



Division of Finance and Business Operations

Procurement & Strategic Sourcing
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October 11, 2019

**Addendum #5 To
Request for Proposal
For Intramural Field: Project 080-326346
Dated October 2, 2019**

The Addendum must be acknowledged on your lump sum bid.

NOTE: You must have attended a pre-bid conference in order to be eligible to bid on a particular project. Receipt of minutes or addenda without being at a pre-bid conference does not qualify your company to bid.

Please find the attached specification revision for the above bid opportunity. This revision to clarify the specification questions received after Addendum #3.

Please note: "All references of shock pads and different infill materials have been removed. Other minor items were also eliminated (strike through). All changes/additions are in bold".

IMPORTANT- This is an addendum which MUST be acknowledged on your bid form

We will require your lump sum proposals, vendor qualification questionnaire and your bid bond documents as a single PDF in your electronic submission.

All questions concerning this project must be emailed to: **Robert Kuhn**, Procurement & Strategic Sourcing. Email: **ac6243@wayne.edu**, and copy **Valerie Kreher, Sr. Buyer**, at **ab4889@wayne.edu**.

Do not contact either FP&M or the Design Firm directly as this may result in disqualification of your proposal.

Thank you for interest shown in working with Wayne State University.

Robert Kuhn
Sr. Buyer

CC: Alycsa Valentine (Project Manager), Valerie Kreher, Sr. Buyer, Attendee list.

SECTION 321813 - SYNTHETIC TURF

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes all materials, labor and equipment for installation of synthetic turf and base as indicated on drawings.
- A. Perimeter edge details required for the synthetic turf shall be as detailed and recommended in these plans and specifications'.
- B. Scope of work: The general extent of the work and project limits is shown on the Drawings and can include, but may not be limited to the following.
 - 1. Provide an inspection and certification of subsurface drainage system and free draining subbase prior to commencement of subsequent work.
 - 2. Furnish and install Synthetic Turf Athletic Surface complete with field markings and logos, inlaid lines and numbers as required including resilient underlayment where applicable, and resilient infill mix.
 - 3. Provide attachment methods for field openings and perimeter conditions.
 - 4. Provide post construction field maintenance instructions, field maintenance training and product warrantee.
 - 5. Furnish attic stock.
 - 6. **Synthetic Turf system to include crumb rubber and silica sand infill only. GMax rating of 165 for the life of the field. See below information for GMax requirements at the time of substantial completion.**

1.3 REGULATORY REQUIREMENTS AND REFERENCES

- A. Regulatory requirements and references follow the current guidelines set forth by the various governing bodies listed below. Unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable. Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.
 - 1. American Society for Testing and Materials (ASTM)
 - 2. Consumer Products Safety Commission (CPSC)
 - 3. International Amateur Athletic Federation (IAAF)
 - 4. National Collegiate Athletic Association (NCAA)

1.4 QUALITY ASSURANCE

A. Synthetic Turf Surface Provider: Synthetic turf athletic surface shall be provided by an experienced vendor, manufacturer or provider which shall have supplied a minimum of five (5) NCAA Division I synthetic turf athletic surfaces of 50,000 square feet or greater within the last five (5) years and one (1) installation of the product in the State of Michigan. Provide a written description of each facility including name, address, date installed and phone number of Owner's Representative.

B. Synthetic Turf Surface Installer: Synthetic turf surface installation shall be provided by an experienced contractor which shall have installed a minimum of five (5) NCAA synthetic turf athletic surfaces of the type specified of 50,000 square feet or greater within the last five (5) years. Provide a written description of each facility including name, address, date installed and phone number of Owner's Representative

D. The synthetic turf surface installation crew whether subcontracted or employed by the turf company shall have the following competent workmen skilled in this specific type of synthetic grass installation on site daily during the entire installation.

1. One lead installer onsite who has installed a minimum of twenty (20) synthetic turf athletic surfaces of the type specified of 50,000 square feet or greater.

2. Two additional crew members onsite which shall have individually installed a minimum of eight (8) synthetic turf athletic surfaces of the type specified of 50,000 square feet or greater.

3. The installation crew personnel qualifications shall include the individual's resume, project list and contact information (cell phone) to allow the owners representatives the opportunity to verify employment and or subcontractor status at any time leading up to and during the installation of the project. Substitution of installation crew personnel shall be approved by the Owner's Representation and shall meet the minimum qualifications specified above.

