



CSI | Stryker Sport

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PART 1.0 - GENERAL

1.1 DESCRIPTION OF WORK

A. The extent of synthetic turf work is shown on the drawings.

B. Synthetic Turf work includes, but is not limited to, the following:

1. A complete non infill synthetic turf system, consisting of a vertical draining gravel blanket and nominal one inch (1") long polyethylene-blended fiber combined with a texturized Polyamide, tufted into a single, dimensionally stable primary backing with a secondary backing consisting of a minimum of 26 ounces of urethane per square yard. Texturized PA fiber should represent more than 51% of the total product face weight.
2. Tufted in game lines and perimeter lines per drawings. Remaining required game marking shall be permanently inlaid or painted as per drawings, direction of Owner or Owner's Representative.
3. Pre-manufactured porous Nexxpad ShockPad.
4. Edge details.
5. Maintenance manual.
6. Written 8-year warranty
7. Striping and seaming plan: Striping plan; layouts for the sports as shown on the drawings showing any field lines, logos, markings and boundaries.
8. Train field maintenance personnel in proper care maintenance procedures.

C. Provide all materials, labor, equipment and services required to accomplish related work in accordance with the drawings and specifications.

D. The turf shall be specifically designed, manufactured, and installed for the intended sports and events. Typically, sports include, but are not limited to, full contact football, soccer, lacrosse, field hockey, baseball and softball. At the time of substantial completion, the system's shock attenuation shall have an average G-Max value less than 100 based on ASTM-F355A. At no time shall the G-Max value exceed 100 throughout the life of the warranty.

E. Copies of independent laboratory test reports on system or components:

1. ASTM D 792 Specific Gravity
2. ASTM D5848 Mass Per Unit yarn floor Covering
3. ASTM D5793 Stiches rate
4. ASTM D 1335 Tuft Bind
5. ASTM D 5034 Grab Breaking Strength
6. ASTM D 418 Pile Height, Tuft Spacing, Face Weight and Total Weight
7. ASTM D 2859 Flammability (Pill test)
8. ASTM F 1551 Water Permeability
9. ASTM F355 Gmax
10. Heavy metal content

F. Prior to Final Acceptance, the Synthetic Turf Contractor shall submit to the owner three (3) copies of their maintenance manuals. These manuals will include all necessary instructions for the proper care and maintenance of the newly installed synthetic turf system.



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1.2 SUBMITTALS

A. Submit the following within 48 hours of bid opening:

1. Three (3) copies of most recent installation/reference list for all projects of similar scope to this project.
2. One (1) 12" x 12" sample of proposed synthetic turf carpet and one (1) 12" x 12" boxed turf of finished synthetic turf and shock pad system. Also submit three (3) copies of product data and testing documents demonstrating that proposed product meets or exceeds all specified requirements.

B. Submit the following prior to the ordering of materials:

1. Material Certificates and Samples: Provide five (5) copies for each material from material producer that will be used for this project. Each material certificate must be stamped and checked as approved by the Synthetic Turf Contractor before submittal to the Architect.
2. Provide to the Architect materials samples of the following: two (2) 12" x 12" samples of synthetic turf carpet and shock pad.
3. Submittals: If desired by the customer, prior to order of materials, the Contractor shall submit a sample warranty, seam layout plan, striping plan and any details of construction which deviate from the plans and specifications.
4. Submit three (3) copies of the resume of proposed installation foreman. Installation crew must meet or exceed all requirements and shall have more than five (5) non infill installations done in the past three (3) years.
5. Three (3) copies of manufacturer's recommended maintenance equipment cut sheets.

1.3 JOB CONDITIONS

A. Installation is to commence only if the base, inclusive of the edging system and of all pieces of in-ground sport equipment items where artificial turf material must be installed up to or on top, is completed and meets the specifications of the various suppliers and manufacturers, the project specifications and the rules of the sport, and that has been accepted by the ATC.

B. Installation is to commence and continue only if the environmental and site conditions are in accordance with these specifications and with the ATM's current recommendations for installation of the selected product.

C. Installation shall not commence and continue if adjacent or concurrent construction operations generate dust, airborne abrasives, or any other by-product that, in the opinion of the ATC, would be harmful to the artificial turf material.

