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ADDENDUM NO. 2

The Architect/ Engineer issues this addendum, applicable to the above named project, to all known Contractors before receipt of proposal.

This addendum includes Item Number 2-1 thru 2-6. This addendum item shall be fully incorporated into the Bidding/Contract Documents and have the same force and effect as though originally included.

The Bidder shall acknowledge receipt of this Addendum No. 2 on the Bid Proposal Form in the place provided.

GENERAL

Item 2-1: Pre-Bid Meeting

Attached is the pre-bid sign-in sheet and meeting agenda

Item 2-2: Pre-Bid Meeting Questions

Q: What is the depth of the electrical utilities on the south plaza area to receive new synthetic turf (bid alternate L-1)?

A: The utilities should be to a depth of 18".

Q: What type of turf are you looking to install for bid alternate L-1?

A: A short type turf ideal for lawns or playgrounds (Polyethylene Monofilament).

LANDSCAPE ARCHITECTURAL

Specifications

Item 2-3: Section 00 42 00 Bid Form

Replace this section in its entirety.

Item 2-4: Section 01 23 00 Alternates

Refer to paragraph 3.1 Schedule of Alternates. Add the following:

C. **Alternate No. L-3.** List the price to add a "Thatch Zone or Thatch Blend to the base bid product. Total product shall have a minimum face weight of 50oz.

Item 2-5: 32 18 13 Synthetic Grass Surfacing

Replace this section in its entirety.

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Drawings

Item 2-6: L2.01 Site Layout Plan

Refer to Bid Alternate L-2 Plan and Details. The aggregate base material for this area shall be 2" min.

Refer to the Jump Lane Layout Plan. Change note on drawings that references bid alternate L-3 to bid alternate L-2.

END OF ADDENDUM NO. 2



Wayne State College
Football Field and Track Improvements / Soccer Field Expansion
 Pre-Bid Meeting Sign-In Sheet
 645-020-13
 March 28, 2013

Name	Organization	Phone	E-mail
Kyle King	NEMAHA LANDSCAPE	402-434-5471	Kyle.King@nemaha.net
JEREMY VAN AMPING	NEMAHA	402-610-0752	jeremy.vanamping@nemaha.net
Brian Lauderville	Midwest FieldTurf	712-263-6445	brinn@midwestfieldturf.com
Al McKellar	Pro Grass	719-243-5951	amckellarc@prograssurf.com
SCOTT WILLIAMS	ATG Sports	402-637-1465	scottw@atgsports.com
MARK WEST	DOUBLE E CONSTRUCTION	913-645-5570	dmswest@kc.rr.com
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Meeting Agenda

March 28, 2013 | WSC Football, Track and Soccer Pre-Bid
10:00 am, South Stadium Plaza
TCEP Project # 645-020-13

1. Project Overview

a. Sign in Sheet

b. Bid Opening

- i. 2:00pm, Friday April 5, 2013
- ii. Notice to Proceed: May 6, 2013

c. Site Access

- i. Stage on east side of property
- ii. Maintain a clean site. Watch the tracking.

d. Soccer Expansion Project

- i. Base Bid Summary
 1. Establish and maintain temp. fence for project
 2. Establish and maintain the SWPPP permit.
 3. Soil removal from football to be used on the soccer field
 - a. Salvage electrical wire
 - b. Salvage the goal post
 - c. Owner to remove irrigation heads and valves
 4. Install new concrete walks and handrails
 5. Install segmental retaining walls
 6. Extend storm drainage piping
 7. Install 4' perimeter fencing w/ decorative fence columns
 8. Fine grading soccer field
 9. Plant new turf grasses
 10. Expand / adjust existing irrigation system
 11. Rough grading football field
 - a. Provide as built survey of rough grading for approval
 12. Install the nailer boards, aggregate base material and subdrainage system for the football synthetic turf project
 - a. Provide as built survey of the aggregate base (by turf contractor)
 - b. Conduct a infiltration rate test
 13. Install new field goals, irrigation qc's, and electrical boxes within the football field

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14. Install decorative fence and columns along south end of the football stadium.

