

ADDENDUM NO. 01

Issued: July 18, 2023
Project: LHS/LNHS Baseball and Softball Field Upgrades
Project No. 23023/23047
Owner: Liberty Public Schools
8 Victory Lane
Liberty, Missouri 64068

Bidding Documents Issued: July 12, 2023

This Addendum includes this 1 page and the following attachments:

Project Manual:

- Reissued Section 000105 "Certifications Page" consisting of 1 page.
- Reissued Section 000110 "Table of Contents" consisting of 2 pages.
- Reissued Section 321813 "Synthetic Turf Surfacing for Athletics" consisting of 12 pages.

PROJECT MANUAL REVISIONS

A1 SECTION 000005 – CERTIFICATIONS PAGE

- A1.1 REPLACE existing Section 000005 "Certifications Page" with the attached revised Section 000005 "Certifications Page", dated July 18, 2023.

A2 SECTION 000110 - TABLE OF CONTENTS

- A2.1 REPLACE existing Section 000110 "Table of Contents" with the attached revised Section 000110 "Table of Contents", dated July 18, 2023.

A3 SECTION 321813 – SYNTHETIC TURF SURFACING FOR ATHLETICS

- A3.1 REPLACE existing Section 321813 "Synthetic Turf Surfacing for Athletics," with the attached revised Section 321813 "Synthetic Turf Surfacing for Athletics", dated July 18, 2023.

END OF ADDENDUM NO. 01



SECTION 000105 - CERTIFICATIONS PAGE

ARCHITECT

I HEREBY, PURSUANT TO RSMO 327.411, STATE THAT THE SPECIFICATIONS INTENDED TO BE AUTHENTICATED BY MY SEAL ARE LIMITED TO SPECIFICATIONS LISTED BELOW:

DIVISION 1 SECTIONS: 011000, 012100, 012300, 012500, 013100, 013200, 013233, 013300, 014000, 014200, 014529, 016000, 017419, 017700, 017823, 017839, 017900
DIVISION 2 SECTION: 024119
DIVISION 5 SECTION: 055000
DIVISION 7 SECTIONS: 071900, 073113, 076200, 079200
DIVISION 8 SECTIONS: 081113, 083613
DIVISION 9 SECTION: 099113
DIVISION 11 SECTION: 116673
DIVISION 32 SECTIONS: **321813, 323113**

I HEREBY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER SPECIFICATIONS, DRAWINGS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ARCHITECTURAL OR ENGINEERING PROJECT OR SURVEY.

KEVIN NELSON

JULY 18, 2023

ARCHITECT

DATE



DOCUMENT 000110 – TABLE OF CONTENTS

Project Name: Liberty Public Schools - LHS/LNHS Baseball & Softball Upgrades
 Project No.: 23023 & 23047
 Site Addresses:
 23023 LHS - 200 Blue Jay Drive, Liberty, Missouri 64068
 23047 LNHS - 1000 NE 104th Street, Liberty, Missouri 64068

Revisions	Date
ADD 01	07.18.2023

Latest Revision Original Issue

INTRODUCTORY INFORMATION

000101	Project Team Directory		07.12.2023
000105	Certifications and Seals	07.18.2023	07.12.2023
000110	Table of Contents	07.18.2023	07.12.2023

BIDDING REQUIREMENTS

(Refer to Construction Manager's Front End Manual for additional Bidding Requirements)

CONTRACTING REQUIREMENTS

(Refer to Construction Manager's Front End Manual for additional Contracting Requirements)

DIVISION 1 – GENERAL REQUIREMENTS

011000	Summary		07.12.2023
012100	Allowances		07.12.2023
012300	Alternates		07.12.2023
012500	Substitution Procedures		07.12.2023
013100	Project Management and Coordination		07.12.2023
013200	Construction Progress Documentation		07.12.2023
013233	Photographic Documentation		07.12.2023
013300	Submittal Procedures		07.12.2023
014000	Quality Requirements		07.12.2023
014200	References		07.12.2023
014529	Testing and Inspections		07.12.2023
016000	Product Requirements		07.12.2023
017419	Construction Waste Management & Disposal		07.12.2023
017700	Closeout Procedures		07.12.2023
017823	Operation and Maintenance Data		07.12.2023
017839	Project Record Documents		07.12.2023
017900	Demonstration and Training		07.12.2023