D. Installation is to commence and continue only if adequate procedures have been enforced to prevent contamination of the area to be surfaced by work of other craftsmen and trades, by site trespassing, by maintenance activity around the site, by dirty rain water, etc.

E. Installation is to commence and continue only if adequate procedures have been enforced to secure the area to be surfaced from unwanted pedestrian and vehicular access.

F. Installation is to commence and continue only weather is dry. The minimum temperature at any point in a 24 hrs cycle shall be of 50°F. The temperature during actual installation shall be at a minimum of 65°F. If in the opinion of the ATC weather and climatic conditions are having or will have an adverse effect on installation, work shall be delayed until the adverse condition has passed.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store products in the original, manufacturer's packaging with the labels intact.



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B. Store products in a location and position that protects them from damage from any cause. The environmental condition in the storage area must be such that no physical changes occur in the products.

C. Handle products in a manner that protects them from damage from any cause.

1.5 QUALITY ASSURANCE

A. Provide a qualified installation foreman to coordinate and review the component parts of the synthetic turf system. Submit a resume of experience for Architects approval prior to starting work.

B. Filled Synthetic Turf:

1. Factory-trained technicians skilled in the installation of athletic non infill synthetic turf systems will undertake the placement of the turf. Special brushing equipment and techniques will be used in the installation.
2. The designated installation crew shall have installed a minimum of five high quality, non infill synthetic turf systems of 15,000 square feet or greater in the past three years.
3. A letter from the turf manufacturer that the installation crew and foreman is factory certified must be submitted prior to the start of turf installation.

C. Provide a striping plan detailing lines, numbers, and letters. Coordinate with Owner or Owner's Representative and Architect to get final approval of all designated colors, dimensions and logo/lettering designs.

D. The Synthetic Turf Contractor shall meet the following criteria:

1. The Synthetic Turf Contractor must provide competent workmen skilled in this type of artificial turf installation. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer, as competent in the installation of this material, including gluing or sewing seams and proper installation of the infill mixture. The manufacturer shall have a qualified job foreman on site to certify the installation and warranty compliance.

E. Warranty:

1. The Contractor shall submit its Manufacturer's Warranty, which warrants the usability and playability of the artificial turf system for its intended uses for a minimum of an eight (8) year period commencing with the date of Substantial Completion. The warranty coverage shall not be prorated nor place limits on the amount of the field's usage.
2. The Synthetic Turf Contractor's warranty must have the following characteristics:
 - a. Provide full coverage for a minimum of eight (8) years from the date of Substantial Completion.
 - b. Warrant materials and workmanship.
 - c. Warrant that the materials installed meet or exceed the product specifications.
 - d. Repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.
 - e. Be from a single source covering workmanship and all materials.
 - f. Assure the availability of exact or substantially the same replacement materials for the artificial turf system installed for the full warranty period.
 - g. Include general wear and damage caused from UV degradation. The warranty shall specifically exclude vandalism and acts of God beyond the control of the manufacturer or installer.
 - h. Cover defects in the installation and workmanship. Assure the installation was done in accordance with both the manufacturer's recommendations and any written directives of the manufacturer's on-site representative.
 - i. Shall be limited to repair or replacement of the affected areas, (unless the field fails to meet the required G-Max rating in which case proceed to 1.01, D) at the option of the manufacturer, and shall include all necessary materials, labor, transportation costs, etc. to complete said repairs.
3. The Synthetic Turf Contractor may be required upon the request of the owner to provide a list of three clients that they have



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completed after the sale warranty work for.

F. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, shall withstand full climatic exposure in the location of the field, be resistant to insect infestation, rot, fungus and mildew; it shall also withstand ultra-violet rays and extreme heat, it shall allow the free flow of water horizontally to perimeter areas and vertically to the gravel blanket and into the field drainage system below the surface.

G. The adhesive bonded seams of all system components shall provide a permanent, tight, secure, and hazard free athletic playing surface. All inlaid markings (game lines, logos, etc.) shall remain in place throughout the duration of the warranty period.

H. The installed synthetic turf system's drainage capability shall allow water flow through the system at a rate of not less than 20 inches per hour.

PART 2.0 - PRODUCTS

2.1 SYNTHETIC GRASS SYSTEM

A. Synthetic Grass – Stryker Sport

Pile Weight: min 65 oz/sy

Face Yarn Type: Extruded monotape (1) + texturized Polyamide (2).

