

**1 GENERAL**

**1.1 SUMMARY**

- .1 The section applies to the supply and installation of a polyethylene monofilament with polyethylene thatch playground turf, shock pad and wear mats.
- .2 Furnish all labour, materials, tools and equipment necessary to install in place all material as specified. The installation of all new materials shall be performed in strict accordance with the manufacturer's written instruction, and in accordance with all approved shop drawings.
- .3 The contractor shall be fully acquainted with the existing sites and shall fully understand the difficulties and restrictions attending the execution of the work under this contract. The contractor shall advise at the time of the bid, any restrictions or anticipated difficulties. Prior to submitting a price for the work, the contractor must seek clarification from the consultant for any items within the specifications that may appear to be unclear or conflicting.
- .4 There will be multiple playground sites and approximate various sizes as outlined below:
  - .1 Alexander Park (225 sq.m.) – 4 wear mats
  - .2 Alpine Park (320 sq.m.) – 6 wear mats
  - .3 Althea Park (250 sq.m.) – 6 wear mats
  - .4 Brookfield Park (250 sq.m.) – 6 wear mats
  - .5 Corwin Park (250 sq.m.) – 6 wear mats
  - .6 Fern Park (320 sq.m.) – 6 wear mats
  - .7 Glengate Park (320 sq.m.) – 6 wear mats
  - .8 Kitchener Park (225 sq.m.) – 4 wear mats
  - .9 Meadowvale Park (320 sq.m.) – 6 wear mats
  - .10 Theresa Park (320 sq.m.) – 6 wear mats

**1.2 REFERENCES**

- .1 ASTM – American Society for Testing and Materials
- .2 DIN – National Standards in Germany
- .3 CEN (EN) – European Committee for Standardization
- .4 MSDS – Material Safety Data Sheet
- .5 OPSS – Ontario Provincial Standard Specification
- .6 STC – Synthetic Turf Council
- .7 CSA – Canadian Standards Association

### 1.3 SUBMITTALS FOR REVIEW

- .1 The following products **must be submitted during** the bidding process for review. The following submissions will be at the expense of the Proponent at no expense to the City of Niagara Falls.
  - .1 Synthetic Turf:
    - .1 Submit one (1) 300 mm x 300 mm sample properly labelled with turf name and fiber length.
    - .2 Submit one (1) of primary backing complete with specifications (see data sheet at the end of this specification) including construction, elongation at break and percentage of shrinkage.
  - .2 Seam:
    - .1 Submit one (1) sample seam length of 300 mm –glued.
  - .3 Shock pad:
    - .1 Submit one (1) 300 mm x 300 mm sample including product data sheet.
  - .4 Wear Mat:
    - .1 Submit one (1) 300 mm x 300 mm sample including product data sheet.

### 1.4 SUBMITTALS FOR INFORMATION

- .1 The following information is to be submitted **with the bid documentation**:
  - .1 Provide technical data sheets of the turf system and completed data sheets.
  - .2 Provide a letter certifying that the products that you are offering meet or exceed specified requirements.
  - .3 Turf Manufacturer:  
Provide all details related to the manufacture of the proposed turf. Clearly identify the source, fiber manufacturer, supply and the specifications related to the turf components of the proposed artificial turf system. Clearly identify the assembly and manufacturing process and the various companies involved. Provide company histories and general information.
  - .4 Artificial Turf Vendor:  
Provide company history and general information. Provide three (3) illustrative examples that demonstrate your firm's warranty responses related to turf installation and/or turf product issues.
  - .5 Turf Installation Company:  
Provide company history and specific information related to artificial turf installations.

- .6 Turf Installation Supervisor:  
Provide a resume of the installation supervisor who will be on site during the installation.
- .7 The manufacturer shall specify in writing that their turf system does not violate any other manufacturer's patents, patents allowed or patents pending.
- .8 Provide certification that all products and components used for the construction of the artificial turf meets all current Canadian Federal, Provincial and Municipal public health and safety requirements, and that all products and components comply with all current Canadian Federal, Provincial and Municipal environmental legislation, and regulations, and that all material used in the construction of the field are non toxic for the intended uses.
- .9 Provide a copy of the manufacturer's warranty.
- .3 The following information is to be submitted **prior to installation**:
  - .1 Shop drawings for the turf roll, seam layout, games lines for football, soccer and numbers and methods of attachment to the perimeter curb and the field openings for football posts.
  - .2 Laboratory and field testing reports prepared by third party testing agency.
  - .3 A signed letter stating that the granular base is acceptable and that provided field test results relative to the base compaction are acceptable to be provided. (a visual inspection is mandatory by an experienced and qualified artificial turf technician.)
  - .4 Submit to the consultant a report from an independent testing agency stating the lead content, if any, of the synthetic turf fibres.
  - .5 MSDS sheets on all individual components of the artificial turf system.