DIVISION 2 – EXISTING CONDITIONS

024119	Selective Demolition		07.12.2023
--------	----------------------	--	------------

DIVISION 3 – CONCRETE

033000	Cast-in-Place Concrete		07.12.2023
--------	------------------------	--	------------

DIVISION 4 - MASONRY

042000	Unit Masonry		07.12.2023
--------	--------------	--	------------

DIVISION 5 - METALS

051200	Structural Steel Framing		07.12.2023
055000	Metal Fabrications		07.12.2023

DIVISION 6 – WOOD AND PLASTICS

061000	Rough Carpentry	07.12.2023
061063	Exterior Rough Carpentry	07.12.2023
061600	Sheathing	07.12.2023

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

071900	Water Repellents and Sealers	07.12.2023
073113	Asphalt Shingle Roofing System	07.12.2023
076200	Sheet Metal Flashing and Trim	07.12.2023
079200	Joint Sealants	07.12.2023

DIVISION 8 - DOORS AND WINDOWS

081113	Hollow Metal Doors and Frames	07.12.2023
083613	Sectional Doors	07.12.2023

DIVISION 9 - FINISHES

091113	Exterior Painting	07.12.2023
--------	-------------------	------------

DIVISION 11 - EQUIPMENT

116673	Exterior Athletic Equipment	07.12.2023
--------	-----------------------------	------------

DIVISION 26 - ELECTRICAL

260500	Common Work Results for Electrical	07.12.2023
260519	Low-Voltage Electrical Power Conductors and Cables	07.12.2023
260526	Grounding and Bonding for Electrical Systems	07.12.2023
260529	Hangers and Supports for Electrical Systems	07.12.2023
260533	Raceway and Boxes for Electrical Systems	07.12.2023
260543	Underground Ducts and Raceways for Electrical Systems	07.12.2023
260553	Identification for Electrical Systems	07.12.2023

DIVISION 27 – COMMUNICATIONS

270500	Common Work Results for Communications	07.12.2023
--------	--	------------

DIVISION 31 - EARTHWORK

311000	Site Clearing	07.12.2023
312000	Earth Moving	07.12.2023

DIVISION 32 - EXTERIOR IMPROVEMENTS

321313	Concrete Paving	07.12.2023
321373	Concrete Paving Joint Sealants	07.12.2023
321813	Synthetic Turf Surfacing for Athletics	07.18.2023 07.12.2023
323113	Chain Link Fences and Gates	07.12.2023

DIVISION 33 - UTILITIES

334100	Storm Utility Drainage	07.12.2023
--------	------------------------	------------

END OF TABLE OF CONTENTS

SECTION 321813 - SYNTHETIC TURF SURFACING FOR ATHLETICS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes synthetic grass surfacing.
 - 1. Work included in this Section includes design, procurement, and installation of a new synthetic playing field system as shown on the drawings.
- B. Synthetic Turf work includes, but is not limited to, the following:
 - 1. A complete installation of turf including fusion at the seams, attachment to perimeter nailer, inlaid lines, markings and logos, installation of infill materials, installation of turf on top of drain inlets, communication boxes, etc.
 - 2. Coordination with other sub-contractors responsible for curbs, sidewalks, nailers, goal posts, drainage, gravel base, etc.
 - 3. A resilient infill system, consisting of a mixture of sand and rubber granules.
 - 4. The primary method of attaching turf together will be by fusion at the seams.
 - 5. Edge details.
 - 6. Maintenance manual.
 - 7. Written 8-year warranty supported by a third party insured warranty policy from an A- Rated domestic insurance carrier. Warranty shall be full replacement for lifetime of warranty. (No pro-rated warranties)
 - 8. Striping and seaming shop drawing: Striping plan; layouts for the sports as shown on the drawings.
 - 9. Training of field maintenance personnel in proper care maintenance procedures.
- C. Evaluation: Owner and the Design team will evaluate the following items when determining the successful bidder: Price, Product, Company History, References, Site Visits, Warranty and Insurance and Track Record.
- D. Related Requirements:
 - 1. Section 311000 "Site Clearing" for site preparation.
 - 2. Section 312000 "Earth Moving" for preparation, compaction, and grading of granular base.
 - 3. Section 116673 "Exterior Athletic Equipment" for related items.

