

PROJECT INFORMATION: **TRACK & FIELD RENOVATION**
COGINCHAUG HIGH SCHOOL
REGIONAL SCHOOL DISTRICT #13
135A PICKETT LANE
DURHAM, CT 06422

ENGINEER: **CHA, INC.**
2139 SILAS DEANE HIGHWAY, SUITE 212
ROCKY HILL, CT 06067

MAY 25, 2010

ADDENDUM NO. 1

TO: **ALL CONTRACTOR BIDDERS OF RECORD**

This Addendum forms a part of the contract documents and modifies the original specifications and drawings dated May 3, 2010. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject bidder to disqualification.

This Addendum consists of: thirty three (33) total pages, and includes the following documents:

- SK-01
- Specification Section 02206
- Specification Section 02540 (revised)
- Specification Section 13125
- Track and Field Measure Form

Bidder Questions:

1. Q. Will CAD files of the Bid Drawings be available for the contractors use?
A. No. CAD files will not available for bidding
2. Q. Is there a specification for the proposed bleachers?
A. Yes. Section 13125 attached.

Modifications to the Drawings:

1. C-201.1 – see attached SK-01

Modification to Specifications:

Table of Contents

1. Add “Division 13 – Special Construction, section 13125 – Permanent Grandstand Seating” to the Table of Contents

Bid Form

1. Add the following:
Unit Prices: K. Furnish and install clay liner at the detention basin in accordance with SK-1, per specification section 02206 – Clay Barrier Layer.

Section 01270 – Unit Prices

1. Add the following:

Item No. 11 – Clay

Description: Furnish all labor, materials, tools, equipment, and incidentals required to furnish and install clay liner at the stormwater detention basin, complete per SK-01, in accordance with specification section 02206 – Clay Barrier Layer. The work includes, but is not limited to the following; proof rolling subgrade; furnishing, installing, grading and compacting clay; material testing; and all work not specifically included for payment under other items.

Unit of Measurement: Cubic yard of clay placed and compacted in place

Section 02206 – Clay Barrier Layer

1. Add the attached section to the Bid Documents

Section 02539 – Track and Field Surveying

1. Add the attached Track and Field Measure form to the back of section 02539

Section 02540 – Track and Field Synthetic Surface

1. Revised Section attached

Section 13125 – Permanent Grandstand Seating

1. Add attached section to Bid Documents

Section 02513 Hot Mix Asphalt Pavement

1. Revise Paragraph 1.3 Submittals as follows:
 - C. Survey submittal requirements described in Section 02539 Track & Field Surveying
2. Revise Paragraph 2.1 Materials as follows:
 - B. Binder Course – ConnDOT Class 1, Section M.04
 - C. Top Course/Curbing Mix – ConnDOT Class 2, Section M.04
 - D. Tack Coat – ConnDOT Standards
3. Revise Paragraph 3.2 Placing and Compaction as follows:
 - K. Any oil spills on the Top Course shall be completely removed, and replaced with new asphalt. New asphalt shall be keyed into the existing pavement structure and sealed via infrared repair. The minimum depth of asphalt repair shall be equal to the depth of the asphalt Top Course.
4. Revise Paragraph 3.3 Field Quality Control as follows:
 - C.4 Track Oval, D-Zone and Tennis Court tolerances:
 - C.4.e Cold tar patching, skin patching and sand mix patching are not acceptable methods of birdbath repair
 - D. Comply with Surveying requirements noted in Section 02539 Track & Field Surveying.
 - G. Allow asphalt to cure a minimum of 28 days in accordance with Synthetic Track Surfacing and Tennis Court Surfacing Manufacturer requirements prior to installation of Synthetic Surfaces.

Section 02579 Synthetic Tennis Court Surface

1. Add the following to Paragraph 1.5 Quality Assurance as follows:

1.9 Survey Requirements

- A. The contractor shall survey the finished asphalt pavement at the tennis courts. Survey shall include top of asphalt elevations on a 25' grid. Survey shall be completed by a licensed surveyor.
- B. Submit survey to engineer for approval prior to installation of court surfacing.

End of Addendum #1

SECTION 02206 CLAY BARRIER LAYER

PART 1 - GENERAL

1.1 SUMMARY

- A. The Contractor shall provide all labor, materials, equipment, and services necessary for, and incidental to, furnishing, placing, compacting and testing the clay barrier layer as shown on the Contract Drawings and as specified herein.
- B. The Engineer shall determine the suitability of materials that are to be used in the work and should any materials encountered be unsatisfactory for the purpose intended, they shall be removed from the site at the Contractor's expense.

1.2 QUALITY ASSURANCE

- A. The latest edition of the following standards and regulations, as referenced herein, shall be applicable.
 - 1. American Society for Testing and Materials (ASTM).
 - 2. Standard Specification for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).

1.3 SUBMITTALS

- A. The Contractor shall furnish representative earth materials to the testing laboratory for analysis and report, as directed by the Engineer or as outlined in the specifications.
- B. Propose borrow source and borrow source prequalification testing data
- C. Test reports for prequalification and construction quality control/quality assurance testing shall be submitted to both the Contractor and Engineer.

1.4 PRODUCT HANDLING

- A. Soil materials shall be excavated from the borrow source, transported, conditioned, placed, and stockpiled in such a manner so as to prevent contamination, segregation, and excessive wetting. Materials that have become contaminated, excessively wet, or segregated shall not be used and shall be removed from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Impervious silty clay and clayey silt soils, classified as MH, CL, or CH in the Unified Soil Classification System (ASTM D 2487), with no sizes larger than 3 inches and at least 75 percent by dry weight of fines passing the No. 200 standard sieve size. The plasticity index shall be at least 15 (ASTM D 4318). The coefficient of permeability of the clay shall be less than 1×10^{-7} centimeters per second when compacted to a minimum of 90 percent of standard Proctor maximum dry density at a moisture content wet of optimum.

PART 3 - EXECUTION

CLAY BARRIER LAYER

3.1 BORROW SOIL MATERIAL QUALIFICATION TESTING

A. General:

1. Sufficient size samples shall be obtained from the potential borrow source to allow completion of tests listed in paragraph B (material tests) below. Samples may be obtained from test borings, test pits, or from borrow pit faces provided that surficial dry or wet soil is removed to expose undisturbed earth. Tests listed below shall be performed on each sample obtained.
 - a. A minimum of three (3) representative samples from each potential borrow source shall be furnished to the testing laboratory for prequalification testing. Test data shall be submitted to the Engineer a minimum of 2 weeks prior to start of clay barrier layer construction for approval of the borrow source.
 - b. Additional quality control samples shall be obtained during construction at the frequencies specified in paragraph B below to verify that borrow materials meet specification requirements.