## **1.5 CLOSEOUT SUBMITTALS**

- .1 The Contractor shall provide the following:
  - 1. Three (3) maintenance manuals, including detailed recommended maintenance methods, recommended maintenance schedules, product repair materials, methods of repair and any equipment required to carry out maintenance and repairs. The recommended maintenance methods must describe how to maintain the turf as to ensure that over the lifetime of the warranty any G-Max testing on the field to ASTM F-1292-99 requirements will yield results that will not exceed the requirements noted herein.
  - 2. Maintenance instructions to include at minimum, cleaning, paint removal, minor seam repair, and grooming.
  - 3. One copy of the manufacturer's warranty covering products and installation. All turf warranties shall be non-prorated, limited to repair or replacement of the affected areas, at the option of the Manufacturer, and shall include all necessary materials, labour, transportation costs, etc. to complete said repairs. The artificial turf system must maintain an ASTM F-1292-99 G-max of less than 150 G for the life of the warranty.
  - 4. Prior to final acceptance, the Turf Contractor will train the owner's facility maintenance staff in the use of the turf Manufacturer's recommended groomer

and maintenance methods required during the warranty. The turf contractor to allow for eight (8) hours of training.

## **1.6 QUALITY ASSURANCE**

- .1 The Contractor shall employ only qualified, experienced supervisors and technicians skilled in the installation of this system. The Project Superintendent shall have a minimum of five years of experience and ten (10) installed systems.
- .2 The Contractor shall:
  - .1 Not have had a Surety or Bonding Company finish work on any contract within the last five (5) years.
  - .2 Not have been disqualified or barred from performing work for any public owner or other contracting entity.
  - .3 Shall have demonstrable resources to fully service and warrant the systems installed.
  - .4 Execute work in this Section only by a Contractor who has adequate equipment, skilled tradesmen, and materials to perform it expeditiously and to the specifications and who has at least two similar installations to that specified over the previous three years. Previous installations must have been installed under the same company ownership and with the same skilled workman positions filled with the personnel proposed for this project.

## **1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and store products in the original manufacturer's packaging with labels intact.
- .2 Store products where they will be protected from damage.

## **1.8 INSPECTION AND TESTING**

- .1 An independent inspection and testing company provided by the Contractor and approved by the Consultant and paid for by the Owner may carry out inspection and testing as required.
- .2 The contractor shall arrange with the inspector and the Consultant for review of construction.
- .3 Tests will be carried out under the appropriate CSA standards and as directed by the Consultant.
- .4 Prior to delivery of the turf system:
  - .1 The turf product submitted will be tested and evaluated as per the testing data listed in this document. All testing will be provided from an independent testing laboratory. The following testing protocols must be done at the source by an independent 3<sup>rd</sup> party testing agency prior artificial turf being shipped.
    - .1 ASTM D1335 tuft bind.
    - .2 ASTM D1577 method A for min. yarn denier.
    - .3 ASTM D5034 grab tear strength.

- .4 ASTM D2256 yarn braking strength.
  - .5 ASTM D418 min. pile height
  - .6 ASTM D5848 pile face weight
  - .7 EN 71-3 toxilogical test results.
- .5 Prior to installation of the turf system:
- .1 Two (2) samples of the synthetic turf material to be installed by the Contractor shall be removed by the Consultant from randomly selected rolls or sheets of material that has been delivered to the site. This material will be sent to an independent lab to verify that it meets the specifications for the product as prescribed herein. The test results of the samples taken on-site must also meet or exceed the test results that are specified.  
  
TO ACCOMMODATE THE REMOVAL OF MATERIAL FOR TESTING, ALL ROLLS DELIVERED MUST BE ABLE TO ACCOMMODATE THE REMOVAL OF TWO SAMPLES 600mm DEEP BY THE WIDTH OF THE ROLL WITHOUT AFFECTING THE INSTALLATION OF THE PRODUCT.  
  