1.2 BID SUBMITTALS

- A. Submittals required with Bid - One (1) sample is required.
 - 1. The following information from independent testing laboratory:
 - a. Fiber Denier: ASTM 1907.
 - b. Face Weight: ASTM D5548.
 - c. Pile Height: ASTM D5848.
 - d. Total Weight: ASTM D5848.
 - e. Drainage Through Turf: ASTM F1551.
 - f. Artificial Weathering (3,000 hours UVA) Turf Color Change: FIFA ISO 20105-A02.
 - g. Artificial Weathering (3,000 hours UVA) Pile Yarn tensile Strength: FIFA ISO 13864.
 - h. Artificial Weathering (3,000 hours UVA) Infill Color Change: FIFA ISO 20105-A02.
 - i. Tuft bind Pull-out: ASTM 1335 or ISO 4919.
 - j. Impact attenuation: ASTM 1936.
 - k. Water Permeability: ASTM F1551.
 - 2. Boxed sample of turf with infill.
 - 3. Synthetic Turf Rag Sample: 12 inches by 12 inches, all Grass colors, and all striping colors.
 - 4. Third party insurance policy.
 - 5. Turf manufacture's non-pro-rated 8 year warranty.
 - 6. Contractor Qualifications.
 - 7. Maintenance Equipment information.
 - 8. Maintenance Manual.
 - 9. Client references: Provide a list of facility operators that have a working knowledge of the proposed product in terms of installation and maintenance.

10. Product Data: For each product specified. Include details of construction relative to materials, dimension of individual components.
11. Submit turf manufacturer's data on fiber resins.
12. Striping and inlays: 4 inch minimum.
13. Seams: Using manufacturer's written recommends for seaming method.
14. Infill Material: 1 quart each.
15. Color rendering of field to show striping layout, color change, and logo location.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project locations.

1.4 ACTION SUBMITTAL

- A. Product Data: For each type of product.
- B. Shop Drawings: For synthetic grass surfacing.
 1. Include sections and details.
 2. Show layout of game lines, and letters. Indicate application method of each line and marking.
 3. Provide details of all edge conditions for playing surface.
 4. Provide details for all logos, and field markings. Owner will provide electronic graphic information for use in preparing shop drawings.
 5. Show locations of seams and method of seaming.
 6. Provide dimensioned seaming plan.
 7. Provide striping plan. Plan to comply with drawings and NFHS/MSHSAA regulations.
 8. Show location and layout of team logo/graphics.
- C. Samples: For each type of synthetic grass surfacing indicated.
 1. Turf Fabric: 12 inches square.
 2. Game Line Turf Fabric: 12 inches long by actual width.
 3. Infill Material: 4 oz. of each type.
 4. Shock-Attenuation Pad: 12 inches square.
 5. Seam Sample: 24 inches; Seamed using manufacturer's written recommendations for seaming method with seam centered in sample.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
 1. Turf Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
 - a. Provide a list of a minimum of ten existing installations, completed over the past five years, including contact information, including telephone number, for the owner's representative for each project.
- B. Product Test Reports: For each synthetic grass surfacing assembly.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For synthetic grass surfacing, including maintenance cleaning instructions, to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Turf Fabric: Minimum of 300 sq. ft. (28 sq. m) for each type indicated at the following project locations. Each project location will have a separate supply of maintenance material.
 - a. Liberty High School
 - b. Liberty North High School
 - 2. Infill: Minimum of 2 (two) bags of each type at each project location.
 - 3. Seaming Tape and Adhesive: One roll of seaming tape and one gallon of adhesive.
 - 4. One new set of maintenance tools, of type recommended by synthetic grass surfacing manufacturer for installation.
 - 5. Turf Groomer.
 - 6. Replacement Panels:
 - a. **Batter's boxes and catcher's box: Eight (8) each, velcro-adhered, twenty-four (24) total pieces. Single unit replacement panel for batter's/catcher's box area. Provide one per field for each School.**
 - b. **Pitching mound push off zone and softball pitching Lane: Two (2) per school.**

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Manufacturer Qualifications: A firm that complies with the following requirements and is experienced in manufacturing synthetic playing surface materials similar to those indicated for this Project and with a record of successful in-service performance.
 - 1. Assumes responsibility for engineering synthetic playing surface components to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive analysis by a qualified professional engineer.
 - 2. Has provided synthetic playing surface components for at least 30 athletic fields at the high school level or higher.
 - 3. Has sufficient production capacity to produce required materials without delaying the Work.
 - 4. Identify what portions of turf are manufactured in an ISO 9001 certified facility.
 - 5. Monofilament fiber yarns must be produced from C6 or C8 Ethylene Copolymers.
- C. Installer Qualifications: Engage an experienced installer to perform work of this Section who, in the past **5 4 years**, has installed at least **2015** synthetic playing field systems similar to that required for this Project and who is acceptable to manufacturer.
 - 1. Installer shall provide a 24-hour call back for warranty work and 48-hours for site visit and/or commencement of warranty repairs.
 - 2. Installer shall be a good-standing member of each of the following trade associations:
 - a. Athletic Sports Builders Association (ASBA).
 - b. Synthetic Turf Council (STC).
 - 3. Installation team shall be trained and certified, in writing by the turf manufacturer, and competent in the installation of the specified material, including seaming and proper installation of the infill mixture.
- D. Playing field surface shall be manufactured, located and installed in strict compliance with NFHS/MSHSAA regulations.
- E. Pre-Installation Conference: Conduct conference at the job site for coordination of schedule, access, procedures and security with the Owner, Architect, Contractor and other related subcontractors.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in location and manner to allow installation of synthetic grass surfacing without excess disturbance of granular base.

