PROJECT MANUAL

PROJECT/CONTRACT NUMBER: Z-XXX-818

Bid Number: B-02-18-19 / CP2788

DW Infrastructure – Synthetic Turf Field

at

Andrew Hill & Oak Grove High Schools

EAST SIDE UNION HIGH SCHOOL DISTRICT

VOLUME 2 of 2

Technical Specifications
Addenda 02

August 31, 2018

EAST SIDE UNION HIGH SCHOL DISTRICT - TRACK AND FIELD RESURFACING PROJECTS

TECHNICAL SPECIFICATIONS SIGNATURE SHEET

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SECTION 31 11 00 – ATHLETIC FIELD DEMOLITION

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Labor, materials, equipment, transportation, and services necessary to complete demolition clearing & grubbing work shown explicitly on construction drawings, or additional demolition as necessary to complete the work.

B. Demolition work must include, but not necessarily be limited to, the following items:

1. (Hardscape Removal) Remove concrete curb, and miscellaneous asphalt and concrete as shown on demolition plans.
2. (Synthetic Turf Removal) Loading, hauling, and dumping fees for concrete, asphalt, synthetic turf system, soil, pipes and other removed items. Synthetic turf and infill must be disposed of in accordance with Local, County, State and Federal regulations and best practices of the industry.
3. Equipment and materials designated as salvage are to be removed by Contractor and turned over to Owner. The Contractor is required to coordinate salvage item turnover, storage location and transportation with the Owner prior to construction.
4. The Contractor is responsible for obtaining any necessary permits for demolition work.

C. Contractor is responsible to protect existing paved and track surfaces from all construction activity and use. The Contractor must repair or replace any surfacing damaged by temporary construction access or construction activities.

D. The Contractor is responsible for all temporary security fencing, gates and locks. The Contractor is to coordinate access to site with the Owner prior to construction.

E. The Contractor is responsible for all temporary security access roads or ramps. The Contractor is responsible for removing temporary roads or ramps prior to project completion. The Contractor is responsible for temporary planking or other surface coverings required to protect existing site conditions to remain. The Contractor must repair or replace any landscape or hardscape damaged by temporary construction access.

F. (California Only) Contractor must strictly adhere to the following regulations during demolition, excavation and grading:

1. Title 8 CCR 1532.1 Lead in Construction
2. Title 8 CCR 1529 Asbestos
3. Title 8 CCR 5194 Hazard Communication
4. Title 8 CCR 5155 Airborne Contaminants
5. Title 8 CCR 5192 Hazardous Waste Operations and Emergency Response

G. Related sections can include, but may not be limited to:

1. Section 33 40 00 – Site Drainage
2. Section 31 1123.23 – Permeable Aggregate Base
3. Section 32 12 00 – Asphalt Paving
4. Section 32 18 13 – Synthetic Turf

1.2 SUBMITTALS

A. Demolition procedures, items to salvage and operational sequence must be submitted for review and acceptance by owner.

B. Material export plans, routes and disposal sites are to be submitted as required by Local, County or State requirements. The contractor is responsible for the cost of material export and disposal.

1.3 PROJECT CONDITIONS

A. The Contractor must verify existing conditions before starting work.

B. The Contractor must protect existing structures.

5. The Contractor must not interfere with use of adjacent buildings

6. The Contractor must maintain free and safe passage to and from adjacent buildings and maintenance areas.

7. The Contractor must prevent movement or settlement of structures, provide bracing or shoring, be responsible for safety and support of structures and assume liability for building movement, settlement, damage, or injury.

8. The Contractor must cease operations and notify owner immediately if safety of structures appears to be endangered, take precautions to properly support structures and resume operations only after safety is restored.

9. The Contractor must provide and maintain barricades, lighting, and guardrails required by applicable regulatory advisory to protect passersby, workers and building occupants.

C. The Contractor must protect existing services and utilities.

1. The Contractor must follow procedures outline by Local, County, State and Federal regulations for utility disconnects and interruptions.

2. The Contractor must follow procedures outlined by general conditions specification and drawings for utility disconnects and interruptions if provided.

3. The Contractor must place markers to indicate location of disconnected services and identify service lines and capping locations on project record documents.

4. Removal or capping of existing utilities must be coordinated with the Owner.

5. The contractor must utilize utility location service. Any utilities shown on plans are for reference only and dimensional accuracy is not guaranteed.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Excess or unsuitable material, broken asphaltic concrete, broken Portland cement concrete, pipes, etc., must be removed and disposed of by contractor. Materials must be disposed of at an approved disposal site. Contractor must, prior to commencement of the work, submit a letter to the owner stating the location of disposal site(s) for all excess material and certifying that he has obtained the property owner's permission for the disposal of all surplus materials.

PART 3 – EXECUTION

3.1 METHODS

A. Contractor must be responsible for determining the method or methods used to accomplish the removals and excavations indicated on the plans. Blasting is not an accepted method of demolition.

B. Contractor must assume responsibilities to protect existing structures and facilities during the work, and must repair or replace structures or facilities damaged by them or their subcontractors at contractor’s expense.

C. Contractor must demolish in an orderly and careful manner items required to accommodate new work, including work required for connection to existing structures. Protect existing foundations and structural members.

D. When directed to remove existing walks, curbs, gutters, and paving, the contractor must saw cut concrete and/or asphaltic pavement to provide a straight line at edges of existing pavement that will remain.

E. Debris handling:

1. Remove excess debris as it accumulates, except as otherwise specified. Do not store or permit debris to accumulate on site.

2. Materials requiring removal and demolition to be removed completely from site, unless approved otherwise.

3. If contractor encounters unforeseen items during clearing and demolition work, they must notify the owner prior to removal or demolition.

F. Repair demolition performed in excess of that required, at no cost to owner.

G. The burning of materials onsite is not permitted.

H. Owner may identify specific items in addition to plans for the contractor to salvage and delivered to owner for future use.

I. Contractor must provide sufficient watering to abate dust.

END OF SECTION

SECTION 32 11 23.23 – ATHLETIC FIELD PERMEABLE BASE COURSE AGGREGATE

PART 1 – GENERAL

1.1 CONTRACT DOCUMENTS

A. “Standard specifications” refers to “State of California Department of Transportation standard specifications” latest edition, and hereinafter referred to as “standard specifications”.

1.2 SCOPE OF WORK

A. Provide all labor, materials, equipment and tools necessary for the complete installation of a synthetic turf base system, which shall consist of, but not necessarily be limited to, the following:

1. Base course aggregate
2. Geotextile liner
3. Nailer Board

B. Related sections can include, but may not be limited to:

1. Section 33 40 00 – Site Drainage
2. Section 31 22 00B – Athletic Field Grading
3. Section 32 18 13 – Athletic Field Synthetic Turf

1.3 JOB CONDITIONS

A. Prior to installation of aggregate base the contractor must accept conditions of subgrade and drainage systems.

B. The aggregate base must not be contaminated with other soil. Any contamination of soil or other debris into aggregate will result in material rejection.

C. The Contractor is responsible for maintaining drainage, irrigation, utilities or any other system below the field that is not specifically called out for demolition.

1.4 REFERENCES

A. The Contractor must follow all requirements and recommendations of any Geotechnical Reports issued as part of the project.

1.5 QUALIFICATIONS

A. The Contractor shall have a minimum of five (5) years experience in the installation of synthetic turf aggregate base systems.

B. The Contractor must provide contact information for five (5) similar installations, greater than 50,000 square feet, which were completed within the past five (5) years.

C. The Contractor shall provide an experienced site supervisor and crew. An alternate installation supervisor and crew is to be provided if for any reason the Owner’s Representation is dissatisfied with the installation process.

