

Specifications

Cape Henlopen School District
Sussex County
Delaware

Division 01 GENERAL REQUIREMENTS



SECTION 001010 – SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Project Description
- B. Work Sequence
- C. Contractors Use of the Site and Premises
- D. Construction Schedule
- E. National Associations and Published Standards
- F. Definitions
- G. Specification Format and Language
- H. Standard Forms
- I. Standard Forms
- J. Applications for Payment
- K. Existing Utilities and Systems

1.2 PROJECT DESCRIPTION

- A. The work of this Project may be summarized as follows:
 - 1. The work includes supplying and furnishing all the required labor, materials, equipment, parts, supplies, overhead, profit, supervision and associated work necessary for the removal of the existing synthetic turf at the Cape Henlopen High School Stadium, installing a ball stopper netting system and new synthetic turf surface.

1.3 CONTRACT DESCRIPTION

- A. Extent of Work shall be as specified herein and as indicated on the Drawings. Work is intended to be awarded as one Prime contract consisting of the following:
 - 1. Site Construction
- B. Contract scope shall be delineated, in general, by the assignment of Specification Sections and Drawings as follows:
 - 1. Site Construction:
 - a. Specifications: All work indicated.
 - b. Drawings: All work of all Drawings and as otherwise indicated.
 - 2. Provide all material, labor, tools, permits, temporary and permanent utilities, insurance and permits necessary to complete the construction as indicated and as implied by these Contract Documents. All material shall be new unless indicated otherwise.

1.4 WORK SEQUENCE

- A. Construct Work to accommodate Owner's occupancy requirements during the construction period, coordinate construction schedule and operations with Owner and Architect.

SECTION 001010 – SUMMARY OF THE WORK

1.5 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to areas indicated on the Drawings.
- B. Construction Operations: Limited to areas noted on Drawings.
- C. Time Restrictions for Performing Work: Owner shall make site available to Contractors between the hours of 7:00 am and 4:30 pm. Additional availability may be arranged through the Owner.
- D. Coordinate construction work with the daily operation of the school and activities on the campus.
 - 1. Do not block driveways or parking lots at any time.
 - 2. Do not schedule deliveries or any other truck traffic in the school parking lots and driveways during school arrival and dismissal.
 - a. School arrival – Monday thru Friday – 7:00 AM to 7:45 AM (school starts at 7:40 AM)
 - b. School dismissal – Monday thru Friday – 2:30 PM to 3:15 PM (school ends at 2:40 PM).
- E. Utility Outages and Shutdown: Contractors shall not disrupt utilities unless scheduled and approved by the Owner a minimum of 72 hours prior to said disruption. Approval shall be at the Owners discretion.
- F. Controlled Substances: Use of tobacco, vaping pens, alcohol, and other controlled substances are not permitted on the Project Site.
- G. Employee Identification: Provide identification tags for all personnel working on the site. Identification must be evident at all times.
- H. Employee Drug and Background Screening: Comply with both State and Owner required screening. Most restrictive requirements are to be followed.

1.6 CONSTRUCTION SCHEDULE

- A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first workday of each week. **Work shall start no later than July 24, 2020 and be substantially completed by September 4, 2020.**
- B. Sequence of Listings: The chronological order of the start of each item of Work. Coordinated with specifications and major equipment.
- D. Submit initial schedule with first application for payment and submit updated schedules with each application for payment.
- E. The Project Schedule and each monthly update shall contain the following statement and the signature of each Prime Contractor: “Our company understands

SECTION 001010 – SUMMARY OF THE WORK

that the meeting of the milestone dates listed in this schedule is critical to maintaining the Project Schedule. In signing this schedule our company agrees to this schedule and further agrees to dedicate whatever resources that are required to complete the work of our Contract in order to meet these dates.” Persons signing the Progress Schedule shall be the same party as executed the Owner/Contractor Agreement or an individual authorized to commit the Contractor’s resources to the schedule.

- F. Actual damages for delay in the time of completion are impossible to determine, thus said sum is a measure only of liquidated damages the Owner will sustain for each day of delay and shall not be construed as a penalty. Accordingly, the Contractor shall be liable and shall pay the Owner **Two Hundred and Fifty Dollars (\$250.00)** per calendar day for each day beyond September 4, 2020. The Owner has the right to deduct these amounts directly from the amounts due on the contract.

1.7 DEFINITIONS

- A. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations.
- B. Install: The term "install" is used to describe operations at the project site, including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, performing, coordinating with other trades, protecting, cleaning, and similar activities.
- C. Provide: The term "provide" means to furnish, supply, and install, complete and ready for intended use.
- D. Coordinate: The term "coordinate" means to cooperate with Owner, Contractors, and related trades to provide all connections between the trades in correct sequence, size, and location to create a complete system ready for intended use.
- E. Verify: The term "verify" means to measure, investigate, review, test, check the accuracy or correctness of and prove by demonstration, evidence, or testimony the location, size, dimension, and condition of an item.

1.8 SPECIFICATION FORMAT AND LANGUAGE

- A. The specifications have been arranged in accordance with CSI/CSC "Masterformat" master list of titles and numbering system.
- B. The imperative language of the technical sections of the specifications is directed to the Contractor unless specifically noted otherwise.
- C. Portions of the specifications have been derived from an automated master specification production system and may include minor deviations from traditional writing forms. Such deviations must be recognized as a normal result of this production technique, and no other meaning will be implied or permitted.

SECTION 001010 – SUMMARY OF THE WORK

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 APPLICATIONS FOR PAYMENT

- A. See Section 001290

3.2 EXISTING UTILITIES AND SYSTEMS

- A. Use Charges: Owner will pay electrical and water consumption costs during construction except for electrical consumption required by welding construction.
- B. Electrical Power:
 - 1. Contractor will be allowed to use the existing power service if required for Work of this Project.
 - 2. The Contractor shall provide extension cords for the extension of utilities as required for the Work of this Project.
 - 3. Contractor shall take all measures necessary to conserve and limit use to that required for construction.
 - 4. If the existing electrical power cannot be utilized the Prime Contractor requiring additional electric power shall provide such power at no additional cost to the Owner.
- C. Potable Water:
 - 1. Contractor will be allowed to use the existing water service if required for work of this project.
 - 2. Contractor shall take all measures necessary to conserve and limit use to that required for construction.
- D. Storage: Secure tools, equipment, and materials at the end of each day.

END OF SECTION

SECTION 010150 – SPECIAL CONDITIONS

PART 1 - GENERAL

1.1 CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary General Conditions, Special Conditions, and applicable requirements of the Contract Documents apply to the Work of the Contract.

1.2 SCOPE

- A. Provide labor, materials, equipment, and services and perform all operations required for completion of Work on the Contract as specified.

1.3 REFERENCE STANDARDS AND SPECIFICATIONS

- A. Standard and other publications referenced to these Specifications shall be of the issues in effect at time of bidding and shall form a part of this Contract.

1.4 CONTRACTOR'S USE OF PREMISES

- A. General: The Contractor shall limit his use of the premises to the work indicated, so as to allow for Owner's continued use of the site.
 - 1. Materials may be stored appropriately at the site of the Work provided such stored materials do not unduly restrict the use of School District facilities by the Owner or either negatively impact or delay the work by other contractors.

1.5 CLEANING UP

- A. Continuously keep rights-of-way, storage areas, streets, roads, highways, and adjacent properties free from accumulations of waste materials, excess excavation, rubbish, dust, and windblown debris resulting from construction operations.
- B. Broom or water clean paved surfaces and remove surplus materials, tools, construction equipment, and machinery as each work area is completed.
- C. Adequate control of dust and particles shall be provided for all work areas and at all times. Any cleanup of such shall be the responsibility of the Contractor.