4. At any time after the award of the contract and before the completion of the project, should any member of the approved installation crew or subcontractor discontinue their relationship with the synthetic turf installation contractor or turf provider the Owners Representative must be immediately notified. Failure to provide installation crew personnel meeting the minimum qualifications shall be considered a default of the contract requirements.

5. The designated Supervisory Personnel on the project must be certified, in writing by the Synthetic Turf Provider, as competent in the installation of this synthetic surface, including sewing seams and proper installation of the infill mixture.

6. The Synthetic Turf Provider shall have a representative on site to certify the installation and Warranty compliance.

E. Source Limitations: Obtain synthetic turf surface including turf yarn, carpet backing, resilient underlayment and infill from a single manufacturer or supplier. Provide additional components including anchoring materials, seaming products, binders, adhesives from single sources.

F. The synthetic turf provider and installation contractor shall inspect the sub-base and provide written approval and acceptance of the sub-base before the installation of the synthetic turf surfacing material. The synthetic turf provider shall provide a certification that the sub-base construction does not void any provision of the product warrantee. Commencement of work indicates acceptance of underlying substrates.

G. Quality assurance testing for in place system performance shall include the following:

1. In-place G-max rating of the synthetic turf system per ASTM F355 & F1936, Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Test Method A. System G-max rating shall not be less than 70 nor exceed **150** at installation. System shall not exceed a G-Max rating of **165** during the warranty period Specify G-max test locations, such as centerline of playing field and other areas subject to more usage, environmental conditions during the test, and other subjective parameters that might significantly affect the test results.

2. The Synthetic Turf Surface Provider shall provide **one** separate G-max tests one at field acceptance, ~~and another prior to the end of the one year guarantee.~~ Testing shall be performed by an independent, third party testing firm that has no manufacturer related ties or sponsorship.

3. ~~Percolation testing: Infiltration testing per ASTM D3385, Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer, for each 20,000 square feet of installed synthetic turf surface, or other equivalent percolation test.~~

4. Conformance Survey of Infill Materials (where applicable): The **Owner's Representative** shall perform a conformance survey on a 20-foot grid over the finish surface of the entire playing field using a dial gauge. After review, the survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to final acceptance. Tolerance for Infill Materials shall be within 1/4 of an inch from the elevations shown on the plans.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver manufactured materials in original packages with seals unbroken and bearing manufacturer's labels indicating brand name and directions for storing.
- B. Store manufactured materials in a clean, dry location, protected from the weather and deterioration, and complying with manufacturer's written instructions for minimum and
- C. Maximum temperature requirements for storage.
- D. Store units on flat surfaces.
- E. Protect UV-light sensitive materials from exposure to sunlight.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply surface system materials or components over wet, frozen, or excessively damp substrates if prohibited by manufacturer's written instructions or warranty requirements.
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit playground surface system to be performed according to manufacturer's written dimensions of other construction by field measurements.

1.7 WARRANTY

- A. The Contractor shall provide its Manufacturer's Warranty which guarantees the usability and playability of the synthetic turf system for its intended use. The warranty coverage shall not be prorated nor limited to the amount of the usage.
- B. The warranty must have the following characteristics:
 - 1. Must provide full coverage for eight (8) years from the date of Substantial Completion
 - 2. Must warranty materials and workmanship.
 - 3. Must warrant that the materials installed meet or exceed the product specifications.
 - 4. Must have a provision to either make a cash refund or repair or replace such portions of the installed materials that are no longer a serviceable as a playable surface.
 - 5. Manufacturer's warranty shall be supported by a third-party insurance policy for the full eight (8) year period. The insurance policy shall be pre-paid, direct with the owner, and non pro-rated. The insurance policy shall cover full labor and material replacement of the entire system including backing, fibers, infill, seams, inlays, adhesives, and nailer boards.

6. Guarantee the availability of replacement material for the synthetic turf system installed for the full warranty period.

