



AL RITT STADIUM
SYNTHETIC TURF &
RUNNING TRACK
RENOVATIONS

SPECIFICATIONS
for
BIDDING

Documents Issued for
Bidding:
January 9, 2023

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SECTION 00 01 10 - TABLE OF CONTENTS

SECTION	TITLE	PAGES
PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP		
DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS INTRODUCTORY INFORMATION		
----	TITLE PAGE	1
00 01 10	TABLE OF CONTENTS	1
00 01 15	LIST OF DRAWING SHEETS	1
00 31 19	EXISTING CONDITION INFORMATION	1
GENERAL REQUIREMENTS, BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT		
Refer to documents authored by the Owner contained in a separate volume.		
SPECIFICATIONS GROUP		
GENERAL REQUIREMENTS SUBGROUP		
DIVISION 01 - GENERAL REQUIREMENTS		
01 3100	PROJECT MANAGEMENT AND COORDINATION	4
01 3300	SUBMITTAL PROCEDURES	5
DIVISION 02 THROUGH DIVISION 19		
NOT APPLICABLE		
FACILITY SERVICES SUBGROUP		
DIVISION 20 THROUGH DIVISION 29		
NOT APPLICABLE		
SITE AND INFRASTRUCTURE SUBGROUP		
DIVISION 31 - EARTHWORK		
31 1001	SITE PREPARATION FOR SYNTHETIC TURF FIELDS	4
31 2011	FINISHING STONE FOR SYNTHETIC TURF FIELDS	3
DIVISION 32 - EXTERIOR IMPROVEMENTS		
32 1375	RUNNING TRACK AND FIELD EVENT STRUCTURAL SPRAY	4
32 1376	RUNNING TRACK AND FIELD EVENT SURFACING SYSTEM	4
32 1800	SYNTHETIC TURF SYSTEMS	12
32 9113	SOIL PREPARATION	3
32 9200	TURF AND GRASSES	4
DIVISION 33 - UTILITIES		
33 4600	SUBDRAINAGE	3
DIVISION 34 THROUGH DIVISION 39		
NOT APPLICABLE		
PROCESS EQUIPMENT SUBGROUP		
DIVISION 40 THROUGH DIVISION 49		
NOT APPLICABLE		
END OF SECTION 00 01 10		

SECTION 00 0115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Cover page of the separately bound drawing set titled AL RITT SYNTHETIC TURF FIELD & RUNNING TRACK RENOVATIONS, issued for BIDDING, and dated JANUARY 9, 2023 (01.09.2023), as modified by subsequent Addenda and Contract modifications.

END OF SECTION 00 0115

SECTION 00 3119 - EXISTING CONDITION INFORMATION

1.1 EXISTING CONDITION INFORMATION

- A. This Section with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for the Contractor's convenience and are intended to supplement rather than serve in lieu of the Contractor's own investigations. They are made available for Contractor's convenience and information, but are not a warranty of existing conditions.
- B. Existing Condition drawings contained in the project drawings are based on aerial photography and design drawings for previous construction at the Project sites. The Architect and the Owner make no warranty of their completeness or accuracy related to the current as-built condition. Contractor shall conduct pre-construction investigations it deems necessary to avoid damage to existing improvements, including below-grade utilities that may be inaccurate or not represented on the Existing Conditions drawings. Repair of existing improvement damage resulting from the Contractor's operations shall be at the Contractor's expense.
- C. Limited as-built information is available for Project site utilities and other site improvements. Upon request, the Owner will provide the successful Bidder with all available information for the Contractor's convenience. The Owner makes no warranty for completeness or accuracy of the as-built information. Contractor shall conduct pre-construction investigations it deems necessary to avoid damage to existing improvements, including below-grade utilities that may be inaccurate or not represented on the Existing Conditions drawings. Repair of existing improvement damage resulting from the Contractor's operations shall be at the Contractor's expense.
- D. Contractor shall utilize MISS DIG and RESA Power locating services to validate and supplement available existing conditions information.

END OF SECTION 00 3119

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 1. General coordination procedures.
 2. RFIs.
 3. Digital project management procedures.
 4. Project meetings.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.

7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. RFI number, numbered sequentially.
 6. RFI subject.
 7. Specification Section number and title and related paragraphs, as appropriate.
 8. Drawing number and detail references, as appropriate.
 9. Field dimensions and conditions, as appropriate.
 10. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 11. Contractor's signature.
 12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number.
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.

- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Preparation of Record Documents.
 - o. Use of the premises.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - t. Procedures for moisture and mold control.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
 - 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Progress Meetings: Conduct progress meetings at biweekly intervals.
 - 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Access.
 - 5) Site use.
 - 6) Temporary facilities and controls.
 - 7) Progress cleaning.
 - 8) Quality and work standards.
 - 9) Status of correction of deficient items.
 - 10) Field observations.
 - 11) Status of RFIs.
 - 12) Status of Proposal Requests.
 - 13) Pending changes.
 - 14) Status of Change Orders.
 - 15) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3100

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
 - 1. Project name.
 - 2. Date.
 - 3. Name of Architect.
 - 4. Name of Contractor.
 - 5. Name of firm or entity that prepared submittal.
 - 6. Names of subcontractor, manufacturer, and supplier.
 - 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
 - 8. Category and type of submittal.
 - 9. Submittal purpose and description.
 - 10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 - 11. Drawing number and detail references, as appropriate.
 - 12. Indication of full or partial submittal.
 - 13. Other necessary identification.
 - 14. Remarks.
 - 15. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on

previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

- D. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.5 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email: Prepare submittals as PDF package, and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Resubmittal Review: Allow 7 days for review of each resubmittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- D. Certificates:
1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- E. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed

- before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.7 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will return without review submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3300

SECTION 31 1001 - SITE PREPARATION FOR SYNTHETIC TURF FIELDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Removal of existing synthetic turf and infill materials.
 - 2. Removal and salvage existing goal posts. (Alternate 2)
 - 3. Inspection and removal of existing wood nailer boards.
 - 4. Protection of existing finishing stone and open aggregate material on synthetic turf field.
 - 5. Protection of existing concrete field curbs.
 - 6. Protection of fencing.
 - 7. Protection of existing lawn areas.
 - 8. Protection of existing running track, sidewalks, and pavement.
 - 9. Temporary erosion and soil sedimentation control measures.
 - 10. Contractor shall complete permeability testing.
 - 11. Contractor shall complete proof rolling of existing finishing stone.
- B. Related Sections:
 - 1. Section 01 7301 "Field Engineering" for coordination.
 - 2. Section 31 2011 "Finishing Stone for Synthetic Turf Field" for coordination.
 - 4. Section 32 1800 "Synthetic Turf Systems" for coordination.

1.3 PROJECT CONDITIONS

- A. Field Verification: Contractor shall field verify existing conditions as illustrated on documents with actual existing conditions. Discrepancy between the existing conditions as illustrated on the drawings and the actual existing conditions shall be reported immediately to the Owner, and Engineer.
- B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-preparation operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
 - 3. Supplemental confirming information as deemed necessary by Contractor shall be obtained by Contractor at Contractor's expense.
 - 4. Neither Owner, or Engineer, shall be responsible for any conclusions or interpretations which the Contractor may make based on information provided.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site work begins.

- E. Do not commence site preparation operations until temporary erosion and soil sedimentation control measures are in place.
- F. Do not commence site preparation operations until all permits are obtained.
- G. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
 - 8. Parking of any vehicles or storage of any materials underneath tree driplines.

1.4 REGULATORY REQUIREMENTS AND RESPONSIBILITIES

- A. Soil Erosion and Sedimentation Control Act 347, amended by Act 197, 1974, State of Michigan, requires that all site work be in compliance with the requirements of the Act and that a permit be obtained before starting work.
- B. Contractor shall secure erosion and sedimentation control permits. Owner shall pay permit fee costs.

1.5 SUBMITTALS

- A. Submit a copy of soil erosion and control permits to Owner and Engineer.
- B. Submit product data to Owner and Engineer.
- C. Submit percolation results for Owner and Engineers review and approval.
- D. Submit survey of existing field.
- E. Submit Testing Engineers proof rolling review and reports.

