this period would require all the materials to be double handled (deposited at the Park boundary and then moved by dumper to the site area) which would incur 15 – 20 % increase in costs and/or the construction of a suitable metal plate access road from the nearest hard surfaced access way.

- c) The Client should establish a budget in the order of £ 80.00 – 90.00 plus V.A.T. per linear metre for the removal of the existing chainlink mesh fencing and the installation of 50mm x 50mm roll weld mesh with high tensile line wires off rectangular hollow section posts (50mm x 30mm).

The Client should establish a budget in the order of £ 100.00 – 125.00 plus V.A.T. per linear metre for the removal of the existing chainlink mesh fencing and the installation of rigid panel weld mesh of 80mm x 40mm rectangular hollow section posts.

Access gates will be in the order of £ 750 plus V.A.T. per single gate and £ 1,500 plus V.A.T. per double gate.

3.00 MAINTENANCE REQUIREMENTS FOR POROUS MACADAM TENNIS COURTS

- a) Maintenance regime requirements were discussed in respect of porous macadam tennis courts. Porous macadam court surfaces generally require the following maintenance regime (as a minimum):-
- i) the annual (or six monthly if the growth rates dictates) application of moss and total weed killer's ;
 - ii) power washing every year ;
 - iii) re-colour coating every 4 – 5 years ;
 - iv) resurfacing every 8 – 12 years.

4.00 SUMMARY AND WAY FORWARD

- a) In order for me to progress the project vetting commission to the next stage of producing the detailed cost plan and scope of works documentation for the court works project I would be grateful to receive your formal confirmation as to the basis on which the Client now wishes to proceed.



ALICE PARK
L.T.A.T.S. REF. NR. 2017/038
CONDITION SURVEY AND SITE FEASIBILITY REPORT

- b) *Please note that the scope of works document produced by this consultancy should be used to obtain suitable tenders for the proposed court works.*

This initial feasibility report does not form an adequate basis on which to obtain tenders for the works and should not be used as a tender document.