- ii. Bid Alternate L-1 Summary
 - 1. Install a 7' high chain link fence
- iii. Bid Alternate L-2 Summary
 - 1. Install the fiber conduits and pull boxes
 - 2. Owner flagged a new route
- iv. Bid Alternate L-3 Summary
 - 1. Replace the south stadium turf with new sod and irrigation
- v. Bid Alternate L-4 Summary
 - 1. Extend the 1 year sub-base warranty to 8 total years

e. Football Field and Track Improvements

- i. Base Bid Summary
 - 1. Installation of the synthetic turf product
- ii. Bid Alternate L-1 Summary
 - 1. Apply a structural wear coat over existing track
 - 2. Repair any concrete areas along the runways
 - 3. Install new track surfacing over repair runways
- iii. Bid Alternate L-2 Summary
 - 1. Replace the south stadium turf with short pile height synthetic turf w/out the infill material

f. Completion Dates

- i. Soccer Expansion Project Substantial Completion Date: July 1, 2013
 - 1. Prepare the aggregate base for synthetic turf
 - 2. Install sod on soccer field
- ii. Football and Track Improvements Substantial Completion Date: August 1, 2013
 - 1. Installation of synthetic turf
 - 2. Resurface the track and runways

g. Addendum

- i. Last day to ask questions: Tuesday April 2nd at 5pm.
- ii. Last addendum will be issued Wednesday April 3rd at 12pm.
- iii. Addendum Items
 - 1. Pre-bid meeting sign in sheet and questions
 - 2. Update fiber routing plan
 - 3. Segmental wall products
 - 4. Modify the turf warranty language

h. Questions

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SECTION 00 42 00 - BID FORM

1.1 BID INFORMATION

- A. Project Name: **Wayne State College Football and Track Improvements**
- B. Project Location: Wayne State College, Wayne, Nebraska
- C. Date: April 5, 2013.
- D. Submitted To: Board of Trustees of the Nebraska State Colleges D.B.A. Wayne State College
- E. Submitted By: _____.
- F. Addenda Received:_____.

1.2 BASE BID

- A. The undersigned, having examined the plans, project manual and related documents, and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies to do the work in accordance with the Contract Documents and terms and condition described below:
- B. BASE PRICE: The undersigned proposes to perform the Work shown/described in the bidding documents, including all Allowances (if included), for the sum of:
 - 1. _____
Dollars(\$_____).

1.3 BID SUPPLEMENTS

- A. Alternates:
 - 1. Alternate No L-1. Installation of additional synthetic turf surfacing as indicated on the drawings.

Add:_____ Dollars(\$_____).



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2. Alternate No L-2. All work associated with resurfacing and repairing the running track and runways.

Add: _____ Dollars(\$ _____).

3. Alternate No L-3. All work associated with adding a thatch zone to the synthetic turf product.

Add: _____ Dollars(\$ _____).

1.4 BID SECURITY

- A. Bid Bond: Bid Bonds or a certified check in the amount of 5% will be required on all bids that exceed \$100,000. The bid bond or check will be required with the bid prior to the stated bid time. If a bond or certified check is not turned in with the bid, the bid will not be considered. The bid bond or certified check is to be payable, without condition, to the Owner, as evidence of the good faith of the bidder and as agreed liquidated damages in case the Bidder whose proposal is accepted fails to enter into a contract within 10 days from the notice of award. No bid bond or certified check will be required for bids under \$100,000.

