

Alternates

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates

Add Alternate No. 01: Provide underground irrigation on rectangular fields in accordance with the specifications.

\$ _____
(\$ _____)

Add Alternate No. 02: Provide underground irrigation at softball outfield in accordance with the specifications.

\$ _____
(\$ _____)

Add Alternate No. 03: Provide underground irrigation at baseball infield and outfield in accordance with the specifications.

\$ _____
(\$ _____)

Add Alternate No. 04: Demolish existing running track and construct new synthetic surface 400m running track in accordance with the plans and specifications.

\$ _____
(\$ _____)

Add Alternate No. 04a: Provide underground irrigation at playing field within inside limits of running track in accordance with the specifications.

\$ _____
(\$ _____)

Unit Prices

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	<u>ADD</u>	<u>DEDUCT</u>
UNIT PRICE No. 1: <u>Unsatisfactory soil (CU)</u>	\$ _____	\$ _____
UNIT PRICE No. 2: <u>Rock Excavation (CU)</u>	\$ _____	\$ _____
UNIT PRICE No. 3: <u>Turf grass Sod (SF)</u>	\$ _____	\$ _____

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for 60 days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to start work on the project within 5 working day of receipt of the Notice to Proceed, but no later than outlined in Specification Section 011000, as amended by Addendum No. 1, dated 12/12/17.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (5) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ **By:** _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Bid Security
- Drug Test Affidavit
- Delaware State Business License
- (Others as Required by Project Manuals)

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.** This form must be filled out completely with no additions or deletions. **Note that all subcontractors listed below must have a signed Affidavit of Employee Drug Testing Program included with this bid**

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. Site Work	_____	_____
2. Concrete	_____	_____
3. Painting	_____	_____
4. Fencing	_____	_____
5. Sports Fields	_____	_____
6. Seeding/Sod	_____	_____
7. Electrical	_____	_____
8. Field Irrigation	_____	_____
9. Masonry	_____	_____
10. Roofing	_____	_____

BID FORM
NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date to the Red Clay Consolidated School District.

All the terms and conditions of the McKean HS Culinary Arts Renovation have been thoroughly examined and are understood.

NAME OF BIDDER: _____

**AUTHORIZED REPRESENTATIVE
(TYPED):** _____

**AUTHORIZED REPRESENTATIVE
(SIGNATURE):** _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20_____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or 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, overhead, and profit.
- B. Measurement and Payment: See 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 schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price No. 1: Removal of unsatisfactory soil and replacement with satisfactory soil material.
 - 1. Description: Unsatisfactory soil excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, according to Section 312000 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard (Cubic meter) of soil excavated, based on in-place surveys of volume before and after removal.

- B. Unit Price No. 2: Rock excavation and replacement with satisfactory soil material.
 - 1. Description: Classified rock excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, according to Section 312000 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard (Cubic meter) of rock excavated, based on survey of in-place surveys volume of before and after removal.

- C. Unit Price No. 3: Turf grass sod in lieu of seeded athletic field.
 - 1. Description: Provide sod in lieu of seeding at select athletic fields, in accordance with the specifications. Price should reflect deduct unit price for athletic field seeding mix and preparation.
 - 2. Unit of Measurement: Square Foot (minimum installation area will be approximately 54,000 s.f.).

END OF SECTION 012200



ARCHITECTURE
ENGINEERING

ADDENDUM TO CONTRACT DOCUMENTS

Date: December 21, 2017

To: Bidders

From: Jon Falkowski, Becker Morgan Group, Inc.

Copies: All Attending Pre-Bid Meeting, see attached sign-in sheet
Marcin Michalski, Supervisor of Facilities and maintenance
Emily Ryan, Data Service Center

Project: **Conrad School of Science Athletic Fields**
Wilmington, Delaware

Project Number: BMG Project No. 2013222.01

Contract No.: 2-18-09

Subject: **ADDENDUM NO. 03**

NOTICE: Attention is called to the following item(s), effective as of the date above, which shall be added to, deleted from, or changed in the contract documents dated November 13, 2017, and any previously issued addenda, thereby incorporating these items into the contract.