B. Material Tests:

1. Particle Size Analysis:
 - a. Method: ASTM D422
 - b. Number of Tests:
 - 1.) Prequalification: 1 test per sample; 3 samples per source.
 - 2.) Quality Control: 1 per 2,500 cubic yards placed.
 - c. Acceptance Criteria: Gradation within specified limits.
2. Atterberg Limits Determinations:
 - a. Method: ASTM D424
 - b. Number of Tests:
 - 1.) Prequalification: 1 test per sample; 3 samples per source.
 - 2.) Quality Control: 1 per 1,000 cubic yards placed.
 - c. Acceptance Criteria: Plasticity index within specified limits.
3. Moisture Content:
 - a. Method: ASTM D2216
 - b. Number of Tests:
 - 1.) Prequalification: 1 test per sample; 3 samples per source.
 - 2.) Quality Control: 1 per 1,000 cubic yards placed.

Test shall be performed on sample specimen preserved at natural (undisturbed) moisture condition.

4. Maximum Density Determination:
 - a. Method: ASTM D698 - Standard Proctor
 - b. Number of Tests:
 - 1.) Prequalification: 1 test per sample; 3 samples per source.
 - 2.) Quality Control: 1 per 5,000 cubic yards placed.
5. Permeability of Cohesive Soils:
 - a. Method: ASTM D5084
 - b. Number of Tests: Minimum two (2) tests per sample performed with sample compacted to 85% and 90% maximum Standard Proctor dry density at optimum moisture content.
 - 1.) Prequalification: 3 samples per source. The intent is to demonstrate that the coefficient of permeability will be less than 1×10^{-7} cm/sec for specified density and moisture content requirements.
 - 2.) Quality Control: 1 sample per 5,000 cubic yards placed. Tests shall be performed using same criteria as for prequalification testing.
 - c. Acceptance Criteria: Coefficient of permeability less than 1×10^{-7} centimeters per second.

3.2 PLACEMENT AND COMPACTION

A. General:

1. The ground on which the barrier layer is to be placed shall be proof rolled until the underlying soil is thoroughly compacted to the satisfaction of the Engineer before any filling is begun. A steel-wheel tandem roller weighing 8 to 10 tons or equipment capable of obtaining the same compactive effort shall be used to obtain a thoroughly compacted subgrade. Remove or recompact any soft or loose soils as determined by the Engineer prior to filling.
2. Do not place fill material on surfaces that are muddy, frozen, or contain frost, ice, ponded water or extraneous debris.
3. When work is suspended during periods of freezing weather, measures shall be taken to prevent fill already in place from freezing. Upon resumption of work after any inclement weather, prepare the exposed surface by proof rolling to identify any zones of soft/loose soils. Soft/loose materials or frozen soils shall be removed and replaced.
4. The distribution of materials throughout the barrier layer shall be such that the layer will be free from lenses, pockets, streaks, and layers of materials differing substantially from the surrounding materials.
5. The placing of material shall be done so as to obtain a layer of uniform thickness without spaces between successively deposited loads.
6. Compaction of each layer shall proceed in a systematic, orderly, and continuous manner so as to ensure the specified coverages by the compaction equipment.

7. Materials which cannot be compacted by the approved rolling compaction equipment because of interferences shall be compacted with smaller approved compactors to a density at least equal to the density achieved in adjacent areas by the rolling compaction equipment and methods. Single pad vibratory base plate compactors shall weigh not less than 200 lbs. and have a vibration frequency not less than 1600 cycles per minute.
8. Should the fill surface become rutted or uneven subsequent to compaction, it shall be relevelled and recompacted before placing the next layer of material.

B. Barrier Layer Placement and Compaction:

1. Place fill materials in layers not more than 6" in loose depth. Lift height shall be governed by the ability of the compaction equipment to obtain the required compaction with 6" as a maximum lift height.
2. Moisture content of the material during compaction shall be between 0 and 4 percent wet of optimum moisture content as determined by ASTM D 698 (Standard Proctor). The average moisture content of the as placed fill shall be 1 to 3 percent wet of optimum.
3. All fill shall be thoroughly and satisfactorily compacted to at least 90 percent of the standard Proctor maximum dry density of the material used (ASTM D-698).
4. Where fill must be moisture conditioned before compaction, uniformly apply water to the surface of each layer of fill. Prevent ponding or other free water on the surface subsequent to, or during, compaction operations. Any surface exhibiting cracking from excessive drying shall be moisture conditioned and reworked by scarifying, discing, pulverizing, and recompacting prior to placement of successive lifts of earth fill or geosynthetic materials.
5. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to the specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified.
6. Rolling compaction equipment shall be heavy rubber tired rollers or pad-foot type rollers capable of achieving the intended result. Compaction equipment used for the Work is subject to approval by the Engineer. Any equipment not originally manufactured for compaction purposes and equipment which is not in proper working order will not be approved. Furnish manufacturer's specifications covering data not obvious from a visual inspection of the equipment and necessary to determine its classification and performance characteristics.
7. Compaction equipment shall make a minimum of 4 complete passes over the entire area of each lift.
8. The surface of each compacted layer shall be scarified to a minimum depth of 1 inch before placing the next layer. If the fill surface softens as a result of heavy rains, the surface shall be scarified and allowed to dry until the moisture content is within the range specified herein or the wet material shall be removed. Should the surface become so dry that bond between such surface and the next layer of material will not be adequate, the Contractor shall loosen the embankment surface by discing and shall add moisture and further condition and recompact the exposed surface immediately prior to placement of the next layer.
9. The Contractor shall grade partially completed fill areas for drainage and thoroughly compact and smooth the surface at the end of each workday.

10. For areas not accessible to heavy rolling compaction equipment, fill materials shall be placed in horizontal layers not to exceed 6 inches in loose thickness and compacted with smaller rolling compaction equipment or hand operated equipment, as approved by the Engineer.
11. The final surface of the barrier layer shall be uniform and suitable for placement of the next subsequent layer.