1.5 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in State of Nebraska, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.6 BID GUARANTEE

- A. Execution of Agreement: The undersigned will, within fourteen (14) days of receipt of notice of acceptance of this proposal, enter into agreement with the Owner on the Owner's agreement form and will deliver the required Performance Bond and Labor and Materials Payment Bond.
- B. Recognizing that time will be of the essence, the undersigned proposes, upon execution of the Agreement Between Owner and Contractor or upon receipt of notice to proceed from the Owner (whichever comes first), to immediately start the Work of the Contract. The undersigned proposes to bring the work to a state of Substantial Completion by **August 1, 2013**.
- C. Markup percentage for all changes in the work shall not exceed 10%. This shall include all overhead and profit associated with each change. See Section 012600, "Contract Modification Procedures", for administrative and procedural requirements for handling and processing contract modification. See Section 012100, "Allowances" for exceptions to this requirement.\

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Respectfully Submitted,

(Signature)

(Company)

(Business Address)

(Seal, if by a Corporation)

(Telephone Number)

END OF SECTION 00 42 00

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SECTION 32 18 13 – SYNTHETIC GRASS SURFACING

1. GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
 - 1. See Section 00 73 00 “Supplementary Conditions”, if included, for requirements relating to interpretation of the drawings and specifications.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials, tools and equipment necessary to install an in-filled synthetic turf system on an aggregate subbase prepared by others, as indicated on the Plans as specified herein. The installation of all new materials shall be performed in strict accordance with the manufacturer’s written installation instructions, and in accordance with all approved shop drawings.

1.3 SUBMITTALS

A. Product Data:

1. Synthetic Turf:

- a. Provide (3) 12” x 12” samples (without infill) at pre-bid meeting of finished product clearly marking manufacturer, product name, and turf specifications as it compares to the properties listed in section 2.1, B.
 - b. Provide (2) 12x12 inches in size for shop drawings, illustrating details of finished product
- 2. Sewn Seams: 12” minimum
 - 3. Infill Mixture: 1 lb of proposed infill material
 - 4. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.
 - 5. 3rd Party laboratory reports on ASTM tests as follows:
 - a. ASTM D41 8 or D5848: Pile Height, Face Weight & Total Fabric Weight
 - b. ASTM D41 8 or D5848: Primary & Secondary Backing Weights
 - c. ASTM DI 335: Tuft Bind
 - d. ASTM DI 682 or D5034: Grab Tear Strength
 - e. ASTM F1936: Verification that product meets GMAX minimums and maximums for life of installation

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- B. Shop Drawings: Prior to ordering of materials, the Contractor shall submit the following shop drawings to the Architect for review prior to the manufacturing and shipping of materials:
1. Seam layout of the field
 2. Field Marking Plan and details for the specified sports.
 - a. NCAA Division II Football
 - b. NCAA Division II Soccer (70 yards wide x 120 yards long)
 - 1) Color: Yellow
 - c. NCAA Division II Rugby
 - 1) Provide a set of dashed lines running entire length of field (parallel to soccer) offset 5 meters from the soccer sideline
 - 2) Each dashed line will be 16' – 10" in length with the midpoint of each dash located at the following football yard lines: 5, 25, 40, 50 for a total of 7 dashed on each side of the field
 - 3) Color: Dark or Light Green to offset color of football.
 - d. 22 Meter Golf Line
 - 1) Make the football 25 yard line a 3-color line (Black, White, Black)
 3. Field Graphics
 - a. Provide the following graphics
 - 1) Large 3-color mild-field logo (black, gold, white)
 - 2) Colored end zones (Black)
 - 3) Minimum of 15'H, 2-color end zone lettering
 - a) WAYNE STATE (end zone 1 – gold letters with white outline)
 - b) WILDCATS (end zone 2 - gold letters with white outline)
 4. Details on construction, especially any details that may deviate from these Plans and Specifications.
 5. Submit the fiber manufacturer's name, type of fiber and composition of fiber. To ensure products specified, a letter shall be provided from the yarn manufacturer stating which product is being supplied to the project.
- C. **Prior to the beginning of installation, the manufacturer/installer of the synthetic turf system shall inspect the aggregate subbase for tolerance to grade. Supply the Sub-base Contractor, and Architect a Certificate of subbase acceptance for the purpose of obtaining manufacturer's warranty for the finished synthetic playing surface.**