1.6 TESTING – EXISTING PERMEABILITY

- A. Following removal of the infill material and synthetic turf Contractor shall complete permeability testing on the existing aggregate. Thirty Five equally spaced test samples shall be taken. Or as otherwise directed by the Testing Engineer and Owners Representative. Drainage tests shall be completed per BS7044 – Method 4. Percolation rate shall meet or exceed 30" per hour. Any areas not meeting the percolation requirements shall be further investigated by Testing Engineer, Owner, and Engineer. Contractor shall pay for and coordinate all base permeability testing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks, field monuments, and survey control points from disturbance during construction.

- B. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 EXISTING UTILITIES

- A. Locate, identify, and protect all utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owners written permission.

3.3 SYNTHETIC TURF REMOVAL

- A. Contractor shall take extreme care when removing the existing turf and infill materials.
 - 1. Running track edge drains shall be protected from infill material and debris. Contractor shall inspect edge drains and remove any debris prior to project closeout.
 - 2. The existing finishing stone and open aggregate stone shall be protected with minimal disturbance. Equipment used for removal shall be verify with Engineer prior to removal operations.
- B. Contractor shall removal all existing synthetic turf and infill materials. All removed material not salvaged to Owner shall become the Contractor's property and be legally disposed off-site.
- C. Owner may desire to salvage an unspecified amount of synthetic turf. Prior to disposal Contractor shall coordinate amount to be salvaged and location for salvaged synthetic turf to be placed. Salvage portion of synthetic turf to Owner and deliver to Owner's storage facility withing 5 miles of project site.
- D. Turf shall be carefully removed from existing nailer boards. Remove fasteners and protect nailer boards for re-use.

3.4 GOAL POST REMOVAL (ALTERNATE 2)

- A. Goal posts shall be removed. Owner may desire to salvage goal posts. Prior to disposal, Contractor shall coordinate with Owner and, if desired, deliver goal posts to Owner's storage facility withing 5 miles of project site.
- B. Remove access frame and top 6" of post sleeve and/or footing. Grout fill remaining sleeve and abandon in-place.
- C. All removed materials not salvaged to Owner shall become the Contractor's property and be legally disposed off-site.

3.5 NAILER BOARD INSPECTION AND REMOVAL

- A. Following turf removal, Contractor shall inspect existing nailer boards and advise Owner of acceptability for re-use. If unacceptable for re-use, Contractor shall provide markup drawing of locations and quantity requiring replacement. Owner may elect to replace portions of nailer boards using bid form unit cost, or replace all nailer boards (Alternate 3).
- B. Nailer boards to be removed shall be carefully removed from the concrete field curb. Single-use fasteners shall be removed such that concrete curb is not damaged. All removed materials shall become the Contractor's property and be legally disposed off-site.

3.6 PROOF ROLLING

- A. Following the removal of the field infill material and synthetic turf material the Contractor shall have the entire field proof rolled and observed by a Testing Engineer. Contractor shall coordinate proof rolling with Owners Testing Engineer. Any soft spots or areas with questionable compaction shall be reported to the Owner and Engineer. Testing Engineer to complete investigation of the areas in question and make recommendations for corrective measures. Following corrective measures, the area shall be retested. Owner shall approve any corrective measures to take place.

3.7 FINISHING STONE REMOVAL

- A. Where required by accepted portions of work, remove and salvage existing finishing stone adjacent to field curb as needed to accept new nailer board and shock pad work.
- B. Following the removal of the finishing stone adjacent to the field curb the Contractor shall have the area proof rolled and observed by a Testing Engineer. Contractor shall coordinate proof rolling with Owners Testing Engineer. Any soft spots or areas with questionable compaction shall be reported to the Owner and Engineer. Testing Engineer to complete investigation of the areas in question and make recommendations for corrective measures. Following corrective measures the area shall be retested. Owner shall approve any corrective measures to take place.

3.8 CLEANING AND REMOVALS

- A. Remove surplus soils, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 00 0115

SECTION 31 2011 - FINISHING STONE FOR SYNTHETIC TURF FIELDS

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:
 - 1. Corrective measures to open aggregate stone as required.
 - 2. Installation of finishing stone.
 - 3. Compaction of finishing stone.
 - 4. Fine grading of finishing stone.
 - 5. Survey of finishing stone.
- B. Related Sections:
 - 1. Section 31 1001 "Site Preparation for Synthetic Turf Field"
 - 2. Section 321 800 "Synthetic Turf Systems"

1.3 DEFINITIONS

- A. Open Aggregate: Aggregate base material beneath finishing stone.
- B. Finishing Stone: Aggregate material placed between existing open aggregate and base of synthetic turf.

1.4 SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 - 1. Finishing stone, sieve analysis and samples to be provided.
 - 2. If finishing stone grading is performed by a different subcontractor, the synthetic turf installer shall provide letter of acceptance of finishing stone to Owner.

1.5 QUALITY ASSURANCE

- A. The Owner will employ a qualified testing laboratory to furnish all of the soil engineering services required for testing and inspections (Contractor to pay for permeability testing). The testing laboratory will make all tests of materials to determine their suitability for compaction and optimum water content, and will supervise continuously the placing of finishing stone. Contractor shall coordinate all testing with Testing Engineer, Owner and Engineer.
- B. The representatives of the testing laboratory, Owner and Engineer shall have the power of rejection of materials. Contractor shall replace, rework or correct work which does not meet the specifications as directed by the testing laboratory and/or the Owner and Engineer.
- C. Contractor shall provide an approved Superintendent during finishing stone operations. Superintendent shall have completed a minimum of fifteen similar successful projects.

1.6 PROJECT CONDITIONS

- A. Utility Locator Service: Notify utility locator service Miss Dig for area where Project is located before beginning earth moving operations.
- B. Do not commence finishing stone operations until field dimensions have been verified.

PART 2 - PRODUCTS

2.1 FINISHING STONE

- A. Material
 - 1. Finishing stone shall consist of uniformly mixed, clean, processed and washed limestone free of any dust. Finishing stone shall meet manufacturer's requirements as necessary to achieve warranty and drainage requirements.
 - 2. Finishing stone shall be 100% fractured by mechanical means, with elongated characters on each particle. Materials shall be washed and devoid of mineral fines. All particles smaller than 1/4" shall be produced by manufactured means only. Rounded sands or aggregates are prohibited.
 - 3. Provide all finishing stone from same source.
 - 4. Gradations for finishing stone shall be as follows:

Sieve	Percent Passing
3/4"	100
3/8"	85 - 100
1/4"	75 - 100
#4	60 - 90
#8	45 - 65
#16	10 - 55
#30	0 - 40
#60	0 - 15
#100	0 - 8
#200	0 - 4
 - 5. The hydraulic conductivity of the aggregate shall be such that is capable of draining the entire synthetic surface after a 24-hour storm event of 3" in a 2-hour period with the existing underdrainage and drainage system shown on the plans.
 - 6. Gradation, depth, compaction requirements and method of placement of the finishing stone shall be as outlined within the specifications and drawings and approved by the Testing Engineer, Owner and Engineer.
 - 7. Any required modifications to the existing open aggregate material shall be confirmed with the Testing Engineer, Owner and Engineer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which finishing stone for site is to be performed and notify the Owner and Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 EQUIPMENT REQUIREMENTS

- A. All grading equipment shall be equipped with laser guided blade systems.

3.3 PREPARATION

- A. Identify required lines, levels, contours, and datum. Employ registered Professional Surveyor for layout.
- B. Identify known below grade utilities. Stake and flag locations.
- C. Identify and flag above grade utilities.
- D. Maintain and protect existing utilities which pass through work area, including field underdrains.
- E. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Owner and Engineer.

3.4 GRADING FINISHING STONE MATERIALS

- A. All grading work shall be completed using laser guided equipment.
- B. Replace finishing stone adjacent to curb to original depth prior to removals, place required amount of finishing stone in areas disturbed by turf removal.
- C. Keep finishing stone wet as required for proper grading.
- D. Finishing stone within entire field area shall be fine graded. Level and compact finishing stone in new and disturbed areas to correlate with finished grade. Roll and Compact to acceptable density. Finish grade shall be smooth and level without high or low points.
- E. Verify gradients and elevations of finishing stone are correct. Establish elevations at field center line and curb and run string lines at 15' O.C. as a starting dimension. Any high or low spots shall be corrected. Surface grades shall not deviate more than .01' from designated compacted grade elevations when checked by 25' grid survey – Contractor to provide survey by registered land surveyor for checking. Surface grades shall also not have any deviation of more than .01' in 10' (any direction) when placed under a 10' straight edge. This tolerance is required over the entire field. Review in the field with Owners Representative and Engineer.
- F. Upon completion of finishing stone placement and acceptance (planarity and compaction) turf installation Contractor shall provide Owner Representative and Owner with Letter of Acceptance.
- G. Completed and approved finishing stone shall be protected at all times. Turf installation crews shall take all precautions necessary to protect the finishing stone.