PART 2 - SPECIAL REQUIREMENTS

2.1 SPECIAL REQUIREMENTS

- A. Contractor shall make every effort to protect and avoid damage to all public and private property. Any damage caused by Contractor shall be repaired or replaced in kind by the Contractor that caused the damage at no additional cost to the School District.
- B. School District shall obtain and pay for all construction permits and licenses.

SECTION 010150 – SPECIAL CONDITIONS

- C. Contractor shall be responsible for coordinating all work on the project with the staff of the Cape Henlopen School District on a weekly basis.

2.2 CONTRACT SCHEDULE AND MILESTONE DATES

- Start / Site Available July 24, 2020
- Substantial Completion September 4, 2020
- Final Completion September 18, 2020

END OF SECTION

SECTION 012200 – UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

SECTION 012200 – UNIT PRICES

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

1. Unit Price UP-1: Ball Barrier Netting System

- a. Description: Furnish all materials, perform all labor, and do all else necessary to install additional Ball Barrier netting system complete in place.
- b. Unit of Measurement: 20' of Net (Includes 20' of net, one post and one ground sleeve).

2. Unit Price UP-2: Turf Nailer Boards

- a. Description: Furnish all materials, perform all labor, and do all else necessary to install new pressure treated synthetic turf nailer boards to replace any boards that may be in poor condition.
- b. Unit of Measurement: Linear Foot.

END OF SECTION

SECTION 012300 – ALTERNATES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Alternates bidding submission procedures.
- B. Documentation of changes to Contract Sum/Price.

1.2 RELATED SECTIONS

- A. Document 000200 - Instructions to Bidders
- B. Document 000410 - Bid Form: Incorporating monetary value of applicable Alternates.
- C. Document 000520 - Agreement: Incorporation of monetary value of accepted Alternates.
- D. Division 01 Section "Submittal Procedures" for requirements of submittals for proposed alternates; work schedule affected by alternates.
- E. Division 01 Section "Product Requirements" for product options and substitutions.

1.3 SUBMISSION REQUIREMENTS

- A. Submit Alternates indicating the amount to be added to or deducted from the Base Bid for the provision of or deletion of all labor, materials and all other Work incorporated and identified by the Specification Sections and Drawings referenced or affected.
- B. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the sole discretion of the Owner. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.4 SCHEDULE OF ALTERNATES

- A. Alternate 1: Furnish all materials, perform all labor, and do all else necessary to complete the Work in accordance with the Contract Documents for all work associated with the installation new ball barrier netting system from the base bid net system at the both ends of the field up to the 10 yard line on the football field. Price shall include all four (4) corners of the field.

PART 2 - PRODUCTS - Not Used.

PART 3 - EXECUTION - Not Used.

END OF SECTION

SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices" for administrative requirements for using unit prices.
 - 2. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Engineer will issue through Owner supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on EJCDC Document C-942, "Field Order" form.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Engineer.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on EJCDC Document C-941 form.

1.6 WORK CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C-940 form. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 012900 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements governing each prime contractor's Applications for Payment.
 - 1. Coordinate the Applications for Payment with the Schedule of Values, Project Schedule, Submittal Schedule, and List of Subcontracts.
 - 2. Contractors using electronic Forms can use either EJCDC C-620 or AIA G702.

1.2 APPLICATIONS FOR PAYMENT

- A. The Application for Payment, including progress payments shall be as indicated in the Agreement (Contract) between Owner and Contractor. Payments to the Contractor will not be made until final approval by the Owner and submittals that precede application have been received and accepted as identified herein.
- B. The Contractor shall prepare a draft copy of the Application for Payment and email a scanned copy to the Engineer 7 days prior to date for submission of Application of Payment. After review by the Engineer a corrected copy will be returned to the Contractor within 3 working days. The Application for Payment shall be itemized and supported by such data substantiating the Contractor's right to payment as the Owner or Engineer may require. The form of Application for Payment shall be either EJCDC C-620 or AIA G702. Continuation Sheet shall be prepared the same as the Schedule of Values submitted by the Contractor and as approved.
- C. Upon receipt of the Engineer's comments, the Contractor shall issue the finalized Application of Payment in triplicate to the Engineer for execution and processing.
- D. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
 - 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- E. Payment-Application Times: Progress-payments shall be paid on a monthly basis. Applications shall reflect the work completed during the month prior to the date of application. The dates for submission of the Applications will be provided by the Owner to the Contractor prior to commencement of work.
- F. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Engineer will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and the Project Schedule. Use updated schedules if revisions were made.

SECTION 012900 – PAYMENT PROCEDURES

2. Include amounts of fully executed Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
 3. Contractor's application for payment shall reflect an equal percentage amount (within 5 percent) for labor and materials for Work completed. The Engineer may adjust applications where labor exceeds materials or where materials exceed labor quantities in the Work completed columns.
- G. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Engineer by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Engineer.
- H. Partial and Final Releases and Waivers: With each Application for Payment, submit a partial release of claims for the Work covered by the payment.
1. Release Forms: Submit Partial Releases on forms, and executed in a manner, acceptable to the Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values must be both submitted and accepted.
 4. Project Schedule.
 5. Schedule of unit prices.
 6. Submittal Schedule must be submitted and coordinated with Project Schedule.
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
- J. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application include:
 - a. Occupancy permits and similar approvals. Party responsible for acquiring general building permit shall acquire occupancy permit.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Changeover information related to Owner's occupancy, use, operation, and maintenance.

SECTION 012900 – PAYMENT PROCEDURES

- f. Final cleaning.
- g. Advise on shifting insurance coverage.
- h. List of incomplete Work, (Contractor's Punch List) recognized as exceptions to Engineer's Certificate of Substantial Completion.
- i. Receipt of Attic (Maintenance) Stock.

K. Final Payment Application:

1. Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
 - a. Completion of Project closeout requirements.
 - b. Completion of items specified for completion after Substantial Completion.
 - c. Ensure that unsettled claims will be settled.
 - d. Ensure that incomplete Work is not accepted and will be completed without undue delay.
 - e. Transmittal of required Project construction records to the Owner.
 - f. Proof that taxes, fees, and similar obligations were paid.
 - g. Removal of temporary facilities and services.
 - h. Removal of surplus materials, rubbish, and "similar elements."
 - i. Receipt of As Built Survey as certified by a licensed surveyor.

PART 2 - PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION

SECTION 013100 – 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination Drawings.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections include the following:
 - 1. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 2. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work.

SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION

- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

- A. Key Personnel Names: Within 5 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
 - 1. Include special personnel required for coordination of operations with other contractors.

1.6 PROJECT MEETINGS

- A. General: Each Prime Contractor will schedule and conduct meetings and conferences at Project site for their project, unless otherwise indicated.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 013120 – PAYROLL REPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for schedules and reports required for proper performance of the Work including:
 - 1. State of Delaware Payroll Reports.
- B. Related Sections include the following:
 - 1. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 2. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of schedules and reports with performance of other construction activities.

1.4 PAYROLL REPORT

- A. State of Delaware Payroll Reports: As required by the State of Delaware, Section 6960, Title 29 of the Delaware Code, payroll wages shall be reported weekly to the Delaware Department of Labor, Division of Industrial Affairs, 4425 North Market Street, Wilmington DE 19802, phone 302-761-8200. Forms shall be available at the above address.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 4. Division 1 Section "Closeout Procedures" for submitting warranties.
 - 5. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 6. Divisions 3 through 33 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings may be provided by Engineer for Contractor's use in preparing submittals upon execution of the required release forms and written approval of the Owner. Consult the office of the Engineer for costs and other information pertaining to the process for the release of CAD files.

SECTION 013300 – SUBMITTAL PROCEDURES

- 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. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer'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 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 3 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 7 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Engineer and to Engineer's consultants, allow 7 days for review of each submittal. Submittal will be returned to Engineer before being returned to Contractor.
 6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- D. Identification: Place a permanent label or title block on each submittal for identification.
- E. Deviations: Highlight, Encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review, received from sources other than Contractor.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- H. 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.