1.6 SUBMITTALS

A. The Contractor must submit aggregate base materials to owner approved testing laboratory within 15 days from notice to proceed. Test results must be submitted for review within 30 days from notice to proceed. Testing requirements are per this specification section Part 2 and Part 3.

B. The Contractor must submit material data or product cut sheets within 15 days from notice to proceed for the following:

1. Aggregate base quarry data sheets and testing data.

2. Geotextile fabric
3. Nailer Board

1.7 QUALITY ASSURANCE (TESTING AND INSPECTIONS)

A. Compaction testing must be provided by a certified geotechnical inspector.

B. The Contractor must submit for review conformance surveys of both the subgrade and top of aggregate base per athletic field grading specifications.

C. Initial material testing and continued quality control testing must be submitted for review before and during construction per material requirements in this specification section.

1.8 SEQUENCING AND SCHEDULING

A. Prior to construction the Owner must approve any necessary shutdowns or interruptions of service to existing facilities. Only authorized personnel may open, close, engage or disengage any valves of power sources.

PART 2 – MATERIALS

2.1 AGGREGATE BASE

2.2 BASE COURSE PERMEABLE AGGREGATE / DRAIN STONE

B. Drain stone must meet the following criteria:

4. Gradation Requirement Table 1

Drain Base Gradation Requirements	
Sieves	Gradations
2”	
1½”	100
1”	95-100
¾”	75-90
½”	55-75
3/8”	40-70
#4	25-40
#8	15-30
#16	10-25
#30	5-12
#50/60	3-9
#100	2-7
#200	0-3

5. Structural stability requirement
   a) D_{60}/D_{10} must be greater than 5
   b) $D_{30}^2/(D_{10}xD_{60})$ must be greater than 1 and less than 3
   c) ("Dx" is the size of the sieve (in mm) that lets pass x% of the stone. For example D_{60} is the size of the sieve that lets 60% of the stone pass. These sizes, for calculation purposes, may be obtained by interpolation on a semi-log graph of the sieve analysis.)
6. Permeability or Infiltration Rate of drain stone must be greater than 50in/hr when stone is saturated and compacted to 95% proctor.
7. Porosity of drain stone must be greater than 25% when stone is compacted to 95% proctor.
8. Drain stone material must be 100% fully fractured. Rounded stone is not acceptable. Photos of material are to be submitted with testing data.
9. Soft limestone and shale materials are not acceptable.
10. Sulfate soundness must be less than 12% loss.
11. LA abrasion must be less than 40.
12. Sand Equivalent must be greater than 75.
13. The drain stone shall contain no more than 1% free shell.

2.3 NAILER BOARD

A. Nailer board must be plastic composite boards, Woodflex by PSP or approved equal. Nominal dimension 2"x4", minimum actual dimensions must be greater than 1 3/8"x 3 ½".

B. Splitting of 2x6 boards is not accepted.

2.4 GEOTEXTILE FABRIC

A. Geotextile Filter Fabric installed below drain pad shall be Mirafi 140N, or approved equal. Geotextile filter fabric below drain pad must meet drain pad manufacturer's requirements.

2.5 TESTING PROTOCOL FOR AGGREGATE BASE

A. The Contractor must submit results for all tests listed. The Contractor must utilize an owner approved third party testing laboratory to perform all material testing. The testing agent must be qualified to perform all of the following testing protocols:
   1. ASTM C136 or CT 202 – Sieve Analysis of Fine and Coarse Stones
   2. ASTM D854 – Specific Gravity of Soils
   3. ASTM D2216 - Laboratory Determination of Water (Moisture) Content of Soil and Rock
   4. ASTM D2434 - Saturated Hydraulic Conductivity (KSAT) or Constant Head Permeability
   5. CT 301– Resistance (R-Value)
   6. CT 229 – Durability Index
   7. ASTM D2419 or CT 217 – Sand Equivalent
   8. ASTM C88 – Sulfate Soundness of Aggregates

B. The Contractor must submit all test results for review and acceptance a minimum of 45 days prior to shipping and installation. Neither the owner nor the engineer are responsible for delays or costs incurred by shipping or installation of untested or rejected materials.

C. The Contractor must submit proposed aggregate base supplier and source location and certification that the supplier can deliver the total quantity of material needed to complete the project within the constraints of the project schedule.

D. All aggregate base must be sourced from a single supplier and a single location. Use of multiple aggregate base sources is not accepted.

E. During construction the aggregate base must be tested every 500 tons by the approved testing laboratory for quality control or QC. After initial testing and source selection only sieve analysis (gradation testing) and infiltration rate testing is required for quality control (QC) testing.

F. If irregularity of materials are noted during installation the engineer reserves the right to request additional testing of institute material.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Subgrade Preparation

1. All subgrade preparation must be done in accordance with geotechnical report, earthwork specification, athletic field grading specifications and site grading specifications.
2. To avoid material contamination the Contractor must not install aggregate base until all subgrade is graded, irrigation and drainage systems are installed.
3. The Contractor must install geotextile liner per construction documents and per drain pad manufacturer's requirements with a minimum overlap of 1' at all seams.

B. Nailer Board Installation

1. Attach nailer board to concrete curb with 3/8" x 3" concrete expansion bolts spaced at a maximum of 4' O.C.
2. Fasten synthetic turf to nailer board with 1" roofing nails spaced at a maximum of 1' O.C.
3. Set Nailer board height based on specified infill depth. The Contractor is responsible for providing smooth transition grade from turf to concrete turf curb.
4. Nailer board shall be installed with expansion joints per manufacturer requirements.

C. Installing the aggregate base

5. The weight and type of all construction equipment which will be used to install the aggregate base must be submitted to the engineer for review and approval.
6. The aggregate base must be laid without damaging the subgrade and liner. The specified stone or stone supplied must conform to the specifications, and must be stable.
7. In performing this work, the Contractor must avoid damage to any existing structures or features of the playing fields or features under construction, such as drainage and irrigation systems. The Contractor is responsible for repair of any such damage.
8. The aggregate base must be carefully and evenly spread to avoid segregation of materials. Excess water should not be applied when dumping and rough grading.
9. The aggregate base must then be carefully smoothed and uniformly compacted to the appropriate grade by alternately raking, watering, and rolling. All surfaces must then be checked for irregularities due to settling and brought back to a uniform grade. Refer to athletic field grading specifications for grade conformance and tolerance requirements.
10. The aggregate base layer must be a uniform thickness. The stone shall be placed in maximum 4" lifts. The aggregate base must be compacted in both directions and water settled to attain uniform 92-95% compaction. Maintain 8-10% moisture content during installation. Vibratory compacting is not permitted.
11. The finished surface of the aggregate base must comply with grading tolerances required by athletic field grading specifications. The finished surface shall be firm and unyielding. The measure of "firm and unyielding" is as follows: When using reasonable and industry-standard

equipment or light-duty track (<1/2 ton) the finished aggregate base surface will not deflect or displace more than 1/8”.

12. Contractor must provide a survey of the completed aggregate base that verifies the field is within tolerance for grade and planarity per athletic field grading specifications.
13. The synthetic turf contractor must visit the site and inspect the aggregate base for grade and planarity and provide a written acceptance of the surface prior to beginning the installation of the synthetic turf.
14. The synthetic turf manufacturer’s representative must accept the visit and inspect the aggregate base prior to turf installation.

END OF SECTION

SECTION 32 12 00 ASPHALT PAVING

PART 1 - GENERAL

1.1 CONTRACT DOCUMENTS

A. “Standard specifications” refers to “State of California Department of Transportation standard specifications” latest edition, and hereinafter referred to as “standard specifications”.

1.2 SCOPE OF WORK

A. Furnish labor, materials, equipment, facilities, transportation and services to complete asphalt paving and related work as shown in contract documents.