3.5 FIELD QUALITY CONTROL

- A. Testing Engineer shall observe the placement of all fill materials

END OF SECTION 00 2011

SECTION 32 1375 - RUNNING TRACK AND FIELD EVENT STRUCTURAL SPRAY

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:
 - 1. Installation of new structural spray on existing track and field event surfaces, Structural spray to be applied over all areas with existing structural spray.
 - 2. Existing polyurethane base mat repair.
 - 3. Field measurements and field confirmation of existing track and field events. Contractor is responsible for all work illustrated on plan and within specifications.
 - 4. Track and field event markings.
 - 5. Protection of synthetic surfacing.
 - 6. Protection all components from structural spray.
 - 7. Erosion control measures.
 - 8. Clean up.
- B. Related Sections:
 - 1. Division 31 Section 31 101 "Site Preparation"
 - 2. Division 32 Section 322376 "Running Track and Field Event Surfacing System"

1.3 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the following standards:
 - 1. Track and field surfacing contractor to have a minimum of 10 years experience in this type of construction.
 - 2. Current MHSAA and NFSHS standards.
 - 3. United States Tennis Court and Track Builders Association.
 - 4. Track surfacing system to have a minimum 5 year warranty.

1.4 SUBMITTALS

- A. Submit manufacturer's product data for each type of material or equipment required, including finish and colors indicated.
- B. Submit complete shop drawings for track system, and field events, with descriptive data of installation methods and procedures. Shop drawings to be submitted and approved prior to construction.
- C. Submit complete shop drawings for track marking and striping per National Federation of State High School Associations Current Standards. Contractor shall review track markings with Owner and Engineer. Review shall be completed two weeks after award of contract.
- D. Submit 'As-Built' drawings upon completion of track surfacing.

- E. Provide complete outline of materials to be used in the construction track and field events areas. Outline shall include all products and total volume or weight to be used per specifications.

1.5 SAMPLES

- A. Submit four (4) 10" x 10" samples of track surfacing system, structural spray shall be applied to black base mat.

1.6 PROJECT CONDITIONS

- A. Do not commence with work until after synthetic turf field work has been completed and track dimensions have been verified.

1.7 WARRANTY

- A. The Contractor shall provide a five (5) year unconditional warranty against any system defects resulting from workmanship or materials.

1.8 PROJECT REVIEW

- A. Contractor, Owners Representative, and Engineer shall jointly walk and review the project site and scope of work prior to the start of construction.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Track and Field Event Surfacing
 1. Track System: Conica Conipur SP, or approved equal.
 2. Color: Standard Red to match existing.
 3. System Requirements – General
 - a. Structural Spray Coating:
1.2kg/sqm (2.2 lb/sy)
EPDM granules 0.80 kg/sqm (1.5 lb/sy)
 - b. Primer System:
Polyurethane primer 0.15 kg/sqm (0.30lb/sy)
 - c. Specified track system shall be installed per manufacturer's instructions.
 4. Composition: Spray applied structural coating of polyurethane based pigmented binder and encapsulated pigmented EPDM rubber granules. Structural spray shall be spike resistant and permeable.
 - a. Primer: Polyurethane-base primers – specially formulated to be compatible with the existing running track and field event system.
 - b. EPDM Surface Spray Granulate: Synthetic pigmented EPDM rubber-chopped, Processed to 1 – 3mm in size.
 - c. EPDM Surface Spray Granulate: Synthetic pigmented EPDM rubber-chopped, processed and graded to 0.5 – 1.5mm in size.
 - d. Polyurethane Structural Spray Binder: A two component, MDI based polyurethane binder, mixed with a polyurethane based color paste.
 - e. Track and Field Event Marking Paint: Polyurethane-based paint, specifically manufactured to be compatible with specified polyurethane synthetic track surfacing. Marking colors to match existing and be verified by Owner upon receipt of track marking plan.
 6. Physical Properties of Finished Surface
 - b. Color: Red to match existing surface, selected from manufacturer's full range.
 - c. Elongation (ASTM 0-412): 83%
 - d. Tensile Strength (ASTM 0-412): 0.7mm 2 at 70 degrees F.

- e. Compression Set (ASTM D-395): 90% - 95% at 70 degrees F over a 24 hour period.
 - f. Abrasion Resistance (ASTM D-501): 0.25 grams loss after 1000 cycles.
 - g. Chalking (ASTM D-822): Throughout warranty period.
 - h. Resilience (ASTM 02532): 36% to 44%.
 - i. Tear Resistance (*ASTM D-624): 50 – 75 psi.
 - j. Coefficient of Friction (ASTM D-1894): Dry – 1.07, Wet – 0.73
- B. Track and field event polyurethane base mat repair material
- a. Repair material for existing base mat repairs shall be:
Locktite PL 3X Premium Polyurethane Construction Adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Field verify existing conditions and dimensions. Notify Owners Representative and Engineer of any discrepancies.

3.2 INSTALLATION

- A. All material and equipment used shall be per manufacturer's instructions and recommendations.
- B. Install synthetic track system per manufacturer's instructions and recommendations:
- 1. Cleaning: All areas to receive new structural spray shall be cleaned and free of any loose or foreign particles (dirt, infill, oil, etc.) prior to the commencement of work.
 - 2. All cracking and joints noted on drawings shall be repaired prior to priming. Clean all joints and apply specified sealing product to achieve a fully sealed joint or crack.
 - 3. Priming: Polyurethane based primer shall be installed on dry surfaces only. Structural spray primer shall fully cover existing red structural spray coating and shall be applied at a rate of .35 - .37 lbs per square yard.
 - 4. Application of The Structural Spray: Spray operation shall not take place until the primer coat is complete and cured. Apply structural spray on dry surfaces only.
 - 5. Weigh out a batch of pigmented polyurethane structural spray material Part A and Part B into two separate containers in a ratio of 1:2 by weight. Pour the two parts into a mixing container with the aliphatic material and thoroughly mix. After mixing add colored, clean, dry 0.5 – 1.5 EPDM rubber granules, such that the ratio of polyurethane to EPDM rubber is 60:40 by weight and thoroughly mix. Transfer the mixed materials to the spray machine, specifically designed for this type of material spray. Spray the material on to the base mat or existing structural spray layer to provide a coverage of 3.7 lb/sy in two coats. No spray operations shall take place when wind speeds are above 10 mph. The finished structural spray shall be uniform throughout. The finished surface shall be seamless in coloration, and density with no imperfections or uneven spray marks.
 - 6. Line Markings: All line and event markings shall be applied by experienced personnel utilizing twp part polyurethane based paint compatible with the synthetic surfacing. All markings dimensions will be in accordance with MHSAA and NFSHSA current rules. Specific markings and colors shall be coordinated with the Owner prior to installation.

3.3 EXISTING BASE MAT JOINT REPAIR

- A. Review joints in field with Owner and Engineer.
- B. Clean joint edges with approved solvent. Apply specified adhesive to dry surfaces per manufacturers instructions. Ensure full closure of existing joint.

3.4 EXISTING BASE MAT REPLACEMENT

- A. Refer to Specification 321376 Running Tracks and Field Events Surfacing System

3.5 TRACK PROTECTION

- A. Contractor shall protect the track surfacing at all times during installation and curing. Any damage to the synthetic surfacing during the curing process shall be the responsibility of the Surfacing Contractor.

3.6 OVERSPRAY PROTECTION

- A. Contractor shall protect synthetic turf field, and all fencing, gates, bleachers, buildings, walks, walls, steps, and scoreboard from any overspray. Any damage or overspray to these items shall be repaired by the synthetic turf contractor at no cost to the Owner.

3.7 CLEANING

- A. Perform cleaning during installation of work and upon completion of work. Remove all debris and equipment from site upon completion of work. Repair all damage resulting from resurfacing work.