RFI's

(Italicized questions still pending)

(Shaded questions answered in previous Addenda)

LandTel Group RFI 01	
Item	Description
1	<p>Q: Please confirm the above referenced project is currently out to bid, as we read conflicting information from various bid notice sites. If it is, could you provide and estimate of the start and finish dates. Is the information regarding purchasing the documents correct: \$25 from Becker Morgan Group?</p> <p>A: Bidders should be using the Delaware bid portal MyMarketPlace for bid information. No estimates will be released at this time. Currently the schedule is included in the Project Manual as start upon receipt of Notice to Proceed and completion in 180 days. The schedule will be amended by Addendum. Bid documents are available from Becker Morgan Group, Inc., 309 South Governors Ave., Dover, DE 19904, 302-734-7950, please call in advance.</p>
The Perfect Mound RFI 01	
Item	Description
1	<p>Q: The Perfect Mound, manufactures portable pitching mounds and I would like to know how I can get our mound approved as an alternative to the one listed in your bid documents so that general contractors have the option to spec us into their bid.</p> <p>A: Currently we are not inclined to approve a portable synthetic surface mound in lieu of the naturally formed, diamond-tex with clay bricks design, per the owner's request.</p>

Precision Sports Surfaces, Inc. RFI 01	
Item	Description
1	Q: Is there an estimated or desired completion date for the running track surface? A: No later than April 2019
2	Q: What are the liquidated damages for the project? A: There are no liquidated damages.
3	Q: Regarding spec section 321818, please approve our equivalent running track surface system (Spartan BS (RED) manuf. by APT). I have attached specifications, references and additional documents for your review. A: Approved.
Grassbusters RFI 01	
Item	Description
1	Q: I have sent out electrical information to 3 separate contractors for bidding and they are asking what size conduit and wiring do you want to use for wiring the scoreboards? Is Becker Morgan going to provide details or do you want them to bid Design/Build? A: Design/Build to provide electric to the relocated scoreboards and new scoreboards. Design should include all necessary appurtenances (Junction/Pull boxes, conduits, etc.).
2	Q: As per detail sheet C-902, there is a proposed 6" concrete curb running the entire interior of the running track. Is this to be included in the base bid for the football field or the alternate for the track? I am just trying to be certain exactly what is to be included in the alternate for the new synthetic track construction. A: Yes, track interior curbing to be included in base bid for alternate no. 4. All work associated with phase 2 including track and field work, etc. is base bid within alternate no. 4. See revised alternates specification 012300 section 3.1 D2 for further description of scope.
3	Q: In addition on plan sheet C-201, item G-5 calls out for a proposed retaining wall per architectural plans. I don't see any detail for a retaining wall. There is currently an existing concrete wall around outside of football field. A: Retaining wall detail and wall mounted fence detail provided with this addendum.
A-Del Construction RFI 01	
Item	Description
1	Q: Are there any soil boring logs available? What is the existing depth of Topsoil on site? What depth of topsoil respread is required? A: Three boring logs were taken on the Conrad site in an effort to find infiltration. Attached logs show an average depth of 8" of topsoil. No logs are available at the Richey Site. There shall be a minimum of 6" of topsoil spread for seed installation on field areas, meeting topsoil specifications.
American Athletic Courts, Inc. RFI 01	
Item	Description
1	Q: On the softball backstop the plan says 24'H however on the detail is shows an 18'H backstop, also the detail shows a 20' Back x 25' Wings, however when you scale it on the plan it shows 20' Back x 40' Wings. Which is correct? A: Detail dimensions revised. See Conrad Phase 1 – Sheet C-902 attached.
2	Q: On the baseball backstop the detail shows 50' Back x 50' Wings, however on the plan it scales 25' Back x 50' Wings which is correct? A: Detail dimensions revised. See Richey Plans – Sheet C-901 and C-902 attached.
3	Q: The right field fence on the softball field is a bit confusing, I believe 115 LF of the right field fence is going to be the existing tennis court fence? Is that correct?