B. Work Included: The general extent of the asphalt paving is shown on the drawings and includes, but is not necessarily limited to, the following:

1. Asphalt Paving (for running track and for site hardscape)

2. Asphalt Overlay

C. Workmanship and material within this section shall conform to the standard specifications, except as modified herein.

1.3 JOB CONDITIONS

A. The pavement installer must review and accept the subgrade conditions and grading prior to installing base course or asphalt.

B. Construct asphalt concrete surface course when temperatures exceed 40 degrees F and when the base is dry.

C. Establish and maintain required grade lines and elevations.

1.4 PROTECTION OF WORK

A. Curbs, walls and other work shall be covered with suitable material and protected from injury by equipment and contact with oil, emulsion or asphalt. Manholes, catch basins and other gratings are shall be covered with suitable material so that no asphalt or emulsion will come in contact with the inside walls or floors of the structures. Damage to such work shall be repaired and/or replaced at the contractor's expense. Manhole rims and catch basin grates shall be adjusted, where necessary, to new finish pavement elevations.

1.5 TESTING AND INSPECTION

A. At owner's discretion, testing and inspection of asphalt pavement mixes and testing of placed stabilizing base course and asphalt pavement will be performed by independent testing laboratory appointed and paid for by owner.

B. If compaction tests indicate that stabilizing base course or asphalt paving do not meet specified requirements, contractor shall remove defective work, replace and retest at contractor's expense.

1.6 GENERAL REQUIREMENTS

A. Paving surfaces shall have positive drainage as indicated in the contract documents. Upon completion of the work, paved areas included in this section shall be subject to a water drainage test. Areas that fail to drain properly as determined by the owner or owners’ representative shall be corrected and repaired at no additional cost to the owner.

B. Asphalt concrete paving shall be free from cracking, pot holes, raveling, slippage, depressions, corrugations or other defects at the date of completion and acceptance of the project.

C. Repairs shall be made within ten (10) days of notification at no cost to the owner.

1.7 SUBMITTALS

A. Contractor to provide copies of material certificates signed by material producer and contractor, certifying that each material item complies with, or exceeds specified requirements.

1.8 REFERENCE

A. American Society for Testing and Materials: ASTM A-136, Sieve Analysis of Fine and Coarse Aggregates.

B. Contractor shall strictly adhere to all requirements of the Geotechnical Report.

1.9 QUALITY ASSURANCE

A. Codes and Standards: Comply with current Standard Specifications for Public Works Construction and with local governing regulations if more stringent than herein specified.

B. Manufacturer's Qualifications: Company with experience in manufacturing asphaltic concrete pavement for a period of five years minimum.

PART 2 – MATERIALS, PRODUCTS AND EQUIPMENT

2.1 MATERIALS

A. General: Use locally available materials, which exhibit a satisfactory record of previous installations.

B. Aggregate Base Course: Asphalt base courses shall be Class 2 aggregate per Caltrans Standard Specifications current addition.

C. Asphalt Aggregate Mixture: Provide plant-mixed, hot laid asphalt aggregate mixture complying with ASTM D3515 for asphalt concrete.

D. Asphalt Binder: Steam-refined paving asphalt conforming to CALTRANS section 92.

E. For track and dzone base course layer shall be 3/4" aggregate; finish course layer shall be 3/8" aggregate.

F. For site hardscape asphalt mix: plant mixed conforming to Caltrans Specification Section 39, Type B,1/2" maximum, medium grading. If elected by contractor site hardscape asphalt mix and section can be installed to match track section and mix.

G. For site hardscape outside of running track install asphalt at no less that 3" total in 2 lifts. Exposed asphalt to be sealed.

H. Soil sterilant shall be "Treflan" pre-emergence herbicide or approved equal.

I. Asphaltic emulsion shall be penetration type.

J. Primer for application on crushed stone base under layers (prime coat) shall be MC-1 or approved equal.

K. Primer for application on asphalt surfaces (tack coat) per CALTRANS 94.

L. If elected by contractor, the site hardscape asphalt mix and section can be installed to match track section and mix. Track mix and section may not be altered from plans and specs.

2.2 EQUIPMENT

A. Paving Equipment:

1. Approved power brooms, aggregate spreaders, bituminous material distributor and hauling vehicles.

2. Furnish equipment in such number and capacities as required to provide coordinated and uniform paving progress.

3. Aggregate spreaders shall be mechanical and either self propelled or attachable to the rear of a dump truck and be capable of spreading aggregate within the specified limits.
4. Bituminous material distributor shall provide controls for regulating and monitoring the spread of material at even temperatures and pressures on variable widths up to 15 feet.

B. Compacting Equipment:

1. Self-propelled vibratory steel drum rollers and pneumatic tired rollers shall be capable of exerting a ground pressure of not less than 80 pounds per square inch of contact area.
2. Manual pushed rollers will not be allowed.
3. Vibrating plate compactors shall be manually guided vibrating plate types.

2.3 SOURCE QUALITY CONTROL

A. Sieve Test: Sub-base and base aggregates in accordance with ASTM C-136 to determine particle size distribution.

B. Aggregate samples shall meet requirements of APWA for base aggregates.

PART 3 – EXECUTION

3.1 ACCEPTABLE APPLICATORS

A. Applicators: Company with experience in applying Asphaltic concrete pavement for a period of three years minimum. Additionally, the applicator shall have experience paving at least five (5) tracks within the past five (5) years, unless general contractor provides experienced personnel (Project Manager and/or Project Superintendent) who meet this requirement.

B. Soil Sterilant: Soil sterilant shall be applied in one (1) application: after base rock and before asphalt is laid. The material shall be uniformly applied according to the manufacturer's recommendations and at the minimum rate of 7.5 lbs. per 1000 sq. ft.

3.2 BASE

A. Base shall be placed and compacted 6 inch maximum lifts in in accordance with the pertinent provisions of Caltrans standard specifications. Lifts shall be compacted to 95% dry proctor.

B. Top of aggregate base rock layer shall receive prime coat conforming to standard specifications.

3.3 SURFACE PREPARATION

A. Remove loose material from compacted base rock surface (sub-base) immediately before applying prime coat.

B. Proof roll prepared sub-base surface to check for unstable areas and areas requiring additional compaction with the owner or owner’s representative present.

C. Notify owner or owner’s representative in writing of unsatisfactory conditions. Do not begin paving work until deficient sub-base areas have been corrected.

D. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete. Distribute at a rate of .05 to .10 gallons per square yard of surface. Exercise care in applying materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged areas. A tack coat shall also be applied to the base course asphalt just prior to placing the top course asphalt.

3.4 LIQUID ASPHALT PRIME COAT

A. After base is ready to receive prime coat, contractor shall make a single, evenly distributed application of liquid asphalt at specified rates. Area shall be left for a period of twenty-four (24) hours to allow liquid asphalt to sufficiently penetrate the surface. Any excess liquid asphalt shall be absorbed with a covering of sand. Sand shall be placed to form an even surface without

humps. Immediately in advance of placing asphalt concrete, additional prime coat shall be applied to areas where prime coat or paint binder has been destroyed.

B. Prior to the laying of the surfacing material, the base shall be thoroughly cleansed of all oil, dirt, loose material and excess sand. Either a power broom or hand brooms may be used.

3.5 PLACING MIX

A. General: Place asphalt concrete mixture on prepared surface, spread and strike off. Spread mixture at a minimum temperature of 275 degrees F for the base course layer and 266 degrees F for the finish course layer. Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness. Asphalt placement shall be at the thickness shown on the plans.

B. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course.

C. Equipment: Spreading and rolling equipment shall be in accordance with the standard specifications.

D. Compaction shall be in accordance with the standard specifications.

E. Asphalt-leveling course shall cure a minimum of thirty days (30) prior to installation of the synthetic track surface.