END OF SECTION 32 1375

SECTION 32 1376 - RUNNING TRACK AND FIELD EVENT SURFACING SYSTEM

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:
 - 1. Removal and replacement of existing urethane track and field event surfacing.
 - 2. Field measurements and field confirmation of existing track and field events.
 - 3. Contractor is responsible for all work illustrated on plans and specifications.
 - 4. Track and field event markings.
 - 5. Protection of synthetic surfacing.
 - 6. Protection of all site components from structural spray.
 - 7. Erosion control measures
 - 8. Clean up.
- B. Related Sections:
 - 1. Division 31 Section 31101 "Site Preparation"
 - 2. Division 32 Section 321375 "Running Track and Field Event Structural Spray"

1.3 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the following standards:
 - 1. Track and field surfacing contractor to have a minimum of 10 years experience in this type of construction.
 - 2. Current MHSAA and NFSHS standards.
 - 3. United States Tennis Court and Track Builders Association.
 - 4. Track surfacing system to have a minimum 5 year warranty.

1.4 SUBMITTALS

- A. Submit manufacturer's product data for each type of material or equipment required, including finish and colors indicated.
- B. Submit complete shop drawings for track system, and field events, with descriptive data of installation methods and procedures. Shop drawings to be submitted and approved prior to construction.
- C. Submit complete shop drawings for track marking and striping per National Federation of State High School Associations Current Standards. Contractor shall review track markings with Owner and Engineer. Review shall be completed two weeks after award of contract.
- D. Submit 'As-Built' drawings upon completion of track surfacing.
- E. Provide complete outline of materials to be used in the construction track and field events areas. Outline shall include all products and total volume or weight to be used per specifications.

1.5 SAMPLES

- A. Submit four (4) 10" x 10" samples of track surfacing system, structural spray shall be applied to black base mat.

1.6 PROJECT CONDITIONS

- A. Do not commence with work until after synthetic turf field work has been completed and track dimensions have been verified.

1.7 WARRANTY

- A. The Contractor shall provide a five (5) year unconditional warranty against any system defects resulting from workmanship or materials.

1.8 PROJECT REVIEW

- A. Contractor, Owners Representative, and Engineer shall jointly walk and review the project site and scope of work prior to the start of construction.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Track and Field Event Surfacing
 1. Track System: Conica Conipur SP, or approved equal.
 2. Color:
 - a. Structural Spray: Standard Red to match existing.
 - b. Base Mat: Black
 3. System Requirements – General
 - a. Structural Spray Coating:
1.2kg/sqm (2.2 lb/sy)
EPDM granules 0.80 kg/sqm (1.5 lb/sy)
 - b. Base Mat:
Polyurethane Binder 1.60 kg/sqm (2.9 lb/sy)
SBR/EPDM Granules 8.0 kg/sqm (14.7 lb/sy)
 - c. Primer System:
Polyurethane primer 0.15 kg/sqm (0.30lb/sy)
 - d. Specified track system shall be installed per manufacturer's instructions.
 4. Composition: Cast-in-place 13mm two layer, spike resistant, colored, resilient synthetic track surface of permeable design consisting of a polyurethane-bound black rubber base mat with a spray applied structural coating of polyurethane based pigmented binder and encapsulated pigmented EPDM rubber granules. Structural spray shall be spike resistant and permeable.
 - a. Primer: Polyurethane-base primers – specially formulated to be compatible with the existing running track and field event system.
 - b. EPDM Base Mat Granulate: Synthetic black EPDM rubber-chopped, processed and graded to 1-3mm in size.
 - c. EPDM Surface Spray Granulate: Synthetic pigmented EPDM rubber-chopped, processed and graded to 0.5 – 1.5mm in size.
 - d. Polyurethane Base Mat Binding Agent: Single component, MDI based polyurethane binder.
 - e. Polyurethane Structural Spray Binder: A two component, MDI based polyurethane binder, mixed with a polyurethane based color paste.
 - f. Track and Field Event Marking Paint: Polyurethane-based paint, specifically manufactured to be compatible with specified polyurethane synthetic track surfacing. Marking colors to match existing and be verified by Owner upon receipt of track marking plan.

6. Physical Properties of Finished Surface
 - a. Thickness: To match existing surfacing system thickness.
 - b. Color: Red to match existing surface, selected from manufacturer's full range.
 - c. Elongation (ASTM 0-412): 83%
 - d. Tensile Strength (ASTM 0-412): 0.7mm 2 at 70 degrees F.
 - e. Compression Set (ASTM D-395): 90% - 95% at 70 degrees F over a 24 hour period.
 - g. Abrasion Resistance (ASTM D-501): 0.25 grams loss after 1000 cycles.
 - h. Chalking (ASTM D-822): Throughout warranty period.
 - i. Resilience (ASTM 02532): 36% to 44%.
 - j. Tear Resistance (*ASTM D-624): 50 – 75 psi.
 - k. Coefficient of Friction (ASTM D-1894): Dry – 1.07, Wet – 0.73

- B. Track and field event polyurethane base mat repair material
 - a. Repair material for existing base mat repairs shall be:
Locktite PL 3X Premium Polyurethane Construction Adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Field verify existing conditions and dimensions. Notify Owners Representative and Engineer of any discrepancies.

3.2 INSTALLATION

- A. All material and equipment used shall be per manufacturer's instructions and recommendations.

- B. Remove existing synthetic track surfacing as indicated on the drawings. Inspect concrete or asphalt base for acceptability. Advise Owner if conditions are unacceptable and provide recommendations for correction.

- C. Install synthetic track system per manufacturer's instructions and recommendations:
 1. Cleaning: All areas to receive new structural spray shall be cleaned and free of any loose or foreign particles (dirt, infill, oil, etc.) prior to the commencement of work.
 2. All cracking and joints noted on drawings shall be repaired prior to priming. Clean all joints and apply specified sealing product to achieve a fully sealed joint or crack.
 3. Priming: Polyurethane based primer shall be installed on dry surfaces only. Structural spray primer shall fully cover existing red structural spray coating and shall be applied at a rate of .35 - .37 lbs per square yard.
 4. Mixing of binder and rubber granules: Binder and 1-3mm clean, dry EPDM granules are mixed in a forced mixer at a rate of 100 parts rubber granules to 20 parts urethane binder by weight. The mixture shall be prepared in a clean, dry mechanical mixer until a homogeneous mixture is obtained.
 5. Application of base layer: The mixed material is applied over the binder coat at a thickness to match existing surfacing system using a specially designed paver which utilizes a heated screen designed to level and compact the resilient base layer. The base layer is then allowed to cure (harden). The curing process depends on temperature and humidity and normally occurs overnight. All joint work shall be toweled flush with the adjacent base mat. Cured joints shall have their edges primed with base mat binding agent prior to the application of the adjacent base mat.
 6. Application of the structural spray (top layer): Spray operation shall not take place until the base mat cure is complete. Weigh out a batch of pigmented polyurethane structural spray material part A and Part B into two separate containers in a ratio of 1:2 by weight. Pour the two parts into a mixing container and thoroughly mix. After mixing add colored, clean, dry 0.5 – 1.5 mm EPDM rubber granules, such that the ratio of polyurethane to EPDM

granules is 60:40 by weight and thoroughly mix. When mixed transfer the mixed materials to the spray machine, specifically designed for this type of material spray the mix onto the base mat surface to give a total coverage of 3.7 lb/sy in two coats. No spray operations shall take place when wind speeds are above 10 mph. The finished structural spray shall be uniform throughout. The finished surface shall be seamless in coloration with no imperfections or uneven spray marks.

7. Line Markings: All line and event markings shall be applied by experienced personnel utilizing two part polyurethane based paint compatible with the synthetic surfacing. All markings dimensions will be in accordance with MHSAA and NFSHSA current rules. Specific markings and colors shall be coordinated with the Owner prior to installation.

3.3 EXISTING BASE MAT JOINT REPAIR

- A. Review joints in field with Owner and Engineer.
- B. Clean joint edges with approved solvent. Apply specified adhesive to dry surfaces per manufacturers instructions. Ensure full closure of existing joint.

3.4 EXISTING BASE MAT REPLACEMENT

- A. Review missing base mat in field with Owner and Engineer.
- B. Uniformly cut out existing base mat adjacent to repair area.
- C. Confirm base mat delamination adjacent to new edges, if delamination exists repair with specified adhesive.
- D. Apply new polyurethane base mat as outlined within this specification.

3.5 TRACK PROTECTION

- A. Contractor shall protect the track surfacing at all times during installation and curing. Any damage to the synthetic surfacing during the curing process shall be the responsibility of the Surfacing Contractor.