Yarn 1 Size: 5040 Deniers

Yarn 2 Size: 6000 Deniers

Yarn 1 Thickness: min 110 microns

Yarn 1 breaking strength: 12 pds

Pile Height (Finished): 1inch (25 mm)

TURF bind: 18 pds

Color: Green

Construction: Broadloom tufted

Stitch Rate: 20/3"

Tufting Gauge: 3/8"

Primary Backing (4 layers): K29 + Polyester min 80gr + ACTIONBACK .

Secondary Backing: 26 oz/sy urethane

Total Product Weight: min 110 oz/sy (+/- 2 oz)

Finished Roll Width: 15 feet (4.6 m)

Finished Roll Length: Up to 240 feet (73 m)

Backing tensile strength: 385 pds

Perforation (Outdoors): 3/16" (4.8 mm) holes on staggered 4" (102 mm) (approximate) center

Permeability: 787" /h

Gmax: < 100

Skin abrasion index: <20

HIC 1000:1.5m after 20 000 cycles Lisport

1. The carpet shall be delivered in 15-foot wide rolls with the four (4") inch white, football 5-yard lines tufted into each roll if desired. The perimeter white line shall also be tufted into the individual sideline rolls. The rolls shall be of sufficient length to go from sideline to sideline. Head seams, between the sidelines, will not be acceptable.

2. Provide game markings as follows: Hash marks, numbers, individual yard marks, and soccer, boys lacrosse, school logo and related markings shall be cut in and glued or painted in accordance with manufacturer's recommendations.



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B. ShockPad

New raw material: Olefin Close cell

Pad Construction: Close structure

Anti-slip patterns on top with 3/4" multiple spacing.

Shark edge interlocking system to allow expansion-retraction

Fixation system: Interlocking with expansion-retraction system.

Thickness: min 3/4" (18mm).

Gmax without infill: <100

100% recyclable class 5 without manipulation process

With lateral drainage

C. BASE BID: Standard of Quality shall be NEXXFIELD X-Gen Reverse SPORT synthetic turf system.

Alternate: List alternates if any or delete.

2.2 RESILIENT UNDERLAYMENT (PRE MANUFACTURED RESILIENT SHOCKPAD)

A. The ShockPad shall be manufactured with 100% Olefin close cell beads and shall be molded in individual close structure sheet (cut sheet from block are not acceptable) during a steam process without chemical binder. Each sheet shall not allow water infiltration except in the water drainage hole. The Olefin pad in typical thicknesses of 25mm, and shall have a drainage rate of not less than 150 inches per hour. Material shall be delivered in panels of 40.5"x42" minimum with incorporated interlocking system with expansion joint. Material shall be 100% recyclable (class 4 or 5). The shock pad should have a superior texture to allow water circulation between the pad and the turf. Spacing between texture rows of the shock-pad should be the same spacing multiple with the synthetic turf rows to allow optimal compatibility and stability. The shock pad should have an inferior footprint to allow lateral drainage.

B. Shock pad manufactured from recycled material (cross link Polyethylene, cross link PVC, SBR,) are not acceptable.

2.3 GROOMING EQUIPMENT

A. Provide one (1) pull behind "GreensGroomer" without Slicer Spring Tine Rack (for field of 45 000 sq.ft. and more).

B. Provide a mechanically powered field sweeper with heavy duty brushes which retain their shape, resist wear and will not deteriorate from moisture, designed to clear debris off the fields (for field of 45 000 sq.ft. and more).

2.4 ARTIFICIAL TURF PAINTED LINES

A. Color shall be as shown on the contract documents. Basis of design shall be Titan Synthetic Turf Marking paint as manufactured by Pioneer or approved equal.

2.5 ARTIFICIAL TURF HOOK line

A. If applicable, hook line (NEXXLINE) for non infill or dressed systems shall be supplied by Nexxfield.

PART 3.0 - EXECUTION

3.1 SUBMITTALS

A. Prior to ordering materials, submit a sample warranty, seam layout of field, striping plan and all details of construction, that



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3.2 VERTICALLY DRAINING BASE (if outdoor)

A. The Synthetic Turf Base Contractor shall strictly adhere to the installation procedures outlined under this section. Any variance from these requirements must be accepted in writing, by the manufacturer's on-site representative, and submitted to the Architect/Owner, verifying that the changes do not in any way affect the warranty.