3.6 ROLLING

A. General: Begin rolling when mixture will bear roller weight without excessive displacement.

B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

3.7 FIELD QUALITY ASSURANCE

A. Asphalt surface shall meet the requirements of the NFHS and CIF.

B. Test in-place asphalt concrete courses for compliance with requirements for thickness, planarity and surface smoothness. Repair or remove and replace unacceptable paving as directed by owner or owner's representative.

C. Thickness: Tolerances for thickness shall be one eight (1/8) inch, plus or minus for running track and DZone (1/2" for site hardscape).

D. Planarity: Asphalt substrate shall not vary from designed cross-slopes by more than +/- 0.1%. Finished asphalt shall not vary, plus or minus more than 1/8" under a 10-foot straight edge in any direction for running track and DZone (1/2" for site hardscape).

E. In no case will polyurethane filler that is used to correct birdbaths be greater than 1/4" thick. (Running Track only)

F. Corrective Measures: It shall be general contractor's responsibility to determine if the planarity's, cross slopes, and general specifications have been met. If conditions have been met, general

contractor shall notify owner's representative in writing of the acceptance of asphalt paving by track-surfacing contractor.

G. The Contractor shall water flood the surface of the asphalt in the presence of the owner or owner's representative. If after 20 minutes, "birdbaths" are evident in a depth more than 1/4", the track-surfacing contractor and the owner or owner's representative will determine the best method of correction at no cost to owner. All asphalt birdbaths between 1/8" and 1/4" in depth shall be filled by the synthetic surfacing contractor at the expense of the asphalt contractor. All asphalt birdbaths less than 1/8" in depth can be filled by the synthetic surfacing contractor at his expense. (for running track only)

H. The sports surfacing contractor shall approve and accept the substrate prior to commencing preparation and installation of new track surfacing components.

I. Regardless of any stated tolerances above all hardscape must meet ADA slope and smoothness requirements.

END OF SECTION

SECTION 32 18 13 SYNTHETIC TURF

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The Contractor must provide all labor, materials, equipment, tools and taxes necessary for the complete installation of a new synthetic turf designed to provide the look, feel, safety, and performance of optimally maintained natural grass. The synthetic turf system(s) must consist of, but not necessarily be limited to, the following:

1. Synthetic Turf: Low-friction, polyethylene-blended fibers, tufted to a permeable or perforated backing.
2. A resilient infill system.
3. Field striping and markings.
4. Field logos.
5. Complete installation of the synthetic turf system.
6. Complete installation of shock/drain pad system
7. Warranty
8. Testing
9. Maintenance equipment as outlined in this specification.

B. The synthetic turf and its components must meet all NFHS and CIF requirements including markings and layouts.

C. The Turf Installer if other than the primary Contractor must coordinate with the Owner's Representative and all other Contractors per specifications and as necessary to successfully install synthetic turf.

1.2 JOB CONDITIONS

A. Prior to commencing work the contractor shall verify and satisfy themselves that the synthetic turf system including turf, infill, pad, fabric and base shall be compatible with one another and the system shall meet all requirements, including performance and safety, as outlined in this specification. If any submitted products are not compatible than the contractor shall submit written notification prior to submitting their bid.

B. Within 10 days of notice to proceed the Contractor shall have completed the following:

a. Pothole the field to verify; location, depth and condition of the perimeter subdrain and the condition of the trench drain rock.

b. The Contractor shall be responsible to obtain 3rd party permeability testing of existing permeable base as indicated in section 1.3.

C. The Contractor shall provide an initial flush and cleaning of all drain lines within the limits of work prior to installation.

D. The Turf Installer must review and accept all synthetic turf base conditions, drainage repairs and grading prior to installation. Proceeding with turf installation by the Turf Install shall be considered a acceptance of the synthetic turf base, nailer and site conditions.

E. The Turf Installer is responsible for maintaining required grades in all areas to receive the synthetic turf.

F. The field aggregate base must not be contaminated with other soil or debris. Any stone contaminated by other soil will be removed and replaced at the Contractor's expense.

G. All products and materials must be approved for use in the State of California.

H. The Contractor must protect the shock/drain pad as needed during installation of the synthetic turf.

I. Verification of Quantities:

1. Quantities shown on plans, sections and details are for Contractor's convenience only and all synthetic turf installation must be done in conformance with plans and in accordance with specifications.

2. Discrepancies between such mentioned quantities and/or sections, and requirements of plans and/or specifications, will not entitle Contractor to additional enumeration.

1.3 Testing

A. All testing must be performed by a 3rd party ISO 17025 certified laboratory.

B. Testing of existing synthetic turf base system shall include:

1. Contractor shall be responsible for (6) tests using ASTM F2898-11 - Standard Test Method Permeability of Synthetic Turf Sports Field Base Stone Non-confined Area Flood Test Method. Administer (2) tests 50 feet from the curb edge, approximately at the midfield line. lines. Administer (4) tests directly over the subdrain approximately at the football 20 yard lines on each side.

2. The Contractor must provide Head Injury Criterion (HIC) testing per ASTM F1292 and Gmax testing per ASTM F1936 upon completion.

3. The Contractor must provide the necessary testing data to the Owner that the finished field meets or exceeds the required shock attenuation. G-max must not be less than 90 or more than 120 at time of project acceptance. The G-max range must be between 90 and 165 for the life of the warranty.

1.4 DELIVERY, STORAGE, AND HANDLING

A. The Contractor must coordinate the delivery and storage of materials with the Owner prior to shipping.

B. Materials must be protected at the job site to insure that they do not become contaminated by other materials, vandalized or stolen.

C. Materials must not be placed in such a way to obstruct any activities adjacent to the field or any paths of travel adjacent to the installation site.

1.5 SUBMITTALS

A. All material and equipment submittals must comply with NFHS and CIF regulations.

B. Re-submittals must reference the previous submittal transmittal number and must include responses to comments on the previous submittals; responses to comments must be summarized as well as identifying where in the re-submittal they are addressed.

C. The Contractor must submit the following information as part of bid.

1. A description of key installation methods, such as method of connecting the turf panels.

2. Synthetic Turf Warranty (Copy).

3. Manufacturer maintenance program details if applicable.

4. Material data or product cut sheet(s) must be submitted with the following information:

a) Product name and description

b) Pile Height ASTM D5823-05A

c) Face Weight ASTM D5848-07

d) Total Weight ASTM D5848-07

e) Fiber Denier ASTM D1907-07
f) Grab Tear Strength ASTM D5034-09
g) Tuft Bind ASTM D1335-05
h) Machine Gauge ASTM D5793-05
i) Infiltration Rate BS7044 Method 4
j) Flammability ASTM D2859-06
k) Fiber manufacturer and product name
l) Primary Backing system type and weight
m) Secondary backing system type and weight
n) Pile height above infill
o) Color uniformity
p) UV inhibiting protection
q) Type of infill and material properties
r) Results of Lisport Test

5. Material data sheet for shock/drain pad system.
6. Installation requirements and description of methods for shock/drain pad installation.
7. Drain Pad Warranty (Copy).

D. The Contractor must submit the following within 15 days of the Notice to Proceed date.

1. A 7½" x 12" minimum sample of the exact synthetic turf and infill system that is specified for this project.
2. Turf samples/swatches (no-infill) for all colors required for the synthetic turf, this includes striping and logos. The swatches must be a minimum of 25 linear feet of fiber.
3. Operation and Maintenance Manuals. Two (2) paper copies and an electronic copy of the initial Operation and Maintenance manual are to be submitted for approval. The manuals must be submitted in 3 ring binders with the Project Name, Vendor information, name, address, phone number and contact name, local representative contact information. The O/M must have an index with tabbed sections.
4. Complete shop drawings and color samples for Owner review. Shop drawings must include:
    a. To scale, color drawings of all text, logos, lines and markings.
    b. Dimensions of all turf extents, text, logos, lines and markings.
    c. Enlarged details of logos, text, line intersections and other markings.
    d. Turf panel layout plan.