1.8 SUBMITTALS

- A. *Proposal Submittals*: Submittals will be used as a basis to verify product quality, performance, and installation procedures. Along with the proposal submission, Contractor shall submit the following:

1. **Wayne State University will contact manufacture as necessary for additional synthetic turf system information needed for their evaluation process.**
 2. Provide Bidder Qualifications of the Synthetic Turf Surface Provider, Installation Contractor and Installation Crew Personnel according to the Proposer's Statement of Qualifications (PSQ) documents.
 3. ~~Provide one (1) square foot assembled sample of selected turf product along with component samples of infill material~~
 4. ~~Provide an analysis and representation of the resilient infill material and resilient underlayment composition including compliance with EN71-3 chemical test compliance.~~
 5. Provide complete description and documentation that selected system meets or exceeds all performance criteria contained in this specification.
 6. Warranty information and details for the system being proposed.
 7. Shop Drawings:
 - a. Submit shop drawings for the synthetic turf surface including edge details, field openings, penetrations, sections and accessories.
 - b. Provide an underlayment and seaming plan at 1"=20'-0"
 - c. Provide a field marking and dimensioning plan which includes field lines, boundaries, numbers, hashes, ticks, logos and other field markings in compliance by the regulatory sports agency and the drawings.
 - d. Provide color samples of manufacturer's standard fiber for approval.
 - e. Provide one quart samples of sand and infill materials along with material sieve analysis.
 8. Submit certified copies of independent laboratory reports on ASTM tests as follows for the synthetic grass carpet:
 - a. Pile Height, Face Width and Total Fabric Weight, Primary & Secondary Backing Weights, ASTM D418 or D418 or D5848
 - b. Tuft Bind, ASTM D1335.
 - c. Grab Tear Strength, ASTM D1682 or D5034
 - d. Pill Burn Test, ASTM D2859.
 - e. Impact Attenuation, Gmax < 130 at installation ASTM F355 and F1936
 - f. Permeability, ASTM D4491
 - g. Cycle Test (Roll Stud) 20,000 cycles (Labosport or approved equal)
 - h. Toxicity Product testing on the European Standard EN 71-3 or equivalent US testing for infill materials and resilient underlayment.
- B. *Pre-Construction Submittals*: Prior to construction, Contractor shall submit the following
 1. Provide documentation as to sources of component materials and related characteristics.
 2. Provide written approval and acceptance of the sub-base before the installation of the synthetic turf surfacing material by both the synthetic turf provider and installation contractor.
 3. Provide certification that the sub-base construction does not void any provision of the product warrantee.
 4. Provide MSDS sheets, equipment warranties and manufacturer information for all materials or components required in this specification.
 5. Provide construction schedule and a schedule of values for each construction component.
 6. Provide written product warranties and third party insurance policies (where applicable) by the synthetic turf surface provider.
 7. Project Management Plan
 8. Sample of stainless steel post for bases, provide submittal

Samples:

- a. Provide the following 12" x 24" assembled samples of the specified synthetic turf surface products:
 - ~~b. Sample of resilient underlayment system~~
 - c. Green carpet to green carpet secured with a glued seamed
 - d. Green carpet with a four inch white tufted line
 - ~~e. Green carpet to green carpet secured with sewn/glued seam~~
 - f. **Provide 12" x 24" sample of each color turf on the field, see layout plan drawings.**
- C. *Testing During Construction:* Contractor shall submit the following during construction:
1. Certification: Submit certification signed by Contractor that installed materials conform to specified requirements and the synthetic turf base was successfully checked and tested prior to covering with carpet.
 2. Synthetic turf manufacturing process random sampling test results.
 3. Conformance Survey of Infill Materials.
- D. *Post Construction Submittals:* Contractor shall submit the following prior to project closeout:
- ~~1. Infiltration testing per ASTM D3385, Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer.~~
 2. In-place G-max rating of the synthetic turf system per ASTM F355 & F1936. **Prior to Final Completion. 1 Test.**
 3. Record Drawings: Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts and slope gradients as applicable **if changes are made from original documents.** Maintain progress drawings on the construction site at all times. ~~Make a daily record of all work installed each day until completion of the work.~~
 4. Operational and Maintenance Data: Submit manufacturer's data in a three ring binder, labeled and indexed. Describe maintenance procedures, required equipment and projected manpower to accomplish required maintenance procedures. Include requirements for replacement of infill materials and procedures for painting temporary markings.
 5. Provide statements and documentation for surface cleaning factors and maintenance protocols for fluid spills, animal waste, pathogens, vandalism, food and debris.

1.9 DELIVERY STORAGE AND HANDLING

- A. Provide for delivery of all materials required to complete the work of this section. Store all materials in such a manner as to prevent ground contact or exposure to sun, wind, or rain. Pay particular attention to maintaining infill materials as dry and flowable. Handle all materials in accordance with the manufacturer's recommendations or requirements for maintenance of the requirements of warranty. The installation contractor shall coordinate storage of products on-site in an orderly manner not to impede the work or reasonable use of the project site.
- B. Deliver materials in original, unopened containers with original labels intact and legible, which state the guaranteed analysis.

