

## **APPENDIX B**

### **PERFORMANCE SPECIFICATIONS**

#### **PART 1 - GENERAL**

##### **1.1 SCOPE OF WORK**

- A. The scope of Work includes the provision of all labour, material, equipment, transportation and other services to install a complete new vertically draining infilled synthetic turf surface including re-use of the existing shock pad at the following location(s).
1. Town Centre Park – North Field
- B. The synthetic turf surfacing system and related work included in this Contract is to be as specified, including, but not specifically limited to, the following:
1. Design, manufacture and install a new synthetic turf surface (turf, infill and where indicated, shock pad) to accommodate in the order of 3,000 hours of organized sport related use per year. The surfacing shall be a vertically draining, non-directional, tufted monofilament infilled synthetic turf system.
  2. The synthetic turf system shall be designed to meet the minimum performance testing requirements outlined in the Specifications and Technical Product Data Sheets. A portion of the technical requirements includes meeting minimum testing equivalent to a FIFA Quality and FIFA Quality Pro Rating (turf system shall meet the minimum requirements of both).
  3. Unless at the time of Contract Award, the Owner has agreed to specific modification(s), the synthetic turf system shall meet the following key minimum qualities:
    - Shall be infilled synthetic turf;
    - Synthetic grass fibre height to be a minimum of 60 mm;
    - Infill to include crumb rubber and silica sand (blended to conform with the FIFA laboratory testing report);
    - Fibre to be 100% monofilament fibres;
    - Minimum 38 oz/sq. yd. face weight;
    - Min. 300 Micron fibre;
    - Roll seams are to be sewn and all inlaid lines and markings to be glued;
    - Product and quality control test criteria meeting or exceeding both FIFA Quality and FIFA Quality Pro standards;
  4. Product system (turf plus pad plus infill) is to hold a laboratory testing report prepared by a FIFA accredited laboratory confirming the system meets FIFA Quality and FIFA Quality Pro standards. Where the manufacturer does not have a laboratory testing report for the exact system proposed (turf plus infill plus pad), the FIFA laboratory testing report confirming the system meets FIFA Quality and FIFA Quality Pro is to be supplied within 30 days of Contract award;

5. The synthetic turf system manufacturer is to be a current FIFA Licensee or be a valid FIFA Licensee at the time the synthetic turf system FIFA testing report was prepared. In the case where FIFA certification is required, the synthetic turf system manufacturer is to be a current FIFA Licensee at the time of Contract award.
6. The synthetic turf is to be manufactured in Canada, the United States or Europe.
7. Coordination and cooperation with all other trades relating to and affecting the installation of the synthetic turf systems and related work;
8. Review and acceptance or certification of installed work of other trades directly affecting the Work of this Contract;
9. Removal of and disposal of the existing synthetic turf and excess/unsuitable infill, where applicable.
10. Removal and re-use of existing infill, where practical and appropriate to do so.
11. Post construction testing of the turf system is to include:
  - FIFA Quality Programme testing by a FIFA accredited testing company. Apply for and obtain FIFA Quality certification.
12. Undertake any remedial work and post construction re-testing to meet the Technical Product and FIFA Data Sheets.
13. Provide a minimum 8 year, non-prorated warranty for the synthetic turf system including turf and infill.
14. Reuse and protect the existing ProPlay 23D shock pad during construction including turf removal and installation.

## **1.2 STANDARD SPECIFICATIONS FOR RULES**

- A. Federation Internationale de Football Association (FIFA) – Soccer

## **1.3 STANDARD SPECIFICATIONS FOR TESTING & MATERIALS**

- A. American Standard Testing Materials, (ASTM)
- B. Synthetic Turf Council Suggested Guidelines for the Essential Elements of Synthetic Turf Systems
- C. European Standards/European Norms (EN)
- D. Federation Internationale de Football Association (FIFA)

#### **1.4 FIBER MANUFACTURERS**

- A. The synthetic turf manufacturer should furnish written documentation in the form of a signed affidavit certifying the source of the fiber used for the field including both green and any other colors used for the lines and markings.