PART 2 – MATERIALS

2.1 SYNTHETIC TURF PRODUCTS

A. The basis of design is ActGlobal XtremeTurf Premier Blend 2-3/8" dual fiber
B. Comparable products include:
    a. Astroturf Rhino Blend, 2-1/4" dual fiber
    b. FieldTurf Vertex Prime, 2-1/4" dual fiber

2.2 The synthetic turf system including those in the basis of design and coparable alternatives must meet the following requirements:

1. Synthetic turf must be considered a premium dual fiber monofilament and slit film product.
2. Synthetic turf system must be designed to maintain integrity and visual aesthetic appeal for high, multisport use for a minimum duration of 8 years.
3. The polyethylene turf fibers must be manufactured using a C6 or C8 resin.
4. The synthetic turf pile height must be 2-1/4” unless specifically noted otherwise in base bid products.
5. The denier of the synthetic turf fiber must not be less than 10,000 per ASTM D1577.
6. G-max must not be less than 90 or more than 120 at time of project acceptance. The G-max range must be between 90 and 165 for the life of the warranty
7. At the time of the bid or at any time prior or during installation all products used must be free of patents rights infringements or trademark copyright infringements or intellectual property of others.

2.3 SYNTHETIC TURF INFILL

A. The infill for the synthetic turf must consist of SBR and sand. The minimum infill weight must be 6.0 lbs/sf.

B. SBR shall be a minimum of 50% cryogenic SBR used in accordance with turf manufacture requirements.

C. The SBR infill must be minimum free of all metal, tire chords and other deleterious material. The rubber must be certified to have less than 50ppm of lead.

D. Infill mix ration must be a minimum of 30% sand with remaining percentage SBR unless specifically noted otherwise. The final sand/SBR ratio shall meet the stability and Gmax requirements outlined in this specification and including he shock/drain pad and all finished comments.

E. The infill materials must be mixed at a ratio and installed so that the field provides a firm and unyielding surface underfoot prior to substantial completion. If the surface is not deemed firm and unyielding by the Owner than the field must be remediated at the Contractors expense until the Owner is satisfied.

F. All granulated rubber must be washed after processing and be certified to be 100% metal and fiber free; any other rubber will not be accepted. The rubber infill must be sized between the 10 - 20 sieve openings, unless otherwise specified by the turf Contractor as part of their proprietary system.

G. Sand must be dust free, rounded silica sand; any other sand will not be accepted.

H. The total depth of the initial infill must be no less than 3/4” below the top of the highest turf fiber.

I. Field must be stable providing a wrinkle free finished surface at completion.

2.4 LINES/MARKINGS

A. The Contractor must submit complete shop drawings and color samples for Owner review.

B. Letters, numbers, logos, arrows, hash marks or other markings other than lines must be inlaid.

C. Refer to plans for approximate size and color of field markings. The Owner reserves the right dictate changes to the size, location, quantity, font and color of all text, logos or markings during the submittal review process.

D. The Contractor must not purchase turf prior to full written acceptance of physical samples and shop drawings from the Owner.

2.5 SEAMS

A. All seams between turf panels must be sewn and inlays may be glued.

B. Sewing method shall be submitted to the Owner for review and approval.

C. All seaming materials must be premium quality and compatible with the synthetic turf product.

D. The Contractor shall protect the shock/drain pad where seams and inlays are glued; this may include plastic or other sheeting below all glued seams to prevent turf from binding to drain pad.

2.6 SHOCK/DRAIN PAD

A. The bases of design is Schmitz Foam Products -ProPlay Sport20 (D) Ecosport 20 millimeter shock/drain pad.

B. Comparable Products include:

a. Brock PowerBase YSR.

PART 3 – EXECUTION

3.1 INSTALLATION

A. The Contractor shall remove the existing synthetic turf and infill and legally dispose of or recycle.

B. The Contractor shall remove base material as necessary above the subdrain trench to expose clean base rock. If no clean drain rock is evident the Contractor shall remove base material to the spring-line of the subdrain pipe. Contractor shall backfill trench with 3/4” crushed stone drain rock flush to the top of base, compacting in 6” maximum lifts.

C. The Contractor shall replace or shim the existing turf nailer board as necessary to provide the correct depth for the specified synthetic turf infill to be flush with the adjacent finished surface. The header/shim must be a solid unyielding plastic nailer for mechanically fastening the turf.

D. The turf manufacturer and installer must accept the existing conditions prior to the installation of the synthetic turf system. The turf installer is encouraged to perform a string line test to verify for themselves that the base surface meets their expectations and planarity does vary more than 1/8” over 10’.

E. The Turf Installer must maintain the stability, planarity, and grades of the (drain mat and aggregate base) during the entire synthetic turf installation process. The Turf Installer is responsible for the repair of the base surface should it become disturbed during the installation of the synthetic turf.

F. The Turf Installer shall not begin installing turf until all the turf material has been delivered and accounted for onsite.

G. The Turf Installer must strictly adhere to the installation procedures outlined under this section. Any variance from these requirements must be accepted in writing, by the manufacturer’s onsite representative, and submitted to the Engineer and Owner’s Representative, verifying that the changes do not in any way affect the warranty.

H. The carpet rolls are to be installed directly over the drain pad.

I. The synthetic turf must be delivered in 15' wide rolls with all white lines, soccer side lines and soccer end lines tufted into each roll. The rolls must be of sufficient length to extend the across the playing field limits. Head seams, between the sideline rolls, will not be acceptable.

J. The full width rolls must be laid out across the field. Utilizing standard attachment procedures each roll must be attached to the next in the manner as recommended by the manufacturer. When all of the rolls of the playing surface have been installed, the sideline areas must be installed at right angles to the playing field turf.

K. The turf must be securely attached to the nailer board. Synthetic turf must be mechanically fastened to the nailer board at a maximum spacing of 6 inches.

L. The infill must be installed according to the manufacturer's recommendations. When the infill is placed to within 3/4" of the top of the synthetic grass fibers, the Turf Installer must notify the Owner's Representative for inspection. The balance of the infill must be placed in the presence of the Owner's Representative to a height or level determined by the Owner.

M. The planarity of the infill must not vary more than 5mm when measured using a 3m straightedge. If the infill settles to a depth exceeding 10% of initial install within 2 years after completion the Contractor must install additional infill to a depth consistent with that during final completion.

N. The Contractor must water settle the infill after installation.

O. The Contractor must thoroughly clean the site after completion of the installation. This includes loose turf fiber, turf fragments, tools, debris, fasteners, glue and other foreign materials.

P. It is the Contractor's responsibility to install turf and infill so that it provides a smooth transition between the field and adjacent surface. Lips, dips, gaps, or elevation differentials are not accepted at any field edge.

Q. After completion of the synthetic turf installation the Contractor must drag the field with a magnet specifically designed to remove metal objects from synthetic turf fields. This procedure must be performed a minimum of two times.

R. After completion of the synthetic turf installation the Contractor shall provide a final flush and cleaning of all drain lines within the limits of work.

S. An alternate installation supervisor and crew is to be provided if for any reason the Owner is dissatisfied with the installation process.