1.10 PROJECT CONDITIONS

- A. Comply with the environmental protection and safety requirements of the Owner and all governmental authorities having jurisdiction.
- B. Synthetic turf installation operations shall not be conducted under the following conditions unless approved by Owner's Representative:
 1. Ambient air and material temperatures are at least 40 degrees F and rising.
 2. High winds
 3. Excessively wet conditions. Surfaces and materials shall be dry. Adhesives should not be applied within 12 hours after rainfall, or when rainfall is eminent.
 4. Conditions exist, or are pending, that will be unsuitable for the installation of the system as set forth by the manufacturer.
- ~~C. Construction Surveying: The Contractor shall be responsible for all construction surveying required for the proper layout and location of all work covered hereunder.~~

Avoid contamination of materials during construction and installation of synthetic turf field.

1.11 WARRANTIES

- A. The Contractor shall submit documentation of its full term Manufacturer's Warranty and proof of a third party insurer (where applicable) which guarantees usability and playability, on a non-prorated basis. Warranty will cover all materials, workmanship, and entire synthetic turf surface performance.
- B. The Contractor warrants that during the period of the warranty that all materials and components, and the installed system meets or exceeds the product and performance specifications set forth herein.
- C. The turf shall not fade in that the synthetic turf material shall remain a uniform color with no significant loss of color during the warranty period.
- D. The length and weight of the face yarn or pile shall not have been decreased by more than 10% per year according to ASTM D418, ~~nor exceed 50% during the warranty period.~~
- E. Synthetic turf system G-max values for all points of sampling or testing, as determined and set forth using the ASTM F355 & F1936 protocol and additional requirements of the warranty, shall be 70 – **150** G-max upon installation and shall not exceed **165** G-max during the warranty period. Any increase shall not exceed 5% in any single year.
- F. ~~The exposed fiber will not wear excessively as represented by a loss of more the 5% per year of the exposed fiber (fiber above the infill).~~
- G. Fabric seams shall remain attached and shall not separate or become unattached.
- H. The synthetic turf surface shall drain vertically a minimum of 15" per hour without prolonged accumulation of surface water. Remediation of the impaired drainage must be approved by the Owner.
- I. The artificial turf system shall be in strict compliance with the recommended installation standards for infill height and free pile height as required by the fiber/yarn manufacturers.
 - 1. The maximum recommended free pile height (fibers showing over the infill as required by the yarn manufacturer) needs to be maintain over the life of warranty and the settling of the infill material needs to be factored into the installation process to comply with the yarn manufacturer's warranty.
 - 2. If the field is found to have settled to a point lower than the recommended amount for "Free Pile Height" at any time during the warrantee the field will be classified as noncompliant and the provider must make remediation by adding additional infill material with a maximum of 5 month from the date of notice.
 - 3. A copy of the yarn manufacturer's warranty must be provided showing all terms, condition, exclusions and limitations on the product and circumstances that can void the warranty.
 - 4. The warranty being provided to the owner by the successful bidder/turf company must reflect the same base minimum guidelines recommended by the yarn/fiber manufacturer. The warranty may be more restrictive but cannot fall below the minimum standard of the yarn manufacturer.

PART 2 - PRODUCTS

2.1 SYNTHETIC TURF FIELD DESCRIPTION

- A. A synthetic turf carpet (~~with a shock pad as required by the manufacturer~~) consisting of a PE (polyethylene) or nylon fiber tufted or knitted into a permeable double-layered primary backing with a secondary backing as shown on the drawings. Synthetic Turf Athletic Surface shall be specifically designed and recommended for athletic use.
- B. Infill systems shall be comprised of resilient infill materials **ambient rubber** and mixed silica sand. The infill material fills the voids between the fibers allowing the fibers to remain vertical and non-directional.
- C. Synthetic Turf Rolls shall be a minimum of 15' feet wide. Rolls shall be of sufficient length (1' min. Overage) to cover from sideline to sideline without head seams.

2.2 SYNTHETIC INFILLED TURF SYSTEM

- A. The synthetic infilled turf surface shall consist of monofilament or parallel cut polyethylene fibers or nylon fibers tufted into a primary backing with a secondary backing. The synthetic infilled turf carpet shall meet the following requirements.