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- D. The turf contractor shall provide the necessary testing data to the owner that the finished field meets the required shock attenuation, as per ASTM F1936.
- E. Prior to Final Acceptance, the Contractor shall submit to the Owner three (3) copies of the Maintenance Manuals, which shall include all necessary instructions for the proper care and preventive maintenance of the synthetic turf system, including any necessary painting and striping.
- F. Project Record Documents: Record actual locations of seams, drains or other pertinent information.
- G. **Warranty: Submit Manufacturer Warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer. Response time for warranty repairs is 48 hours or less. Submit information confirming 3rd party insurance policy, non-cancelable and pre-paid, in the effect covering this installation, and underwritten by a AM Best A Rated Insurance Carrier. Supply Warranty Insurance Certificate with complete information on contacting the Insurance Carrier should a claim need to be made.**

1.4 QUALITY ASSURANCE

- A. **Prior to the Owners approval of a specified artificial turf system, the Manufacturer shall specify in writing the their turf products do not violate any other manufacturer's patents, patents allowed or patents pending and shall not hold WCS liable for and such violations.**
- B. Manufacturer Qualifications:
 - 1. Must be experienced in the manufacturing of this specific type of synthetic infill, Monofilament and Slit-Film grass system, for at least five (4) years that is proposed for field. This includes the same Monofilament and Slit-Film fiber, backing, the backing coating, and the installation method.
 - 2. Must have a football field of 65,000 sq. ft or more of the exact specified material, including the infill material and fiber, in play for at least three (3) year's with the same manufacturer and company this is proposing for this field.
- C. Installer Qualifications:
 - 1. The Turf Contractor must provide competent workmen skilled in this specific type of synthetic grass installation
 - 2. The designated Supervisory Personnel on the project must be certified, in writing by the turf Manufacturer, as competent in the installation of this Monofilament and Silt Film material, including sewing seams and proper installation of the infill mixture.
 - 3. The Manufacturer shall have a representative on site to certify the installation and Warranty compliance.
 - 4. Have a proper state contractor's license at the time of bidding, in good standing, and never had a license revoked or suspended.
 - 5. The installer shall have a minimum of 100 turf fields installed in the continental United States.

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- D. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ASTM Standard Test Methods:

- a. D1577 – Standard Test Method for Linear Density of Textile Fiber
- b. D5848 – Standard Test Method for Mass Per Unit Area of Pile Yam Floor Covering
- c. D5823 – Standard Test Method for Tuft Height of Pile Floor Coverings
- d. D418 – Standard Test Method for Testing Pile Yam Floor Covering Construction
- e. D1335 – Standard Test Method for Turf Bind of Pile Yarn Floor Coverings
- f. D5034 – Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Strength)
- g. F1015 – Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
- h. D4491 – Standard Test Method for Water Permeability of Geotextiles by Permittivity
- i. D2859 – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering
- j. F355 – Standard Test Method for Shock – Absorbing Properties of Playing Surfaces
- k. F1936 – Standard Test Method for Shock – Absorbing Properties of North America Football Field Playing Systems as Measured in the Field
- l. D1557 – Test Method for Laboratory Compaction Characteristics of Soil

1.5 EXISTING CONDITIONS

- A. The surface on which the new synthetic turf system is to be placed is a limestone aggregate base over a subsurface drainage system. A nailer board will be attached to the concrete border on all the sides of the field for the installation and fastening the ends of the synthetic turf material in a secure fashion. The Turf Contractor shall be responsible for any damage to the aggregate base, subsurface drainage system, running track, running track trench drain and concrete border during installation of the synthetic turf system.

1.6 SURFACE AREA

- A. See Plans for site layout. Contractor to verify all measurements prior to commencing turf installation.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to project site in wrapped condition
- B. Store products under cover and elevated above grade

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1.8 WARRANTY

A. The Turf Manufacture 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 with no uninsured periods or periods of self-insurance. The turf manufacturer must verify that their onsite representative has inspected the installation and that the work conforms to the manufacturer's requirements. The warranty shall be non-prorated and shall include the following.