3.3 FIELD QUALITY CONTROL

- A. The Contractor's Testing Laboratory shall perform testing of barrier layer fill and borrow materials to insure compliance with these Specifications.
- B. In-place density and moisture content tests shall be performed on in- place clay fill material in accordance with ASTM D 1556, D 2167 or D 2922. In-place density shall be determined at a depth of 3 inches below grade. At least 1 test shall be performed.
- C. One Laboratory permeability tests shall be performed on thin wall "Shelby" tube samples of the in-place clay. Shelby tubes shall be advanced by jacking in one continuous smooth thrust into the compacted clay barrier. Use of hammers or similar driving equipment will not be permitted. Use of a backhoe bucket or bulldozer blade to push sampling tubes will not be permitted. Earth moving equipment may be used as a reaction for jacks. Field methods and test locations subject to approval by the Engineer. Void resulting from sample removal shall be backfilled with barrier material according to placement specifications. Samples shall only be obtained of the upper lift.
- D. Tests for moisture content shall be performed on the in-place silty clay fill at a rate of one test. If nuclear methods or microwave methods are used to determine field moisture content, one oven-dry moisture content determination (ASTM D2216) shall be performed per acre per lift for calibration. Sample shall be obtained from a location immediately adjacent to an in-place density test location.
- E. The Engineer may direct additional tests to establish gradation, Atterberg limits, permeability, maximum density, in-place density, and water content as required by working conditions, or changes in borrow source material at the Contractor's expense.
- F. Acceptance Criteria:
 1. Acceptance Criteria: The criteria for acceptability of in-place fill shall be in situ dry density and moisture content and in-situ permeability. Minimum dry density for all fill shall be 90 percent of the standard Proctor maximum dry density. The in-place moisture content shall be 0 to 4 percent wet of optimum as determined by the standard Proctor compaction method (ASTM D-698). In place permeability shall be less than 1×10^{-7} cm/sec. If a test fails to qualify, the fill shall be further reworked, compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

3.4 CLEAN UP

- A. Provide and maintain protection of newly filled areas against damage. Upon completion or when directed, correct all damaged and deficient work by building up low spots and remove temporary protections, fencing, shoring and bracing if any.
- B. Remove all surplus excavated material not required for filling and backfilling and legally dispose of same away from premises.
- C. Leave the premises and work in clean, satisfactory condition, ready to receive subsequent operations.

END OF SECTION

SECTION 02540 TRACK & FIELD SYNTHETIC SURFACE

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers all labor and materials required to install a first-class, polyurethane track & field surface. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings (see section 02542) as designated in these specifications.

1.2 CODES AND STANDARDS

- A. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NFSHSA shall be enforced.

1.3 RELATED SECTIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:
 - 1. 02541 – Sports Equipment
 - 2. 02542 – Track & Field Line Markings
 - 3. 02543 – Field Event Special Materials

1.4 SUBMITTALS

- A. The following information must be submitted by the Contractor with the bid documents.
 - 1. Test results, from an IAAF certified laboratory, verifying manufacturer's full pour polyurethane Track & Field Synthetic Surfacing product meets the IAAF Performance Specifications for Synthetic Surfaces.
 - a. The same components from the test sample must be used in the installed surface. No substitutions will be allowed.
 - 2. A list of completed facilities, minimum of 5, which are certified to meet NFSHSA rules & regulations in the past 5 years utilizing the product specified in these specifications. The Track & Field Synthetic Surfacing Contractor's supervisor responsible for the completed facilities must supervise this project. These requirements are not only for qualifying the track & field synthetic surface, but the supervisor responsible for this project as well.
 - 3. Standard printed specifications of the track & field synthetic surfacing system that is being installed.
- B. The following information must be submitted by the Track & Field Synthetic Surfacing Contractor prior to installation.

1. Installation process and requirements for subbase (stone, asphalt and concrete) and any conditions that may limit the track & field synthetic surface installation or affect quality of installation.
 2. Temperature/climatic conditions limiting quality of installation.
 3. Standard specification and application for recommended subbase primers, crack filler, patching and leveling material.
 4. Three product samples, a minimum of, 6" x 6" in size, the same color, texture, thickness, etc. of the same type of surfacing to be installed for this project. This must be a representative sample of the product. This sample must be submitted and approved by the Owner, prior to installation. At completion of the project this sample may be used as a comparison to judge the quality of the installed product. Separate samples are required for each color surface to be installed at the facility.
 5. Material safety data sheets on all individual components of the product being installed.
 6. Provide a letter stating the Track & Field Synthetic Surfacing Contractor reviewed the asphalt specification and are accepting the specification as correct. Upon completion of the Asphalt paving and prior to installation of the track & field synthetic surface, the Track & Field Synthetic Surfacing Contractor will provide a letter accepting the installed asphalt and stating it is suitable to receive the track & field synthetic surface.
 7. Written notice and acceptance that all inground field event equipment is installed as per the Contract Documents and the rules of the sport.
- C. The following information shall be submitted after completion of the specified work:
1. Provide a five (5) year manufacturer's warranty against workmanship and materials on the synthetic surface. The warranty period to begin at final completion or Owner occupancy.

1.5 QUALITY ASSURANCE

- A. All material shall be guaranteed to the extent that the surfacing:
1. Has been manufactured, applied and will perform in accordance with these and the manufacturer's specifications;
 2. Will hold fast and/or adhere to the primer, asphalt, concrete, edging, filler, patches or overlay materials;
 3. Is Ultra-Violet resistant, will not bubble, blister, fade, crack, or wear excessively during the guarantee period.
- B. Prior to installation, or during installation or at completion of installation of the synthetic surfacing if the Owner has any question or doubt about the quality or formulation of the material, the Track & Field Synthetic Surfacing Contractor shall have the product tested. If the product meets these specifications, then the Owner shall pay for the cost of the testing; if the product does not meet these specifications, then the Track & Field Synthetic Surfacing Contractor shall pay for the testing. Any material failing to meet specifications will be replaced with new material at the Track & Field Synthetic Surfacing Contractor's expense.

- C. The Track & Field Synthetic Surfacing Contractor shall, in the presence of the Owner, inspect the track and field synthetic surfacing each year until the end of the five (5) year warranty period, or at any time requested by the Owner.
- D. Slopes & Tolerances
 - 1. Track Oval - Direction of running, maximum slope 1:1000 (0.1%); Cross / lateral slope (perpendicular to lane lines), Outermost lane down to Lane 1, 1:200 (2.0%) maximum and no less than 1.2%.
 - 2. High Jump - Maximum slope of the approach and take-off area in the direction of the crossbar, maximum 1:100 (1.0%) downward.
 - 3. Long / Triple Jump and Pole Vault Runways - Direction of running, maximum slope 1:1000 (0.1%); Maximum slope from take-off board to sand pit shall not exceed 1:1000 (0.1%) downward; Cross / lateral slope (perpendicular to runway lines), 1:200 (2.0%) maximum and no less than 1.2%, except if runway is located in the High Jump Area, then follow High Jump slopes.
 - 4. Throwing Circles / Pads and Landing Areas - Concrete circles / pads shall be level; Direction of throwing in Landing Area, maximum slope 1:100 (1.0%) downward, throwing up hill is allowed.
 - 5. Depressions can not exceed 3mm under a 1m straight edge or 6mm under a 4m straight edge.
 - 6. The drawings depict the lateral slope at 1.6%; this allows for a 0.4% deviation; therefore the maximum is 2.0% and the minimum is 1.2%.