Property	Standard	Specification
Pile Yarn Type	PE	Thielen XP Pre , Extruded Polyethylene
Fiber Denier	ASTM D1577	≥ 10000 nominal
Pile Height	ASTM D418/D5848	2.25 inches nominal
Pile Weight	ASTM D418/D5848	>33 oz./sq. yd.
Primary Backing		Thiobac C08 Pro or Equal
Primary Backing Weight	ASTM D418/D5848	>7.0 oz./sq. yd.
Secondary Backing		Polyurethane
Secondary Backing Weight	ASTM D418/D5848	>25 oz./sq. yd.
Tuft Bind	ASTM D1335	>8 lbs. (without infill)
Total Carpet Weight	ASTM D5848	>56 oz./sq. yd.
Grab Tear (length)	ASTM D1682/D5034	250 lbs/force
Elongation To Break	ASTM D2256	>50%
Yarn Breaking Strength	ASTM D2256	>20 lbs. to break
Carpet Permeability	ASTM D4491	>20 inches/hour
Impact Attenuation, G-max	ASTM F355/F1936	≤130 at installation ≤145 over field life
Relative Abrasiveness	ASTM F1015	> 20
Water Permeability	ASTM F1551	> 15" / hr.
Pill Burn Test	ASTM D2859	Pass
Cycle Test (Roll Stud)	Labosport or approved equal	20,000 Cycles or more prior to showing wear on fibers.

- ~~B. Certificate attesting that the Synthetic Turf Manufacturer meets the requirements of ISO 9001:2008 and ISO 14001.~~

2.3 RESILIENT INFILL MATERIALS

- A. Resilient infill materials shall be uniformly filled to a depth which meets the system specification after settlement, and consist of a homogeneous mixture meeting the following criteria.

Property	Standard	Specification
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Crumb Rubber	ASTM F3188	Per manufacture / industry standards
Granule Composition		Virgin EPDM
Sieve Analysis	ASTM D5644	0.8 mm — 2.4 mm
		#18 sieve: 100% passing
		#35 sieve: <80% passing
		#50 sieve: <0.5% passing
Quantity		Must meet system specifications
Sand Granules Shape	ASTM D442	Angular & sub-angular particles are not acceptable
Sand Sieve Analysis	ASTM E11	#16 sieve: 100% passing
		#30 sieve: <80% passing
		#50 sieve: <0.5% passing
Sand Quantity		Must meet system specifications
Hardness		=7.0 Mohs
Moisture Content	ASTM C566	<0.1%
Specific Gravity	ASTM C128	2.65 g/cm ³
Total Infill weight	ASTM D5848	Must meet system specifications
Depth of Infill	Depth from top of infill to surface of fabric	Must meet system specifications
Toxicity	European Standard EN 71-3	Pass
Tolerance of infill depth		.25 in
Pill Burn Test	ASTM D2859	Pass (as installed)

2.4 MISCELLANEOUS MATERIALS

- A. Seaming Tape: Tape for securing inlaid lines and reference tick marks in the tufted synthetic turf surfaces shall be high quality seam tape made especially for artificial turf applications with a minimum width of 15" inches.
- B. Adhesives: Adhesives for bonding tufted artificial turf shall be hot melt or a one part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces, Scotch Plains, NJ (908) 233-6803 or approved equal. The adhesive shall be amended per the manufacturer specification during adverse weather conditions.
- C. Perimeter Edge: The method for attaching to the edge of the synthetic turf shall be hidden, stable, non-degradable, and not visible when construction is complete as recommended by the Synthetic Turf Provider. All edge conditions must be addressed, including where the synthetic turf abuts skinned infield, paved areas, or concrete conditions.
 - 1. The perimeter edge details required for the synthetic turf shall be as detailed and recommended by the Turf Provider, and as approved by the Owner. Supply and installation of these details will be under the scope of work of the base contractor (see Section 32 11 23.35- Athletic Field Base), not that of the Synthetic Turf Installer.