3.2 MAINTENANCE, TESTING AND WARRANTY

A. Warranty

1. The Contractor must provide the following warranty:

a) The turf manufacturer must provide a warranty to the Owner that covers defects in materials and workmanship of the turf for a minimum period of eight years from the date of final completion. The turf manufacturer must verify that their onsite representative has inspected the installation and that the work conforms to the manufacturer's requirements.

b) The manufacturer's warranty must cover damage caused by general wear and damage caused from UV degradation.

c) The warranty must not have any qualifications or exclusions limiting total time of use, sport type specific use, athletic level (professional, recreational) use, or any other intended purpose limits.

d) The warranty may only specifically exclude vandalism, and acts of God beyond the control of the Owner or the Manufacturer which occur after final acceptance of installation and the start of the warranty period.

e) The warranty must cover defects in the installation workmanship, including the integrity of seams, straightness of lines and symmetrical layout of letter, numbers and logos.

f) The warranty must include remediation or replacement of the synthetic turf in its entirety if the HIC value exceeds 1000 or the Gmax exceeds 165 during the duration of the warranty.

g) All turf warranties must be non-prorated, must include all necessary materials, labor, transportation costs, etc. to complete said repairs.

h) The warranty must be prepaid and insured by an A rated, third party insurer.

B. Repairs

1. In circumstances where field repairs are needed including failure to meet HIC tolerance, seam repair or infill repairs the Contractor must have qualified personnel and materials onsite and ready to make repairs within 24 hours of notification by the Owner during the regularly scheduled football season.
2. The Contractor must be onsite within 5 business days when outside of the regularly scheduled football season.

C. Extra Materials

1. Prior to final completion the Contractor must provide the following materials and equipment to the Owner. Copies of written documentation of delivery must be provided to the Owner.
2. Provide a separate piece of turf for each color used for the field, each piece of turf must be at least 15’ x 15’.
3. Provide a minimum of (5) heavy duty 32 gallon containers and lids which are filled with the crumb rubber and sand mixed in accordance with the ratio used for this project.
4. Provide a minimum of 5 gallons of the glue which was used for inlays.

END OF SECTION

SECTION 31 18 23.60 SYNTHETIC TRACK LINE MARKINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish labor, materials, apparatus, tools, equipment, transportation, temporary construction and special occasional services as required to install track and field line markings.

B. Related sections can include, but may not be limited to:

1. Section 32 18 23 – Athletic Track Synthetic Surfacing

1.2 CODES AND STANDARD

A. Codes and standards shall comply with current guidelines set forth by the **NFHS and CIF**.

1.3 SUBMITTALS

A. Following information shall be submitted prior to installation of specified work:

2. A list depicting colors of line markings and labels of events to be included for approval prior to installation. The list will be based on the approved color selected at the time of bid opening. Symbols and markings shall be clearly identified, illustrated, and their colors stated. Recommended **NFHS** colors shall be used.

3. Installation process and requirements for line markings and any conditions that may limit installation or affect quality of installation.

4. Material safety data sheets on products to be used.

B. Following information shall be submitted at completion of specified work:

1. Upon completion of line markings, contractor shall submit to Owner a five (5) diagram/drawing depicting and identifying line markings including: 1) a key to the color codes, 2) a chart for symbols, and 3) labels for all events.

2. Full track certification measurements, including all event and all lane lengths as installed and measured in the field. This certification must be signed by line marking installer.

1.4 QUALITY ASSURANCE

A. Contractor shall repaint track and field line markings once during five (5) year track and field synthetic surface warranty period. Repainting will occur at Owner's request and be completed at no charge to Owner.

PART 2 – PRODUCTS

2.1 PAINT

A. Paint used on Track & Field Synthetic Surfaces must be polyurethane based.

B. Temporary reference markings must be removed at completion of project.

C. Contractor is responsible for purchasing paints and line markings.

D. **All products and materials must be approved for use in the state of California.**

PART 3 – EXECUTION

3.1 SUMMARY

A. General line markings of the 400-meter track and field events shall be spray applied, using only paint, primers and finishes supplied and guaranteed by approved manufacturers and/or suppliers.

B. Markings must be in accordance with rules of **NFHS and CIF** and must be certified for accuracy. **NFHS** color code shall be followed, unless otherwise modified herein.

C. No line markings shall be installed if weather conditions are not proper; i.e. too windy, wet, cold or hot.

3.2 LINE MARKINGS

A. Paint

1. All line markings to receive a minimum of two (2) coats of paint

B. Measure Line (Theoretical – not painted)

1. Contractor to verify if a regulation curb is utilized prior to providing shop drawing.
2. Distance to right hand edge of the inside lane line of Lane 1 to be 30 cm or 20 cm from the measure line, depending on use of the regulation curb.

C. Line Precedence

1. Lane lines to take precedence over other markings.
   a) Numbers and letters to be broken at all lane line intersections.
2. Waterfall starting lines take precedence over straight starting lines.
   a) Straight starting lines to taper at waterfall starting lines – maintain a ½" gap.

D. Chute Extensions

1. Chute extension lines to be solid not dashed when outside the track oval lane lines.
2. Chute extension lines to be dashed when within the track oval lane lines.

E. 100 Meters

1. Two directions home straightaway.
2. Event label is 100, is 4" high, is located in the outside lane and is above the starting line.
3. Color of starting line is white.
4. Chute extension lines to be solid lines broken at each oval curve line (4” break)

F. 100 Meter Hurdles

1. Two directions home straightaway.
2. Event label is 100, is 4" high, located in the outside lane, and is above the starting line.
3. Color of the starting line is white and the hurdle tic marks are yellow.
4. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running. Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.
5. Chute extension lines to be solid lines broken at each oval curve line (4” break)

G. 110 Meter Hurdles

1. Two directions home straightaway.
2. Event label is 110, is 4" high, is located in the outside lane, and is above the starting line.
3. Color of the starting line is white and the hurdle tic marks are blue.
4. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running. Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.
5. Chute extension lines to be solid lines broken at each oval curve line (4” break)

H. 200 Meters

1. All in lanes, both curves (Reverse).

2. Event label is 200, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is white. Color of reverse starting line is black.

I. 300 Meter Hurdles

1. All in lanes.
2. Event label is 300, is 4" high, is located in lane 2, and is above the starting line.
3. The starting line is white in color and located on the track oval. The hurdle tic marks are red.
4. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running. Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.

J. 400 Meters

1. All in lanes.
2. Event label is 400, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is white.

K. 800 Meters

1. Waterfall start and 1 turn stagger.
2. Event label is 800 M, is 4" high, the 1 turn stagger starting line is located in lane 2, the waterfall starting line is located in the outside lane, and the labels are above the starting line.
3. Color of the 1 turn stagger starting line is white with a green insert.
4. The color of the waterfall starting line is green.

L. 1600 Meters

1. Waterfall start.
2. Event label is 1600, is 4" high, is located in the outside lane, and is above the starting line.
3. Color of the starting line is white.

M. 3200 Meters

1. Waterfall start.
2. Event label is 3200, is 4" high, is located in the outside lane, and is above the starting line.
3. Color of the starting line is white.

N. 400 Meter Relay

1. All in lanes.
2. Event label is 400 M, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is white, same starting line as the staggered starting line for the 400 meters.
4. The relay exchange zone markers are yellow and the acceleration zone marker is yellow.
   a) Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone.
   b) Acceleration zone mark is 6" wide by 6" high triangle; one triangle per lane, 10 meters before the exchange zone marker, and the triangle is included in the 10-meter acceleration zone.

O. 800 Meter Relay

1. All in lanes.

2. Event label is 800R, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is black.
4. The relay exchange zone markers are white and the acceleration zone marker is white.
    a) Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone.
    b) Acceleration zone mark is 6" wide by 6" high triangle; one triangle per lane, 10 meters before the exchange zone marker, and the triangle is included in the 10-meter acceleration zone.

P. 1600 Meter Relay
1. Three turn stagger.
2. Event label is 1600R, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is white.
4. The relay exchange zone markers are blue.
    a) Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone.

Q. 3200 Meter Relay
1. Three turn stagger.
2. Event label is 3200R, is 4" high, is located in lane 2, and is above the starting line.
3. Color of the starting line is white.
4. The relay exchange zone markers are green.
    a) Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone.