1.6 SPECIAL PROJECT CONDITIONS

- A. The Track & Field Synthetic Surfacing Contractor will provide a project manager on-site daily through the completion of the Track & Field Synthetic Surfacing Contractor's portion of the contract.
- B. The Track & Field Synthetic Surfacing Contractor will provide a technician that will serve as a consultant to the Owner during the Asphalt Paving, first reviewing the asphalt specification, accepting the specification as correct, and then, providing daily review and guidance of the construction of the Asphalt Paving which will directly effect the tolerances and longevity of the eventual synthetic surfacing installation.
- C. Prior to installing any concrete the Contractor must verify with the Track & Field Synthetic Surface manufacturer if any curing compounds or agents are allowed or acceptable.

1.7 SPECIFIC SCOPE OF WORK

- A. The Track & Field Synthetic Surfacing Contractor shall provide all labor, materials and equipment to perform the following work:
 - 1. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings (see section 02542) as designated in these specifications.
 - 2. Review Bidding documents and specifications, provide technical assistance, and approve Asphalt Paving base work as required in the specifications.

3. Review and approve installation of all field event inground equipment before any track & field synthetic surfacing is installed as specified and shown on the project drawings.
4. Brush and wash down all areas to be surfaced, as often as necessary during the installation of the track and field synthetic surface.
5. Repair all birdbaths as required in these specifications.
6. Install 100 square feet of track & field synthetic surfacing to a mock-up area to the satisfaction of the Owner and then, remove this area prior to installation of the track & field synthetic surface, this may be waived by the Owner.
7. Install approved track & field synthetic surfacing material on all areas as defined by these Bidding Documents.
8. Install removable track & field synthetic surfacing (full pour polyurethane) plugs in all pole vault boxes, long/triple jump take-off boards (1" x 1" notch in corner) and throw circles (cut plugs in half); apply synthetic surfacing to the steeplechase water jump cover and junction box covers.
9. Install special material (i.e. foam, board, etc.) in slot drain opening to prevent polyurethane from entering the opening. The drainage slot opening shall be neatly trimmed out (vertical cuts), after polyurethane installation, to allow proper drainage to occur. No polyurethane is allowed on the inside of the drainage slot opening. This shall apply only if the precast slot drain is installed.
10. Repair all damaged areas, clean-up all glue, and remove excess polyurethane, primers and similar products. All trim cuts shall be neat and clean; on all curves the trim-out shall follow a radius line for accuracy and neatness.

PART 2 - PRODUCTS

2.1 TRACK & FIELD SYNTHETIC SURFACE

- A. The track and field synthetic surface shall be as per the manufacturer's specifications, plus the following requirements and where discrepancies exist, they shall be brought to the attention of the Owner or Owner's representative prior to Bidding or Installation.
- B. The color scheme shall be red.
- C. The following Contractors are approved for bidding:
 1. APT, Contact: Jim Sacco @ (724) 452-3033
 - a. Base Bid: Spurtan BS
 - b. Alternate No. 6: Rekortan M99
 2. BASF-Conica, Contact Mike Grindle @ (508) 922-5769
 - a. Base Bid: Conipur SP
 - b. Alternate No. 6: Conipur MX

3. Cape and Island Tennis & Track, Contact: Kristoff Eldridge @ (800) 422-1827
 - a. Base Bid: BSS 100
 - b. Alternate No. 6: BSS 1000

4. Polytan-USA, Contact: Leon Behr @ (706) 264-8708
 - a. Base Bid: Polytan WS
 - b. Alternate No. 6: Polytan PUR

- D. Base Bid: Base Mat with Structural Spray porous wearing layer
 1. Materials:
 - a. Primers - Polyurethane-based primers specifically formulated to be compatible with the subbase and track & field synthetic surfacing material.
 - b. Rubber Granules (Base Layers) - Styrene Butadiene Rubber (SBR). The rubber granules shall be recycled SBR rubber, cryogenically processed, chopped, and graded to match product specifications. Granules containing any traces of fiber or steel are unacceptable.
 - c. EPDM Granules - The rubber granules for the structural spray wearing coats shall be EPDM peroxide cured, man-made rubber containing a minimum 20% EPDM, with a specific gravity of 1.5+/-0.1. The EPDM rubber will be 0.5mm to 1.5mm EPDM granules. The EPDM rubber shall be the same color as chosen by the owner for the track surface.
 - d. Polyurethane Binder - Binder for the black rubber mat shall be an MDI-based mono-component, polyurethane binding agent. The binding agent shall not have a free TDI monomer level above 0.2%, must be clear in color, not milky, and must be solvent free. The binding agent must be specially formulated for compatibility with SBR rubber crumb.
 - e. Structural Spray Coating - The spray coating shall be the MDI-based mono-component, moisture cured, pigmented polyurethane, specifically formulated for compatibility with EPDM granules.

- E. Alternate No. 6: Two component full depth polyurethane with an EPDM embedded wearing layer.
 1. Materials
 - a. Primers – Polyurethane based primers specifically formulated to be compatible with the base and track surfacing material.
 - b. Rubber Granules (Base Layer) - Styrene Butadiene Rubber (SBR). The rubber granules shall be recycled SBR rubber, processed, chopped, and graded to match product specifications. Granules containing any traces of fiber or steel are unacceptable.

- c. Polyurethane - This consists of a two-component polyurethane which is self leveling and compounded from a proprietary, pigmented polyol and MDI based, "TDI Free", isocyanate. The liquid polyurethane shall contain no mercury, lead, or any other heavy metals added by design.
 - d. EPDM Granulate - The EPDM granules shall be graded to match product specifications. The EPDM granules must match the Polyurethane in color.
- F. Patching Material: All materials must be approved materials and compatible with the synthetic surface.

PART 3 - EXECUTION

3.1 INSPECTION AND ACCEPTANCE

- A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation.

Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2 INSTALLATION REQUIREMENTS

- A. The following installation requirements must be met by the Track & Field Synthetic Surfacing Contractor:

- 1. Installation by approved technicians. Local laborers may be hired for non-technical work, only.
- 2. Technical representative from the approved manufacturer of the polyurethane product must provide on site technical services during the installation of the Asphalt Paving base and track & field surface.
- 3. Priming - The primer shall be spray-applied in accordance with the manufacturer's specifications. Only those areas which can be installed the same day should be primed.

- B. Base Bid: Installation of Base Mat w/ Structural Spray

- 1. Mixture Composition - Job mix formulas shall be as follows:
 - a. Black Mat
 - (1) SBR Rubber: 80% by weight
 - (2) Binding Agent: 20% by weight
 - (3) Application Temperature: Min. 40° Degrees F.
 - b. Structural Spray Top Coats
 - (1) Structural Spray: 60% by weight
 - (2) EPDM Rubber 0.5-1.5mm: 40% by weight
 - (3) Application Temperature: Min. 40° Degrees F.

2. Base Mat - Mix the black SBR granules and the single component binder at a ratio of approximately 5:1 by weight. The exact ratio depends on the dust content of the granules, which should be reduced to a minimum. Mixing time is 2 to 4 minutes, depending on the size of the mixing-batches and the type of mixer used.
 - a. The blended materials are then spread onto the asphalt or concrete base using a mechanical tandem leveler. The tandem leveler shall have a heated oscillating screed bar to obtain both smoothness and compaction. The heated screed bar normally works at a temperature of 158 to 176 degrees F.
 - b. The laying procedure shall be bay-to-bay and limiting the length of the passes so as not to have any cold (cured) joints between the bays. At the beginning of each new day's work, the traverse joint from the previous day's work shall be tack coated to ensure a good bond. Small irregularities remaining in the surface after the tandem leveler has passed may be removed using a light polyethylene or Teflon roller. The surface hardens through the reaction of the binding agent with humidity. The speed of the reaction depends on temperature and relative humidity. Usually the surface may be walked upon the next day.
 - c. Minimum thickness of 11mm.
 3. Structural Spray Wearing Coats - After the black mat has properly cured, apply a mixture, using the polyurethane binder and pigmented EPDM granules. Mixture to be spray applied using approved spray equipment designed to handle this heavy rubber mixture. The structural spray coating is applied in applications utilizing 1.50 lbs/ square yard for each application. To avoid cloud formations and to achieve total coverage of the base mat, there shall be three (3) applications of the mixture in alternate directions.
 - a. Minimum thickness of 2mm.
- C. Alternate No. 6: Installation of two component full depth polyurethane with an EPDM embedded wearing layer (full pour system)
1. Thickness to match sample submitted to IAAF certified testing laboratory. (See Item 1.4 – A.1. of this section)
 2. Equipment
 - a. The components shall be processed and installed by specially designed machinery with automatic electronic portioning, which provides continuous mixing, feeding and finishing for accurate quality controlled installation.
 3. Base Layer
 - a. Flow apply the two component polyurethane using a notched trowel or squeegee.
 - b. Broadcast to excess with SBR granules, ensuring all of the coating is covered. Ensure the rubber is totally dry.
 - c. Remove any rubber that is not bonded to the coating using a mechanical sweeper or vacuum/blower.

4. Wearing layer
 - a. Flow apply the two component polyurethane by using a notched trowel or squeegee.
 - b. Broadcast to excess with colored EPDM rubber ensuring all of the coating is covered. After initial cure the excess rubber granules are removed by means of mechanical sweeper.
 - c. The final wearing layer shall be a dense matrix of EPDM granules embedded into the polyurethane with no "bald" spots.

3.3 TIMING, LIMITATIONS, AND CONDITIONS AFFECTING INSTALLATION

- A. Weather and Climate: If in the opinion of the synthetic track surfacing manufacturer or the Owner, weather and climatic conditions are having or will have an adverse effect on installation; work shall be delayed until the adverse condition has passed.
- B. Adjacent and Concurrent Construction: Installation shall not take place until the completion of the adjacent or concurrent construction operations which generate dust, airborne abrasives, or any other by-product that, in the opinion of the Owner or synthetic track surfacing manufacturer, would be harmful to the track material. Under specific direction of the Owner, the Track & Field Synthetic Surfacing Contractor may be allowed to cover the track material with an approved covering if such harmful construction operations must occur after the track material has been installed.

END OF SECTION 02540

Track & Field Measurements

I. Facility Information

Owner: _____

Facility Name: _____

Location: _____

II. Surveyor/Engineer Information

Firm Name: _____

Contact: _____

Phone #: _____

Registration #: _____

III. General Information

Date of Survey _____

Weather Conditions _____

IV. Track Oval Measurements

All measurements to 0.005'

All calculations to 0.001m

A. Raised aluminum curb: _____ (Y/N)

Note: Measure line to be measured at 30 cm for raised curb and at 20 cm for no curb.

B. Radius to measure line: _____ ft

C. Distance between radius points: _____ ft

D. Lane width: _____ ft

V. Line Markings

All entries to be in meters unless otherwise noted

A. Races starting in lanes - Measured distance from start to finish

| Event | Lane | | | | | | | |
|----------------|------|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 100m | | | | | | | | |
| 100m (Reverse) | | | | | | | | |
| 110m | | | | | | | | |
| 110m (Reverse) | | | | | | | | |
| 200m | | | | | | | | |
| 200m (Reverse) | | | | | | | | |
| 300m | | | | | | | | |
| 400m | | | | | | | | |
| 800m | | | | | | | | |
| 4 x 400m | | | | | | | | |

Notes: 4 x 100 start line is the same as the 400m start line.

B. Waterfall starting lines - Measured distance to finish first lap

| Event | Lane | | | | | | | |
|-------|-------------------------|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 800m | | | | | | | | |
| 1500m | | | | | | | | |
| 1600m | | | | | | | | |
| Mile | | | | | | | | |
| 3200m | | | | | | | | |
| 800m | Box Alley Starts | | | | | | | |
| 1600m | | | | | | | | |
| 3200m | | | | | | | | |

Note: Box Alley for lanes 1-4 is the same as the main waterfall starting line.