3.6 OVERSPRAY PROTECTION

- A. Contractor shall protect synthetic turf field, and all fencing, gates, bleachers, buildings, walks, walls, steps, and scoreboard from any overspray. Any damage or overspray to these items shall be repaired by the synthetic turf contractor at no cost to the Owner.

3.7 CLEANING

- A. Perform cleaning during installation of work and upon completion of work. Remove all debris and equipment from site upon completion of work. Repair all damage resulting from resurfacing work.

END OF SECTION 32 1376

SECTION 32 1800 - SYNTHETIC TURF SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – 16 Specifications Sections apply to this Section.

1.2 WORK INCLUDED

- A. Furnish all labor, materials, tools and equipment necessary to install, in place, all synthetic turf materials as indicated on the plans and 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 SUMMARY

- A. Work shall include the removal and replacement of existing synthetic turf field and infill materials.
- B. Related Sections:
1. Section 311001 "Site Preparation for Synthetic Turf Field"
 2. Section 312011 "Finishing Stone for Synthetic Turf Field"

1.4 SUBMITTALS

- A. Submit the following with the bid/proposals:
1. Product Data and Specifications for synthetic turf systems.
 2. Synthetic Turf Samples for Final Selection – Approximately 12" x 12" fabric sample and one sample box with infill in place; line and marking color samples. Resubmit samples and infill material upon award of project based on Owners selection.
 3. Marking and Logo color samples.
 4. Sample seam and inlay.
 5. Infill Mix, One 12 oz. samples each of rubber and silica sand with sieve analysis.
 6. Wood Nailer product data.
 7. The Turf Contractor and Turf Manufacturer shall provide a sample copy of insured, non-prorated warranty and insurance policy information to the Owner.
 8. Certified list of ten (10) similar projects, including Owner Representative and telephone number, attesting compliance with quality assurance information.
 9. Rubber certification letter of availability and delivery date from supplier guaranteeing product supply reserved for the Dexter Community Schools Al Ritt Field Turf project.
 10. Turf certification letter of availability and delivery date from supplier guaranteeing product supply reserved for the Dexter Community Schools Al Ritt Field Turf project.
 11. Certified copies of independent (third-party) laboratory reports on ASTM tests for Silt Film Synthetic Turf as follows:

Yarn	Linear Density – Denier	ASTM D1577-07
	Thickness	ASTM D3218-07
	Break Strength	ASTM D2256-10
	Elongation	ASTM D2256-10
	Total Lead Content	ASTM F2765-14
Turf	Total Product Weight	ASTM D5848-10e1
Fabric	Pile Yarn Fiber Weight	ASTM D5848-10e1
	Primary Backing Weight	ASTM D5848-10e1

Secondary Backing Weight	ASTM D5848-10e1
Average Pile Height	ASTM D5823-13
Average Tuft Bind Strength	ASTM D1335-12
Tufting Gauge	ASTM D5793-05
Average Grab Tear Strength	ASTM D5034-09

Turf System	g-Max	ASTM F355-10a
	Pill Flammability	ASTM D2859-06 (2011)
	Infiltrometer (Drainage)	ASTM BS 7044 Method 4
	UV Testing	ASTM E648

12. Contractor shall verify that synthetic turf system does not violate other manufacturers patents.
13. Submit proposed infill mix design; sand and rubber mix per square yard for turf.
14. Submit certification that rubber utilized for infill material is lead free and material source.
15. Name of turf manufacturer and specific product being proposed.
16. Any exceptions to the base performance specification shall be outlined in detail and provided with proposal.

B. Prior to order of materials, the Contractor shall submit the following:

1. Sample Warranty
2. Seam layout of the field.
3. Details on construction, especially any details that may deviate from these plans and specifications.

C. Prior to Final Acceptance, the Contractor shall submit to the Owner three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and markings.

D. Prior to the beginning of installation, the manufacturer/installer of the synthetic turf shall inspect the finishing stone with Owner and Engineer, supply a Certificate of Acceptance.

E. All submittals shall be provided within 14 days of notice to proceed.

F. Provide manufacturer and product of adhesive for gluing inlaid materials. Indicate if hot or cold applied.

1.5 SHOP DRAWINGS

A. Shop Drawings shall be prepared at the scale of the construction documents and contain all pertinent information regarding installation. These drawings shall be submitted to the Owner and Engineer for approval prior to the manufacturing and shipment of materials.

B. Submit Shop Drawings For

1. Seaming plan: seams are not to coincide or interfere with subsurface drain system.
2. Installation details: edge detail with field profile, field and drainage profile, seaming, stitching detail, and all other applicable details for complete installation of system.
3. Marking plan: Layout for all field lines, markings and boundaries per project drawings, indicate tufted and inlaid markings.
4. Field logos.

1.6 QUALITY ASSURANCE

A. Manufacturer/Installer's Experience:

1. The Contractor shall employ only qualified, experienced supervisors and technicians skilled in the installation of this system. Submit resumes of key installation personnel with

- bid/proposal. The site superintendent shall have at least ten (10) projects similar to the proposed projects.
2. The Contractor shall have successfully completed a minimum of thirty (30) similar projects and have a minimum of 8 years experience.

B. Prospective bidders must meet the following criteria:

1. Are able to substantiate currently available bonding capacity.
2. Have not had a Surety or Bonding Company finish work on any contract within the last five (5) years.
3. Have not been disqualified or barred from performing work for any public Owner or other contracting entity.
4. Shall have demonstrable financial strength to fully service and warrant the systems installed by providing with the bid/proposal an audited financial statement for the past fiscal year.

1.7 QUALITY STANDARDS

- A. All products and installation methods shall meet or exceed the MHSAA, NFSHSA, all applicable ASTM, State and Federal Standards, and all current guidelines and standards set forth by the Synthetic Turf Council.

1.8 WARRANTY

- A. The Contractor shall submit a complete system warranty that guarantees the usability and playability of the synthetic turf system for its intended use for an eight (8) year period commencing with the date of final acceptance by the Owner. The warranty coverage shall not be prorated or limited to the amount of use. The synthetic turf field system warranty shall include all components required for its construction; infill materials, synthetic turf and backing materials, stitching materials, seaming materials, inlaid materials, finishing stone, and maintenance requirements.
- B. The warranty submitted must have the following characteristics:
 1. Must provide full coverage for eight (8) years from the date of Owners Acceptance of the field and related systems.
 2. Must warrant materials, performance and workmanship.
 3. Must warrant that the materials installed meet or exceed the product specifications. 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.
 4. Must be a warranty from a single source covering workmanship and all self-manufactured or procured materials.
 5. Guarantee the availability of replacement materials for the synthetic turf system installed for the full warranty period.
 6. Upon completion of the project the Contractor shall submit a copy of the fiber manufacturer's warranty to the Owner. Dexter Community Schools shall be named on the warranty along with the Contractor.

1.9 WARRANTY INSURANCE POLICY

- A. The Turf Contractors Warranty must be supported by an insurance policy from an 'A' rated insurance company for the duration of the warranty. The bond shall be specific to the Dexter Community Schools Al Ritt Synthetic Turf Renovation project, Owner and Engineers Project Numbers shall be included on the policy. The policy cannot be a re-insurance or off-shore policy. As part of the submission the Contractor shall include specific coverage and exclusions, including the following:
 1. Length of Policy

2. Name of Carrier
3. Method for Payment of The Policy (Must Be Pre-Paid)
4. Limit for Single Claims
5. Additional Policy Features of Importance
6. The policy must have an aggregate amount of not less than Five (5) million US dollars.

1.10 OPERATIONAL INFORMATION

- A. At the completion of the project, submit three (3) complete sets, in manual (binder) form, of all the manufacturer's recommended procedures and materials for maintenance for, but not limited to:
1. General maintenance and grooming procedures
 2. Lining/Marking Installation
 3. Lines and Marking Removal
 4. Small Repair Procedures
 5. Cleaning
 6. A list of all procedures required to maintain the surface condition and activities and/or procedures to be avoided in order to prolong the life and maintain the warranty-including static and dynamic load limits, snow clearing, etc.