#### **1.5 PROJECT SUBMITTALS**

- A. Key Personnel: Submit a listing of the key members of the Contractor's team. This should include the Project manager, Project construction superintendent, quality control representative, testing agency, and any other important Project participants. The list should include phone and fax numbers for each team member and 24-hour emergency telephone number for contacting job responsible personnel in an emergency.
- B. Field Shop Drawing Submittal: Submit the field Shop Drawings to the City Representative for review and approval. The submittal should include an electronic copy of the plans and the Specifications. The plans should include field edging details, insert details, seam details, seam layout, gluing patterns, provisions for goals, dimensional Shop Drawing for all field lines, markings and boundaries.
- C. Schedule: Submit a schedule for all activities indicating dates and locations of specific tasks to be completed. Provide clarification and additional information as directed by the City Representative. Update as needed and submit corrected schedule to the City Representative prior to dates altered on the schedule.

#### **1.6 CONSTRUCTION SUBMITTALS**

- A. Submit the following synthetic turf samples to the City Representative for approval prior to commencing with the production of the synthetic turf field:
  - 1. Two 50 cm x 50 cm samples each of green turf showing backing with perforations.
  - 2. Two 50 cm x 50 cm samples each of turf showing method of seam makeup with perforations. One sample to have example of inlaid lines.
  - 3. Two 20 cm x 30 cm samples each of the other colors proposed for use on the field for lines and markings.
  - 4. Two 1-kg samples of the proposed infill materials, each type.
  - 5. One 30 cm x 30 cm sample of the E-layer
- B. Submit the synthetic turf Warranty package and a USB Key containing the operation and maintenance manual to the City Representative for approval prior to commencing with the field construction. Provide descriptions of any equipment required or recommended for field area conversions, maintenance and repair, citing specific vendors for each unit. Provide a separate section stating the approved activity usage for the turf and activities not recommended, all relative to the Warranty. Include maintenance recommendations including recommended coverings for special events, small repair procedures, minor seam repair, discussion of precautions to be practiced, general maintenance, and uses to avoid to protect turf surface and to maintain installation's Warranty.

- C. Synthetic Turf Testing and Quality Control: Prior to manufacture, submit to the City Representative results certified by an independent testing laboratory experienced in synthetic turf testing for the following tests performed on the synthetic field surfacing system:

Pile Yarn Type	FTIR Spectrograph
Yarn Denier	ASTM D1577
Yarn Breaking Strength	ASTM D2256
Yarn Melting Point	ASTM D789
Pile Height	ASTM D5823-13
Pile Weight	ASTM D5848
Total Weight	ASTM D5848
Backing Perforations	Perforation Diameter and Spacing
Tuft Bind (without infill)	ASTM D1335
Grab Tear Strength	ASTM D5034-09
Impact Attenuation	ASTM D355
Pill Burn Test	ASTM D2859
Permeability (with infill)	ASTM WK22081 (or approved in-lab test)
Total Lead Content	ASTM F2765 - 09
Gradation Analysis (infill only)	ASTM D5644-01 (2008)

- D. Site Acceptance: Submit a letter confirming that an inspection of the finished field base has been conducted, noting all discrepancies, problems and conflicts. If no problems are found, this should be so indicated. The Contractor's inspection should include acceptance of the field base materials for both planarity and permeability, as well as any other factors the Contractor considers relevant to the synthetic turf installation. The Contractor's certification letter should also include acceptance of the field subgrade and base as being totally suitable for the application of the Work, with the assurance that the synthetic turf installation work carried out on the field's subgrade and base will result in a "superior quality" athletic surface, fully warranted for the period and conditions specified herein. The Owner will provide permeability testing results conducted on the field bases to the Contractor for the Contractor's review and acceptance. Note that the Contractor will not be held responsible for any hidden substandard field subgrade and base conditions.

## 1.7 PRE-INSTALLATION CONFERENCE

- A. The City Representative will conduct a conference at the Project site. The following issues should be discussed at this meeting:
1. Schedule.
  2. Submittal and approval of materials.
  3. Coordination issues with other contractors.
  4. Stockpiling of materials.
  5. Testing and inspection of materials and installation.
  6. Coordination with turf supplier.
  7. Acceptance of work area from other contractors.
  8. Field protection during and upon completion of surface installation.
  9. Turnover to Owner.

## **1.8 QUALITY CONTROL**

- A. Submit to the City Representative for approval a quality control plan. The plan should designate a quality control representative for the Contractor's team. The plan should also clearly specify the testing procedures for the field materials.
- B. Refer to the General Conditions for details of the pre-shipment testing requirements.