C. Relay races - Measured distance to finish line

| Event | Lane | | | | | | | | |
|-------------------|------|---|---|---|---|---|---|---|-----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| 4 x 100m | | | | | | | | | |
| End (a) | | | | | | | | | Exchange Zone 3 |
| Center (b) | | | | | | | | | |
| Start (c) | | | | | | | | | |
| Zone Length (c-a) | | | | | | | | | |
| Acceleration (d) | | | | | | | | | |
| Zone Length (d-c) | | | | | | | | | |
| End (a) | | | | | | | | | Exchange Zone 2 |
| Center (b) | | | | | | | | | |
| Start (c) | | | | | | | | | |
| Zone Length (c-a) | | | | | | | | | |
| Acceleration (d) | | | | | | | | | |
| Zone Length (d-c) | | | | | | | | | |
| End (a) | | | | | | | | | Exchange Zone 1 |
| Center (b) | | | | | | | | | |
| Start (c) | | | | | | | | | |
| Zone Length (c-a) | | | | | | | | | |
| Acceleration (d) | | | | | | | | | |
| Zone Length (d-c) | | | | | | | | | |

| | Lane | | | | | | | | |
|-------------------|------|---|---|---|---|---|---|---|--------------------|
| 4 x 400m | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| End (a) | | | | | | | | | Exchange Zone 2 |
| Center (b) | | | | | | | | | |
| Start (c) | | | | | | | | | |
| Zone Length (c-a) | | | | | | | | | |
| End (a) | | | | | | | | | Exchange Zone 1 |
| Center (b) | | | | | | | | | |
| Start (c) | | | | | | | | | |
| Zone Length (c-a) | | | | | | | | | |

Note: 4 x 800m relay will use exchange zone 2 of the 4 x 400m relay for all legs.

D. Hurdle events

Hurdle 1 - distance from start line

Hurdles 2-9 - offset distance

Hurdle 10 - distance to finish line

| | | Lane | | | | | | | |
|------|--------|------|---|---|---|---|---|---|---|
| 100m | Hurdle | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |

| | | Lane | | | | | | | |
|----------------|--------|------|---|---|---|---|---|---|---|
| 100m (Reverse) | Hurdle | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |

| | | Lane | | | | | | | |
|------|--------|------|---|---|---|---|---|---|---|
| 110m | Hurdle | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |

H. Shot Put

Area 1

Sector line angle: _____ Degrees

Dividing lines provided: _____ (Y/N)

I. Discus

Area 1

Sector line angle: _____ Degrees

Dividing lines provided: _____ (Y/N)

VI. Slopes

A. Lateral incline: Oval

NFSHSA Rule 5 Section 1 Article 2: Maximum lateral inclination across the full width of the track oval shall not exceed 2%

Incline towards lane 1: _____ (Y/N)

Elevation shots to be taken at:

Inside line of lane 1: C

Center of track oval: B

Outside line of outer lane: A

| Location | Incline (%) | | |
|--------------------|-------------|-----|-----|
| | A-B | B-C | A-C |
| Common finish line | | | |
| 50m | | | |
| 100m | | | |
| 150m | | | |
| 200m | | | |
| 250m | | | |
| 300m | | | |
| 350m | | | |

B. Lateral incline: Runways

NFSHSA Rule 7 Sections 5 & 6 Article 1: Maximum lateral inclination across the full width of runways shall not exceed 2%

Provide levels at 10m intervals at the inside, center and outside of each runway; include level of all take-off boards and pole vault boxes

| Runway | | Runway 1 | Runway 2 |
|------------------|---------------------|------------|----------|
| Long/Triple jump | Lateral Inclination | 0 | |
| | | 10m | |
| | | 20m | |
| | | 30m | |
| | | 40m | |
| | | 50m | |
| | | LJ Board | |
| | | W-TJ Board | |
| | | M-TJ Board | |

| Runway | | Runway 1 | Runway 2 |
|------------|---------------------|----------|----------|
| Pole Vault | Lateral Inclination | 0 | |
| | | 10m | |
| | | 20m | |
| | | 30m | |
| | | 40m | |
| | | 50m | |
| | | Box | |

C. Overall Incline - Running Events

NFSHSA Rule 5 Section 1 Article 2: *Maximum downward inclination in the direction of running shall not exceed 0.1% over the entire length of the event*

| Event | Incline % | | | | | | | |
|----------------|-----------|--------|--------|--------|--------|--------|--------|--------|
| | Lane 1 | Lane 2 | Lane 3 | Lane 4 | Lane 5 | Lane 6 | Lane 7 | Lane 8 |
| 100m | | | | | | | | |
| 100m (Reverse) | | | | | | | | |
| 110m | | | | | | | | |
| 110m (Reverse) | | | | | | | | |
| 200m | | | | | | | | |
| 200m (Reverse) | | | | | | | | |
| 300m | | | | | | | | |
| 400m | | | | | | | | |

D. Overall Incline - Runways

NFSHSA Rule 7 Sections 5 & 6 Article 1: *Maximum downward inclination in the direction of running shall not exceed 0.1% over the entire length of the event*

| Runway | | Runway 1 | Runway 2 |
|------------------|---------------------|------------|----------|
| Long/Triple jump | Overall Inclination | 0 | |
| | | 10m | |
| | | 20m | |
| | | 30m | |
| | | 40m | |
| | | 50m | |
| | | LJ Board | |
| | | W-TJ Board | |
| | | M-TJ Board | |

| Runway | | Runway 1 | Runway 2 |
|------------|---------------------|----------|----------|
| Pole Vault | Lateral Inclination | 0 | |
| | | 10m | |
| | | 20m | |
| | | 30m | |
| | | 40m | |
| | | 50m | |
| | | Box | |

E. Overall Incline - High Jump

NFSHSA Rule 7 Section 4 Article 1: *The maximum inclination of the approach and take-off area shall not exceed 1:100, one percent (1.0%) in the direction of running toward the crossbar*

| Approach | | | Area 1 | |
|-----------|---------------------|----------|--------|--|
| High Jump | Overall Inclination | Radial 1 | 0 | |
| | | | 20m | |
| | | | 25m | |
| | | Radial 2 | 0 | |
| | | | 20m | |
| | | | 25m | |
| | | Radial 3 | 0 | |
| | | | 20m | |
| | | | 25m | |

F. Long/Triple Jump Landing Areas

Incline to be measured from center of take-off board to center of sand pit

| Event | Incline % | |
|---------------------|-----------|----------|
| | Runway 1 | Runway 2 |
| Long Jump | | |
| Women's Triple Jump | | |
| Men's Triple Jump | | |

G. Shot Put

NFSHSA Rule 6 Section 2 Article 13: *Maximum downward inclination in the direction of throwing shall not exceed 1.0% over the entire length of the event*

NFSHSA Rule 6 Section 5 Article 3: *The interior of the throw circles to be a maximum of 19 millimeters lower than the surface outside the circle*