1.10 WARRANTY

- A. **Special Warranty:** Manufacturer agrees to repair or replace synthetic grass surfacing that fails in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration and excessive wear.
 - b. Deterioration from UV light.
 - c. Excessive loss of shock attenuation.
 - d. Seam separation, including game lines and markings.
 - 2. Warranty Period: 8 years from date of Substantial Completion.
- B. **General Warranty:** The special warranty specified in this Article shall not deprive the Owner or other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- C. **Turf Warranty:** Submit written warranty/warranties, executed by the manufacturer and installer agreeing to repair or replace components of synthetic surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 - 1. Premature wear and tear.
 - 2. Seam failure, including delamination, raveling, and separation.
 - 3. Degradation of fiber or backing resulting in excessive "shedding" and/or discoloration to the extent that the playing surface is no longer serviceable to maintain, playable, and safe for all levels of participants. Acceptable levels to be remaining at the end of the warranty period are as follows:
 - a. Tensile strength: 80% of original strength.
 - b. Color Fastness: 85% of original color.
 - c. Turf Bind: 7.2 lbs.
 - d. Percolation: 15 inches per hour.
- D. **Warranty Period:** 8 years from date of Substantial Completion.
 - 1. Conditions: Contractor shall perform yearly inspections including Gmax testing throughout the warranty period.
 - 2. Warranty will be non pro-rated. Failure in any location on the field at any time during the warranty period shall be cause for the entire field to be replaced or an amount to be determined by the Owner and Turf Manufacturer.
 - 3. Contractor warrants the materials, performance, workmanship, useability, and playability of the Work for its intended use and agrees to repair or replace all of the Work that may prove to be defective in workmanship or material within a period of eight (8) years from the date of final acceptance by Owner, as indicated herein, ordinary wear and tear and unusual abuse or neglect excepted.

PART 2 PRODUCTS

2.1 SYNTHETIC GRASS SURFACING

- A. **Synthetic Grass Surfacing:** Complete surfacing system, consisting of synthetic yarns bound to water-permeable backing and infill indicated, suitable for baseball and softball playing fields.
- B. **Synthetic Grass Surfacing:** Subject to compliance with requirements, provide complete surfacing system "Diamond Series RBI," by AstroTurf, or comparable product from one of the following, meeting specified requirements, submitted to and accepted by Architect prior to bidding.
 - 1. FieldTurf Double Play
 - 2. Matrix Turf Baseball/Softball
- C. **Turf Fabric for Liberty High School:** Woven turf fabric with multicolored fiber and UV resistance, complying with the following:
 - 1. Clay Turf Running Path: Astroturf "Rootzone Diamond i"
 - a. Yarn Polymer: Twisted Nylon/Polyethylene - a combination of diamond-shaped monofilament polyethylene face fibers; diamond-shaped monofilament nylon face fibers; and along with an extruded monofilament nylon RootZone.
 - b. Yarn Cross Section: i-fiber

- c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Average Tuft Length: 1.5 inches according to ASTM D 5823.
 - e. Color: Brown
 - f. Infill Proportions: Customized to Coach's style of play.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
2. Infield: Astroturf "Rootzone Diamond Blend"
 - a. Primary Yarn Polymer: Polyethylene.
 - b. Yarn Cross Section: i-fiber.
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: Customized to Coach's style of play.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite
 3. Outfield: Astroturf "Rootzone Diamond Blend"
 - a. Primary Yarn Polymer: Polyethylene.
 - b. Yarn Cross Section: High Micron Monofilament/ Slit Film.
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 2 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: 70 percent rubber, 30 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 4. Warning track: Astroturf "Rootzone Diamond i"
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: 30 percent rubber, 70 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 5. Foul Territory: Astroturf "Rootzone Diamond Blend"
 - a. Primary Yarn Polymer: Polyethylene.
 - b. Yarn Cross Section: High Micron Monofilament/ Slit Film.
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 2 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: 70 percent rubber, 30 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 6. Striping: Astroturf "Rootzone Diamond i"
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: White.
 - f. Infill Proportions: 30 percent rubber, 70 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 7. Logo: Astroturf "Rootzone Diamond i"
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Average Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: Three (3) color - Florida Blue, White, Black.
 - f. Infill Proportions: To match outfield/foul territory.
 - g. Fabric Width: 15 feet wide.