The cost for this testing, except for testing done as a result of the initial samples tested failing to meet the specifications herein, will be at the Owner's expense. All subsequent materials, and testing costs to verify if the remedial work is required, are to be at the Contractor's expense. This additional testing, if required, will be contracted by the Owner and back charged to the contractor by change order credit. The Contractor must use the same testing agency as used by the Owner. The Contractor is to allow the Consultant seven (7) working days to complete the testing prior to the installation of the material. Installation can only commence if the material has passed the required testing.
  - .2 Once the turf contractor has accepted the base, it is the turf contractor's responsibility to keep the base clean and free of contaminants (dirt, mud etc.) until the installation of the artificial turf surface begins. No vehicle traffic shall be allowed on the base until the installation begins.
- .6 At the completion of the installation of the turf system:
- .1 ASTM F-1292-99 Impact Attenuation of Surfacing Material Within the Use Zone of Playground Equipment testing is required.
  - .2 The completed installation will be reviewed for porosity. The porosity rate shall be greater than 250mm per hour at all locations.
  - .3 Installation must be in accordance with ASTM F-1292-99 Standards for Impact Attenuation of Surface Systems Under and Around Playground Equipment per G/Max and HIC values, meeting all CAN/CSA-Z614 Standards from a height of 2.4m (8').
- .7 A copy of all test results are to be forwarded directly to the Consultant by the Inspection and Testing Company.

- .8 Materials and workmanship will be subject to the inspection at any time. Co-operate in permitting access for inspection at all places where work is being done or stock is being stored.
- .9 The Contractor shall supply all necessary samples to the Testing Laboratory for testing. Supply additional labour required to assist the Testing Laboratory in making such tests. The costs of this material and labour shall be borne by the Contractor.
- .10 Where Work, in the opinion of the Consultant or independent testing agency, requires re-inspection, or more stringent inspections because of previous requirements of re-inspections of similar work, such re-inspections and certifications shall be at the Contractor's expense.

### **1.9 SCHEDULING**

- .1 The turf installer will be required to coordinate their schedule with the site General Contractor.
- .2 Check the specifications for the requirements of other trades which will affect the installation of the artificial turf.
- .3 Give instruction and information in writing, or by schedule to other trades, of the requirements necessary for services, materials, or inserts prepared and/or supplied by other trades which will affect the work of this division.
- .4 Prior to installing turf provide all laboratory and field tests as specified. Turf shall not be installed until the Consultant has completed the review.

### **1.10 WARRANTY**

- .1 Minimum Eight (8) year warranty against workmanship and materials on the proposed artificial turf system. The contractor shall also provide proof in advance of intent and ability to provide manufacturer's warranty that guarantees the serviceability and playability of the artificial grass system for its intended uses for an eight (8) year period commencing with the date of substantial completion. The warranty shall be for full performance and shall not be prorated. The warranty submitted must have the following characteristics.
  - .1 Must provide full coverage for eight (8) years from the date of Substantial Completion.
  - .2 Must warrant that the materials proposed meet or exceed the product specifications.
  - .3 The turf contractor shall warrant that the artificial turf system offered shall not fade in colour, shrink, wrinkle, show excessive wear or fail. The contractor, at their sole expense and cost, shall replace all areas of the artificial turf system that does not perform to these standards for the life of the warranty. The warranty must be non-prorated for eight (8) years.
  - .4 Definitions:
    - .1 RE: "shall not fade" - No significant loss of colour shall be evidenced during the life of the warranty. The polyethylene materials will maintain a shade of green or white or yellow that is uniform throughout the field.