	A: Correct, right field fence is shared with tennis court fence.	
4	Q: Can you provide an athletic field detail for topsoil thickness, subgrade prep and seed/sod? A: Please refer to Specification section 329400 – Natural Grass Playing Field	
5	Q: Please provide a detail for the proposed retaining wall for the track and also the delineation of demo. A: Retaining Wall detail and Wall Fencing details have been added to the plans. See Conrad Phase 2 – Sheets C-901 and C-903. All wall/curbing to demolished except the 270 +/- 1.f. as delineated on sheet C-201.	
6	Q: Is there an existing topographic survey that is more detailed? A: Associated C-101 sheets are what is currently available. If there is specific information needed, please detail your request.	
7	Q: Is there going to be an alternate for sod in lieu of seed as discussed at the pre- bid? A: A unit price line item has been added for sod in lieu of grass. See specification section - 329200	
8	Q: Does the import topsoil need to be amended or can we use a top quality screened native topsoil as a cost savings to the owner? The owner may end up with several different types of soils if not. A: Topsoil must meet specification requirements whether amended or native.	
9	Q: Are there bidder qualifications for the athletic field construction such as a CFB (Certified Field Builder per American Sports Builders Assoc) with a minimum of 10 athletic fields constructed within the last 3 years? A: CFB qualifications not required for fields however, contractor will be held to strict subgrade and finish grade tolerance requirements as indicated on the drawings. In addition, see specification SECTION 329400 – NATURAL GRASS PLAYING FIELD for quality assurance and tolerance specifications as well as the contract drawings.	
10	Q: Are there bidder qualifications for the track construction portion such as a minimum of 10 track construction projects within the last 3 years. Is the bidder required to be a CTB (Certified Track Builder As per the American Sports Builders Association)? Asphalt paving contractor requirements? The measure line is not in lane #1 and will require an experienced track construction contractor to assure proper layout and design criteria is met A: Bidder qualifications added. See revised SYNTHETIC TRACK SURFACING SYSTEM specification and new specification section 321216 - Asphalt Paving.	
11	Q: Does the existing topsoil need to be removed if the area requires import fill/topsoil? A: Existing topsoil should be stripped a minimum of 8” depth and subgrade shall be brought to elevation with suitable fill. Topsoil should then be applied at the depths indicated in the specifications (min. 6”) and meeting all specification requirements.	
12	Q: Can a BSS-200 sealed system be included as an alternate? A: Per owner, an alternate for this system will not be included at this time.	
Jones Turf Management RFI 01		
Item	Description	
1	Q: Are the Wage Rates provided in the specifications for wages only, or do they include fringe benefits? If not, what are the Fringe Benefits for each classification? A: The certified wage rates that we provide you do not include the Fringe Benefits. Fringe Benefits are explained below. Fringe Benefit Explanations Fringe benefits may be considered in determining whether an employer has met his/her prevailing wage obligations. The only fringe benefits which the Delaware Department of Labor will recognize are the following:	

	<ul style="list-style-type: none"> -Health benefits, -Welfare benefits, -Retirement benefits, -Vacation pay, -Holiday pay, -Sick leave pay, and -Education benefits relating to apprenticeship and training programs. <p>For how these fringe benefits may be applied and/or calculated please review Delaware's Prevailing Wage Regulations.</p>	
2	<p>Q: Plan Sheet C-501 shows a "Sensitive Area" in the area of the existing Baseball field at Conrad. What is the nature of the sensitive area? How is that area to be handled throughout the project?</p> <p>A: See DNREC standard Sensitive Area Protection details on sheet C-504 (Conrad Phase 1) and C-506 (Richey). Orange construction fencing required.</p>	
3	<p>Q: The new track plans show a Channel Drain only where the D-Zone area meets the track. Is this the only location? Was it considered to install Channel Drain around the entirety of the track and connect it to the field drainage system?</p> <p>A: Yes, only at the D-zone area as shown. It was considered but ultimately omitted in an effort to reduce overall project cost.</p>	

PROJECT MANUAL CHANGES:

Item	Description
1	Section 012200 – Unit Prices A. Add Unit Price No. 3: Turf grass sod in lieu of seeded athletic field
2	Section 004113 – Bid Form A. Add Unit Price No. 3
3	Section 329200 – Turf and Grasses A. Revised section 2.2 Turfgrass Sod

DRAWING CHANGES:

Item	Description

LIST OF ATTACHMENTS

Item	Description	
1	Specification Section 004113 – Bid Form	12/21/17
2	Specification Section 012200 – Unit Prices	12/21/17
3	Specification Section 329200 – Turf and Grasses	12/21/17

END OF ADDENDUM # 03

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SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Execute the work of this Specification in accordance with applicable portions of;
1. Division 1 – General Requirements
 2. Drawings L-101

1.2 SUMMARY

- A. Section Includes:
1. Seeding.
 2. Hydroseeding.
 3. Sodding. (Alt)
 4. Turf renovation.
- B. Related Sections:
1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
 2. Division 31 Section "Earth Moving" for excavation, filling and backfilling, and rough grading.
 3. Division 33 Section "Storm Utility Drainage" for subsurface drainage.