2.5 SYNTHETIC TURF

- A. Contractor shall provide a total of (6) six sperate prices for synthetic turf systems.
1. See Section 00 43 22 UNIT PRICES FORM – Section 1.3. Contractor shall enter overall synthetic turf system number on line provided and ender a price per Square Foot cost for each system for evaluation by the University. Contractor to INCLUDE their lowest synthetic turf price in their overall bid.
- B. Contractor shall provide (3) three bids on the following turf systems:
1. Base Bid:
- a. 2-1/4" pile
 - b. Minimum 6 pounds total infill weight (1.5 pounds to 3 pounds sand minimum)
 - c. **Must not exceed 165 GMAX for life of the field, 8 year warranty.**
 - d. FieldTurf: Field Turf XT-57
 - e. AstroTurf: Rhino 42
 - f. Shaw: Momentum SD
- C. Contractor shall provide (3) three bids on the following turf systems:
1. Alternate Bid:
- a. 2-1/4" pile height
 - b. Total infill weight (1.5 pounds to 3 pounds sand minimum – 70% rubber to 30% silica sand) to achieve GMAX and safety standards for warranty period of field
 - c. **Must not exceed 165 GMAX for life of the field, 8 year warranty.**
 - d. FieldTurf: FieldTurf Vertex-57 2-1/4" Duel Fiber
 - e. AstroTurf: Rootzone 3D3 Blend 52 – 2" fiber
 - f. Shaw: Legion 2" – Duel Fiber
- D. Grooming Equipment
1. No grooming equipment to be included as part of the base bid or alternate bid. Wayne State University will use existing grooming equipment.

PART 3 - EXECUTION

3.1 GENERAL

- A. The installation shall be performed in full compliance with approved shop drawings.
- B. All installation operations shall be performed by personnel directly employed by the manufacturer, full familiar with the materials and their application, under the full-time direction and supervision of a qualified technical supervisor employed by the manufacturer of the synthetic turf. Installation supervisors shall have a minimum of five (5) years experience.
- C. The surface to receive the synthetic turf shall be inspected and certified by the manufacturer as ready for the installation of the synthetic turf system. Contact Landscape Architect to schedule on-site meeting.

- D. Adhesives for bonding knitted synthetic turf appropriately shall be as recommended by the synthetic turf manufacturer.
- E. Cord for sewing seams of the turf shall be as recommended by the synthetic turf manufacturer.

3.2 BASE STONE CONSTRUCTION

- A. The base stone slope gradation and direction shall match subgrade slope, unless otherwise noted.
 - 1. The geotextile fabric shall be installed under the stone base.
 - 2. The drain system shall be installed as indicated on the drawings.
 - 3. The base stone shall consist of open graded aggregate. The open graded aggregate material must be free draining consistent with the vertical draining requirements of the turf manufacturer.
 - 4. The finished grade of the base stone shall not vary more than 1/4" when compared with a 50' taut string line. Any imperfections, divots, etc in the base stone will be repaired by the contractor and re-evaluated.

3.3 INSTALLATION OF SYNTHETIC TURF SURFACE

- A. Installation of synthetic turf to be completed by qualified personnel approved by manufacturer, meeting the qualifications standards set forth in this document. All installation work shall be done in strict accordance with the manufacturer's current installation instructions and approved design documents for this project.
- B. In the event of damage **during installation**, immediately make all repairs and replacements necessary to the approval of the Owner and Owner's Representative at no additional cost to the Owner.
- C. The contractor shall verify subgrade compaction and elevation conditions will be adequate to achieve field performance.
- ~~D. Conformance with building codes: System shall meet applicable codes and ordinances.~~

Verify that area is ready to receive work, and excavations, dimensions, and elevations are as indicated on Drawings.

Beginning of installation means acceptance of existing conditions.

3.4 SYNTHETIC TURF CARPET

- A. ~~After acceptance of the shock absorbing pad,~~ the carpet is to be laid out on the site and consecutive panels to be sewn together at the seams using procedures approved by the manufacturer.
- ~~B. Protect finished shock pad installation from disturbance.~~
- C. Note climatic conditions during placement of individual segments of carpet materials. Make allowances for heat and cold as necessary to provide uniform elongation and tension.
- D. Lay carpet uniformly smooth throughout, with no wrinkles, folds, or overly tight areas.
- E. Any carpet panels exhibiting yarn or fiber from different dye lots which result in a discernable visible appearance shall be rejected.
- F. Any carpet panels exhibiting tufting, yarn or secondary coating defects in excess of 5% which in the Owner's Representative's opinion would impair bonding of adhesives, vertical drainage, stability of yarn or degrades the performance of the turf surface shall be rejected.