SECTION 013300 – SUBMITTAL PROCEDURES

- I. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. 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 printed data are not suitable 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. Submit Product Data before or concurrent with Samples.
 4. Submit one (1) electronic file (PDF) of Product Data, unless otherwise indicated. Engineer will return one (1) electronic file (PDF) copy each to the Contractor and Owner.
- C. 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. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
 2. Number of Copies: Submit copies of each submittal as follows:
 - a. All Submittals: Submit one (1) electronic file (PDF) of the Shop Drawing, unless otherwise indicated. Engineer will return one (1) electronic file (PDF) to the Contractor with comments/ approval or scan and e-mail an electronic file to the Contractor. If approved the distribution will be 1 PDF copy each for Contractor, Owner and Engineer.
- D. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- E. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- F. 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.

SECTION 013300 – SUBMITTAL PROCEDURES

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit one (1) electronic file (PDF) of each submittal, unless otherwise indicated. Engineer will not return copies.
 - 2. Certificates and Certifications: Provide a notarized 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.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- 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, names and addresses of Engineers and owners, and other information specified.
- D. Installer Certificates: Prepare 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.
- E. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- F. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Material Test Reports: Prepare 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.
- I. Product Test Reports: Prepare written reports indicating 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.
- J. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

SECTION 013300 – SUBMITTAL PROCEDURES

- K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, 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.
- L. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.
- M. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- N. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- O. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. 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 Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, 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.

3.2 ENGINEER'S / ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

SECTION 013300 – SUBMITTAL PROCEDURES

- C. Informational Submittals: Engineer will review each submittal and will not return it or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

SECTION 014000 – QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Divisions 2 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

SECTION 014000 – QUALITY REQUIREMENTS

- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
- I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices,

SECTION 014000 – QUALITY REQUIREMENTS

receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of Delaware.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

SECTION 014000 – QUALITY REQUIREMENTS

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Reinspection: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspection, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Engineer, Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

SECTION 014000 – QUALITY REQUIREMENTS

3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Engineer's and Owner's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for limitations on utility interruptions and other work restrictions.
 - 2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
 - 3. Division 1 Section "Execution Requirements" for progress cleaning requirements.

1.3 SAFETY

- A. The Contractor shall maintain a safe work site at all times. Contractor shall submit a site plan depicting the sequencing of its work with ten days after the Notice to Proceed. Contractor shall ensure that construction dirt does not track onto public roadways and shall employ whatever means are necessary to comply with same.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Engineer, testing agencies, and authorities having jurisdiction.

1.5 QUALITY ASSURANCE

- A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pavement: Not Used.
- B. Portable Chain-Link Security Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized steel bases for supporting posts.
- C. Open-Mesh Plastic Fencing: Heavyweight orange colored plastic; open mesh, safety fence, 4 feet high with post set in compacted mixture of gravel earth.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities and temporary security chain link fencing where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 - 1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
 - 2. Meter and record all water usage during execution of the Work and submit "Water Usage Report" to the Owner on an agreed bi-weekly basis.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Comply with State and Federal requirements for proper facilities in response to COVID-19.
 - 1. Toilets: Use of Owner's existing toilet facilities will not be permitted.
- D. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Parking: Existing paved parking areas may be utilized by the Contractor for parking. Review parking requirements with the Owner and park only in designated locations and as otherwise not to interfere with the Owner's use of the premises.
- B. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
- C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

having jurisdiction. Comply with Division 01 Section “Execution Requirements” for progress cleaning requirements.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Division 1 Section “Summary of Work”.
- B. Temporary Erosion and Sedimentation Control: Comply with the approved NPDES / Erosion & Sediment Control Plans and Narrative as applicable.
- C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical

SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION

SECTION 016000 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 1 Section "References" for applicable industry standards for products specified.
 - 2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
 - 3. Divisions 2 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

SECTION 016000 – PRODUCT REQUIREMENTS

1.4 SUBMITTALS

- A. Substitution Requests: Submit one (1) electronic file (PDF) of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Cost information, including a proposal of change, if any, in the Contract Sum.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 3 days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 5 days of receipt of request, or 3 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.

SECTION 016000 – PRODUCT REQUIREMENTS

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 2. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project.
 - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Store cementitious products and materials on elevated platforms.
 - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 6. Protect stored products from damage and liquids from freezing.
 - 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and

SECTION 016000 – PRODUCT REQUIREMENTS

limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. **Manufacturer's Warranty:** Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. **Special Warranty:** Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. **Special Warranties:** Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. **Manufacturer's Standard Form:** Modified to include Project-specific information and properly executed.
 2. Refer to Divisions 2 through 33 Sections and Plans for specific content requirements and particular requirements for submitting special warranties.
- C. **Submittal Time:** Comply with requirements in Division 1 Section "Closeout Procedures."
- D. The warranty period on systems or equipment shall begin at date of Substantial Completion in part or whole. Contractor shall make provisions as required to extend the manufacturer's warranty from time of initial operation of systems or equipment until Substantial Completion is given in writing.
- E. The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. **General Product Requirements:** Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. **Standard Products:** If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. **Or Equal:** Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in

SECTION 016000 – PRODUCT REQUIREMENTS

Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Engineer will consider requests for substitution if received within 10 days after receipt of Bids. Requests received after that time may be considered or rejected at discretion of Engineer. Requests received after that time may be considered or rejected at discretion of Engineer.
- B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.

SECTION 016000 – PRODUCT REQUIREMENTS

6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of engineers and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 017300 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Installation of the Work.
 - 3. Cutting and patching.
 - 4. Progress cleaning.
 - 5. Protection of installed construction.
 - 6. Correction of the Work.
- B. Related Sections:
 - 1. Division 1 Section "Submittal Procedures" for submitting surveys.
 - 2. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in the State of Delaware.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Engineer of locations and details of cutting and await directions from the

SECTION 017300 – EXECUTION REQUIREMENTS

Engineer before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

- a. Primary operational systems and equipment.
- b. Communication systems.
- c. Electrical wiring systems.
- d. Operating systems of special construction.

3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

SECTION 017300 – EXECUTION REQUIREMENTS

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Engineer for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

SECTION 017300 – EXECUTION REQUIREMENTS

- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Engineer according to requirements in Division 1 Section "Project Management and Coordination."
- E. Surface and Substrate Preparation: Comply with manufacturer's recommendations for preparation of substrates to receive subsequent work.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. General: Engage a licensed land surveyor to lay out the Work using accepted surveying practices.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer and Owner.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

SECTION 017300 – EXECUTION REQUIREMENTS

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Temporary Support: Provide temporary support of work to be cut.

SECTION 017300 – EXECUTION REQUIREMENTS

- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering, and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

SECTION 017300 – EXECUTION REQUIREMENTS

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Utilize containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 1 Section "Temporary Facilities and Controls."
- G. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- ### 3.7 PROTECTION OF INSTALLED CONSTRUCTION
- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
 - B. Comply with manufacturer's written instructions for temperature and relative humidity.
- ### 3.8 CORRECTION OF THE WORK
- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

SECTION 017300 – EXECUTION REQUIREMENTS

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 017700 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
 - 3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 5. Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit close out submittals specified in individual Sections. These include, but are not limited to specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.