1. The warranty submitted must have the following characteristics:
 - a. Specifically provide for reimbursement to the warranty holder in the event of bankruptcy of the synthetic turf provider.
 - b. Must provide full coverage, including UV resistance for the entire period.
 - c. Must warrant materials and workmanship inclusive of infill, seaming, labor and colored inlays for even markings.
 - d. Must warrant that the materials installed meet or exceed the product specifications.
 - e. Must have a provision to either make a cash refund or repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.
 - f. Must cover both workmanship and all self-manufactured or procured materials.
 - g. Guarantee the availability of replacement material for the synthetic turf system installed for the full warranty period.
 - h. Must be a third party insured warranty from an A-rated insurance company (rated by AM Best Company). Certificate of Insurance must be submitted with final warranty to OWNER.
 - i. Response time for warranty repairs is 48 hours or less.
 - j. Must maintain as ASTM 355 G-Max of 130-150 for the life of the Warranty
 - k. Insurance coverage shall not limit the hours of use
 - l. Insurance coverage shall not exclude heavily traffic areas or related uses such as team or band practices
 - m. Insurance shall not exclude any colored turf fibers
2. The warranty shall include general wear and damage caused from UV degradation. The Warranty shall specifically exclude vandalism, and acts of God beyond the control of the owner or the manufacturer.

B. The Turf Contractor shall provide shall provide a Warranty to the owner that covers the defects in the installation workmanship, and further warrant that the installation was done in accordance with both the Manufacture's recommendations and any written directives of the Manufacturer's onsite representative.

1. The Warranty shall include the cost of eight (8) annual visits for grooming and consultation. The contractor shall provide at a minimum the following:
 - a. Annual on-site inspection analysis of seams, infill, inlay, edge, and field insert repair as required.

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- b. Annual deep cleaning of synthetic turf consisting of decompaction, deep cleaning, and finish clean/turf grooming.
- c. Annual synthetic turf report with results of inspection analysis, photos, results of cleaning process, and recommendations of future cleaning / maintenance.
- d. GMAX attenuation testing results per ASTM F1936, by an independent testing agency, shall be provided to the Owner upon initial install each year of play. If the GMAX values are found to be high at any time, the contractor shall be responsible to bring the field in compliance at the contractor's experience.
- e. Work with the owner to install additional infill product in low areas as required.

C. Maintenance Service

- 1. The Turf Contractor will train the Owner's facility maintenance staff in the use of the turf Manufacturer's recommended groomer / sweeper.

2. PRODUCTS

2.1 MATERIALS

A. The components of the artificial grass surface field surface system shall consist of:

- 1. A carpet made of polyethylene non post-fibrillated Monofilament and Silt-Film fibers (TenCate or pre-approved equivalent), tufted into a fibrous, perforated pours backing. The fibers shall be tufted to a finished pile height of approximately 2.25 to 2.8 inches.
 - a. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in Wayne, Nebraska, be resistant to insect infestation, rot, fungus and mildew; to ultraviolet light and heat degradation, and shall have the basic characteristic of flow-through drainage allowing free movement of surface run-off vertically through the synthetic turf system.
 - b. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use. The system shall be suitable for football, soccer, PE classes, intramurals, marching band and recreational use.

B. The synthetic turf shall have the following properties:

- 1. Fiber
 - a. Material: Monofilament and Slit-Film fibrillated UV – resistant polyethylene
 - 1) Fibers must alternate rows
 - or-
 - 2) Fibers must be tufted in the same linear row