## **1.9 CONSTRUCTION SUPERINTENDENCE**

- A. The Contractor should at all times employ personnel who are skilled in their respective work areas. Incompetent, careless or negligent employees or agents shall be forthwith discharged upon written request of the City Representative.
- B. All Work under the Contract shall be performed under the continuous on-site supervision of a competent superintendent who is thoroughly experienced in the class of work specified. There shall be on site at all times Work is being performed, a designated superintendent in the employ of the Contractor, and approved by the City Representative, in responsible charge, managing the Project construction. The superintendent shall have the authority to make decisions for the Contractor.
- C. The superintendent should be satisfactory to the City Representative in all respects, and City Representative shall have the right to require the Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to City Representative, and to replace such superintendent with a superintendent satisfactory to City Representative. The lack of proper supervision by the Contractor or supervisory personnel shall, at the Owner's sole discretion, be just cause for suspension of the Work or termination of the Contract by the Owner.

## **1.10 TRAFFIC REGULATION**

- A. Conduct operations in such a manner to avoid unnecessary interference to existing traffic. Minimize heavy vehicle traffic to and from site during peak traffic hours. Do not park vehicles in traffic lanes. Provide flag persons as required. Conform to Owner traffic control requirements.
- B. Contractor should be responsible for all traffic control and emergency call outs resulting from Contractor operations.
- C. Maintain fire lanes, roadways and alleys to existing buildings continuously, as required by the fire department having jurisdiction.

## **1.11 DELIVERY, STORAGE, AND HANDLING**

- A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and Protection:
  - 1. Comply with manufacturer's recommendations.
  - 2. Store in dry place out of direct sunlight.
  - 3. Protect from damage by the elements and construction procedures.

- C. Bulk Materials: Deliver materials in clean, washed and covered trucks to eliminate contamination during transportation. Onsite stockpiling location is to be coordinated with The City Representative. Stockpile only in areas free of debris and away from drainage routes. Cover with plastic or geotextile if material is to be stockpiled for more than 24 hours.

#### **1.12 FIELD SYSTEM HOLD HARMLESS**

- A. The Contractor shall hold the Owner, and Consultant, harmless from infringement of any current or future patent issued for the synthetic field surfacing system, pad system (if applicable), installation methods and vertical draining characteristics of the synthetic turf system.

#### **1.13 FIELD DIMENSIONS AND LAYOUT**

- A. The Contractor will be responsible for furnishing, setting and marking of all line, grade and location stakes, including offsets and general construction staking.
- B. The Contractor should have on site at all times when work requiring control is being performed, all necessary equipment, supplies and instruments related thereto. A qualified technician must be assigned to the crew for this Work. The equipment and technician must be available, at no additional cost, to the City Representative for checking, verifying and certifying construction control on site.

#### **1.14 PROTECTION OF UTILITIES AND STRUCTURES**

- A. The Contractor shall take special care to protect any existing structures and utilities.

#### **1.15 CONSTRUCTION RECORD "AS-BUILT" DRAWINGS AND SPECIFICATIONS**

- A. An accurately marked construction record set of Drawings and Specifications shall be kept on site as the job progresses. All changes or deviations from the original Contract Documents shall be recorded in red thereon for Work under the Contract.
- B. The record set shall be kept up-to-date at all times and shall be submitted periodically to the City Representative covering all Work for which progress payment is being requested. Failure to have the record set up-to-date shall, at the discretion of the City Representative, be reason to withhold payment until such information is recorded or submitted.

Upon completion of the Project and prior to final payment, the Contractor shall forward a complete record set of Drawings and Specifications showing the as-built notations to the City Representative.

#### **1.16 WARRANTY OF SYNTHETIC TURF SYSTEM**

- A. Refer to the attached Form of Warranty for the detailed requirements of the synthetic turf system warranty.
- B. The warranty is to be provided in the same format as specified in the attached Form of Warranty. Any changes are to be agreed to by the Owner prior to execution of the Contract.

