1.1 PROJECT IDENTIFICATION

A. Project Name: Northwood University Fisher Track, located at:

4000 Whiting Dr.
Midland, MI 48640

B. The Owner, hereinafter referred to as Owner: Northwood University

1.2 NOTICE TO PROSPECTIVE BIDDERS

A. These documents constitute an Invitation to Bid to General Contractors for the construction of the project described below.

1.3 PROJECT DESCRIPTION

A. Summary Project Description: Athletic Track surfacing project.

B. Contract Terms: Lump sum (fixed price, stipulated sum).

1.4 PROJECT CONSULTANTS

A. Owner’s FEMA Consultant: CSRS.
   3. Phone/Fax: 225.769.0546.
   4. Contact: John Nsibirwa
   5. E-mail: john.nsbirwa@csrsinc.com.

   1. Address: 1515 Arboretum Dr SE.
   2. City, State, Zip: Grand Rapids, MI 49549.
   3. Contact: Ryan Musch 616.464.3905
   4. Email: rmusch@fishbeck.com

1.5 BIDDING TIMETABLE

A. Bid Due Date: June 24, 2021, before 4 PM local time.

B. Bids May Not Be Withdrawn Until: 30 days after due date.

C. Desired Construction Start: July 5, 2021.

D. Desired Substantial Completion Date: Not later than 45 calendar days from Notice to Proceed.

Please note in your Bid response if the schedule above can be completed on time. If you cannot meet the desired construction timeframe, please provide an alternate construction timeframe on your bid form.
E. Completion date is critical due to requirements of Owner's operations.

F. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
DIVISION 00  BIDDING AND CONTRACTING REQUIREMENTS

00 01 02  Project Information
00 01 10  Table of Contents
00 02 13  Instructions to Bidders
00 41 00  Bid Form

DIVISION 01  GENERAL REQUIREMENTS

01 11 00  Summary of Work
01 45 35  Testing Services for Buried Utilities, Roadways, and Site Projects

DIVISION 31  EARTHWORK

31 10 13  Site Preparation

DIVISION 32  EXTERIOR IMPROVEMENTS

32 12 16  Asphalt Paving
32 18 23  Synthetic Track Surface System
SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

INVITATION

1.1 BID SUBMISSION

A. Bids signed, executed, and dated will be received at the office of the Owner at The Church Family Administration Building on Northwood University's Campus located at 4000 Whiting Dr. Midland, MI 48640 before 4:00 p.m. local time on the 24th day of June, 2021.

1.2 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises the surfacing of the athletic track, including general construction Work.

B. Location: Fisher Track located at Northwood University.

1.3 CONTRACT TIME

A. Perform the Work in 45 calendar days. The bidder may suggest a revision to the Contract Time with a specific adjustment to the Bid Amount. The suggested timeframe above is critical to the Owner's operation.

BID ENCLOSURES/REQUIREMENTS

2.1 BID FORM REQUIREMENTS

A. Complete all requested information in the Bid Form and Appendices.

2.2 FEES FOR CHANGES IN THE WORK

A. Include in the Bid Form, the overhead and profit fees on own Work and Work by subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Amount is based.

2.3 BID FORM SIGNATURE

A. The Bid Form shall be signed by the bidder, as follows:

1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.

2. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
2.4 SELECTION AND AWARD OF ALTERNATES

A. Bids will be evaluated on the base bid price. After determination of a successful bidder, consideration will be given to Alternates and bid price adjustments.

OFFER ACCEPTANCE/REJECTION

3.1 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the bid closing date.

3.2 ACCEPTANCE OF OFFER

A. Owner reserves the right to accept or reject any or all offers.

B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Bid Acceptance.

FEDERAL GOVERNMENT AND FEMA STANDARDS AND GUIDELINES

4.1 GENERAL

A. The work performed under this contract may be wholly or partially funded by Federal Government and/or FEMA relief funding, therefore all bidders shall comply with the following Contract Provisions:

COMPLIANCE WITH FEDERAL LAW, REGULATIONS, AND EXECUTIVE ORDERS:
This is an acknowledgement that FEMA financial assistance will be used to fund all or a portion of the contract. The contractor will comply with all applicable Federal law, regulations, executive orders, FEMA policies, procedures, and directives.