SECTION 017700 – CLOSEOUT PROCEDURES

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

SECTION 017700 – CLOSEOUT PROCEDURES

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, starting with exterior areas first
 - 2. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Contractor.
 - d. Page number.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

SECTION 017700 – CLOSEOUT PROCEDURES

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up and matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

SECTION 017700 – CLOSEOUT PROCEDURES

3.3 SUMMARY OF CLOSEOUT DOCUMENTS

A. The Contractor is to provide the following items (as applicable):

1. Contractor's Affidavit of Payment of Debts and Claims.
2. Contractor's Consent of Surety.
3. Contractor's Release of Liens.
4. Warranty Information.
5. Subcontractor's Release of Liens
6. Operation and Maintenance Manuals.
7. Record Shop Drawings and Submittals.
8. As-built Drawings. Three (3) redline copies of Construction Drawings with all changes clouded and marked.
9. Affidavit of Discharge of State Tax Liability (Furnish an Affidavit from the State Tax Department that all liabilities thereunder have been discharged by the Contractor and all subcontractors. (Delaware Division of Revenue, Mr. William Kirby, 302-577-8259).
10. Punch List Closeout Letter.
11. Bond Certification.

END OF SECTION

SECTION 017839 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures.
 - 2. Divisions 2 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up Record Prints.
- B. Record Product Data: Submit one copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

SECTION 017839 – PROJECT RECORD DOCUMENTS

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Actual equipment locations.
 - f. Changes made by Change Order or Work Change Directive.
 - g. Changes made following Engineer's written orders.
 - h. Details not on the original Contract Drawings.
 - i. Field records for variable and concealed conditions.
 - j. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - C. As Built Survey of Work: Retain a licensed land surveyor to perform an "As-Built" survey of the completed work which will include, but not be limited to the following:
 1. Location and elevation of all surface improvements.
 2. Location and elevation of all completed stormwater facilities. This includes detention basins as well as inlets, pipes, headwalls, endwalls, outlet structures and similar improvements.
 3. Upon completion the plan shall be certified by a licensed surveyor and both hard copy and electronic versions (PDF and AutoCAD files) shall be provided to the Owner.

2.2 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

SECTION 017839 – PROJECT RECORD DOCUMENTS

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION

Specifications

Cape Henlopen School District
Sussex County
Delaware

Division 02 through 33 TECHNICAL SPECIFICATIONS



SECTION 329220 – SYNTHETIC TURF SURFACING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Synthetic athletic field turf system.
- B. Aggregate drainage base course and finished course for synthetic turf.

1.2 RELATED DOCUMENTS

- A. None.

1.3 REFERENCES

- A. NFHS - National Federation of State High School Associations, Rules and Regulations, current edition.
- B. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition
- C. ASTM Standard Test Methods:
 - 1. D1557 - Test Method for Moisture Density Relations of Soil-Aggregate Mixtures Using a 10-lb. Rammer and 18-inch Drop
 - 2. D1577 - Standard Test Method for Linear Density of Textile Fiber
 - 3. D5848 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
 - 4. D418 - Standard Test Method for Testing Pile Yarn Floor Covering Construction
 - 5. D1338 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
 - 6. D1682 - Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
 - 7. D5034 - Standard Test Method of Breaking Strength and Elongation of Textile Fabrics
 - 8. F1015 - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing surfaces
 - 9. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity
 - 10. D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor coverings
 - 11. F355 - Standard Test Method for Shock-Absorbing Properties of Playing Surfaces
 - 12. F1936 - Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field
 - 13. D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 14. E-648 - Flooring Critical Radiant Panel Test (Flame Spread)
 - 15. F2117 - Vertical Rebound Characteristics of Sports Surface Systems; Acoustical Measurements (Soccer)
 - 16. F2898 - Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-Confined Area Flood Test Method
 - 17. BS7044 - Section 2.2, Methods for Determination of Person/Surface Interaction Method; Determination of Traction (Rotational Resistance)

SECTION 329220 – SYNTHETIC TURF SURFACING

- 18. F1551-03 - Suffix: DIN 18-035, Part 6; Water Permeability of Synthetic Turf Systems
- 19. F1951-14 - Determination of Accessibility of Surface System Under and Around Playground Equipment

1.4 SUBMITTALS FOR REVIEW PRIOR TO AWARD

- A. Substitutions: The turf systems listed in this Section cannot be substituted after Proposal Opening.
- B. Evidence of Non-Infringement: Letter from turf manufacturer certifying that the turf system does not violate any other manufacturer's patents, patents allowed, or patents pending.
- C. Manufacturer Certification: Submit from synthetic turf manufacturer a product specification sheet certifying that the synthetic turf products to be supplied under this Section meet or exceed the specified requirements. The specification sheet must be accompanied by quality control test data report current within three months of proposal date from manufacturing plant.
- D. Turf System Installer and Contractor List of References: Provide a reference list for all public and private high schools, colleges/universities, and other facilities where the synthetic turf carpet system products required by these specifications, and alternate systems as may be offered by the vendor/manufacturer, are installed. The list shall include the name of the facility, year of installation, contact name, and product installed, including pile height.
- E. Sample Warranty: Manufacturer's Warranty that will be issued for this project must be provided. Provide a Manufacturer's sample pre-paid third party insured warranty. The Manufacturer's Policy must be in force at time of proposal.
- F. Synthetic turf system shall be approved as ADA Handicap accessible as determined by Test Method - ASTM 1951-14 (Standard Specification for Determination of Accessibility of Surface Under and Around Playground Equipment).
- G. Product Samples: 12" x 12" square rag sample for each system specified, in each color scheduled on the Drawings, including field lines, letters, and logos.
- H. Turf System Manufacturer Qualifications: Submit qualifications as noted in Sub-Section 1.9A of this specification.

1.5 SUBMITTALS FOR REVIEW DURING CONSTRUCTION

- A. Stone Gradation Certification: Sieve analysis from aggregate supplier documenting that stone gradation for finished aggregate meets specified requirements. Submit one-quart aggregate sample for each classification representative of material source.
- B. Crumb Rubber Infill Certification:

SECTION 329220 – SYNTHETIC TURF SURFACING

1. Documentation from Crumb Rubber Infill (CRI) suppliers shall certify that the CRI is derived from only material produced in compliance with North American tire manufacturing specifications.
 2. Suppliers of CRI shall provide in writing that they maintain an ongoing Quality Control program meeting all the standards of the STC Guidelines for CRI Used in Synthetic Turf Fields and capable of meeting all the specifications of the selected synthetic turf manufacturers product.
 3. Shipment and/or Order Certification shall include at least the following information:
 - a. Type and origin of raw material (certify that it comes from tires)
 - b. Production facility
 - c. Production method
 - d. Fiber content (%)
 - e. CRI sieve/gradation analysis
- C. Sand Gradation Certification: Sieve analysis from aggregate supplier documenting that sand gradation meets synthetic turf manufacturers specified requirements.
- D. Bills of lading documenting the amount of sand and rubber for the turf infill delivered to the site as well as documentation for the actual amount of sand and rubber material used for the infill.
- E. Shop Drawings:
1. Field Marking Plan, including dimensions, line widths, and colors for each sport scheduled and details with dimensions for all letters, numbers, logos, and other field ornamentation. Provide note/certification on drawing that all game markings and field layout is in accordance with prevailing sport governing body, such as NFHS or NCAA as applicable.
 2. Provide review certificate on shop drawing for owner to acknowledge review and acceptance of synthetic turf field shop drawing, including signature and date of review/acceptance line for owner signature.
 3. Field Seaming Plan, including location of all turf carpet seams and individual sections of turf (rolls), including approximate width and length.
 4. Attachment Details for turf anchoring where method of attachment is different from that scheduled on Drawings.
- F. Turf Fiber: Submit company name of fiber manufacturer, fiber composite, type of fiber, and statement that fiber meets or exceeds that required by the turf company specifications for the carpet systems specified.
- G. Product Certification:
1. Manufacturer's Certification: Not Used.
 2. Manufacturer Quality Control Test Results: Third party independent test results taken during the carpet system manufacturing process for the actual carpet system delivered to the site verifying compliance with the product reference standards and criteria. Quality control test reports shall be submitted for verification to the owner within 10-days of delivery of the carpet system to the project site.
 - a. Pile height, face weight, and total fabric weight per ASTM D5848
 - b. Primary and secondary backing weights per ASTM D5848
 - c. Tuft bind per ASTM D1335