- C. The warranty shall be signed by a principal of the applicable firm(s), duly authorized to make contracts at the same time as the Contract is executed.
- D. If the firm manufacturing and supplying the synthetic turf system is not the same entity as the Contractor, the warranty shall be co-signed by the turf manufacturer/supplier. Should the warranty be co-signed by the turf manufacturer/supplier, both the Contractor and the turf manufacturer/supplier will be jointly and equally liable for all commitments made under the warranty.
- E. The warranty period shall be a minimum of eight years from date of acceptance of the installed system by the Owner.

## **PART 2 - MATERIALS**

### **2.1 GENERAL**

- A. The field should be comprised of vertically draining infilled synthetic turf system. The turf system should consist of a synthetic grass like monofilament surface pile that should be tufted into a synthetic backing.
- B. Infill material should consist of clean crumb rubber and silica sand (unless the Contract provides for an alternate infill material).
- C. The complete synthetic turf system should be constructed of materials that minimize environmental impacts and risk to human health to the greatest extent feasible.
- D. All backing layers and coatings should be firmly bonded together. Coating materials must be completely cured and bonded to the other backing layers. Synthetic turf panels or rolls that do not meet this requirement will be rejected.
- E. The entire system should be resistant to weather, insects, rot, mildew, and fungus growth, and be non-allergenic and non-toxic. The entire system should be constructed to maximize dimensional stability, to resist damage and normal wear and tear from its designated use, and to minimize ultraviolet degradation.
- F. All adhesives used in bonding the system together should be resistant to moisture, bacterial and fungus attacks, and resistant to ultraviolet rays at any location upon installation.

### **2.2 DYNAMIC CUSHIONING REQUIREMENTS**

- A. The dynamic cushioning of the system should not exceed a maximum value of 110 G's per ASTM, F1936-98 and ASTM, F355, procedure A at any location upon installation.

### **2.3 PERMEABILITY REQUIREMENTS OF THE SYNTHETIC TURF SYSTEM**

- A. The system should drain vertically a minimum of 750 mm precipitation per hour without visible surface ponding.

### **2.4 SYNTHETIC TURF PILE SURFACE**



- A. The pile surface should provide good traction in all types of weather with the use of conventional "sneaker-type shoes" and composition, molded-sole athletic shoes.
- B. The pile surface should be suitable for both temporary and permanent line markings using rubber-base paint where applicable.
- C. Pile surface should be nominally uniform in length for all portions of the field. Synthetic turf panels or rolls with irregular pile heights or with "J hooked" fibers that extend more than 5 mm above the surrounding fibers will be rejected.
- D. The colour should be uniform with no visible deviations in shade permitted. Rolls that do not meet this requirement will be rejected.
- E. The grass fibre height, as measured from the top of the backing layers should be a minimum of 60 mm or such greater height as indicated in the Technical Product Data Sheet.

## **2.5 SYNTHETIC TURF FABRIC SURFACE**

- A. The fabric surface should be constructed and installed in minimum 4.57 meter (15-foot) widths with no longitudinal or transverse seams, except for head or tee seams at field boundaries and inlaid lines within a finished roll assembly. The seams should be 4.57 meter (15'-0") spacing.
- B. Rolls that do not lay evenly and with full dimension width will be rejected. No fitted pieces will be allowed to true alignment.

## **2.6 SYNTHETIC TURF SYSTEM MATERIAL COMPONENTS**

- A. Pile fibers shall resemble freshly-grown natural grass in appearance, texture and colors.
- B. Fabric backing for the infilled synthetic turf system can be loose laid and anchored at the perimeter of the field as shown in the details or adhered to the base.
- C. All turf seams for field areas shall be sewn with high strength, polyester fiber cord or nylon. For inlaid lines and markings where cemented seams are necessary, cemented with a supplemental backing material and/or, use supplemental backing material. If a non-permeable backing material exceeds 25 cm in width, it shall be perforated in accordance with clause 2.7 of this section. Perforations shall be drilled from the surface after the adhesive has set.

## **2.7 SYNTHETIC TURF PERFORATIONS**

- A. If a permeable backing is utilized, perforations are not required. Certified independent test results indicating a minimum drainage rate of 750 mm per hour must be provided for the backing and infill material.
- B. Synthetic turf with tufted fibers and a coated backing must include perforations in the backing for vertical drainage.
- C. Perforations in turf backing to be a minimum of 5 mm diameter clear opening and shall be spaced a maximum of 100 mm uniformly on-center.