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- b. Denier:
 - 1) Slit Film: 5,000 minimum
 - 2) Monofilament: 9,000 minimum
- 2. Backing (primary and secondary)
 - a. Weight Primary: Not less than 6 oz per sq. yd.
 - b. Weight Secondary: Not less than 14 oz per sq. yd.
- 3. Fabric
 - a. Width: 15ft (minimum)
 - b. Tuft Bind Strength: >8 lbs without infill
 - c. Tufting Gauge: 3/8" to 3/4"
 - d. Pile Height: 2.25" minimum
 - e. Pile Weight: 40 oz per sq. yd minimum
 - f. Total Carpet Weight: 55 oz per sq. yd minimum
 - g. Grab tear strength: Not less than 170 lbs
 - h. Pill burn test: Passing results tested as installed
 - i. Permeability: >30 inches/hour
- 4. Infill Materials: 2 types of infill material will be acceptable for this project
 - a. 100% (Cryogenic) recycled SBR rubber crumb. Minimum infill weight of 3.5 lbs/ft.
-or-
 - b. Layered system of (Cryogenic) recycled SBR rubber crumb and washed silica sand. Minimum infill weight of 3.0 lbs/ft (Rubber), 6.0 lbs/ft (sand).
- C. Thread for sewing seams of turf shall be as recommended by the synthetic turf Manufacturer.
- D. Glue and seaming fabric for inlaying lines and marking shall be as recommended by the synthetic turf Manufacturer. All turf roll seams must be sewn. Inlays shall be installed either cutting the or by shaving the backing of the turf and applied using special hot melt adhesive. The purpose of this is to provide a consistent fiber height.
- E. Shock Absorbency of the Synthetic Turf System:

Player protection is an important aspect of athletic field performance for natural grass fields and synthetic turf systems. It is well established and accepted by the Owner that Owner's maintenance plays an important role in the subsequent Gmax test values for installed, in-filled, synthetic turf systems of the type specified herein in conjunction with the design characteristics of the manufactured product and installation process. As such, the synthetic turf system installation, designed for multiple sport usage including varsity football and soccer practices and games, will be periodically tested for shock attenuation (Gmax) properties in accordance with ASTM F 1936 and F355, Method A, per frequency intervals and Gmax standards provided herein.

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1. Test Locations:

- a. The installed system will be tested for Gmax at the locations defined in ASTM F 1936 as modified with two (2) additional locations for the soccer field: at one soccer goal's mouth and at one corner of a penalty box. All test locations will be offset approximately 12 inches from any fabric seam, and all subsequent retesting will be performed at the exact same locations as previous test locations for comparisons.

2. Test Frequency and Gmax – Compliance Standards: The synthetic turf Contractor shall arrange and pay for the testing of the synthetic turf field for Gmax compliance.

- a. At Substantial Completion the Gmax average shall not exceed 150 G's with no single location value in excess of 130. Submit three (3) copies of the Gmax test report to the Engineer prior to the date of Substantial Completion.
- b. **Refer to the warranty for additional testing requirements.** (See Maintainability below for Gmax compliance standards during the warranty period).

3. Maintainability for Gmax Properties:

It is important to Owner that the synthetic turf system can be easily maintained by Owner's maintenance staff for cleanliness as well as to retain Gmax properties at relatively low values for as long as possible. The product design and infill components and maintenance procedures should be such that the goals listed below are achievable by trained, user maintenance staff using equipment provided by the Contractor that is not abusive to the pile fiber fabric.

- a. The infill mixture shall be designed and installed to alleviate excessive compaction of the infill that results in excessive Gmax values in too short a period of time. The use of harsh, abusive procedures and equipment that could shorten the useful life expectancy of the synthetic turf fabric and/or pile fibers is prohibited.
- b. Downtime for maintenance should be minimized. Brushing to level out the infill should not be required more frequently than once every week or two.
- c. Top dressing at Owner's expense to add additional infill over the whole field should not be required more frequently than every 2 to 4 years. Gmax growth over time should be slow and predictable, assuming that the Owner implements and follows an adequate inspection and maintenance schedule as recommended by the synthetic turf manufacturer. It is also assumed that the Owner's maintenance staff must periodically add more infill to localized low spots and thoroughly brush the field to level out the infill for scheduled field use and immediately prior to Gmax testing.
- d. During the first five (5) years the infilled synthetic turf system shall be maintainable by the Owner's staff in the Gmax Average range of 125-150 G's.
- e. At no time during the warranty period shall the Gmax Average for the field exceed 150.