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- d. Grab tear strength per ASTM D1682 or D5034
- e. Water permeability per ASTM D4491

1.6 SUBMITTALS FOR CLOSEOUT/CLOSEOUT PROCEDURES

- A. Representative of manufacturer must review and accept installation of field.
- B. Coordinate substantial completion inspection with owner and owner's representatives. Perform corrective action of any defects or areas of non-compliance within 72-hours of receipt of written notification, or at schedule required by owner to permit occupancy of the field.
- C. Deliver bills of lading for all infill materials to verify compliance with infill weight and mix ratio of sand and rubber.
- D. Deliver all warranty documents and maintenance manuals.
- E. Stockpile excess synthetic carpet material desired to be retained by the owner at location designated by the owner.
- F. Coordinate impact attenuation testing (g-max test) by certified third party professional and provide test results to owner.
- G. Completely remove all waste materials, trash, equipment, and perform final site housekeeping.
- H. Certification Statement: Letter from manufacturer or installer certifying that all markings as installed meet the dimensional and accuracy requirements of the NFHS or other governing athletic association.
- I. Laboratory Test Reports: Submit certified test reports from independent laboratory certifying that the supplied turf products meet specified requirements. Test reports shall be from the production run of the turf supplied for the project.
 - 1. Pile Height, Face Width, and Total Fabric Weight, ASTM D418 or D5848.
 - 2. Primary and Secondary Backing Weights, ASTM D418 or D5848.
- J. Warranty: Submit final warranty and evidence of third-party insurance policy, fully executed and with original signatures.
- K. Certificates for carpet disposal from authorized waste management facility, or recycling facility, certified to receive synthetic turf carpet materials/construction waste products. Right of ownership of the carpet system or infill materials is not granted to the contractor without expressed written consent of the owner.
- L. Infill Density Certification: Submit bills of lading/material delivery receipts for synthetic turf sand and rubber infill materials.
 - 1. Bills of lading shall bear the name of the project/delivery address, quantity of materials delivered, source/location of origin of infill materials and/or manufacturer, and date of delivery.

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2. Submit original unedited certificates. Originals shall be made available to the owner when requested.
- M. Field Maintenance and Care Manuals: Submit two (2) copies in three ring binders covering owner field maintenance responsibilities to maintain warranty in full effect and other activities such as regular grooming, deep grooming, debris pick-up, line painting and removal, decontamination of surface, inlay or seam repairs, infill replenishment, and similar owner required operations for the life of the warranty period.
- N. Impact Attenuation (Gmax) Test Results: submit independent third-party test report performed in accordance with ASTM F1936 within 10-days of receipt of substantial completion certificate unless owner requests delay of testing (for up to 30-days following owner's first use of the field).
- O. Project Record Documents:
 1. As-Built Survey: Not Used.
 2. Provide record drawing as a plan redline of all field changes and modifications to the work, including adjustments to storm sewer piping, athletic field subdrainage system, underground utilities, existing underground features abandoned in-place, uncharted utilities discovered during construction, and other pertinent information for owner record documents of the construction.

1.7 TURF SYSTEM INSTALLER AND CONTRACTOR QUALIFICATIONS

- A. All contractors employed for the installation of the synthetic turf system and aggregate subbase must have installed a minimum of twenty (20) synthetic turf fields within the last five years. They must also have worked on at least five (5) similar size projects within the last three (3) years. Installer shall provide a list of fields for those five (5) projects as well as additional similar projects and a list of references to verify the satisfactory completion of the projects. If the installer and company performing field construction are different, qualification criteria for each contractor/company employed in the execution of the project must be identified and qualification information provided.
- B. Provide workmen qualified and skilled in the specific type of synthetic turf installation.
- C. Provide supervisory personnel certified by, or directly employed by, the Turf Company.
 1. Provide same supervisory personnel for entire duration of project unless replacement is required or approved by Owner.
 2. Supervisor shall have a minimum of ten (10) years' experience in the installation of infill type synthetic turf systems and shall be present on site at all critical components of the carpet system installation.
- D. Provide representative on site to verify installation and warranty requirements, including subgrade, drainage, and subbase installation.

1.8 TURF SYSTEM MANUFACTURER QUALIFICATIONS

- A. The manufacturer of the synthetic turf carpet system shall demonstrate and provide documentation with the proposal compliance with the following qualification criteria:

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1. Not less than 20 installations of the manufacturer offered system, meeting the requirements of Paragraph 2.3 of this Section, within the continental United States installed within 24-months of the proposal date. Installation list shall include facility name, product installed, substantial completion date, and location/address.
2. Not less than 5 installations of the manufacturer offered system, meeting the requirements of Paragraph 2.3 of this Section, within approximately 150 miles of the project site installed within 48-months of the proposal date. Installation list shall include facility name, product installed, substantial completion date, and location/address.
3. Number of fields of equal or similar construction to that as the manufacturer offered product installed in the continental United States in 2007 and earlier with not less than three (3) having been installed within approximately 200 miles of the project site. Installation list shall include facility name, product installed, substantial completion date, and location/address.

1.9 AGGREGATE DRAINAGE BASE CERTIFICATION

- A. Turf Company installer is required to inspect and confirm the aggregate drainage base is prepared to specified requirements prior to turf installation.
- B. Turf Company installer must provide a letter to the Owner indicating their acceptance of the construction of the aggregate drainage base prior to installation of the synthetic turf surfacing.

1.10 PRE-INSTALLATION MEETING

- A. Convene meeting to review installation requirements, scheduling, delivery and storage of materials, procedures, confirm field layout and markings, turf colors and logos, review any required aggregate base connections and other items a minimum of one (1) week prior to beginning Work of this Section.

1.11 COORDINATION

- A. Coordinate and schedule Work to meet schedule requirements.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver products in original unopened packaging with manufacturer's product identification. Delivery shall only be at times set by the Owner.
- B. Store all materials in dry area, under cover, and elevated above grade at locations designated by the Owner.
- C. Do not deliver materials until scheduled for installation. Schedule delivery and storage of materials on site to meet scheduling and installation requirements.
- D. Bulk Materials: Deliver materials in clean, washed, and covered trucks or in sealed bags to prevent contamination.

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1. Coordinate location of bulk material storage to avoid interference with work of other Contracts and Owner use of facilities.
2. Store material to avoid contamination by drainage and cover with waterproof materials when covered storage is not available.

1.13 WARRANTY

- A. Provide a Warranty covering defects in materials and workmanship of the turf for a minimum period of ten (10) years from the date of Substantial Completion. Warranty shall stipulate that the turf manufacturer onsite representative has inspected the installation and that the work conforms to the manufacturer's requirements.
- B. Warranties: The Contractor shall provide a warranty to the Owner that covers defects in materials and workmanship of the turf for a period of ten (10) years from the date of substantial completion. The turf manufacturer must verify that their representative has inspected the installation and that the work conforms to the manufacturer's requirements. The manufacturer's warranty shall include general wear and damage caused from UV degradation. The warranty shall specifically exclude vandalism, and acts of God beyond the control of the Owner or the manufacturer. The warranty period shall consist of a third party insured, pre-paid warranty for a period not less than 8 years. The remaining two (2) years of the required warranty period can be covered by a manufacturer's supplemental warranty. The entire 10-year term of the warranty coverage shall be non-prorated.

The Contractor shall provide a warranty to the Owner that covers defects in the installation workmanship, and further warrant that the installation was done in accordance with both the manufacturer's recommendations and any written directives of the manufacturer's representative. Prior to final payment for the synthetic turf, the Contractor shall submit to owner proof in writing of the insurance policy, guaranteeing the warranty to the Owner. The insurance must reflect the following values: 1) minimum of seven - million dollar annual aggregate 2) Must cover full 100% replacement value of total square footage installed, minimum of \$7.00 per sq ft. 3) Pre Paid 8 year third party policy must be issued by a carrier with an A.M. Best rated "A" or better rating. Policy can not include any form of deductible amount to be paid by Owner.