B. Install geotextile fabric over excavated and prepared sub-grade in accordance with Turf Contractor's recommendations. Provide a 12" minimum overlap at all seams. Fabric shall first be installed in the drainage trenches prior to installation of perimeter collector lines. After backfilling of all trenches is complete, the entire field shall be covered with fabric prior to the base aggregate application.

C. Trenching, Drainage Pipe Installation and Backfilling: All piping shall be as specified and connected by manufacturer's couplers, plugs etc.

1. The base grade shall be shaped to mirror the finished grade and approved by the Architect and/or Owner's Representative. The Base Contractor shall begin layout and trenching for the drainage network as indicated on the drainage plan and all details that apply. Collector lines shall be installed before lateral lines and shall begin with the deepest elevations. Collector lines shall be connected to discharge outlet at the onset of operations. Trenching progress shall work upward in elevation to allow for immediate discharge of water from the entire field in the event of a rainfall.

2. No trenches, with or without pipe, shall be permitted, to remain unfilled overnight and/or while crews are not progressively working on site.

3. All perimeter trenches must be dug in accordance with the field drainage plan details.

4. After all collector and lateral lines have been installed, the Contractor shall repair any sub grade undulations prior to installing geotextile fabric.

D. Concrete Header Curb and Pressure Treated Wood Turf Nailer: The synthetic turf perimeter fastening structure shall be installed before the drainage aggregate.

1. The concrete header curb shall be installed in accordance with the Drawings and/or Shop Drawings and these Specifications. The foundation of the concrete header curb shall be a compacted free-draining aggregate. Future water entering the foundation shall have a free-draining path directly to the perimeter collector pipe.

2. Install a pressure treated wood 2" x 4" bordure. Pressure treated wood bordure shall be set 1.5 inches below top of the curb by means of a Tapcon every 12 inches. This shall be the responsibility of the Synthetic Turf Base Contractor. See synthetic turf edge attachment detail.

E. Base Drainage Aggregate: The installation of the base drainage aggregate shall only begin after the drainage pipe installation has been inspected and approved by Owner's Representative. Installation of the Free-Draining Base Aggregate shall follow procedures that protect the base grade soils and drainage pipe. The drainage pipe network and its existing elevations shall not be disrupted through ground pressures from trucks, dozers or by any other means.

1. The base grade subsoil shall be dry before undertaking the placement of base aggregate.

2. Delivery trucks shall enter the field only from the designated entrance point. Base course stone shall be dumped closest to the entrance first and continuously worked towards the furthest point of the field. Extreme care must be taken not to disturb sub grade or drainage network.

3. Track-type dozers shall push out the stone from behind the pile onto and toward the field center. Dozers shall only traffic the aggregate they are spreading.

4. When the aggregate spreading is completed, the surface shall be further firmed by a 5-ton roller. Static vibration shall not be part of this process.

5. The stone shall be left firm, but not over-compacted as to protect the porosity and drainage capabilities of the aggregate profile.

6. After the drainage stone has been uniformly spread throughout the surface, the surface shall receive a final laser finished



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grade. This process shall be accomplished using a turf-type tractor, or lightweight grader, equipped with high flotation tires and a hydraulically controlled laser blade.

7. The free-draining base course must be installed to a depth of 4.5 inches and shall be independently tested for an overall compaction rate of 95% proctor.

F. Choker Levels: The base drainage stone final elevations shall mirror the proposed choker layer final grade material. Care shall be taken not to allow the coarser aggregate to surface into the profile or finished grade of the choker layer.

1. The layer shall be applied using high flotation grading equipment. The choker material shall be evenly spread throughout the proposed field surface to the final pre-pad or pre-turf elevations.

2. After the material has been uniformly spread throughout the surface by the described method, the surface shall receive a final laser finish grade. This process shall be accomplished using a turf-type tractor, or lightweight grader, equipped with high flotation tires and a hydraulically controlled laser blade.

3. Care shall be taken throughout the installation not to force the choker material into the porosity of the base aggregate below.