- h. Backing: Triple Lock Composite.
- D. Turf Fabric for **Liberty North High School**: Woven turf fabric with multicolored fiber and UV resistance, complying with the following:
1. Running Path: AstroTurf "Rootzone Diamond i"
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Face Pile Weight: 60 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: Brown
 - f. Infill Proportions: Customized to Coach's style of play.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 2. Infield: AstroTurf "Rootzone Diamond Blend"
 - a. Primary Yarn Polymer: Polyethylene.
 - b. Yarn Cross Section: i-fiber.
 - c. Face Pile Weight: 42 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: Customized to Coach's style of play.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite
 3. Outfield: AstroTurf "Rootzone Diamond Blend"
 - a. Primary Yarn Polymer: Polyethylene.
 - b. Yarn Cross Section: High Micron Monofilament/ Slit Film.
 - c. Face Pile Weight: 42 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 2 inches according to ASTM D 5823.
 - e. Color: As indicated on Drawings
 - f. Infill Proportions: 70 percent rubber, 30 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 4. Warning track: AstroTurf "Rootzone Diamond i" – **T1**.
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Face Pile Weight: 45 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.5 inches according to ASTM D 5823.
 - e. Color: Brown
 - f. Infill Proportions: 30 percent rubber, 70 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 5. Striping: AstroTurf "Rootzone Diamond i" – **T10**.
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Face Pile Weight: 45 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.125 inches according to ASTM D 5823.
 - e. Color: White
 - f. Infill Proportions: 30 percent rubber, 70 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.
 6. Logo: AstroTurf "Rootzone Diamond i" .
 - a. Primary Yarn Polymer: Twisted Nylon/Polyethylene.
 - b. Yarn Cross Section: i-fiber
 - c. Face Pile Weight: 45 oz./sq. yd. according to ASTM D 5848.
 - d. Pile Height: 1.125 inches according to ASTM D 5823.
 - e. Color: Three (3) color - Navy, White, Custom Yellow
 - f. Infill Proportions: 30 percent rubber, 70 percent sand.
 - g. Fabric Width: 15 feet wide.
 - h. Backing: Triple Lock Composite.