- D. The turf shall be perforated with a minimum of 95% integrity over entire surface. Holes must be full diameter, completely through the underside of the turf backing with no material residue or fragmented fibers remaining.
- E. The City Representative shall approve the turf perforations prior to shipment, upon shipment onsite, or during on-site perforating operations, as applicable.
- F. Any rolls delivered to the site that lack sufficient perforations, or have incomplete perforations should be remediated or replaced with a roll that meets the requirements. Replacement will be of full rolls only (not partial rolls or sections of turf). Remediation measures include onsite manual perforation using a hot iron capable of burning a 5 mm diameter perforation in the turf.

## **2.8 INFILL MATERIALS**

- A. Infill should consist of clean crumb rubber removed from the existing field blended with new crumb rubber and sand as required.
- B. Crumb rubber should be derived from used whole vulcanized commercial truck tires. Buffings, bladders and tubes should not be used as feedstock.
- C. Crumb rubber infill should have a specific gravity range from 1.1 minimum to 1.2 maximum as determined by ASTM D 297.
- D. Crumb rubber infill should have an ash content of between 5 and 15% as determined by ASTM D 297.
- E. Crumb rubber infill should not contain more than .01% liberated fibre (no more than 0.2 lbs per ton: equivalent to 3.2 ounces of fibre per 2,000 lb 'supersack') tested per ASTM D 5603. The liberated fibre remaining in the CRI should be free flowing and not agglomerated into clumps of fibre as received at the job site.
- F. Crumb rubber infill should be dry and free flowing.
- G. Crumb rubber infill should be produced cryogenically, ambiently, or a combination.
- H. Where crumb rubber/sand blend infill is utilized, the materials should consist of a blend of clean crumb rubber and silt-free silica sand. The infill composition ratio should be 80% crumb rubber and 20% sand by volume.
- I. Sieve gradation specification should be as indicated in the Technical Product Data Sheet.

## **2.9 LINES AND MARKINGS**

- A. A complete field lining, marking and field boundary system should be provided prior to installation of the surfacing system. Layouts shall be accurately surveyed and marked prior to installation. The lines and markings shall comply with the following standards (all where applicable):
- B. The colour of the lines and markings should be as shown on the Plans.

- C. The lines and markings should include all lines and markings shown on the Plans.
- D. All lines and field markings shall be tufted or installed as synthetic turf inlays. Wherever possible, lines shall be tufted into the turf panels in lieu of inlays. All markings should be uniform in color, providing a sharp contrast with the turf color, and should have sharp and distinct edges. Markings should be true and should not vary more than 1 cm from specified width and location, except that no line or marking should be uniformly smaller or larger than specified.
- E. Manufacturer should guarantee that synthetic turf is adaptable to painted lines in the event painting is utilized in the future.
- F. For cemented seams, the supplemental backing material should bridge all inlaid lines and markings a minimum of 10 cm on each side of the seam. Supplemental backing material that is greater than 30 cm in width should be perforated in accordance with clause 2.7 of this section. Perforations should be drilled from the surface after the adhesive has set.
- G. The fiber used for the lines and markings should be of the same composition as that used for the green field areas.

## **2.10 MINIMUM SPECIFICATIONS FOR SYNTHETIC TURF SYSTEM MATERIALS**

- A. The minimum material standards should be as established by Specifications and the Technical Product Data Sheets provided by the Contractor prior to Contract execution. These standards will be verified and enforced and will be the basis for the Owner's testing. Material that fails to meet these minimum standards will be rejected. The Contractor, or the manufacturer of the synthetic turf fiber and fabric may elect to exceed these Specifications to insure compliance with all requirements and the Warranty as specified in this section.
- B. The maximum deviation with respect to the individual test results and the target standard tested against should be plus or minus 5%, except that the material should not be uniformly low.
- C. The minimum material standards for all synthetic turf materials must also meet or exceed those of the Synthetic Turf Council Suggested Guidelines for the Essential Elements of Synthetic Turf Systems. The minimum material standards will therefore be those combined requirements of the Technical Product Data Sheets, Contract Specifications, and the Synthetic Turf Council Suggested Guidelines for the Essential Elements of Synthetic Turf Systems.
- D. Where there is a conflict between the standards, the order of priority should be the (1) Technical Product Data Sheets, (2) the Specifications and (3) the Synthetic Turf Council Suggested Guidelines for the Essential Elements of Synthetic Turf Systems.