3.5 BONDING OF MATERIAL SURFACES

- A. The adhesive bonding of all system material components shall provide a permanent, tight, and secure and hazard free athletic playing surface. The following components, at a minimum, shall meet this requirement. Bonding of:
1. ~~Shock absorbing pad to the base material (if required)~~
 2. ~~Turf to pad~~
 3. Turf to seam tape (if tape is used)
 4. All turf to terminal edges
- B. The bonding design and work shall be such that all surface joint and seams shall remain as required throughout the warranty period as a minimum.

3.6 SEAM CONSTRUCTION

- A. Edges and seams are to be constructed in strict accordance with manufacturer's instructions
- B. The synthetic turf surface shall be installed using sewing techniques for the main seams and glue or hot melt for the inlays. All sewn seams shall be done with high strength durable outdoor cord routinely used for synthetic turf surfaces. Seams shall be indiscernible at the completion of the installation. Shearing of fiber or yarn to achieve a uniform system height must be approved by the owner's representative.
- C. All seams widths are to be the absolute minimum and as approved. All seams (butt joints) shall be traverse to the field direction of play. No head seams are allowed on the playing surface. All lateral seams (if sewn) are to be sewn with a reinforced lock stitch.
- D. Seams shall be sown or glued so that the exposed primary backing does not exceed $\frac{3}{4}$ " maximum
- E. Remove fibers from the stitch line prior to sewing the carpet panels.

3.7 FIELD MARKINGS

- A. Field marking, lines, yard line numbers, hashes and logos shall be as approved by owner prior to fabrication and installation. The Owner reserves the right to reject any turf panels not properly tufted in accordance with the seaming plan.
- B. Field of play perimeter lines and field lines shall be tufted into the turf carpet as shown on the plans. ~~Numbers logos and hash~~ markings are to be inlaid prior to insertion of the infill.
- C. All inlays (lines, numbers, letters, hash marks and logos) must be reinforced with a mechanical attachment such as hand sewing to secure the corners and edges down to the seaming tape or primary backing. This process is in addition to the adhesive process of securing the inlays.
- D. All synthetic turf carpet used for field marking must be the same yarn, type and height, **upgraded turf inlays accepted.**
- E. Under no circumstances will inlays or repairs of less than 4 inches in width be allowed.

3.8 RESILIENT IN-FILL MATERIALS

- A. The infill materials is to be approved by the manufacturer, and shall be inserted according to the manufacturer's approved procedures by qualified installers.
- B. Precisely blend the infill materials to obtain a homogeneous mix (as required).
- C. Install and compact the infill materials so that the infill is settled and will meet the system specifications throughout the warrantee.

3.9 MAINTENANCE EQUIPMENT AND MATERIAL STOCKPILE

- A. Stockpile the following additional materials for Owner's future use at an on-site location to be determined.
- B. Arrangements to be made for the Owner to purchase additional quantities of the infill mixture for addition to the field if and when the need arise.
- C. The Synthetic Turf Provider will provide the following additional material:
1. Twenty (25) linear feet of one (1) normal roll width to the Owner surplus carpet for repairs caused by vandalism or acts not covered by the warranty.

2. One (1) super-sack container of resilient infill materials.

3.10 ~~RECORD DRAWINGS~~

- ~~A. Maintain progress drawings on the construction site at all times during installation of the synthetic field system. Make a daily record of all work installed each day until completion of the work.~~

OWNER'S INSTRUCTIONS

- A. The Synthetic Turf Provider shall instruct the Owner's maintenance staff on the care and maintenance of the synthetic turf surface.
- B. Notify Owner's Representative when instructions are to be given.
- C. Provide Five (5) complete maintenance manuals to be given to the Owner; one maintenance manual to be given to the Owner's Representative.
- D. Furnish Five (5) copies of manufacturer's literature, samples, certifications, or laboratory analytical data for all items submitted as a part of this specification.

PROJECT CLOSEOUT

- A. Remove all debris, excess materials, etc. from site and leave work in clean, orderly and acceptable condition.
- B. Provide all submittals, quality assurance tests, manuals, equipment and warranties.
- C. One Year Inspection: The Owner's Representative shall perform a conformance survey on a 20-foot grid over the finish surface of the entire playing field using a dial gauge. After review, the survey will be returned to Synthetic Turf **Customer Surface Department** with areas out of tolerance noted for correction. Synthetic Turf Installer will be required to correct areas out of tolerance and certify that corrections have been made ~~The Synthetic Turf provider shall conduct an ASTM-F355/F1936 impact test using an independent lab and provide the results to the Owner.~~

END OF SECTION