E. Grass Turf:

1. A complete synthetic turf system consisting of a combination of a 10,800 denier monofilament fiber made from a singularly extruded combination of stabilized polyethylene and nylon polymers with proper compatibilizers, 10,000 denier polyethylene slit film fibers, and an extruded monofilament RootZone®.
 2. The fabric shall possess the following minimum physical characteristics.
 - a. Average Pile Yarn Weight: ASTM D 5848, 60 oz/square yard
 - b. Average Total Weight: ASTM D 5848, 86.7 oz/square yard
 - c. Secondary Backing Weight: ASTM D 5848, 20 oz/square yard
 - d. Primary Backing: ASTM D 5848, 6.7 oz/square yard
 - e. Average Tuft Length: ASTM D 5823, 2.0"
 - f. Tufting Gauge: ASTM D 5793, 3/8" maximum
 - g. Tuft Bind: ASTM D 1335, > 8 lbs.
 - h. Yarn Denier (monofilament face): ASTM D 1577, 10,800/6
 - i. Yarn Denier (slit film face): ASTM D 1577, 10,000
 - j. Yarn Denier (nylon RootZone): ASTM D 1577, 5,400/8
 - k. Surface Flammability: ASTM D 2859, Passed
 - l. Permeability: ASTM F 1551, >30
 - m. Melt Point: ASTM D 789, 248 Degrees Fahrenheit
- F. Clay Turf (except Batters/Catchers' Boxes and Pitching Mound):
1. Face yarns shall be a combination of diamond-shaped monofilament polyethylene face fibers; diamond-shaped monofilament nylon face fibers; and along with an extruded monofilament nylon RootZone®.
 2. The fabric shall possess the following minimum physical characteristics:
 - a. Average Pile Yarn Weight: ASTM D 5848, 60 oz/square yard
 - b. Average Total Weight: ASTM D 5848, 86.7 oz/square yard
 - c. Secondary Backing Weight: ASTM D 5848, 20 oz/square yard
 - d. Primary Backing: ASTM D 5848, 6.7 oz/square yard
 - e. Average Tuft Length: ASTM D 5823, 1.5"
 - f. Tufting Gauge: ASTM D 5793, 3/8" maximum
 - g. Tuft Bind: ASTM D 1335, > 8 lbs.
 - h. Yarn Denier (monofilament face): ASTM D 1577, 10,600/10
 - i. Yarn Denier (slit film face): ASTM D 1577, 6,000/8
 - j. Yarn Denier (nylon RootZone): ASTM D 1577, 5,400/8
 - k. Surface Flammability: ASTM D 2859, Passed
 - l. Permeability: ASTM F 1551, >30
 - m. Melt Point: ASTM D 789, 248 Degrees Fahrenheit
- G. Batters/Catchers' Boxes and Pitching Mound:
1. Face yarns shall be a combination of diamond-shaped monofilament polyethylene face fibers; diamond-shaped monofilament nylon face fibers; and along with an extruded monofilament nylon RootZone®.
 2. The fabric shall possess the following minimum physical characteristics:
 - a. Average Pile Yarn Weight: ASTM D 5848, 90 oz/square yard
 - b. Average Total Weight: ASTM D 5848, 106.7 oz/square yard
 - c. Secondary Backing Weight: ASTM D 5848, 20 oz/square yard
 - d. Primary Backing: ASTM D 5848, 6.7 oz/square yard
 - e. Average Tuft Length: ASTM D 5823, 1.5"
 - f. Tufting Gauge: ASTM D 5793, 3/16" maximum
 - g. Tuft Bind: ASTM D 1335, > 8 lbs.
 - h. Yarn Denier (monofilament face): ASTM D 1577, 10,600/10
 - i. Yarn Denier (slit film face): ASTM D 1577, 6,000/8
 - j. Yarn Denier (nylon RootZone): ASTM D 1577, 5,400/8
 - k. Surface Flammability: ASTM D 2859, Passed
 - l. Permeability: ASTM F 1551, >30
 - m. Melt Point: ASTM D 789, 248 Degrees Fahrenheit
- H. Backing Material:
1. Primary Backing:
 - a. Primary backing must be a dual layered woven polypropylene material.
 - b. Primary backing system weight must be a minimum of 7.0 ounces/square yard.
 2. Secondary Backing:
 - a. Secondary backing system weight must be a minimum of 20 ounces per square yard.

- b. Secondary backing shall saturate the primary backing and effectively lock the fiber tufts in place to the primary backing.
 - c. Secondary backing must be a heat activated polyurethane coating with **no vegetable based polyols**.
 - d. Secondary backing system shall have minimum tuft bind strength of 10 pounds.
 - e. Secondary backing must have Drainage Perforations: 3/16 inch to 1/4 inch diameter at 4 inches or less on center each way. Non-perforated backing is not acceptable.
- I. Turf Roll Seams: To be sewn or glued on site so that no openings larger than the porous backing mat openings are created. Roll width to coincide with tufted-in sports line markings where possible. All turf fabric edges to be securely bound as per the perimeter detail design. Adhesives for joining seams of turf together shall be Nordot 34G Glue, Mapei 2K, Turf Claw, hot melt technology or equivalent. No substitutions.
 - 1. Seaming Method: Provide all labor, products, and material required to achieve seaming recommended in writing my manufacturer. Contractor shall obtain access to use of special tools and equipment when required by manufacturer.
 - J. Fabric Surface: Shall be constructed and installed in minimum widths of 15 feet with no longitudinal or transverse seams, except for inlaid lines with a finish roll assembly. Seams shall be 15 feet apart. Rolls that do not comply with the proper length or conform to the seaming diagram, as approved prior to installation, shall be rejected from the site. No fitted pieces shall be allowed to true alignment. Parallel seams only are acceptable in the main playing areas. No head seams are acceptable on the sports fields.
 - K. The entire system shall be resistant to weather, including ultra-violet light and heat degradation; insects, rot, mildew and fungus growth and be non-allergenic and non-toxic.
 - L. The turf material shall be non-combustible and pass the DIN standard Pill Burn test or ASTM D 2859.
 - M. Fiber Colors: Submit samples of the full available color palette for owner approval prior to placing order for turf including at a minimum the below listed colors:
 - 1. All Colors as listed in Articles 2.2 "Synthetic Grass Surfacing," above and as indicated on Drawings, including custom logo colors.
 - 2. Refer to layout on Drawings for additional information.
 - N. Game Lines and Markings: Provide game lines and markers in widths and colors according to requirements indicated on Drawings.
 - 1. General Requirements:
 - a. All line material is to be identical dimensionally and of the same material to that used for the main playing field fiber system.
 - b. Inlaid material as indicated on the drawings to be identical, except for fiber color, as the main turf field.
 - c. All lines and markings shall be accurately set and surveyed to within 1/2 inch tolerance of the location shown on the drawings and in conformance with specified field marking standards.
 - d. All lines and markings shall be installed prior to any installation of in-fill material.
 - 2. Application Method: Tufted in to the maximum extent practicable, with remaining lines inlaid.
 - O. The Logo shall be provided by the owner in a standard PDF or EPS file to the selected contractor. Contractor shall submit a shop drawing of Logo to include colors and dimensions for approval by the owner prior to ordering.
 - 1. All Colors as listed in Articles 2.2 "Synthetic Grass Surfacing," above and as indicated on Drawings.