F. Maintenance Equipment

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1. At the conclusion of the project, at no additional cost to the Owner, the Contractor shall supply the Owner with maintenance equipment as recommended by the synthetic turf manufacturer in order to properly maintain the surface uniformity of the infill material and shall demonstrate the use of the equipment to the Owner.
 - a. Provide one (1) Maintenance / drag equipment with rake tines.
 - 1) Green's Groomer
 - 2) Fieldspec GroomAll
 - 3) Or approved equivalent
 - b. Provide one (1) turf cleaning / sweeper machine with a 6-foot magnet attachment
 - 1) Green's Litter Kat with magnet attachment
 - 2) Or pre-approved equivalent

3. EXECUTION

3.1 GENERAL

- A. The installation shall be performed in full compliance with the reviewed shop drawings.
- B. Only factory-trained technicians skilled in the installation of athletic caliber synthetic turf systems, working under the direct supervision of the approved product manufacturer/installer's supervisors, shall undertake the placement of the system.
- 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 and must be perfectly clean as installation commences and shall be maintained by the synthetic turf Contractor in that condition throughout the process.

3.2 EXAMINATION

- A. Verify that all sub-base leveling is complete prior to installation.
- B. The surface to receive the synthetic turf shall be inspected by the Installer, and prior to the beginning of installation, the Installer must accept the sub-base planarity in writing. The acceptance will depend on the sub-base contractor providing the installer with test results indicating that compaction and planarity are in compliance with the synthetic turf manufacturer's specifications. The surface must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.
- C. Turf contractor shall verify the installed sub-bas has been tested for permeability prior to the installation of the synthetic turf system.

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- D. The Turf Project Superintendent shall thoroughly inspect all materials delivered to the site both for quality and quantity to assure that the entire installation shall have sufficient material to maintain the schedule and proper mixing ratios.
- E. Synthetic turf shall be loose laid across the field, stretched, and attached in accordance with the perimeter edge detail. Turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed in the playing field inside the football/soccer sidelines.
- F. Turf fabric seams shall be sewn using high-denier, UV-stabilized polyester thread. All seams shall be transverse to the field direction, i.e., run perpendicularly across the field. Seams shall be flat, tight, and permanent with no separation or fraying.
- G. Infill materials shall be applied in numerous thin lifts using specials broadcasting equipment. The turf shall be raked and brushed properly as the mixture is applied. The infill material shall be installed to a depth of 1.75 inches in order to comply with the initial Gmax standards. The infill can only be applied when dry.

3.3 FIELD MARKINGS AND DECORATIONS

- A. The football field will have “tufted-in” white fabric as required for 5-yard stripes, goal lines, end lines and football sidelines. All other football field markings shall be “inlaid” fabric in accordance with the project Plans and Specifications and with approved Shop Drawings.
 - 1. Football field turf shall have inlaid numbers, inbounds lines, hash marks and yard line extensions.
- B. All soccer field markings (penalty area, penalty area arcs, penalty spots, center circle, goal lines and corner kick arcs) will be inlaid yellow in accordance with the project Plans and Specifications and with approved Shop Drawings.
- C. All Rugby field markings will be inlaid dark or light green in accordance with the project Plans and Specifications and with approved Shop Drawings.

3.4 CLEAN UP

- A. The synthetic turf 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 keep the work areas clean and clear of debris throughout the project.
- C. 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.

3.5 FINAL SUBMITTALS

645-020-13

- A. At no additional cost to the Owner, the Contractor shall supply the Owner with sweeping and brushing equipment as recommended by the synthetic turf manufacturer in order to properly maintain the surface uniformity of the infill material.
- B. The Contractor shall provide the Owner written certification that 100% of the SBR rubber infill used on the project was derived from recycled tires.
- C. All warranty information.
- D. Repair Materials
 - 1. Upon substantial completion provide the following items to the owner.
 - a. Seaming Tape: 200 LF
 - b. Seaming Epoxy: Sufficient quantity for 50 SF
 - c. Turf Fabric (Green): 250 SF with at least one-piece 15' wide x 10' long
 - d. Turf Fabric (White): 100 SF
 - e. Turf Fabric (Yellow): 100 SF
 - f. 4" Wide Colored Fabric: 100 LF minimum of each color specified for inlaid lines
 - g. 500 pounds of infill material in weatherproof bags.

END OF SECTION 32 18 13