4. Final layer must be graded by means of a laser within 0 to 1/2 inch from design grade. The finished surface tolerance must not exceed 1/4 inch over 10 feet in all directions. Base Contractor must provide a topographical survey with a minimum of 200 shots demonstrating finished grade meets all written requirements.

5. Final layer of stone must be installed at a depth of 1.5 inches. Finished aggregate base must be proof rolled by means of 2 to 5 ton roller. The finished aggregate base must achieve an overall compaction rate of 95% proctor in accordance with ASTM D1557. It shall also be flush with top of pressure treated wood nailer.

G. Base Acceptance: The Architect and/or Owner's Representative must jointly approve the base before shock pad or turf installation can begin.

H. Resilient Shock Pad:

1. After the choker layer grades have been approved and inspected, the Resilient Shock Pad shall be installed by the ATC.

a. Equipment and personnel shall take extreme care to minimize disturbance of the stone base during pad installation.

b. Padding material shall cover the entire surface.

2. The Resilient Shock Pad shall be inspected by the Synthetic Turf Contractor after completion to insure the surface is completely smooth without bumps from stone particles or other material protruding from underneath.

3. The rolls of turf shall be rolled out a minimum of four hours prior to starting seaming procedures and allowed to relax/expand.

a. All visible wrinkles shall be stretched out before seaming.

b. Seams shall be flat, tight and permanent with no separation or fraying.

c. Synthetic turf yarn fabric that is trapped or glued between seams shall be freed from the seams by hand or other approved method to an upright position prior to the commencement of brushing and top dressing procedures.

d. All synthetic turf seams shall be assembled as follows: The full width rolls shall be laid out across the field. Utilizing standard state of the art adhering procedures, each roll shall be attached to the next.

e. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed perpendicular to the playing field. The yard lines, game markings, sidelines, etc. of all applicable sports shall be tufted into carpet

I. Tufted Lines

1. Layout and descriptions of tufted and/or painted lines shall be as indicated on final shop drawings.

2. Inlaid lines are not acceptable.

J. Synthetic Turf Perimeter Attachment:

1. After final trimming of the turf, the turf shall be screwed into the pressure treated wood nailed system as per the turf manufacturer's recommendations.



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3.3 FIELD LAYOUT

A. Field layout shall be as shown on the record drawings.

3.4 CLOSEOUT

A. The Synthetic Turf Contractor must verify that a qualified representative has inspected the installation and that the finished field surface conforms to the manufacturer's requirements.

B. The turf manufacturer shall provide a warranty to the Owner that covers defects in materials and workmanship of the turf for a period of eight (8) years from the date of Substantial Completion.

C. The Synthetic Turf Contractor must submit three (3) copies of its maintenance manual to the Owner.

D. Synthetic Turf Contractor must train Owner's designated field personnel in proper grooming and care procedures. This includes training field personnel how to properly use grooming equipment as well as make minor repairs.

E. Extra materials: Synthetic Turf Contractor must leave one pail of adhesive, 100 lineal feet of seam tape and 15" x 10' roll of turf with owner before leaving job site. All salvageable pieces of colored turf used during the installation should be left with the Owner as well.

3.5 CLEAN UP

A. Contractor shall provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items.

B. All usable remnants of new material shall be neatly rolled up and turned over to the Owner at a place and area designated by the Owner.

C. During the contract and at intervals as directed by the Architect and as synthetic turf installation is completed, clear the site of all extraneous materials, rubbish, or debris and leave the site in a clean, safe, well draining, neat condition.

D. Surfaces, recesses, enclosures, etc. shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.6 G-MAX TESTING

A. Optional at substantial completion, the Synthetic Turf Contractor can, as specified, hire an independent testing laboratory to perform a G-Max test (ASTM 355, 1936 method) to verify that the shock attenuation properties of the field meet the requirements set forth in this specification. Submit three (3) copies of the G-Max test to the owner.

B. At the time of substantial completion, the average G-Max rating must not exceed 100. The average G-Max of a padded system must not exceed 100 during the life of the warranty. The Owner reserves the right to have the field tested for shock attenuation at its own cost at anytime it deems necessary. If at anytime the G-Max ranges reach unacceptable levels, it is the responsibility of the turf contractor to bring the field back into the required ranges at no cost to the Owner.