2.2 INFILL MATERIALS

- A. General Requirements:
 - 1. The synthetic infill material shall consist of a blend of graded, silica sand and treated and mixed ground rubber.
 - 2. The infill materials shall be installed to allow an exposed fiber of not less than 1/4 inch after finish brushing and 1/2 inch after 180 days.
 - 3. No replacement rubber from other turf permitted.
 - 4. New infill must have point of origin with sieve analysis.
- B. Sand Infill: Uniformly sized silica sand free of silts, clays, and contaminants, and of subangular or rounder shape according to ASTM F 1632; mesh size as recommended by synthetic grass surfacing manufacturer.
- C. Rubber Infill: Recycled granulated SBR rubber, free of belting fabric and/or wire; and clean, sub-angular silica sand with a minimum fill height necessary to achieve the required shock absorbing properties and bio-mechanical properties.

2.3 MISCELLANEOUS MATERIALS

- A. Seam Adhesive:
 - 1. Adhesive products shall be Nordot 34G, Mapei 2K, Turf Claw, hot melt technology or equivalent as approved by the Architect and turf system Manufacturer.
 - 2. The adhesive system shall have been utilized on at least 50 full installations.
 - 3. Any adhesive products required for the installation of a proposed turf system shall be purpose-suited to the system. The material and application methods shall be as recommended by the adhesive manufacturer.
 - 4. The adhesive bed shall be a metered amount suitable for the application. It shall be heat and pressure activated. A special heat application machine and pressure application using weighted rollers is mandatory.
 - 5. Disposal of adhesive containers and unused adhesives as well as any fees resulting from such disposal shall be the responsibility of the Contractor.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, relative to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels as necessary to locate each element of Project.
 - 2. Establish dimensions within tolerance indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location and level of every major element as the Work progresses.
 - 5. Notify Architect when deviations from required lines and level exceed allowable tolerance.
 - 6. Close site surveys with an error closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.
- E. Examine base and other conditions, with Installer present, for compliance with requirements for installation tolerances, permeability, and other conditions affecting performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Examine substrates, areas, and conditions where playing surface will be installed, with Installer present, for compliance with requirements for conditions affecting performance of installed playing surface.
 - 1. Verify that substrates for placing playing surface are dry, clean, and well-compacted.
 - 2. Verify that installation of grounds, anchors, recessed frames and covers, electrical and mechanical units of work, and similar items located under playing surface has been completed before installing turf.
 - 3. Verify that irregularities in substrates will not adversely affect installed playing surface.
 - 4. Verify ambient temperatures are in compliance with manufacturer's recommendations for installation.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Over subgrade and filter fabric, install synthetic turf in accordance with manufacturer's written instructions. Seams shall be connected according to manufacturer's written recommendations for installation.