## **PART 3 - EXECUTION**

### **3.1 CERTIFICATION OF FIELD BASE INSTALLATION**

- A. The Contractor should perform an inspection of the field base and submit written certification of acceptance of the base for the installation of the synthetic turf system. The inspection and certification should be completed at least ten working days prior to turf installation.
- B. Summary of certification should include, but not be limited to:
  - 1. Acceptance of the base construction "finish surfaces" (planarity, granular surface stability, etc.) as being totally suitable for the application of Work specified under this section, and with the assurance that the synthetic turf installation work carried out on the elastic layer will result in a "superior quality" athletic surface, fully warranted for the period and conditions specified herein.
  - 2. Verification and certification of the infiltration and permeability rates of the permeable base as applying to the Warranty. The Owner will provide permeability testing results conducted on the field base to the Contractor for the Contractor's review and acceptance.
- C. All discrepancies between the required materials, application and tolerance requirements noted by the Contractor should be brought immediately to the attention of the City Representative. . Note that the Contractor will not be held responsible for any hidden substandard field subgrade and base conditions.
- D. The existing field contains an existing shock pad which is intended to be retained where suitable.

### **3.2 SYNTHETIC TURF INSTALLATION**

- A. Perform all Work in strict accordance to the Drawings, Shop Drawings and manufacturer's specifications and instructions.
- B. Verification: The Contractor is responsible for inspecting, verifying, and accepting all installed Work of this section.
- C. Environmental Conditions: Do not apply adhesive materials or infill material when:  
  
Ambient air temperature is below 10 degrees C.
  - 1. Material temperatures are below 10 degrees C.
  - 2. Rain is falling or pending.
  - 3. Conditions exist, or are pending, that will be unsuitable to the installation of the system.
- D. Preparation:
  - 1. Accept bases onto which the synthetic turf surfacing system and the anchoring system(s) are to be applied, as specified above.

2. Immediately prior to application of the synthetic turf, the bases should be thoroughly cleaned of all foreign material, soil, or any other substances that may be detrimental to permeability and the installation of the turf system.

### **3.4 INSPECTION OF MATERIALS**

- A. Prior to installation, and immediately upon delivery of synthetic turf system materials to the Project site, the Contractor should inspect material as follows:
  1. General inspection for damaged or defective items;
  2. Measure turf pile height and thickness of each roll;
  3. Measure backing perforation diameter and spacing;
  4. Reject damaged materials and all materials out of tolerance with the Specifications.
  5. Conduct such additional inspections as are required to ensure quality control is maintained to a high level.
- B. After installation, inspect Project area for acceptable seaming, adhesive bonding, uniformity of color of turf, bubble-free surface smoothness as laid, field lines and markings, insert installations, edge details. Remove and/or repair deficient workmanship prior to requesting the City Representative's inspection pursuant to completion and acceptance of the Work.

### **3.5 OWNER'S TEST**

- A. Owner may have samples of the turf submitted and tested for verification of conformance to Specifications. Turf system acceptance is subject to the results of these tests.
- B. Any material so tested and found not conforming to the Specifications will be rejected and replaced with material conforming to the Specifications at the Contractor's expense. Re-submittal should be required.

### **3.6 IN-FILLED SYNTHETIC TURF INSTALLATION**

- A. The fabric surface should be constructed and installed in 4.57 meter (15 –foot) minimum widths with no longitudinal or transverse seams, except for head or tee seams at each field's boundaries and inlaid lines within a finished roll assembly.
- B. No head seams shall be permitted inside of the soccer field boundaries. A single head seam will be permitted in the quarter turned panels outside of the soccer sidelines.
- C. Rolls that do not lay evenly and with full dimension width will be rejected. No fitted pieces will be allowed to true alignment.
- D. Bonding of Material Surfaces: The bonding or fastening of all system material components should provide a permanent, tight, secure and hazard-free, athletic playing surface. System material components include:
  1. Bonding all seams and inlaid line and markings.
  2. Bonding and seaming must maintain their integrity for total length of Warranty period.