- C. Warranty shall be signed and executed by a principal of the firm, including title, of the firm furnishing the warranty.
- D. The terms of the Warranty may specifically exclude vandalism, and acts of God beyond the control of the owner or the manufacturer.
- E. The terms of the Warranty shall specifically include coverage for normal wear for all sport activities, including games and practices, scheduled on the Drawings.
- F. Identify and detail all coverage and exclusions, including, but not limited to, the following:
 1. Length of policy
 2. Name of the carrier

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3. Method for payment of the policy. Policy shall be pre-paid and non-cancelable.
 4. Limit for single claims
 5. Limit for aggregate claims
 6. Additional policy features of importance
- G. Warranty shall cover defects in the installation, workmanship, and further warrant that the Work was executed in accordance with the Manufacturer's recommendations, specifications, and any written directives of the Manufacturer's onsite representative.
- H. The synthetic field turf must maintain an ASTM F355 G-Max as stipulated by the Manufacturer's product performance requirements as specified in this Section.
- I. The Manufacturer shall be responsible for providing the Owner with a G-Max testing and turf evaluation report, of all warranty requirements, from an independent testing agency. The testing and evaluations by the independent testing agency shall be conducted at one-year intervals, until the end of the warranty period. Testing shall commence one year after the date of substantial completion of the synthetic turf installation. G-Max testing shall include testing as indicated in this Section.
- J. A representative of the Manufacturer shall provide an annual visit in on the anniversary of the date of substantial completion during the warranty period. The Manufacturer's representative shall meet with the Owner's representative to discuss the current maintenance practices of the School District Staff and verify that the synthetic turf is being maintained properly in accordance with the provisions of the warranty.
- K. The Contractor shall be responsible for providing replacement of up to 2,000 sf of synthetic turf within the goal areas, faceoff area, etc. at least one time as directed by the School District during the ten-year warranty period of the field.
- L. Other items that the Contractor shall provide to the Owner shall consist of 300 lineal feet of each game line color cut into 4" wide strips (boxed/labeled), 2000 lbs. Sand (in bulk), 2000 lbs. Rubber (1 super sack) and six (6) tubes of Mapei Ultra-Bond Turf 527 Premium Urethane Adhesive or approved equal.
- M. The School District will consider alternative Warranty policies provided the policy meets or exceeds coverage requirements as it pertains to all materials, workmanship and performance criteria outlined in this Section 1.13. Consideration of such a policy by the School District does not indicate acceptance of said policy. Approval of the alternative policy is wholly at the discretion of the School District.

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1.14 INSTALLATION WARRANTY

- A. Installer shall warrant and repair all defects arising from new construction for a period of one (1) year following the date of project substantial completion.
- B. Warranty shall include defects in field planarity, settlement, concrete construction, defective construction materials, and all workmanship. The warranty does not cover acts of god or unknown geologic conditions, such as the formation of sinkholes.
- C. All repairs and corrections made during the warranty period shall be warranted for one (1) year following the date of repair.

1.15 MAINTENANCE TRAINING

- A. Provide on-site maintenance training to Owner staff in use of turf maintenance equipment and general turf maintenance procedures, including demonstration of items included in Maintenance Manual. This training must be for a minimum of two (2) hours.

PART 2 - PRODUCTS

2.1 SYNTHETIC TURF CARPET SYSTEM

- A. The synthetic turf carpet system shall be a component system.
 - 1. Carpet System: Constructed of polyethylene fibers broadloom tufted into a fibrous and porous urethane coated or selectively coated urethane backing.
 - a. Parallel Slit Film (“Yarn”): True 100-percent polyethylene fiber.
 - 2. Infill: Controlled mixture of graded washed silica sand and processed SBR crumb rubber.
 - 3. Accessories: Glue, thread, paint, seaming fabric, and other materials used to install and mark the field as approved by the manufacturer.
- B. Synthetic Turf Backing: The synthetic turf carpet shall consist of true parallel slit film fibers tufted into a primary backing and secondary backing.
 - 1. Primary Backing: Double-layered polypropylene UV treated fabric.
 - 2. Secondary Backing: Porous, heat-activated urethane that provides complete coverage of all stitching and firmly locks turf fiber in place.
- C. Carpet Roll Width, Length, and Seams:
 - 1. Furnished and installed in widths of not less than 15-feet, excluding perimeter areas of the carpet where cutting is required for configuration and dimension of field or total area of turf surfacing.
 - 2. Furnish and install in lengths to extend from sideline to sideline of playing field without splicing. Head seams are not permitted within the playing area of the field.
 - a. Perimeter primary field line (marking) shall be tufted into the carpet at specified dimension for all turf rolls used to form the playing field side lines and end lines.
 - b. Football and soccer field lines, goal lines, end lines shall be permanently tufted into the synthetic carpet along the edge of each roll where possible.
 - c. Sideline roll shall be placed perpendicular to the turf rolls comprising the field, with the perimeter line directly abutting the field turf rolls.

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- d. Coordinate with owner to determine primary field where multiple field layouts are proposed. Plan turf seams to eliminate head seams in primary playing field or as otherwise approved by owner.
3. Turf Seams: All seams shall be sewn along the selvedge edging flap of the turf roll with a union special sewing machine. Seams secured by other means including adhesive (“glued seams”) are not acceptable.
 - a. Use of formulated synthetic turf adhesive is permitted for repair, corner completions, and to cut in any tick marks and inlaid lines as scheduled. Adhesive shall also be utilized for securing turf backing to perimeter concrete curb anchor or wood “nailer”.
 - b. Seams shall be flat, tight, and permanent with no separation or fraying. Seams shall not be butted and shall be provided with overlapped backing. All field fibers on the overlapped backing must be sheared to the backing and the backing must be overlapped 6-inches minimum.
- D. Synthetic Turf Adhesive and Seaming Fabric: Use for inlaid lines, markings, and tick marks only. Sew all turf seams.
 1. Adhesive: “Hot Meld” method or one-part moisture-cured polyurethane obtained from single source, equal to 34-g, Synthetic Surfaces, Inc., Scotch Plains, NJ, or equal as approved by Synthetic Turf Manufacturer.
 2. Seaming Tape: High quality cord/thread tape with a minimum tape width of not less than 12-inches.

2.2 SYNTHETIC TURF CARPET INFILL

- A. All carpet infill materials shall be inspected and approved by the manufacturer upon delivery to the project site. All materials not meeting the manufacturer’s infill requirements shall be rejected and replaced with approved infill material.
- B. Provide infill consisting of a resilient granular system of graded subangular or rounded uniformly sized silica sand and SBR rubber granules.
- C. Provide infill material free of metal, glass, soil, and other contaminants. Supplier must provide verification from a third-party inspection agency for every 10,000 pounds of infill that the infill material meets this requirement.
- D. The sand component of the infill shall be no greater than 60% of the infill volume as measured by weight. Infill ratio shall be approved by owner prior to delivery and installation of infill materials.
- E. All infill rubber shall be “black” in color, free of dust and particulates, delivered in 2,000 lb. sealed bags with weight, manufacturer, lot/production run, and production date identified.