1.11 TESTING AND MAINTENANCE

- A. At the completion of the synthetic turf installation the Contractor shall complete G-Max Testing ASTM 355-95 Procedure A, and Standard F-1936-98 on the field. Testing shall be completed at center of the field, at the edge of the field play area, and between the center of the field and the edge of the field. Tests shall be completed at 10 yard intervals. Acceptable G-Max testing must be completed before substantial completion will be granted for the field.
- B. Percolation Testing: Following the installation of the synthetic turf percolation tests shall be completed on the new field. Thirty Five equally spaced test samples shall be taken. Or as otherwise directed by Testing Engineer and Owner/Engineer. Final in place turf and infill material shall have a percolation rate of no less than 30" per hour. Drainage tests shall be completed per BS 7044-Method 4. Any areas not meeting percolation requirements shall be further investigated as directed by Testing Engineer. If percolation rates do not meet specified requirements, Contractor shall resolve at no cost to Owner. Refer to Section 311001 Site Preparation for Synthetic Turf Fields, Paragraph 1.6 for percolation tests required on existing aggregate. Contractor shall pay for and coordinate all permeability testing.
- C. At the completion of the synthetic turf installation the Contractor shall take infill depth measurements in at least 30 locations to be determined by the Engineer. Acceptable testing must be completed before substantial completion will be granted for the field.
- D. At the completion of the synthetic turf installation the Contractor shall provide a certificate that the specified field drainage requirements have been achieved.
- E. At the completion of the synthetic turf installation the Contractor shall walk the field with the Owner and Engineer to verify planarity of the field and line work. Acceptable planarity and line work must be completed before substantial completion will be granted for the field.
- F. Prior to the second season of play the Contractor shall review the field with the Owner and Engineer repeat the infill, and planarity testing. Any unacceptable testing shall be corrected at no cost to Owner. In addition to testing the Contractor shall provide a field report to the Owner addressing grooming techniques, turf/fibers, infill materials, inlaid markings, and drainage.
- G. Warranty Maintenance: Beginning with the second season of play and continuing through the eighth season of play the Contractor shall visit the site no later than May 15th to complete

maintenance work. During the site visit the Contractor shall complete a full and detailed review of the field. During the review the Contractor shall walk the site with the Athletic Director and Maintenance Staff to review grooming techniques, turf/fibers, infill materials, inlaid markings, and drainage. During the review the Contractor shall provide full "deep-clean" field grooming utilizing the Contractor's self-propelled vacuum-filter type equipment. After cleaning, the Contractor shall reapply antimicrobial treatment per project specifications and perform a magnet sweep. The Contractor shall be responsible for contacting the District to establish meeting times. The Contractor shall document the review with meeting minutes and any potential issues with respect to items reviewed. The written review shall be submitted to the Owner, Athletic Director, and Engineer.

- H. The Contractor shall provide additional G-Max testing at the 4th and 7th year of the warranty period. Testing shall be completed at no cost to the Owner. Field shall have a G-max value of less than 120 when installed. G-max value shall not exceed 130 after 4th year of warranty and shall not exceed 165 after the 7th year of the warranty period.

PART 2 - PRODUCTS

2.1 SYNTHETIC TURF

- A. Synthetic Turf System shall be the following, or approved equal alternate:
 - 1. AstroTurf
 Rootzone 3D3 Blend, 2", 52 oz.
 800.723.8873, 248.941.2453
- B. Alternate Turf Manufacturers/ Contractors shall meet or exceed all turf and rubber specifications as defined for base bid products. In the case that the product line and materials do not meet or exceed the specifications in any way the Turf Manufacturer/Contractor shall clearly delineate the differences within their bid submittal. It is the Turf Manufacturers/ Contractors responsibility to demonstrate that what is being submitted fully meets or exceeds the base bid specified products.
- C. Specifications:
 - 1. Pile Yarn
 Yarn shall be proven athletic quality yarn designed specifically for outdoor use and stabilized to resist the effects of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. The primary pile fiber shall possess the following characteristics:

<u>Materials Properties</u>	<u>Minimum Specifications</u>
Primary Yarn Polymer	Trionic Co-Polymer Monofilament, Polyethylene Slit Film
Fiber Type	Monofilament and Slit Film Blend
Standard Color	Standard Greens, To Be Selected
Line and Marking Colors	Refer to Drawings
UV Stabilized	Yes
Fabric Construction	Tufted
Primary Backing	Multilayer Polypropylene Polyester
Secondary Backing Type	Full Coat Polyurethane, Perforated (No Finger Coating)
Yarn Denier	16,000
Infill Ratio	50/50 Rubber to Sand
Fiber Reveal	5/8" Max

Note: Exceptions to specifications shall be outlined within proposal.

- 2. Physical Properties/Values

<u>Properties</u>	<u>Minimum Specifications</u>	<u>Testing Method</u>
Pile Height (Nominal)	2"	D5823-13
Fiber Denier	16,000	D1577-07

Thickness	Mono 330 microns	D3218-07
	SF 115 microns	D3218-07
	RZ 100 microns	D3218-07
Tuft Gauge	3/8"	D5793-05
Total Product Weight	78 oz/sy	D5848-10e1
Pile Yarn Fiber Weight	52 oz/sy	D5848-10e1
Primary Backing Weight	7 oz/sy	D5848-10e1
Secondary Backing Weight	20 oz/sy	D5848-10e1
Ave. Grab Tear Strength	>200 lb/force	D5034-00
Ave. Tuft Bind Strength	>10 lb/force	D1335-12
Break Strength	>20 lb/force	D2256-10
Elongation	>50%	D2256-10
Total Lead Content	<50 ppm	F2765-14
Infiltrometer	>30 in/hr	BS 7044 Method 4
Pill Flammability	Pass	D2859-06 (2011)
G-Max (Per Warranty)	<120 @ Install	F355-10a

Note: Exceptions to specifications shall be outlined within bid.

2.2 SHOCK PAD (ALTERNATE 1)

- A. Shock Pad System shall be the following, or approved equal alternate:
 1. Schmitz Foam Products, ProPlay Sport 20
- B. Alternate Shock Pad Manufacturers shall meet or exceed all pad specifications as defined for base bid products. In the case that the product line and materials do not meet or exceed the specifications in any way the Turf Manufacturer/Contractor shall clearly delineate the differences within their bid submittal. It is the Manufacturers/ Contractors responsibility to demonstrate that what is being submitted fully meets or exceeds the base bid specified products.
- C. Specifications:
 1. Physical Properties/Values

<u>Properties</u>	<u>Minimum Specifications</u>	<u>Testing Method</u>
Thickness	0.79"	
Mass per unit area	0.61 lb/ft	
<u>Strength</u>		
Tensile	38 psi	D3575
Compressive at 25% deflection	12 psi	D3575
Thickness after 72 hr recovery	0.79"	
Compressive at 50% deflection	49 psi	D3575
Thickness after 72 hr recovery	0.79"	
<u>Performance</u>		
Impact attenuation [gmax]	80-110	F 355-A
<u>Drainage and Isolation</u>		
Water permeability via infiltration rate	>1,000 in/h	EN 12616
Water flow rate under 2 in (51 mm) hydraulic head	15 gpm/ft ²	D4491
Water permeability by permittivity	5.9 gpm/ft ²	D4491
In-plane water flow rate at 0.3 psi (2 kPa) load and 0.005 hydraulic gradient (0.5% slope)	0.05 gpm/ft ²	D4716
Hydraulic transmissivity	10 gpm/ft	D4716
Thermal conductivity	0.03 BTU/h.ft.°F	C177
Thermal resistance [R-value]	2.271 h.ft ² .°F/BTU	C177

Note: Exceptions to specifications shall be outlined within bid.

2.3 FINISHING STONE

- A. Refer to Specification Section 312011 "Finishing Stone for Synthetic Turf Fields".

2.4 PRODUCT

- A. The turf system shall consist of an artificial grass-like surface pile, which shall be tufted into a woven backing, with a mechanically applied adhesive backing.
- B. The entire system shall be resistant to weather, insects, rot, mildew, and fungus growth, and will be non-allergic and non-toxic.
- C. The entire system shall be constructed for porous standards as specified.
- D. The pile surface shall provide good traction in all types of weather with the use of conventional sneaker type shoes, composition mold sole athletic shoes, baseball spikes, and screw-on football cleats.
- E. Despite the inlaid lines and logos, the pile surface shall be suitable for both temporary and permanent line markings using acrylic paint, as per the turf manufacturer's recommendations.
- F. The fabric surface shall be installed in 15' rolls.
- G. All synthetic turf seams shall be sewn with a double-lock stitch using a high strength fiber cord.
- H. The entire system shall be constructed to maximize dimensional stability, to resist damage, resistant to ultraviolet radiation, and sustain normal wear and tear for its designated uses.
- I. All adhesives used in bonding the inlaid markings to the supplemental backing material shall be resistant to moisture, bacteria and fungus attacks, and resistant to ultraviolet radiation. The adhesive shall be made specifically for the adhesion of synthetic turf to seaming to seaming tape.