- .2 RE: "shall not show excessive wear or fail" - In the context of this warranty, this shall mean that the face weight of the yarn and the length of the yarn in the artificial turf surface shall not have been decreased by more than 10% per year according to ASTM D418 nor exceed 50% during the warranty period. In the event that the synthetic turf system does not retain it's height, shock absorbency, or G-max and is consequently no longer serviceable during the warranty period, the contractor shall, at their sole expense, replace such portions of the system that are no longer serviceable.
- .3 RE: "serviceable" - This means that the artificial turf system and wear mats shall have a maximum G-max value according to ASTM F-1292-99 at any location upon the completion of the installation and shall not exceed ASTM-1292-99 throughout the life of the warranty period. minimum of four (4) locations per playground be tested that includes at least one wear mat at the highest fall height or designated play system for that surface not to exceed 150Gmax for the entire warranty period.
- .4 All artificial turf seams shall not separate or become unattached. The Warranty must specifically state that any and all seams that come apart will be repaired within fourteen (14) days upon request from the owner, as time is of the essence. The Contractor is responsible for all costs associated with ensuring a successful repair, even under inclement weather conditions.
- .5 The Contractor shall promptly replace or repair, to the specifications herein, any areas of the synthetic turf playing field system that are not performing to the standards of the warranties at the sole expense of the Contractor.
- .6 The Contractor must warrant the backing for tuft bind and delamination for the entire eight (8) year warranty period.

#### **1.11 QUALITY CONTROL**

- .1 Defective materials or quality of work whenever found at any time shall be rejected, regardless of previous inspection. Inspection is not to relieve the Contractor from responsibility, but is a precaution against oversight and errors. Defective materials shall be removed and replaced by the Contractor at their own expense, and without change to the Contract Time.

#### **1.12 PATENT RIGHTS AND INFRINGEMENT**

- .1 There are various established performance criteria throughout this request for products and services. There may exist patent coverage for some means and methods of achieving those performance criteria. Bidders are responsible for ascertaining that means and methods of the products and services which they are providing are not being provided in violation of any such patent rights. Bidders responsibilities are as follows:
  - .1 To hold harmless, the Owner and Consultants as to any violation to include dollar amounts that could be owed as a result of damages for infringement including potential treble damages as provided for under US and Canadian Patent Law.
  - .2 Any and all costs that the Owner and Consultants would incur in replacing materials and services which are determined to infringe patent

rights.

- .3 All administrative, legal and other costs that would be incurred as a result of an infringement.
- .2 If any product or services proposed to be provided by the Bidder are known by the Bidder to be subject to any existing claims of infringement, Bidder shall notify Owner and Consultants of such claim and provide evidence of financial ability to perform on the above hold harmless requirements.

## **2 PRODUCTS**

### **2.1 GENERAL**

- .1 The entire system, including all materials such as turf, scrim, glue, etc. that is employed and becomes a permanent part of the system is to be resistant to weather, insects, rot and mildew, fungus, be non-toxic, and resist ultraviolet degradation.
- .2 The entire artificial turf system and all its parts shall be constructed to provide a safe playing surface that will resist damage through normal wear and tear for the stipulated uses as well as movements of maintenance vehicles and emergency services vehicles and will remain dimensionally stable and true to line. The finished surface shall not shift, move, slide or separate from the supporting base and shall remain smooth and consistent. Irregularities in the planarity of the play surface or the finished surface at any time during the lifespan are unacceptable and the responsibility of the Contractor and Manufacturer issuing the Warranty Certificate and/or Insurance Certificate.

### **2.2 ARTIFICIAL TURF**

- .1 The Synthetic turf system will consist of a polyethylene monofilament fiber with polyethylene thatch meeting the specifications herein.
- .2 The synthetic turf playing surface system must be manufactured using polyethylene yarns. Acceptable yarn manufacturers include Bonar, Tencate, Polytex, Mattex, Shaw or approved equal. Equivalent requests must be provided and approved prior to tender close.
- .3 The yarn shall be tufted into a triple layer of a primary backing. A secondary backing of polyurethane or latex shall cover the width and length of the primary backing.
- .4 The turf must meet or exceed the following performance requirements:
  - .1 The fibre shall be tufted to a finished pile height of a minimum 1.5" (38mm).
  - .2 The monofilament fibre shall be a minimum 150 micron.
  - .3 Pile face weight shall be a minimum of 80 oz. per sq. yd.
  - .4 Tuft bind shall be a minimum of 8 lbs. average
  - .5 Grass zone yarn denier shall be a minimum of 5,000 Denier (per tuft).
  - .6 Thatch zone yarn denier shall be a minimum of 4,000 Denier (per tuft).
  - .6 Grab tear strength shall be a minimum of 200 lbs.
  - .7 Yarn breaking strength shall meet a breaking strength of 12 lbs/foot. (per tuft)