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2.3 SYNTHETIC TURF SYSTEMS

A. Synthetic Turf System: Furnish and install synthetic turf systems in accordance with the following specifications:

1. Base Bid A – Manufacturer: Fieldturf

ASTM Standard	Specification	Field Requirement
	Yarn Structure	Slit Film
D1577	Fiber Denier	10800 min.
D418/D5848	Pile Height (inches)	2.25" min.
D418/D5848	Min. Pile Weight (oz / sq. yd.)	48
D1335	Tuft Bind (W/ Infill) (lbs. force)	8 lbs. min.
D1682/D5034	Grab Tear (Width) (lbs. force)	200 min.
D1682/D5034	Grab Tear (Length) (lbs. force)	200 min.
DIN18-035	Carpet Permeability (inch/hour)	40 min.
F1936	Impact Attenuation (Gmax)	<125 installed <200 warranty
	Minimum Infill Weight (lbs./SF)	6.0 min

2. Base Bid B – Manufacturer: Turf Nation

ASTM Standard	Specification	Field Requirement
	Yarn Structure	Slit Film
D1577	Fiber Denier	9000 min.
D418/D5848	Pile Height (inches)	2.25" min.
D418/D5848	Min. Pile Weight (oz / sq. yd.)	48
D1335	Tuft Bind (W/ Infill) (lbs. force)	8 lbs. min.
D1682/D5034	Grab Tear (Width) (lbs. force)	200 min.
D1682/D5034	Grab Tear (Length) (lbs. force)	200 min.
D4491/DIN18-035	Carpet Permeability (inch/hour)	30 min.
F1936	Impact Attenuation (Gmax)	<125 installed <200 warranty
	Minimum Infill Weight (lbs./SF)	6.0 min

3. Base Bid C – Manufacturer: A-Turf

ASTM Standard	Specification	Field Requirement
	Yarn Structure	Slit Film
D1577	Fiber Denier	10000 min.
D418/D5848	Pile Height (inches)	2.25" min.
D418/D5848	Min. Pile Weight (oz / sq. yd.)	48
D1335	Tuft Bind (W/ Infill) (lbs. force)	8 lbs. min.
D1682/D5034	Grab Tear (Width) (lbs. force)	250 min.

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D1682/D5034	Grab Tear (Length) (lbs. force)	250 min.
D4491/DIN18-035	Carpet Permeability (inch/hour)	20 min.
F1936	Impact Attenuation (Gmax)	<125 installed <200 warranty
	Minimum Infill Weight (lbs./SF)	6.0

4. Base Bid D – Manufacturer: Sprinturf

ASTM Standard	Specification	Field Requirement
	Yarn Structure	Slit Film
D1577	Fiber Denier	10000 min.
D418/D5848	Pile Height (inches)	2.25” min.
D418/D5848	Min. Pile Weight (oz / sq. yd.)	48
D1335	Tuft Bind (W/ Infill) (lbs. force)	8 lbs. min.
D1682/D5034	Grab Tear (Width) (lbs. force)	250 min.
D1682/D5034	Grab Tear (Length) (lbs. force)	250 min.
D4491/DIN18-035	Carpet Permeability (inch/hour)	40 min.
F1936	Impact Attenuation (Gmax)	<125 installed <200 warranty
	Minimum Infill Weight (lbs./SF)	6.0

5. Base Bid E – Manufacturer: Astroturf

ASTM Standard	Specification	Field Requirement
	Yarn Structure	Slit Film
D1577	Fiber Denier	10000 min.
D418/D5848	Pile Height (inches)	2.25” min.
D418/D5848	Min. Pile Weight (oz / sq. yd.)	48
D1335	Tuft Bind (W/ Infill) (lbs. force)	8 lbs. min.
D1682/D5034	Grab Tear (Width) (lbs. force)	200 min.
D1682/D5034	Grab Tear (Length) (lbs. force)	200 min.
D4491/DIN18-035	Carpet Permeability (inch/hour)	30 min.
F1936	Impact Attenuation (Gmax)	<125 installed <200 warranty
	Minimum Infill Weight (lbs./SF)	6.0 min

- A. The various products specified by name are given to establish a standard of quality. It is not the intent to limit the bidder, the bid, or the evaluation of the bid to any one product specified. A bid containing an alternative that does not meet the specifications may be declared non-responsive.
- B. Each bid shall include Manufacturer Certifications (data sheet(s) and literature) which documents full compliance with the specifications. A bid that does not include this documentation may be declared non-responsive.

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2.3 RESILIENT UNDERLAYMENT (PRE-MANUFACTURED RESILIENT SHOCK PAD)

A. Not Used.

2.4 NEW AGGREGATE BASE RESTORATION MATERIALS

A. In all areas of new construction requiring removal or displacement of the existing synthetic turf field aggregate base course, provide graded mixture of crushed stone or crushed gravel for base aggregate and dense graded mixture of natural or manufactured crushed stone for finishing layer meeting the following requirements:

US STANDARD SIEVE	BLENDED BASE AGGREGATE MIX	OPEN GRADED BASE AGGREGATE (AASHTO NO. 57)	FINISHED AGGREGATE (AASHTO NO. 8)
	PERCENT PASSING		
2"			
1-1/2"	100	100	
1"	95-100	95-100	
3/4"	80-100		
1/2"	60-80	25-60	100
3/8"	30-50		85-100
#4	20-40	0-10	10-30
#8	10-30	0-5	0-10
#16			0-5
#30	5-15		
#50			
#100			
#200	0-5		

B. Where a single blended processed aggregate mix cannot be obtained from a local quarry source, a two (2) layer aggregate base system may be utilized consisting of the open graded and blended fine aggregate as scheduled. The complete two-layer system must meet all specified compaction, drainage rate, and tolerance requirements as described herein.

C. Aggregate materials shall not exceed 12-percent material loss as determined by ASTM C88, sulfate soundness test.

D. Permeability: final gradation of base and finished aggregate (when utilized) having permeability not less than 20-inches/hour.

2.5 ACCESSORIES

A. Geotextile Fabric: Polypropylene, nonwoven, needle-punched construction fabric stabilized to resist degradation due to ultraviolet exposure, non-biodegradable, and

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resistant to commonly encountered soil chemicals, mildew, and insects, stable within a PH range of 2 – 13.

- B. Geotextile fabric used as synthetic turf subgrade separation and drainage fabric shall meet the following characteristics:

PROPERTY	TEST METHOD	MIN. AVE. ROLL VALUE
GRAB TENSILE STRENGTH	ASTM D4632	120 LBS
GRAB TENSILE ELONGATION	ASTM D4632	50%
MULLEN BURST	ASTM D3786	230 PSI
PUNCTURE	ASTM D4833	70 LBS
TRAPEZOIDAL TEAR	ASTM D4533	50 LBS
UV RESISTANCE	ASTM D4355	70% @ 500 HRS
APPARENT OPENING (AOS)	ASTM D4751	70 SEIVE
PERMITTIVITY	ASTM D4491	1.2 SEC ⁻¹
PERMEABILITY	ASTM D4491	0.21
FLOW RATE	ASTM D4491	95 GAL/MIN/FT ²

1. Manufacturer Products:

- Propex (AMOCO) Fabrics, Style 4547;
- MIRAFLI 140N;
- Or equal.

- C. Synthetic Turf Pressure Treated Wood Nailer:

1. 2" x 4" (Nominal) Pressure Treated Lumber to be ramset into existing concrete curb replacing any damaged nailer. For purposes of this bid assume 100 LF of nailer is to be replaced. If less than 100 LF or no replacement is needed, a Change Order (deduct) will be required prior to project closeout based on the provided unit price.

- D. Turf Groomer:

1. Integrated Synthetic Sports Turf Groomer (926), as manufactured by Greens Groomer Worldwide or approved equal per manufacturer's specifications.
2. Litterkat Synthetic Turf Sweeper as manufactured by Greens Groomer Worldwide or approved equal per manufacturer's specifications.

PART 3 - EXECUTION

3.5 FIELD QUALITY CONTROL

- A. Review and verify approved shop drawings with owner prior to installation. Perform installation in accordance with approved shop drawings.
- B. Provide direct supervision by designated supervisory personnel certified by the manufacturer for the products specified, including base installation, sewing seams, installation of turf infill, and installation of field markings, game lines, and logos.