2.5 INFILL MATERIAL

- A. Infill shall be per manufacturer's system design. Infill shall be controlled homogeneous mixture of approved processed SBR rubber and quartz silica sand. The mixture shall have an installed compacted depth as indicated on plans. The infill shall consist of a resilient layered granular system, comprised of selected and graded silica sand and, washed and processed granulated SRB rubber (free of belting fabric and wire). Infill material proportions shall be 50% rubber to 50% sand. Provide sieve analysis per ASTM – F-1508. SBR rubber used for infill material shall be lead free. Source of rubber shall be from car tires manufactured in the United States.

RUBBER INFILL

US MESH	% PASSING
8	100
10	95-100
12	70-80
16	35-45
20	10-15
30	0

2.6 FABRIC SURFACE

- A. The fabric surface shall consist of tufted slit film and monofilament fibers tufted into a primary and secondary urethane backing.
- B. The entire system shall be resistant to weather, insects, rot, mildew, and fungus growth, and will be non-allergic and non-toxic.
- C. The pile surface will resemble freshly mown natural grass in appearance, texture, and color. Color shall be uniform throughout field area.
- D. The pile surface will be nominally uniform in length.
- E. The pile fiber angle will be 90 degrees +/- 5 degrees, measured from the horizontal after installation of the infill material.
- F. The turf system shall have a fiber height of 2".
- G. Each roll shall be 15' wide.
- H. Turf shall be perforated at 3" x 4" or equal, and a perforation hole diameter of 0.25".

2.7 LINE MARKINGS AND NUMBERS

- A. All line markings and numbers shall meet the material standards for synthetic turf as outlined within this specification. All line markings and numbers shall meet current MHSAA and NFSHSA standards. Colors shall be as indicated on Drawings.
- B. All markings shall be tufted in-place, inlaid or glued as noted on drawings.

2.8 SYNTHETIC TURF REPAIR MATERIALS

- A. Upon substantial completion provide the Owner with the following:
 - 1. Inlaying glue - one gallon
 - 2. Turf fabric – three (3) 15' x 30' pieces of field green; one (1) 15' x 5' piece of each marking and logo color.

2.9 PERFORMANCE REQUIREMENTS

- A. Testing Requirements:
 - 1. Immediately following installation of the synthetic turf field by the Contractor the field shall undergo the tests listed below. Tests shall be conducted by testing agencies approved by the Owner and paid for by the contractor.
 - 2. If the field shall fail any of the following tests the Contractor shall replace the field at their expense. The replacement field shall be tested using the same guidelines for the balance of the warranty period.
- B. Dynamic Cushion Test (G-max)
 - 1. Test shall be based on ASTM F355-10a
 - 2. Field shall have a G-max value of less than 120 when installed.
 - 3. G-max value shall not exceed 130 after five years and shall not exceed 165 for the balance of the warranty period.
- C. UV Testing
 - 1. For UV degradation the turf shall not lose 5% of its weight over the warranty period.
 - 2. Shall have an elongation to break point greater than 9% over the warranty period.

3. Contractor shall provide documentation on forecasted color degradation expected over the warranty period.
- D. Tuft Binding
1. Shall be based on ASTM D1335-12.
 2. For the warranty period the Tuft Bind Strength shall be greater than 8 lbs.
- E. Grab Tear Strength
1. Shall be based on ASTM D5034-00.
 2. For the warranty period the Grab Tear Strength shall be greater than 180 lbs.
- F. Pile Height, Fiber Weight
1. Shall be based on ASTM DD5848-10e1.
 2. For the warranty period the Finished Pile Height shall be no less than 2" high.
 3. For the warranty period the Fiber Weight shall not be less than 52 oz. per square yard.
- G. Playing Surface
1. The finished playing surface shall resist abrasion and cutting from normal use. The system shall withstand continuous use of all sports and band activities in all weather conditions. In the event of any visible tear, stretch, delamination of inlaid materials, or any other performance abnormalities the Contractor shall replace all or a portion of the field at the discretion of the Owner, at no cost to the Owner. The finished playing surface shall be uniform in planarity without vertical irregularities. Surface tolerance shall be no greater than 1/8" in 20'. All line markings shall be straight and true without horizontal deviations.

2.10 GOAL POSTS (Alternate 2)

- A. Football Goals shall be manufactured by Sportsfield Specialties, 888.975.3343, or approved equal.
1. Model: AdjustRight GP820HS with Ground Sleeve and Artificial Turf Access Frame Covers, 8' Gooseneck, 20' Uprights, Color shall be Yellow.
 2. Quantity: Set of Two (2) Goals and Accessories.

2.11 WOOD NAILER BOARD

- A. Pressure treated southern yellow pine, No. 2 or better, 2"x4" nominal size, pressure treatment shall be Copper Azole – Type A (CBA-A), retention shall be 0.61 pounds per cubic foot.

2.12 ANTIMICROBIAL FIELD TREATMENT

- A. Turf system shall be pre-treated with acceptable antimicrobial system. If system is not pretreated antimicrobial treatment shall take place following installation. The following system or an 'Approved Equal' system shall be used:
1. Product: Bac-Shield Antimicrobial – Chitosan by HeiQ CemTex, 704.795.9322.

2.13 TURF GROOMER

- A. Provide manufacturer's turf groomers, conditioning and sweeping units. Manufacturer's provided units shall be equivalent to the following basis of design products:
1. Conditioner Basis of Design Product - GreensGroomer Integrated Sports Turf Groomer model #926, 888-298-8852.
 2. Sweeper Basis of Design Product - GreensGroomer LitterKat model #760, 888-298-8852.

PART 3 - EXECUTION

3.1 FINISHING STONE

- A. Refer to Specification Section 312011 "Finishing Stone for Synthetic Turf Field".

3.2 GENERAL

- A. The installation shall be performed in full compliance with approved shop drawings.
- B. All installation and markings shall be to current MHSAA and NFSHSA standards.
- C. Only factory-trained technicians, skilled in the installation of highest quality synthetic turf systems working under the direct supervision of the approved installer supervisors, shall undertake the placement of the system.
- D. The surface to receive the synthetic turf shall be inspected and certified by the Manufacturer/and Testing Engineer as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.
- E. Nails or Spikes shall not be used in the installation of the synthetic turf system. Following completion of the fields Contractor shall go over the entire field area with magnetic sweeper to ensure no nails or foreign material is present within the turf or infill material.

3.3 INSTALLATION

- A. Prior to ordering or setting the synthetic turf field materials, the Contractor shall have a registered Land Surveyor layout the field and critical marking locations on the finished grade. Critical locations (corners, centerline markings, etc.) shall be staked and painted on the finish grade. The Contractor shall maintain the markings as check points throughout the installation of the synthetic turf system.
- B. The synthetic turf shall be laid across the field per the approved seaming plans. The grain of the turf shall face the home bleacher side of the field. During the installation process the Contractor shall continuously check the field layout dimensions in all directions. The Contractor shall maintain a log recording all measurements taken during the installation process.
- C. All seams shall be sewn. Seams within the area of play shall traverse the field of play. Seams shall be flat, tight, and permanent with no separation or fraying. Visible seams shall not be accepted.
- D. All inlaid material shall be set to the tightest tolerances possible. Adhere with the highest grade bonding materials. Seams adjacent to the inlaid materials shall be flat, tight and permanent with no separation or fraying.
- E. Finish grade of infill material adjacent to curbs shall be as illustrated on drawings. Top of Infill material shall be a continuation of the field grade, smooth and uniform. No depressions or irregularities of finish grade shall exist in this location.
- F. Infill materials shall be properly mixed on site and applied utilizing a broadcasting machine designed for this purpose. The turf and infill material shall be thoroughly raked and brushed into the fibers between each pass of the broadcasting unit. The infilling operation shall only take place with dry material and dry field conditions.

- G. Upon completion of infill and grooming activities Contractor shall remove all loose fiber material from the field. Additionally, contractor shall complete touch up operations of seams and field and lining irregularities prior to requesting inspection from Owner and Engineer.