NFSHSA Rule 6 Section 5 Article 3: *The diameter of the throw circle to be 2.134 meters*

Note: Measurements to be taken at 4 locations for each circle.

| Throw circles | | | Circle 1 |
|--------------------------------------|----|----------|----------|
| Interior of throw circle level (Y/N) | | | |
| Shot Put | D1 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D2 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D3 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D4 | Diameter | |
| | | Depth | |
| | | Depth | |
| Circle depth at center | | Depth | |

| Landing Area | | | Circle 1 |
|--------------|-------|---|----------|
| Shot Put | 0-6m | % | |
| | 0-12m | % | |
| | 0-18m | % | |
| | 0-24m | % | |

H. Discus

NFSHSA Rule 6 Section 2 Article 13: *Maximum downward inclination in the direction of throwing shall not exceed 1.0% over the entire length of the event*

NFSHSA Rule 6 Section 4 Article 3: *The interior of the throw circles to be a maximum of 19 millimeters lower than the surface outside the circle*

NFSHSA Rule 6 Section 4 Article 3: *The diameter of the throw circle to be 2.50 meters*

Note: Measurements to be taken at 4 locations for each circle.

| Throw circles | | | Circle 1 |
|--------------------------------------|----|----------|----------|
| Interior of throw circle level (Y/N) | | | |
| Discus | D1 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D2 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D3 | Diameter | |
| | | Depth | |
| | | Depth | |
| | D4 | Diameter | |
| | | Depth | |
| | | Depth | |
| Circle depth at center | | | Depth |

| Landing Area | | | Circle 1 |
|--------------|-------|---|----------|
| Discus | 0-30m | % | |
| | 0-50m | % | |
| | 0-70m | % | |

SECTION 13125 PERMANENT GRANDSTAND SEATING SYSTEM

PART 1 - GENERAL INFORMATION

1.1 SCOPE OF WORK

- A. Provide engineering, material, freight, installation and supervision to provide a new permanent grandstand structure in accordance with the following specifications.
- B. Minimum acceptable criteria:
 - 1. Design per plan view and sectional view drawings.
 - 2. Galvanized structural steel understructure per Section 2.2.
 - 3. Structural steel sizing as shown on drawings per Part 4 Peer Review.
 - 4. Continuous aluminum interlocking decking system with slip resistant surface equal to or greater than .80 coefficient of friction per Section 2.3.
 - 5. 10/24 rise/run with riser mounted seatboard brackets with a structural steel connection.
 - 6. Powder coated riser boards (school colors) with 100% coverage front and back.
 - 7. All concrete foundations for structural columns as sized and shown on drawings.

1.2 RELATED WORK/RELATED SECTION

- A. Section 02200, "Earthwork".
- B. Section 03300, "Cast-In-Place Concrete".
- C. Section 13127, "Pressbox".

1.3 SUBMITTALS

- A. Samples
 - 1. Seatboard
 - 2. Footboard
 - 3. Riserboard
 - 4. Guardrail-post and fabric
- B. Seating plan.
- C. Egress calculations.
- D. Shop Drawings indicating riser and row depth, deck configuration, and method of attachment, railings, size of framing members, framing system, and foundation details.

- E. Certified Structural Drawings by a registered professional Engineer in the State of Connecticut.
- F. Project schedule.

1.4 DESIGN CRITERIA

- A. All material and workmanship shall be in accordance with the following:
 - 1. Connecticut State Building Code.
 - 2. AISC Manual of Steel Construction, Load & Resistance factor Design, 2nd Edition.
 - 3. ACI Building Code for Reinforced Concrete.
 - 4. Aluminum Association of America.
 - 5. ASTM E985, standard specification for permanent metal railing systems and rails for buildings.
 - 6. AWS D1.2, American Welding Society.

B. Design Loads:

| | | |
|--------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------|
| Dead Load | 6 psf | seat and footboards, risers, steel framing, etc. |
| Live Load | 100 psf | to structural members. All stringers and girders shall be limited to L/200 for maximum vertical live load deflection. |
| | 120 plf | Seatboards |
| | 120 plf | Footboards |
| Design Wind Speed (local conditions) | mph | On projected vertical surface |
| Sway | 24 plf | Per lineal foot of seat, parallel to seat run |
| Sway | 10 plf | Per lineal foot of seat, perpendicular to seat |

- C. Deflection: Structural elements shall be sized to limit the live load deflections to L/200 of the span. Calculation shall be submitted with shop details confirming L/200 deflection criteria.
- D. Foundations: Foundations have been sized by an engineer and are based on soil bearing capacity of 3000 psf. Soil bearing capacity to be verified by the Owner prior to placement of footings. Foundation sizes on drawings will not be reduced under any circumstance. Downsizing or redesigned foundations are not allowed. Geotechnical Report included in the bid documents for design Engineer reference.

1.5 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of five (5) years experience in fabrication of grandstand structures.
- B. A calculation package must be provided to the Owner with the first set of approval drawings. The calculations and plans shall bear the preparing engineer’s seal.

- C. AISC Certification: Steel Fabricator to comply with applicable provisions of AISC’s “Code of Standard Practice for Steel Buildings and Bridges.” Participation in the AISC Certification Program and certified STD at time of bid. (STD – Standard for Steel Building Structures)
- D. Warranty: Product shall be guaranteed for five (5) years on the structure and three (3) years on the finish together with labor. Damage resulting from abnormal use, vandalism, or incorrect installation (if done by other than authorized installer of the manufacturer) is not applicable. Any exposed mill finish aluminum surface will become discolored due to oxidation which is a natural phenomenon. The manufacturer will not be responsible or liable for oxidation of mill finish aluminum.

1.6 SUBMITTALS

- A. Fabricator AISC Certificate of compliance with the Standard for Steel Building Structures
- B. Product Certificate: Prepare written statement on manufacturer’s letterhead certifying that product complies with requirements in the Contract Documents.
- C. Shop Drawings: Complete detailed drawings prepared, signed and sealed by a Registered Professional Engineer (P.E.) licensed in the State of Connecticut. Include:
 - 1. Detailed and dimensioned plans.
 - 2. Seating plan indicating aisles, walkways, seating sections and exits and showing exit calculations using appropriate tables and requirements of the Massachusetts Building Code.
 - 3. Sections and details showing complete methods of assembly and anchorage.
 - 4. Footings and foundation sizes and types and relationships to finish grade in compliance with construction documents. Exposed portions of foundations, pier height and top elevations shall be subject to Engineer's approval.
 - 5. Engineering calculations.
 - 6. Reduction in minimum sizes of concrete foundation and structural steel will not be allowed.
- D. Qualifications of Professional Engineer who seals the shop drawings and calculations.
- E. Samples for verification to include 3’ section of deck assembly with interlocking riser in specified dimensions and finishes and 3’ long seat board with mounting bracket.
- F. Independent test data confirming the coefficient of friction and durability of the slip resistant finish.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Dant Clayton Corporation, 1500 Bernheim Lane, Louisville, Kentucky 40210; (800) 626-2177 or approved equal.