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- C. Provide only trained technicians, skilled in the installation of the products specified, working under the direct supervision of the approved supervisory personnel, for all cutting, gluing, sewing, shearing, infill operations, topdressing, and brushing.
- D. Verify that new areas of aggregate base construction (restoration) have been reviewed and accepted within tolerance requirements prior to proceeding with installation of carpet system.
- E. Confirm field dimensions and locations of communication boxes, conduits, ground sleeves, and other improvements within field area scheduled on the drawings.
- F. Establish string lines and controls to ensure carpet is laid true and square to curb lines.

3.6 EXAMINATION

- A. Verify finished elevations of aggregate finishing course, compaction, and surface planarity prior to installation of synthetic turf.
 - 1. Immediately regrade, recompact, and correct any irregularities prior to installation of synthetic turf.
 - 2. Submit evidence of compliance with finished base surfacing (fine aggregate finish course) tolerance to engineer prior to installation of synthetic turf carpet system.
- B. Verify erosion and sediment control facilities are in place and functioning per design requirements prior to initiating excavation, filling, or subgrade preparation.
- C. Verify that football goal foundations, underdrainage system and components, and other buried utilities and structures are installed and correctly located prior to initiating installation of geotextile fabric and aggregate base course construction.

3.7 TESTING

- A. Synthetic Turf Infill Product Testing: Provide third party testing results for synthetic turf and infill materials as identified in Section 2.2 verifying that infill products meet or exceed synthetic turf system manufacturer requirements.

3.4 SYNTHETIC TURF CARPET SYSTEM REMOVAL

- A. Existing carpet system shall be completely removed from the existing aggregate base course in a manner that minimizes disruption to the existing surface plane.
- B. The existing carpet system shall be removed utilizing specialized equipment manufactured specifically for this type of operation.
- C. Where applicable, protect running track pavement cross-over points from damage during all removal and new construction activities.

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- D. Existing carpet system products and non-recycled infill material shall be immediately removed from site or contained within enclosed waste containers. Removed materials are not permitted to accumulate on site.
- E. Disposal of the carpet system and non-recycled infill material in accordance with waste management rules and regulations is at the sole discretion and responsibility of the contractor.

3.5 AGGREGATE BASE RESTORATION AND GRADING

- A. Following carpet system removal and installation of new subsurface drainage improvements, contractor shall “regrade” the existing surface plane to correct ruts and deviations created during removal operations and restore/correct the existing surface plane to uniform slope, grade, and be free of depressions, ridges, high areas, and other imperfections.
 - The work includes correction of the surface plane of the field area only and does not extend to correction of inconsistencies that may exist in the field surface cross-slope or the existing synthetic carpet base aggregate.
- B. Install fine aggregate utilizing high flotation equipment to address areas of the existing aggregate base system that cannot be corrected utilizing existing in-place fine aggregate materials. Provision of aggregate material when necessary to correct existing surface planar deficiencies is required as part of the work.
- C. Final laser grade finished surface utilizing turf type tractor with calibrated spreader to ensure uniform distribution or lightweight grader with high flotation tires and hydraulically controlled laser blade.
- D. Maintain uniform thickness and avoid forcing fine aggregate into existing underlying open graded aggregate.
- E. Where existing fine aggregate exceeds 2-inches in any location and additional fine aggregate is required to correct base deficiencies, remove fine aggregate, and adjust open graded base aggregate so that not more than 2-inches of fine aggregate depth will be present.
- F. Compact all areas of new aggregate base construction/restoration required for installation of new turf nailer, and other work where the existing drainage base requires excavation using 5-ton roller or equivalent. Static vibration equipment is not permitted in compaction process.
- G. Surface planarity: surface plane shall be not deviate by more than 1/4” (0.02’) when measured with a 10-foot straight edge in any direction.

3.6 SYNTHETIC TURF INSTALLATION

- A. General:
 - 1. Do not install synthetic turf over aggregate finished course or resilient underlayment (if applicable) until surface tolerance has been visually reviewed and

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- survey verification completed. Correct any irregularities prior to installation of synthetic turf surfacing.
2. Fan or unfold fiber tufts prior to installation. Rolling or spiraling of tufts is not acceptable.
- B. Install carpet rolls directly over finished and stable fine aggregate surface or resilient underlayment (if applicable). Avoid disruption of base planarity in handling of carpet installation equipment traffic. Immediately repair/restore any damaged area of aggregate base course.
- C. Lay full width rolls across the primary playing field from sideline to sideline. Turf shall be of sufficient length to extend across the playing field area without head or cross seams.
- D. Stretch carpet during installation to prevent wrinkles and irregularities in surface plane.
- E. Sew all seams using double bagger stitches and manufacturer approved thread. Sew seams flat and tight, without separation or fraying.
- F. After all rolls for the playing surface have been installed, install sideline rolls at right angles to the playing field turf extending beyond the curb line. Excess turf shall be trimmed neat and finish to form seamless transition at perimeter curb on edge of field carpet anchor.
- G. Stretch carpet to remove irregularities and anchor perimeter turf to concrete turf anchor/edging. Anchor to concrete lip, curb, or “nailer” as scheduled utilizing turf adhesive suitable for bonding to the anchor material.
- H. Install all “non-tufted” lines, markings, numbers, letters, logos, and other inlaid portions of synthetic carpet prior to installation of infill.
1. Install inlays in accordance with the approved shop drawings.
 2. Install inlaid markings, lines, logos, and lettering to carpet backing with synthetic turf adhesive approved by the turf manufacturer. Large logos, lettering, or inlays may be installed by cutting and removing the synthetic carpet completely and installing the inlay utilizing seaming tape and synthetic turf adhesive.
- I. Synthetic Turf Infill Installation:
1. Verification: Verify all game lines and scheduled field markings are installed, straight, correct, and accurate prior to proceeding with infilling procedures.
 2. Install infill in numerous thin lifts at a uniform rate for each lift. Do not install infill when material is wet.
 3. Brush infill between lifts concurrently utilizing a motorized rotary broom and groomer brush.
- J. Infill material shall consist of a homogeneous blend of silica sand and processed SBR crumb rubber.
1. The combined total weight of the sand and rubber infill installed shall not be less than 6 lbs. per square foot for 2.25” tufted field.

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2. The sand infill ratio by weight shall not be more than 60-percent or less than 40-percent. Review infill ratio with owner prior to delivery or installation of infill materials.
 3. Provide shipping receipts/bills of lading to owner for all infill materials as evidence of weight and ratio of infill material installed.
- K. Installed the homogeneous mixture of sand and rubber at the approved ratio.
- L. Topdress finished infill with a thin final course of rubber. The particle size of the topdressing course shall be in accordance with the turf manufacturer requirements.
- M. Fibrillate field surface with nylon rotary brush to groom the field. Remove all loose tufts, glue, or other material from finished field surface.
- N. Testing and Verification: Provide the following reports and information prior to, or in conjunction with, request for substantial completion:
1. Impact Attenuation (Gmax) Test: Perform GMax testing per ASTM F1936 to verify required impact attenuation requirements. Perform testing prior to request for inspection to determine substantial completion. Provide test results to engineer.

3.7 SYNTHETIC TURF CARPET COLOR AND FIELD MARKING SCHEDULE

- A. All markings, lines, letters, numbers, and logos shall be inlaid or tufted. Field markings shall be in accordance with NFHS regulations for each designated sport.
1. Field sizes and markings may be modified by the owner or deviate from referenced standards due to physical field area limitations. Confirm variations from referenced standards with owner prior to installation.
 2. Game Lines and Field Markings (*Stadium*):
 - a. All football game line markings to be continuous and unbroken.
 - b. “Break” all other game line markings where crossing football field markings.

END OF SECTION 329220