3.4 ENVIRONMENTAL CONDITIONS

- A. Weather conditions are important for the successful installation of the systems. No work under this section will proceed when:
 - 1. Ambient air temperatures are below 50 degrees F.
 - 2. Material temperatures are below 50 degrees F.
 - 3. Surfaces are wet or damp
 - 4. Rain is imminent or falling
- B. If conditions exist or are imminent, which will be unsuitable to installation requirements of the systems specified herein. Humidity levels will be inside the limits recommended by the adhesive manufacturer to obtain optimum bonding characteristics of the surfaces.

3.5 EDGES

- A. Attach tucked synthetic turf edges to wood nailer board as indicated on drawings.
- B. Attach wood nailer to existing concrete curb as indicated on drawings. Location of new wood nailer to match location of existing wood nailers.

3.6 GOAL POSTS (Alternate 2)

- A. Per manufacturer's instructions, specifications, and details; including concrete ground sleeve foundation.
- B. Existing field underdrains, base materials, drainage aggregate, and finishing stone shall be restored to original specifications following installation of new ground sleeves.
- C. Install synthetic turf in goal post frame covers.

3.7 CLEAN UP

- A. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.
- B. All usable remnants of new material shall become the property of the Owner. Confirm with Owner. If Owner does not wish to keep remnants Contractor shall remove.
- C. The Contractor shall keep the area clean throughout the project and clear of debris.
- D. Surfaces shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.8 ANTIMICROBIAL FIELD TREATMENT

- A. Upon final approval of field antimicrobial treatment shall be applied.
- B. Application of antimicrobial treatment shall be per manufacturer's instructions. Applicator shall meet with Owner and Owners Representative prior to application.

3.9 MAINTENANCE TRAINING

- A. Prior to acceptance the Sports Field Contractor will be responsible for training the Owner's selected personnel regarding the maintenance and upkeep of the field upon completion. The Synthetic Turf Contractor is responsible for scheduling this event and obtaining written confirmation and acceptance of the scheduled time from the Owner a week in advance of the maintenance training session. The Owner is responsible to supply a list of selected personnel to the Sports Field Contractor within 72 hours of a written request.

3.10 WARRANTY MAINTENANCE

- A. Warranty Maintenance: Beginning with the second season of play and continuing through the eighth season of play the Contractor shall visit the site no later than May 15th to complete maintenance work. During the site visit the Contractor shall complete a full and detailed review of the field. During the review the Contractor shall walk the site with the Athletic Director and Maintenance Staff to review grooming techniques, turf/fibers, infill materials, inlaid markings, and drainage. During the review the Contractor shall provide full "deep-clean" field grooming utilizing the Contractor's self-propelled vacuum-filter type equipment. After cleaning, the Contractor shall reapply antimicrobial treatment per project specifications and perform a magnet sweep. The Contractor shall be responsible for contacting the District to establish meeting times. The Contractor shall document the review with meeting minutes and any potential issues with respect to items reviewed. The written review shall be submitted to the Owner, Athletic Director, and Engineer.

END OF SECTION 32 1800

SECTION 32 9113 - SOIL PREPARATION

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 planting soils for lawns.
- B. Related Sections:
 - 1. Division 32 Section 329200 'Turf and Grasses' for topsoil/ seed bed preparation and seeding.

1.3 DEFINITIONS

- A. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- B. Imported Soil: Soil that is transported to Project site for use.
- C. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- D. Topsoil: Imported soil; or manufactured soil that has been modified as specified with required soil amendments to produce a soil mixture best for turf growth.
- E. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- F. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- G. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Submit a certified analysis of topsoil from all sources from an independent testing laboratory prior to placement. Topsoil shall meet criteria set fourth within the paragraph 2.1 deficiencies shall be corrected prior to placement of topsoil.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Planting-Soil for Lawns: Topsoil shall be imported, shred before spreading.
 - 1. Imported topsoil, if any, shall meet the following criteria, be confirmed through test results and submitted to the Architect. Imported topsoil shall be weed-free and free of extraneous material (stones, sticks, etc.) larger than ½".
 - a. pH range between 5.5 and 6.5
 - b. Soluble salts content 500 ppm (parts per million) maximum
 - c. Organic content between 5 and 30 percent
 - d. Clay content between 5 and 25 percent

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.
 - 2. Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
 - 3. Form: Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in subsoil or topsoil.

3.2 PLACING TOPSOIL OVER EXPOSED SUBGRADE FOR LAWNS

- A. Subgrade Preparation: Till subgrade to a minimum depth of 4 inches. Remove stones larger than ½" inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- B. Spreading topsoil for Lawns: Spread topsoil to a minimum total depth of 4 inches but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.

- C. Compaction: Compact topsoil to 85 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place.
- D. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.3 PROTECTION AND CLEANING

- A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform seeding operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- B. Remove surplus soils and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
 - 1. Dispose of excess existing subsoil, topsoil and unsuitable materials off site.

END OF SECTION 32 9113

SECTION 32 9200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Seed bed preparation, fertilization, seeding, mulching, maintenance and seeding warranty.
- B. Related Sections:
 - 1. Division 32 Section 32 9113 "Soil Preparation" for topsoil preparation and placement.

1.3 DEFINITIONS

- A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- B. Weeds: includes dandelion, jimsonweed, quackgrass, horsetail, morning glory, rush grass, mustard, lambsquarter, chickweed, cress, crabgrass, Canadian thistle, nutgrass, poison oak, blackberry, tansy ragwort, Bermuda grass, Johnson grass, poison ivy, nut sedge, nibble will, bindweed, bent grass, wild garlic, perennial sorrel and brome grass.
- C. Topsoil: Use imported topsoil. See Section 32 9113 "Soil Preparation" and drawing designations for topsoil and seeding.

1.4 REFERENCES

- A. Michigan Department of Transportation (MDOT) – 2012 Standard Specification for Construction.

1.5 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Certification of grass seed.
 - 1. Certification of each seed mixture.
- B. Product certificates and data.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 2. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species:
1. Quality: Seed of grass species as listed below with not more than 0.5 percent weed seed:
 2. Mix Type 1
Supplier: Rhino Seed, 800.482.3130
Product: 'School Lawn Mix'
Seeding Rate: 250 lbs/acre
 3. Supplemental Seed
To Seed Mix Type 1 add Annual Rye, seed at a rate of 15 lbs/ac.

2.2 FERTILIZERS

- A. Recommended starter fertilizer for grass with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil as indicated within topsoil analysis, and shall contain a minimum of 4% phosphorus acid, 2% soluble potash and sufficient nitrogen to provide one pound of actual nitrogen per 1000 square feet of lawn area.

2.3 STRAW MULCH

- A. Straw mulch shall be threshed straw, oats, spring wheat, spring barley, or spring rye chopped in 8" to 12" lengths and containing not noxious weeds.

2.4 TACKIFIER

- A. Tracer Tackifier, Reinco Inc., 800.526.7687.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 32 9113 "Soil Preparation."

- B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 PLANTING SEASON

- A. April 1st through May 31st or August 16th through October 10th unless otherwise noted on plans or directed by Landscape Architect.

3.3 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix fertilizer thoroughly into upper two inches (2") of topsoil

3.4 MECHANICAL SEEDING

- A. Sow seed with mechanical seeder.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed immediately following rain, when ground is dry, or during windy periods.
- B. Sow seed at a total rate of 250 lbs per acre.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Within 24 hours of seeding, all areas shall be mulched using straw mulch and tackifier. Mulch shall be spread evenly with extreme care so as to leave the seeded lawn surface with a minimal amount of damage.
 - 1. Straw mulch shall be applied uniformly at a rate of 2.5 tons per acre on seeded areas. The mulch shall be loose enough to permit air to circulate but compact enough to prevent erosion.
 - 2. Apply tackifier immediately following installation of mulch. Apply tackifier at manufacturers recommended application rates. Sufficient tackifier shall be applied to anchor straw mulch and prevent blowing of straw. Contractor shall immediately correct any deficiencies.

3.5 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Establishment period will require multiple mowings.

3.6 SATISFACTORY TURF

- A. Prior to acceptance, turf installations shall meet the following criteria as determined by Landscape Architect:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory. Maintenance shall include mowing of seeded lawn areas and watering.

END OF SECTION 32 9200