2.2 MATERIALS

A. Structural Steel:

1. All detailing, fabrication, and erection shall be in accordance with AISC Specifications, Load & Resistance Factor Design, 2nd Edition.
2. Structural steel shall be ASTM A572 multi-certified grade 50. Miscellaneous steel shall be ASTM A36.
3. All bolts 5/8" diameter and larger shall be ASTM A325. All bolts 1/2" and smaller shall be ASTM A307. Threaded rod shall be ASTM A36.
4. All welds shall conform to ANSI/AWS D1.1, latest edition. Electrodes shall be E70XX.
5. Columns shall be wide flange shapes.
6. Support beams shall be wide flange shapes.
7. Stringer beams shall be wide flange shape.
8. Steel Finish:
 - a. Structural steel shall be coated with a minimum of 2 oz. hot dipped galvanized in accordance with ASTM 123-A with a minimum galvanized film thickness of 3.3 mils. Zinc shall be 98% purity, certified with written test results based on samples taken from the tank.

B. Guardrail:

1. Vertical guardrail structural supports shall be aluminum rectangular tube 2.8" x 2.0 x .1888" or aluminum angle of equivalent strength, and shall be 6061-T6 alloy. Guardrail shall have structural support on each leg of the fencing at all 90° turns. Tension bars do not meet this requirement.
2. Guardrail horizontal and vertical framing members will be 1 5/8" O.D. aluminum pipe.
3. Chain link fence infill shall be 2" mesh, 6 gauge vinyl-coated fabric.

C. Handrail:

1. Two line center aisle handrails shall be anodized extruded aluminum pipe of 6061-T6 alloy, with a 1 15/16” outside diameter and a wall thickness of .145”.
2. Handrails on all ramps and stairs shall provide 1-1/2” clearance from the guardrail material and shall extend 12” past the last riser with a return. Newel posts will not interrupt handrails. Handrails will not project more than 4.5” into the width of a stair or ramp. There shall be a second handrail installed on ramps that shall be 17” to 19” above the ramp.

D. Seating:

1. Seats shall be 6063-T6 extruded aluminum with a fluted surface and a minimum of 4 vertical legs. The exact size of seatboard is 2” x 10” x .080” wall thickened at the joints and weighing 1.9 lbs. per foot with 1” radius comfort curve front edge. Aluminum shall be cleaned, pre-treated and clear anodized.
2. Mounting brackets: 3/16” thick A36 steel plate, plasma cut, bent and galvanized.
3. Seatboards shall be attached to the system by riser mounted galvanized steel “L” brackets (deck mounted brackets not allowed). The seatboards shall align with the intermediate steps at the aisles. Seat brackets must have a positive connection to the steel frame of the bleacher. Attachment to the riserboard or channels in aluminum decking is not allowed.

2.3 DECKING SYSTEM

A. Fully Closed Deck System:

1. Footboards and toeboards shall be 6063-T6 extruded aluminum with a fluted surface with a minimum wall thickness of 0.078” between flutes. The minimum acceptable vertical height is 1.750”. Footboards and toeboards shall be mill finish. The expansion joint between the ends of the footboards are to be covered with a 4” wide aluminum extrusion joint cover. The ends of decking system will be finished with a one-piece aluminum angle end caps.
2. Individual planks shall be interlocking design, nesting with adjacent planks.
3. Riserboards shall be 6063-T6 aluminum and shall be cleaned, pre-treated and powder coated, covering 100% of the riser surface. Gaps between riser pieces are located behind the seat bracket. The use of splice plates is unacceptable.

B. Walking Surface Requirement:

1. All aluminum decking intended for use as a walking surface, including walkways, aisles, walking surfaces in seating sections, stairs, ramps, platforms, handicap areas, and landings, will exhibit a factory blasted slip resistant surface treatment intended to minimize the effects of wet conditions on pedestrian safety.

2. This surface treatment will have a uniform appearance and will increase the slip resistance of mill finished aluminum to achieve a slip index (coefficient of friction) of 0.80 or higher in all directions of travel, including parallel to seating, as measured by the Variable Incidence Tribometer (VIT), under wet conditions as well as dry conditions. The surface treatment must maintain this minimum slip index for at least 225,000 simulated foot strikes.
3. An independent test substantiating both the minimum required .80 coefficient of friction and the durability performance of the slip resistance feature must be provided with the bid.

2.4 RAMPS, STAIRS, RAMP PLATFORMS AND STAIR PLATFORMS

- A. Shall conform to local building codes.

2.5 END CAPS

- A. Walkways, footboards, and aisle board end caps shall be one-piece mill finish aluminum angle design tumbled after fabrication to remove burrs and sharp edges. End caps shall be riveted to the planks.
- B. Seatboard end caps shall be one-piece cast aluminum and shall be friction-fit to the plank without the use of mechanical fasteners.
- C. Guardrail posts shall be covered with cast aluminum top caps.

2.6 HANDICAP AREAS

- A. Handicap areas will be per design drawings

2.7 REINFORCED CONCRETE

- A. All concrete work and materials shall be in accordance with ACI 318.
- B. Cast-in-place concrete shall have minimum compressive strength of 4,000 psi at 28 days.
- C. All exterior concrete shall be air-entrained to 6% ± 1%.
- D. Reinforcing steel shall be in accordance with ATM A615, grade 60.
- E. Embedment of reinforcing in concrete shall be as follows, unless otherwise noted on drawings:
 1. 3" Placed directly against earth
 2. 2" Concrete poured against forms and exposed to weather
 3. 1 ½" Columns to ties

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be handled directly by the manufacturer or by a factory-certified installation subcontractor. Factory certification shall require three installations within the last two years within the state.
- B. Structure shall be erected in accordance with plans, shop drawings, and specifications.
- C. Site preparation is not included in this specification.

3.2 CLEANING

- A. Clean all surfaces after erection, in accordance with manufacturer's recommendations.
- B. Remove and properly dispose of all packaging and construction debris.
- C. Do not use acid solution, steel wool or other harsh abrasives.

END OF SECTION 13125