- D. Fasten synthetic turf to 1-1/2-inch nailer around perimeter of field with corrosion-resistant mechanical anchors (staples), per manufacturer's recommendations.
- E. Vibrate rubber infill materials into turf at a rate and depth recommended by manufacturer.
- F. Designs, markings, layouts, and materials shall conform to all currently applicable National Collegiate Athletic Association rules, NFHS rules, MSHSAA rules, and/or other rules or standards that may apply to this type of synthetic grass installation. Designs, markings and layouts shall first be approved by the Architect or Owner in the form of final shop drawings. All markings will be installation full compliance with final shop drawings.
- G. Carpet rolls shall be installed directly over the properly prepared aggregate base. Extreme care shall be taken to avoid disturbing the aggregate base, both in regard to compaction and planarity. A 2-5 ton static roller shall be on site and available to repair and properly compact any disturbed areas of the base stone.
 - 1. Repair and properly compact any disturbed areas of the aggregate base as recommended by manufacturer.
 - 2. Full width rolls shall be laid out across the field.
 - 3. Turf shall be of sufficient length to permit full cross-field installation from sideline to sideline.
 - 4. No head or cross seams will be allowed in the main playing area between the sidelines.
 - 5. Each roll shall be attached to the next roll utilizing standard state-of-the-art seam fusion process and procedures.
 - 6. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed at right angles to the playing Field.
 - 7. All inlaid elements shall be cut and glued into place. No shaving of turf fiber and gluing backing on backing is allowed.
 - 8. All seams shall be installed manufacturer's written recommendation to provide warranted installation as described in this specification.
 - 9. Seams shall be flat, tight, and permanent with no separation or fraying.
- H. Resilient Infill
 - 1. The rubber infill material shall be spot inspected and tested for conformance to sieve specifications. Any metal found in the rubber shall be cause for rejection of the rubber sack and immediate inspection of all materials.
 - 2. Infill must be placed in such a way as to minimize fiber entrapment.
 - 3. The infill must be uniformly applied so as to ensure uniform, predictable surface. The turf foreman must take numerous on site measurements to confirm the uniformity of the infill.
- I. 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.

3.3 FIELD LINING AND MARKINGS

- A. General: A complete field "Lining, Marking and Field Boundary" system will be provided with the installation of the surfacing system specified herein. All markings shall be installed in accordance with prior approved project Shop Drawings.
 - 1. Inlays shall conform to the manufacturers' specifications, directions and recommendations for the best results.
 - 2. Striping layouts shall be accurately surveyed by the Contractor before installation of inlaid field markings.
 - 3. Install inlays only when the surface is completely dry. Adhere all inlays securely into place. Never loose-lay and sew an inlay into place.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified independent testing agency to perform field quality-control testing.
- B. Perform the following tests and inspections:
 - 1. Permeability: Minimum 30 in./h of rainfall capacity according to ASTM F 2898 or EN 15330-1.
 - 2. Shock Attenuation: No greater than 125 G(max) at time of installation according to ASTM F 1936.

- C. Testing agency shall inspect and test the following:
 1. Surface performance requirements.
 2. Surface impact and shock absorbency according to ASTM F 1936 and ASTM F 355.
- D. Proceed with subsequent work only after test results for previously completed work comply with requirements.
- E. When testing agency reports that subgrades have not achieve degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

3.5 MAINTENANCE INSTRUCTIONS AND TRAINING

- A. Submit three copies of manufacturer’s printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use conditions. Include precautions against all materials and methods that may be detrimental to finishes and performance.
- B. Turf installer/supplier shall provide on-site maintenance training for the Owner’s maintenance personnel on how to maintain the field properly.
- C. The Contractor shall provide evidence that the turf can be plowed with conventional rubber bladed snow removal equipment.

3.6 RECORD DRAWINGS:

- A. Provide as-constructed drawings illustrating locations of all clean-outs, utility access boxes, etc.

3.7 MATERIAL LEAVE BEHIND

- A. Turf Fabric: Minimum of 300 sq. ft. (28 sq. m) for each type indicated at each project location.
 1. Each project location will have a separate supply of maintenance material.
- B. Infill: Minimum of 2 (two) bags of each type at each project location.
- C. Seaming Tape and Adhesive: One roll of seaming tape and one gallon of adhesive.
- D. One new set of maintenance tools, of type recommended by synthetic grass surfacing manufacturer for installation.
- E. Turf Groomer: Shall remain at each project location as determined by Architect.
- F. Batters/Catchers Box replacements – One unit per field in original colors as indicated.
- G. ~~Catchers Box replacements – Four (4) sets to be removable with hook and loop adhesion in original colors as indicated.~~
- H. Softball Pitching Circle replacements - ~~Four (4) sets to be removable with hook and loop adhesion~~ **One per field** in original colors as indicated.

3.8 CLEANING AND PROTECTING

- A. Cleaning: Upon completion of installation, clean all playing surfaces so they are free of foreign matter.
- B. All usable remnants of new material shall become the property of the Owner. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensure playing surface is without damage or deterioration at the time of Substantial Completion.
- C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensure playing surface is without damage or deterioration at the time of Substantial Completion, ready for immediate

occupancy and use by the Owner..

3.9 DEMONSTRATION

A. Train Owner's maintenance personnel in proper maintenance procedures for synthetic grass surfacing.

END OF SECTION 321813