1.3 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

- F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- I. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass. Include identification of source and name and telephone number of supplier.
- B. Qualification Data: For qualified landscape Installer.
- C. Product Certificates: For soil amendments and fertilizers, from manufacturer.
- D. Material Test Reports: For existing in-place surface soil and imported topsoil.
- E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required initial maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified Installer whose work has resulted in successful turf establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Experience: Three years' experience in turf installation in addition to requirements in Division 01 Section "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with specialty area(s), designated CLT-Exterior.
 - b. Certified Turfgrass Professional, designated CTP.
 - c. Certified Turfgrass Professional of Cool Season Lawns, designated CTP-CSL.
 5. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
 6. Pesticide Applicator: State licensed, commercial.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of the soil.
1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
 2. The soil-testing laboratory shall oversee soil sampling, with depth, location, and number of samples to be taken per instructions from Architect. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
 3. Report suitability of tested soil for turf growth.
 - a. Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.
- D. Pre-installation Conference: To Be Announced
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 18 to 24 hours of harvesting. Protect sod from breakage and drying. (Alternate).
- C. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.8 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance.
1. Spring Planting: March 15 – June 15
 2. Fall Planting: August 15 – November 15
 3. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions. No work shall be performed when the ground is frozen, wet or otherwise un-tillable or when even distribution of materials cannot be obtained.

1.9 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
1. Seeded Turf: 90 days from date of installation.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
 2. Sodded Turf: 30 days from date of installation (Alt)
- B. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: (For Athletic Fields) Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
1. Full Sun:
 - a. 30 percent Perennial Ryegrass, 'Blackcat II (turf type) (lolium perenne, 'Blackcat II').

- b. 30 percent Tall Fescue, ‘Raptor II (turf type) (Festuca arundinacea (Lolium arundinaceum) ‘Raptor II).
- c. 15 percent Kentucky Bluegrass, ‘Clearwater’ (Poa pratensis, ‘Clearwater’)
- d. 15 percent Kentucky Bluegrass, ‘Volt’ (Poa pratensis, ‘Volt’)
- e. 10 percent Annual Ryegrass (Lolium multiflorum (L. perenne var. italicum))

C. Grass Seed Mix: Proprietary seed mix as follows:

- 1. Products: Subject to compliance with requirements, As Specified by Ernst Conservation Seeds. “Athletic Field Mix”

2.2 TURFGRASS SOD (Unit Price No. 3)

- A. Turfgrass Sod: At a minimum “Approved Turfgrass Sod” or Certified Turfgrass Sod shall be used. Number 1 quality/premium, Sod shall comply with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted. Free of weeds, disease and insects.
- B. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 5 percent weed seed: 45% Rebel Exeda Turf Type Tall Fescue, 45% Rebel Sentry Turf Type Fall Fescue, 10% Turf Bluegrass Blend; or approved equal suitable for non-irrigated athletic field use.

1. Turf shall be machine – cut at a minimum uniform 2” soil thickness and be cut to the maximum length possible to allow for safe handling. Sod roll lengths should be a minimum of 60’ at 24” wide. No underlay plastic filament will per permitted.

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 85 percent calcium carbonate , ground so that not less 90% passes a 10 mesh sieve and not less than 30% passes a 100 mesh sieve. Apply at the rate adequate to bring pH range up to 6.0 to 6.5.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through ½ inch sieve; soluble salt content of 4 to 8 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 1. Organic Matter Content: 50 to 60 percent of dry weight.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, with a pH range of 3.4 to 4.8.
- C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.