- .5 The elastomer coatings and primary backing materials shall be perforated to allow for rapid drainage. Drainage rates must be greater than 500mm per hour.
- .6 Source Limitations: Obtain Synthetic Turf System including tufted synthetic turf yarn and carpet backings from a single Tufted Synthetic Turf Manufacturer. Provide additional system components including anchoring materials, seaming products, binders and adhesives, and resilient underlayment materials meeting the criteria of the specifications.
- .7 The colours for the installation shall be mixed two colours of green (Field Green, Lime Green, Olive Green) resembling natural grass.
- .8 The turf material shall have satisfied the test results related to PILL Flammability - ASTM D2859 and Melting Point Index - ASTM D789 and have flame spread ratings not greater than those required by the Building Code.
- .9 The turf rolls shall be no less than 4.57m (15') wide and must extend the entire width (rolling direction axis) of the playground.
- .10 All rolls not exhibiting uniform colour, width, pile direction and pile height will be rejected by the Consultant as failing to conform to the Contract Documents and shall be immediately removed from the Place of Work by the Contractor and replaced promptly in accordance with the Contract Documents.

### **2.3 FASTENERS**

- .1 All fasteners that are to be employed in fastening the edges of the turf must be suitable for use with the specified concrete curb and be manufactured as to prevent corrosion while in use over the life of the warranty periods.
- .2 Turf installer shall supply and install a 2" x 4" composite nailer strip attached to the perimeter concrete curb, fastener with #10 4" tapcons at 400mm O.C.

### **2.4 SHOCKPAD**

- .1 Delivery of the shockpad must include a Certificate of Compliance from the supplier stating that the materials comply with EN 71-3.
- .2 Shockpad shall be a minimum 4" (100mm) and meet previously stated performance standard of 150 Gmax requirements average for each testing location within the playground area.

### **2.5 WEAR MATS**

- .1 Delivery of the wear mats must include a Certificate of Compliance from the supplier stating that the materials comply with EN 71-3.
- .2 Wear mats must be provided at the bottom of each slide and in each swing bay. Mats shall measure approximately 1450mm x 850mm each.
- .3 Wear mat test results shall not exceed 150 Gmax for the life of the warranty.

## **3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Contractor shall verify existing conditions before starting work.
- .2 Verify all dimensions and elevations required on drawings.

- .3 Work is to commence and continue only if the environmental and site conditions are in accordance with the manufacturer's recommendations for product replacement.

### **3.2 INSTALLATION**

- .1 The installation methods and procedures must be in strict accordance with the Manufacturer's specifications and instructions in accordance with the Contract Documents. The finished installation must provide for a high quality facility for the duration of Warranty Period.
- .2 The turf supplies shall coordinate the finished grade of the granular base with the General Contractor.
- .3 Rolls shall be laid straight, true and flat and be laid parallel to the width (rolling direction axis) of the playground. Subsequent rolls to be placed straight and true to the preceding roll. Fitted or tapered pieces to true the alignment or infill gaps in seams are not acceptable. Cross seams are not permitted.
- .4 Tufted Synthetic Turf shall be installed with no wrinkles, ripples or bubbles. Shearing of fibers, slits in the fabric or driven spikes or staples to relieve such defects will not be permitted.
- .5 All seams shall run perpendicularly across the largest width of the playground. Seams shall be flat, tight, and permanent with no separation or fraying. Tufted Synthetic Turf Yarn pile shall not be trapped between seams. If some fibers are trapped, they shall be freed from the seams by hand or other approved method to an upright position prior to brushing.
- .6 All Tufted Synthetic Turf field markings shall be adhered in accordance with manufacturer specifications. Tufted Synthetic Turf Yarn pile that is trapped or glued between inlay seams shall be freed from the seams by hand or other approved method to an upright position prior to brushing.
- .7 Turf Vendor/Installer is to accurately survey and layout all line applications in accordance with the approved shop drawings. Install and construct seams as per approved shop drawing.

### **3.3 CLEANING**

- .1 Upon completion of the Work of this Section, all surplus material and debris caused by the Work and equipment shall be promptly removed from the site. The building and site must be left in a condition satisfactory to the Consultant.
- .2 Clean turf surface and all loose granules are to be swept and vacuumed and otherwise removed from the site and legally disposed of. Upon completion of the installation, thoroughly clean surfaces, remove and dispose of off-site all refuse, debris, surplus materials, containers and packaging.

**END OF SECTION**