R. Finish Lines
1. Located at the southwest, northwest and northeast points of curvature (PC)
2. 2" wide, and white in color
3. The intersection of the finish line with the lane lines shall be alternating: inside of lane 1 - 2" x 2" black square, inside of lane 2 - a black line-white line-black line (total size is 2" x 2" and the black lines are parallel to the lane lines), inside of lane 3 - 2" x 2" black square, etc.
4. No lean lines are to be provided

S. 1st Turn Break line
1. 2" wide, white when it is also a finish line, otherwise it is green.

T. Box Alleys
1. Provide 1 turn box alley starts for the following events:
2. 800M
3. 1600M
4. 3200M
5. Box 1 to be lanes 1-4
6. Box 2 to be lanes 5-8

U. Interval Marks

1. Provide a 2” wide white line on the inside of the track oval extending from the inside edge of the inside Lane 1 line approximately 4” long.
2. These lines are to be at 50 meter intervals starting at the common finish line and running the entire length of the track oval.

V. Long/Triple Jump

1. Runway lines
   b) 2" wide lines
   c) White in color
   d) 48" wide runways (inside edge to inside edge of line).
2. Distance marks
   a) Contractor to confirm distance mark configuration prior to construction.
   b) Provide 1.5” long by 1” wide white lines outside the runway on the right hand (direction of running) side every foot beginning at 20 feet from the long jump foul line and extending the length of the runway or 150’ whichever is shorter.
   c) For the lines in item 4, every 5 and 10 foot line to be 3” long by 1” wide.
   d) For the lines in item 4, every 10 foot line to be labeled below the line facing the athlete.
3. **Polyurethane plugs for take off boards**
   a) **4” nearest the sand pit to be black.**
   b) **Remaining 8” to be white.**
4. **Painted take off locations**
   a) **Per NFHS requirements for both boys and girls locations**

W. Pole Vault

1. Runway lines
   a) 2" wide lines
   b) 48" wide runways (inside edge to inside edge of line)
   c) White in color
2. Zero Line
   a) Provide 1/2” wide white line at back of each box extending 15’ in each direction
3. Distance Marks
   a) Contractor to confirm distance mark configuration prior to construction.
   b) Provide 1.5” long by 1” wide white lines outside the runway on the right hand side (direction of running) every foot beginning at 15 feet from the plant box and extending the length of the runway or 150’ whichever is shorter.
   c) Every 5 and 10 foot line to be 3” long by 1” wide.
   d) Every 10 foot line to be labeled below the line facing the athlete.

X. Lane numbers

1. The numbers are a script style or block style, 24" wide by 24" high, and the numbers will not have a color shadow.
2. The color of the numbers will be white. The contractor is to confirm lane number locations prior to construction.

b) There are 5 sets of numbers: There are 2 sets of numbers 5 feet before the 110M starting line and outside the track oval lane lines.

c) There is 1 set of numbers 1 foot after the common finish line, facing to the outside of the track oval.

d) There is 1 set of numbers staggered in the first turn, above the 400M staggers.

e) There is 1 set of numbers staggered at the 200M, above the starting line.

f) Lane numbers are 0-9. The lane inside the temporary track is number 0.

g) All line markings must be reviewed and verified with the Owner's representative prior to installation.

END OF SECTION

SECTION 32 18 23 SYNTHETIC TRACK SURFACING

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The Contractor must provide all labor, materials, equipment, tools and taxes necessary for the complete installation of synthetic track surfacing as indicated in these specifications. The synthetic track surfacing system must consist of, but not necessarily be limited to, the following:

1. Synthetic Surfacing Full Section
2. Synthetic Surfacing Overlay
3. Synthetic Surfacing Seal and Respray
4. Cleaning or other necessary preparation of existing surfaces

B. The track synthetic surfacing must meet all requirements of NFHS and CIF.

C. The Synthetic Surfacing Installer if other than the primary contractor must coordinate with the Owner's Representative and all other contractors per specifications as necessary to successfully install synthetic track surfacing.

1.2 JOB CONDITIONS

A. The Synthetic Surfacing Installer must review and accept asphalt paving prior to installation.

B. The Synthetic Surfacing Installer must protect existing conditions as needed during installation of synthetic track surfacing.

C. All products and materials must be approved for use in the state of California.

D. Verification of Quantities:

1. Quantities shown on plans, sections and details are for contractor's convenience only and all synthetic track surfacing installation must be done in conformance with plans and in accordance with specifications.

1. Discrepancies between such mentioned quantities and/or sections, and requirements of plans and/or specifications, will not entitle contractor to additional enumeration.

1.3 DELIVERY, STORAGE, AND HANDLING

A. The contractor must coordinate the delivery and storage of materials with the Owner prior to shipping.

B. Materials must be protected at the job site to insure that they do not become contaminated by other materials, vandalized or stolen.

C. Materials must not be placed in such a way to obstruct any activities adjacent to the field or any paths of travel adjacent to the installation site.

1.4 SUBMITTALS

A. All material and equipment submittals must comply with NFHS and CIF

B. Re-submittals must reference the previous submittal transmittal number and must include responses to comments on the previous submittals; responses to comments must be summarized as well as identifying where in the re-submittal they are addressed.

A. The Contractor must submit the following information as part of bid.

1. Procedures for cleaning the track.
2. Standard printed specifications for the synthetic surfacing system that is being installed.

3. Standard printed specifications and applications for recommended sub base primers, crack filler, patching and leveling materials acceptable for use with synthetic track surfacing.
4. A description of key installation methods.
5. A list of temperature, climatic or other site conditions that might affect quality of installation.
6. Synthetic Track Surfacing Warranty (copy).
7. Material data or product cut sheets for all products required.

B. The contractor must submit within 15 days of the Notice to Proceed date.

1. A 6”x6” minimum sample of the exact synthetic track surfacing system that is specified for this project.
2. Material Safety data sheets on all individual components of the product being installed.
3. Operation and Maintenance Manuals. Two (2) paper copies and an electronic CD of the initial Operation and Maintenance manual are to be submitted for approval. The manuals must be submitted in 3 ring binders with the Project Name, Vendor information, name, address, phone number and contact name, local representative contact information. The O/M must have an index with tabbed sections.

1.5 QUALITY ASSURANCE

A. Installed synthetic surfacing system must be guaranteed to meet the following requirements:

1. The synthetic surfacing must be manufactured and applied so that it will perform in accordance with these specification and all manufactures specifications.
2. The synthetic surfacing must hold fast and adhere to the primer, asphalt, concrete, edging, filler, patches, existing surfacing or overlay materials.
3. The synthetic surfacing must be ultra-violet resistant and must not bubble, blister, fade, crack, or wear excessively during the guarantee period.

PART 2 – PRODUCTS

2.1 SYNTHETIC SURFACE BASE BID PRODUCTS

A. Basis of design is Beynon BSS 2000RE - 2mm seal coat and 5mm wearing layer with embedded EDPM

B. Comparable alternatives include:

1. Hellas EPIQ x1000 - 2mm seal coat and 5mm wearing layer with embedded EDPM 2mm seal coat and 5mm wearing layer with embedded EDPM
2. Advanced Polymer Technology – APT Rekortan 2mm seal coat and 5mm wearing layer with embedded EDPM

2.2 The synthetic surfacing system must meet the following requirements.

A. The track overlay must be a two-coat system with a minimum 2-millimeter leveling/seal layer and a minimum 5-millimeter top coat with embedded EDPM.

B. All visible components of system must be red in color. Physical sample of exact color is required for Owner approval.

C. Synthetic surfacing systems must be installed per manufactures requirements and recommendations. If discrepancies exist between construction documents, these specification, existing condition and manufacturer’s requirements than the Synthetic Surface Installer must notify engineer and Owner prior to bidding and installation.

D. Manufacturer approved primers must be used in all applicable installations.

PART 3 – EXECUTION

3.1 EXAMINATION

A. The Synthetic Surface Installer must verify asphalt pavement for dimensional stability, strength, and surface preparation and notify Owner of any discrepancies.