2.5 FERTILIZERS

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
 3. For lawns, provide fertilizer with not less than 4% phosphoric acid and not less than 2% potassium and the percentage of nitrogen required to provide not less than 1 lb. of actual nitrogen per 1000 sq. ft. of lawn area. Provide nitrogen in a form that will be available to the lawn during the initial period of growth.

2.6 PLANTING SOILS

A. TOPSOIL

Topsoil shall be from off-site sources. It shall be without admixture of subsoil or slag and shall be free of stones, lumps, plants or their roots, sticks and extraneous matter, and shall not be moved, placed or used while in a frozen or muddy condition.

Topsoil from off-site sources shall have an acidity range of pH 5.0 to 7.0 and shall contain not less than 5% organic matter as determined by the "Walkley-Black Method" (Colorimetric version). Sufficient limestone shall be added to topsoil used to bring it to a range of pH 6.0 to pH 6.5.

Soil sample tests will be ordered by the Landscape Architect and shall be made by a state or commercial laboratory using methods approved by the Associates of Official Agricultural chemists or the State Agricultural Experiment Station.

Such analysis will be paid for by the Contractor. Moving and placing of topsoil may be made after approval of the analysis by the Landscape Architect.

If approved, natural topsoil not having the hydrogen-ion value specified above may be amended by the contractor, at his own expense, to bring it within the specified limits. Topsoil shall meet the following mechanical analysis:

	<u>Passing %</u>	<u>Retained %</u>
1" Screen	100%	0%
1/2" Screen	97-100%	0-3%
No. 100 Mesh Sieve	60-40%	40-60%

There shall be a minimum of 4" of topsoil (after settlement) for sod installation, 6" for seed installation in areas as called for on the drawings.

2.7 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.
- C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content 2-5 deciSiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content 50-60 percent of dry weight.
- E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- G. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.8 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.9 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd. with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples,
- C. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface,. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Thoroughly blend planting soil off-site before spreading.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 2. Spread soil mix to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately 1/2 the thickness of soil mix over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of soil.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - 3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

- F. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 75-150 lbs per acre, or 3-5 lbs per 1,000 s.f.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where shown on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
 - 2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- G. Protect seeded areas from hot, dry weather or drying winds by applying peat mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with [fiber-mulch manufacturer's recommended tackifier.
 - 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than [1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 - 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 1000 lb/acre.

3.6 SODDING (Alt)

- A. Lay sod within 18 to 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy. Soil shall be irrigated within 12 to 24 hours prior to laying the turfgrass sod.
- B. Lay sod to form a solid mass with tightly fitted joints. Overlap ends of each roll; cut ends cleanly and abut tightly. But ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across angle of slopes exceeding 1:3.
 - 2. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray immediately after installation. Sod shall be thoroughly irrigated to a depth sufficient that the underside of the turfgrass sod pad and soil immediately below the turfgrass are thoroughly wet. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1 to 1-1/2 inches below sod.

3.7 TURF RENOVATION

- A. Renovate existing turf.
- B. Renovate existing turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 - 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- D. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches
- I. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
- J. Apply seed and protect with straw mulch as required for new turf.
- K. Water newly planted areas and keep moist until new turf is established.

3.8 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate to maintain adequate moisture in the upper 4 inches of soil.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowing. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain the following grass height:
 - 1. Seeded areas (Perennial ryegrass, tall fescue Kentucky bluegrass height between 1-1/2 and 2-1/2 inches.
 - 2. Sod areas between 2 to 2-1/2 inches unless otherwise noted.
- D. Turf Post fertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over and bare spots not exceeding 5 by 5 inches.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.10 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 329200

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Transmittal

309 South Governors Avenue, Dover, DE 19904

PROJECT: 201322201 Conrad Schools of Science/Athletic Fields
2013222.01 DATE: 12/21/2017

SUBJECT: Addendum No. 03 TRANSMITTAL ID: 00010

PURPOSE: For your use VIA: Info Exchange

FROM

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DATE: 12/21/2017
TRANSMITTAL ID: 00010

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REMARKS: Please download the 3rd and final addendum documents from the provided link.

Thank you,

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1	12/21/2017	012200 - unit prices-Add03.pdf	
1	12/21/2017	329200 - turf and grasses-Add03.pdf	
1	12/21/2017	201322201_Addn03.pdf	