E. Seams (Joint)

1. All turf seams shall be sewn with high strength polyester fiber cord or nylon.
2. Where cemented seams are required for inlaid lines and markings, the supplemental backing material shall bridge all seams a minimum of 100 mm on each side of the seam. Supplemental backing material that is greater than 250 mm in width shall be perforated in accordance with paragraph 2.7 of this section. Perforations shall be drilled from the surface after the adhesive has set.
3. Backing layers must lie flat on the field base to provide a uniform pile surface.
4. The width between fiber rows at the seam locations shall not exceed that of the tufting gauge of the turf materials.
5. All sewn seams should be brushed to provide full coverage of fiber over the thread.
6. All cemented seams should be brushed to eliminate any adhesive materials from the fibers.

F. Turf Edges: Turf edges to be as shown on the edge fastening detail and specified herein.

**3.7 LINING / MARKING INSTALLATION**

- A. Complete field markings should be provided with the initial installation of the surfacing system. The Contractor should provide lines and markings in conformance with these Specifications. Layouts should be accurately surveyed and marked prior to installation.
- B. If overlapping backing materials are utilized for the inlaid lines and markings resulting in a non-permeable surface in excess of 250 mm wide, the backing materials should be perforated in conformance with section 2.7 from the surfacing after gluing and prior to installation of the infill material.

**3.8 INFILL INSTALLATION**

- A. The infill material should be applied in a dry condition and when the synthetic turf is dry.
- B. Infill materials will be installed with a minimum of 8 applications.
- C. The infill installation should not result in fiber material trapped below the surface of the infill material. If fiber is trapped below the surface, a portion or all of the infill material must be removed and reinstalled.
- D. The infill material should be installed at a uniform depth across each entire field area. Infill depths should not vary by more than 5 mm across each field area, with no areas uniformly high or low.
- E. The brushing of the infill material should provide fiber fibrillation resulting in a natural surface appearance.
- F. The infill materials should be water settled to provide accelerated consolidation of the infill material prior to use by the Owner. The Contractor should utilize portable sprinkler heads to evenly apply a minimum of 20 mm of water over each entire field area for water settlement. Upon completion of the initial water settlement, each surface will be inspected by the Owner and City Representative for footing stability and infill

consolidation. The Contractor should provide any additional water settling as required by the Owner and The City Representative to achieve the desired level of infill stability and consolidation.

### **3.9 CLEANING**

- A. The Contractor should remove all excess materials of all types, equipment, debris, etc., from the site immediately after completion of the Work. Remove all stains and other blemishes from all finished surfaces. Leave Work in a clean, new appearing condition, ready for use by Owner.
- B. The Contractor should inspect each entire field area with a hand held metal detector to identify any construction materials or tools left on the field. All such materials should be removed prior to Owner occupancy of the fields.

### **3.10 PROTECTION**

- A. Adequate protection of materials and Work from damage will be the responsibility of the Contractor during installation and until acceptance of the Work. The Contractor will be responsible for protection after the acceptance of the Work until final acceptance of all Contract Work by the Owner. All material damaged or stolen prior to acceptance by the Owner shall be replaced at no cost to the Owner.

### **3.11 EXTRA MATERIALS**

- A. Deliver to Owner all extra materials herein specified. Receive Owner's written receipt for all materials. Deliver receipt to The City Representative.
- B. Infill Materials: Provide four (4) 120-litre rubber trash containers with lids of each infill material used.
- C. Turf for Future Repairs: Material may be roll ends or cutoffs; however, each piece of fabric should be at least 2 meters x 3 meters. At least one green turf piece should be at least 3 meters x 4.5 meters. The following are minimum areas for the extra synthetic turf materials to be provided by Contractor to the Owner:
  - 1. Green Turf: 100 square meters
  - 2. White Turf: 30 lineal meters of 100 mm wide lines

**- END OF SECTION -**

**APPENDIX B1 – FIFA TECHNICAL PRODUCT DATA SHEET (PAGE 1)**

Supplier to provide 3rd party support documentation outlining Technical Data results for 'FIFA Quality Pro' Performance Standards for 'FIFA Quality Pro' designation in accordance with FIFA Quality Programme for Football Turf October 2015 Edition of the Handbook Requirements Version 3.1 (16.03.2020), and Handbook of Test Methods – Version 3.1 (16.03.2020).



**FORM OF WARRANTY OF SYNTHETIC TURF**  
**REFER TO THE ATTACHED FORM OF WARRANTY**