B. The entire track surface must be clean and free of all dire, oil, grease or any other foreign matter. The Synthetic Surface Installer must thoroughly clean and / or pressure wash all areas of the track surface as necessary to ensure adhesion of the surfacing material.

C. Minimum curing time for base repairs prior to beginning of surfacing is 14 days for new asphalt paving and 28 days for new concrete. No concrete curing compounds are accepted.

D. Commencement of work will be construed as complete acceptance of existing conditions.

E. The Synthetic Surfacing Installer is fully responsible for adhesion of the surfacing materials to the existing surfaces.

3.2 INSTALLATION

A. The Synthetic Surfacing Installer must maintain the stability, planarity, and grades of the asphalt pavement and surrounding existing surfaces. The Synthetic Track Surfacing Installer is responsible for the repair of existing surfaces if they are damaged due to actions of the Installer.

B. The Synthetic Surfacing Installer must strictly adhere to the installation requirements and recommendations of the manufacture and these specifications.

C. A technical representative for the polyurethane product manufacture must be available to provide onsite technical services during the installation of the track surface if requested by the Owner.

D. An alternate installation supervisor and crew is to be provided if for any reason the Owner is dissatisfied with the installation process.

E. If in the opinion of either the Owner or the Synthetic Surface Installer anticipated weather conditions will have an adverse effect on track surface than installation must be delayed until work can proceed unhindered.

F. Installation of synthetic track surfacing must be scheduled so that adjacent construction operations which generate dust, airborne abrasives, or any other byproduct that will have an adverse effect on synthetic surface installation are not performed concurrently with the installation of the synthetic surfacing system.

3.3 TESTING

A. Prior to, during or after installation the Owner may request that the Synthetic Surfacing Installer have product quality testing performed by a third party. If products meet specifications than testing expenses will be paid by Owner. If products do not meet specifications than the Synthetic Surfacing contractor is responsible for testing expenses and must replace nonconforming materials at no addition cost to Owner.

3.4 WARRANTY AND INSPECTION

A. The Synthetic Track Surfacing Installer must provide the following Warranty

1. The warranty must cover all defects in workmanship, labor and materials under normal use for a period of (5 years).

2. The warranty must not have any qualifications or exclusions limiting total time of use, athletic level (professional, recreational) use, or any other intended purpose limits.

3. The warranty may only specifically exclude normal wear and tear, abuse, vandalism, and acts of God beyond the control of the Owner or the Manufacturer which occur after final acceptance of installation and the start of the warranty period.

4. All turf warranties must be non-prorated, must include all necessary materials, labor, transportation costs, etc. to complete said repairs.

B. The Synthetic Track Surfacing Installer must provide the following annual inspections

1. As requested by the Owner, the Synthetic Track Surfacing Installer must, in the presence of the owner, inspect the synthetic surfacing once a year until the end of the warranty period, or at any time requested by the owner. Any defects in workmanship or materials (at no fault of the owner) must be repaired at the expense of the Synthetic Surfacing Contractor to the satisfaction of the owner.

END OF SECTION

SECTION 32 33 00 – SITE FURNISHINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish labor, materials, apparatus, tools, equipment, transportation, temporary construction and special or occasional services as required to install all sports equipment.

B. Unless specifically stated otherwise the Contractor is responsible for the purchase and installation of all site furnishings.

1.2 CODES AND STANDARDS

A. Codes and standards follow the current guidelines set forth by

1. NFHS National Federation of State High School Association and CIF California Interscholastic Federation.

1.3 SUBMITTALS

A. The following information shall be submitted prior to installation of specified work.

1. Manufacturer published specifications, diagrams, drawings and cut sheets depicting the installation instructions, directions and dimensions for all specified sports equipment.

2. Material safety data sheets on all products, as necessary.

3. The Contractor shall provide as required shop drawings and complete footing design. Footing drawings and sizing calculations must be signed and sealed by a Registered Professional Engineer.

1.4 QUALITY ASSURANCE

A. The Contactor must provide and install all materials as required by these specifications and shown on the project drawings.

B. The Contractor must provide equipment from vendors or manufacturers that have been pre-approved or have been identified in writing as approved equals. The Owner is responsible for the determination of what products are considered equal.

C. The Contractor shall provide a formal written request for substitution for any equipment, product or material that is different or in substitution of the specified product and manufacturer. It shall be the responsibility of the Contractor to prove that the requested substitution is an equal to the specified material. All substitutions must be given written approval by the owner prior to delivery or installation.

PART 2 – PRODUCTS

2.1 SPORTS MATERIALS

A. Long / triple jump pit sand requirements include:

1. All sand for the long and triple jump sand pits shall be clean, washed, white sand, produced from 98% pure silica and which is angular in shape. Sand must be washed and sized following United States Golf Association (USGA) guidelines for bunker sand.

2. Sand shall be free of trash, organic matter, and rock.

3. Particle size requirements

U.S. Standard Sieve Mesh	% Retained on Sieve
18	<7%
35-60	60% Minimum
100	<20%
14-270	<5%
Silt	<5%
Clay	<3%

2.2 IN-GROUND SPORTS EQUIPMENT

A. The Contractor is responsible to provide and install all permanent and loose equipment as specified and shown on the project drawings.

B. All equipment must comply with NFHS and CIF requirements.

C. The following sports equipment shall be provided an installed by the Contractor:

1. Sportsfield Specialties football goalpost access box (GP4570)

2. Sportsfield Specialties combox

a) Electrical Junction Box in Concrete Sportsfield Specialties (3312)

b) Electrical Junction Box in Synthetic Turf Sportsfield Specialties (3500)

c) Electrical Junction Box in Synthetic Track Sportsfield Specialties (3000)

i. Surfacing contractor must install synthetic track surfacing over combox cover per manufacturer's requirements.

d) Quick Coupler Box in Synthetic Turf Sportsfield Specialties (TCITQCV)

2.3 DRINKING FOUNTAINS

A. The Contractor is responsible to provide and install ADA compliant drinking fountain as specified and shown on the project drawings.

1. All equipment must comply with ADA and DSA accessibility requirements.

a) Elkay Outdoor EZH2O Bottle Filling Station Tri-Level Pedestal, Non-Filtered Non-Refrigerated - LK4430BF1U (Evergreen Color)

2.4 REMOVABLE SPORTS EQUIPTMENT

2. Soccer Goals: SportsField Specialties – Round Faced Soccer Goal with Skids model # SG824RS.

PART 3 –EXECUTION

3.1 INSTALLATION OF JUMP PIT SAND

A. Long and triple jump pit sand is to be installed and the end of the project just prior to substantial completion to avoid contamination during construction operations.

B. Sand is to be installed level with the bottom of the sand pit covers and graded smooth.

3.2 INSTALLATION OF SPORTS EQUIPMENT

A. Installation of the sports equipment shall follow the directions of the manufacturer and/or vendor. The Contractor must report any discrepancies in construction plans or specification and manufacturer instructions or requirement prior to installation of equipment.

B. Shop drawings of all equipment installations are required for approval prior to installation of equipment unless specifically waived by manufacturer or engineer.

C. Any equipment requiring concrete footings must have footing shop drawings and size calculations submitted for approval. All concrete footing drawings and size calculations are to be signed and sealed by a Registered Professional Engineer.

D. The Contractor is responsible for all costs associated with shop drawings and footing size calculations required.

3.3 INSTALLATION OF DRINKING FOUNTAIN

A. Installation of the drinking fountain shall follow the directions of the manufacturer and/or vendor. The Contractor must report any discrepancies in construction plans or specification and manufacturer instructions or requirement prior to installation of equipment.

B. Drinking fountains are replacements of existing to be removed.

END OF SECTION