NO OBLIGATION BY FEDERAL GOVERNMENT:
The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.

PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS:
The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor’s actions pertaining to this contract.

DHS SEAL, LOGO, AND FLAGS:
The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA preapproval.

ACCESS TO RECORDS:
The following access to records requirements apply to this contract:

1. The Contractor agrees to provide Northwood University, the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents,
papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

2. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

3. The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

4. In compliance with the Disaster Recovery Act of 2018, the (write in name of the nonfederal entity) and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS
Owner encourages participation from small, minority-owned, women-owned, and labor surplus area business. Incorporation of these types of firms into the project team is encouraged. Additionally, prime contracts are required, if subcontracts are to be let, to take the following affirmative steps 1 through 5 of this section.

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

Anti-Kickback Clause
The Contractor hereby agrees to adhere to the mandate dictated by the Copeland "Anti-Kickback" Act which provides that each Contractor or subgrantee shall be prohibited from inducing, by any means, any person employed in the completion of work, to give up any part of the compensation to which he is otherwise entitled.

REMEDIES: Applies to all FEMA grant and cooperative agreement programs.

Contracts for more than the simplified acquisition threshold, currently set at $250,000, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate. See 2 C.F.R. Part 200, Appendix II, A.

TERMINATION FOR CAUSE AND CONVENIENCE: Applies to all FEMA grant and cooperative agreement programs.

All contracts exceeding $10,000 must address termination for cause and for convenience by the
non-Federal entity, including how it will be affected and the basis for settlement. See 2 C.F.R. Part 200, Appendix II, B.

**EQUAL EMPLOYMENT OPPORTUNITY:** This requirement applies to all FEMA grant and cooperative agreement programs and exact language below is required.

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as
provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the applicant so participating is a State, Territorial, or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

DEBARMMENT AND SUSPENSION: This requirement applies to all FEMA grant and cooperative agreement programs.

Suspension and Debarment


Requirements: These regulations restrict awards, subawards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in Federal assistance programs and activities. See 2 C.F.R. Part 200, Appendix II, ¶ H; and 2 C.F.R. § 200.213. A contract
award must not be made to parties listed in the SAM Exclusions. SAM Exclusions is the list maintained by
the General Services Administration that contains the names of parties debarred, suspended, or otherwise
excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other

In general, an “excluded” party cannot receive a Federal grant award or a contract within the meaning of a
“covered transaction,” to include subawards and subcontracts. This includes parties that receive Federal
funding indirectly, such as contractors to recipients and subrecipients.

1. This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such,
the contractor is required to verify that none of the contractor’s principals (defined at 2 C.F.R. § 180.995)
or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified
(defined at 2 C.F.R. § 180.935).

2. The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and
must include a requirement to comply with these regulations in any lower tier covered transaction it enters
into.

3. This certification is a material representation of fact relied upon by Northwood University. If it is later
determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000,
subpart C, in addition to remedies available to Northwood University, the Federal Government may pursue
available remedies, including but not limited to suspension and/or debarment.

4. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2
C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise
from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in
its lower tier covered transactions.

PROCUREMENT OF RECOVERED MATERIALS: This requirement applies to all contracts awarded by
a non-federal entity under FEMA grant and cooperative agreement programs.

Requirements: The requirements of Section 6002 include procuring only items designated in guidelines of
the EPA at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable,
consistent with maintaining a satisfactory level of competition, where the purchase price of the item
exceeds $10,000 or the value of the quantity acquired by the preceding fiscal year exceeded $10,000;
procuring solid waste management services in a manner that maximizes energy and resource recovery;
and establishing an affirmative procurement program for procurement of recovered materials identified in
the EPA guidelines.

1. In the performance of this contract, the Contractor shall make maximum use of products containing
recovered materials that are EPA-designated items unless the product cannot be acquired—
   a. Competitively within a timeframe providing for compliance with the contract performance
      schedule;
   b. Meeting contract performance requirements; or
   c. At a reasonable price.

2. Information about this requirement, along with the list of EPA-designated items, is available at EPA’s
Comprehensive Procurement Guidelines web site, https://www.epa.gov/smm/comprehensive-
procurement-guideline-cpg-program.

3. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the
Solid Waste Disposal Act."
CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT: This requirement applies to contracts awarded by a non-Federal entity of amounts exceeding $150,000 under a federal grant.

Clean Air Act

1. The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

2. The contractor agrees to report each violation to the Northwood University and understands and agrees that the Northwood University will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

3. The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

1. The contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

2. The contractor agrees to report each violation to the Northwood University and understands and agrees that the Northwood University will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

3. The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

BYRD ANTI-LOBBYING AMENDMENT: This requirement applies to all FEMA grant and cooperative agreement programs. Contractors that apply or bid for a contract of $100,000 or more under a federal grant must file the required certification. See 2 C.F.R. Part 200, Appendix II, I; 31 U.S.C. § 1352; and 44 C.F.R. Part 18

Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended) Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier-to-tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

Required Certification: If applicable, contractors must sign and submit to the non-Federal entity the following certification.
**CONTRACT WORK HOURS AND SAFETY STANDARDS ACT:** This requirement applies to all FEMA contracts awarded by the non-federal entity exceeding $100,000 under grant and cooperative agreement programs that involve the employment of mechanics or laborers. It is applicable to construction work. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Compliance with the Contract Work Hours and Safety Standards Act.

(1) **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $26 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) **Withholding for unpaid wages and liquidated damages.** The Northwood University shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.
APPENDIX A, 44 C.F.R. PART 18 – CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. The Contractor, ______________, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

________________________________________
Signature of Contractor’s Authorized Official

________________________________________
Name and Title of Contractor’s Authorized Official

________________________________________
Date

END OF SECTION
SECTION 00 41 00 - BID FORM

1.1 TO: NORTHWOOD UNIVERSITY (OWNER)
4000 Whiting Dr
Midland, MI 48640

1.2 FOR: PROJECT: NORTHWOOD UNIVERSITY FISHER TRACK

1.3 DATE: _________________________ (BIDDER TO ENTER DATE)

1.4 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____________________________
   1. Address _____________________________________
   2. City, State, Zip______________________________

1.5 OFFER

A. Base Bid Track Surface Material: Having examined all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Fishbeck for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
   1. ________________________________________________ dollars ($______________________), in lawful money of the United States of America.

B. Alternate Track Surface Material: Having examined all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Fishbeck for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
   1. ________________________________________________ dollars ($______________________), in lawful money of the United States of America.

C. Alternate Javinin Throw Area of Work: Having examined all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Fishbeck for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
   1. Base Bid Track Material:
      a. ________________________________________________ dollars ($______________________), in lawful money of the United States of America.
   2. Alternate Track Material:
      a. ________________________________________________ dollars ($______________________), in lawful money of the United States of America.

D. All applicable federal taxes are included and State of Michigan taxes are included in the Bid Sum.

1.6 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:
1. Execute the Agreement within seven days of receipt of Notice of Award.

1.7 CONTRACT TIME

A. If this Bid is accepted, we will (Circle One Below)

1. Complete the Work in 45 calendar days from Notice to Proceed.

2. Complete the Work in _______________ days from Notice to Proceed.

1.8 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

1. Addendum # _______ Dated ________________.

2. Addendum # _______ Dated ________________.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work covered by the Contract Documents comprises construction, furnishing and installation of new synthetic track surface system and associated construction located at the Fisher Track on Northwood University's campus in Midland, Michigan.

B. The Work includes the following major items:
   1. Asphalt Milling and Removal.
   2. Asphalt surfacing.
   3. Synthetic Track System Installation including running track and field event runways.
   4. New curb along track inner lane, per NCAA requirements

1.3 TYPE OF CONTRACT

1.4 Construct the Work of this Contract by General Contractor as Lump Sum (fixed price, stipulated sum).

A. Imperative Language: These Specifications (Divisions 01 through 49) are written in the imperative and abbreviated form. This imperative language of the technical specifications is directed at Contractor unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "shall be" and similar mandatory phrases by inference in the same manner as they are applied to notes on Drawings. The words "shall", "shall be" and similar mandatory phrases shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated in the imperative or otherwise.

B. Related Sections: Some Sections of these Specifications (Divisions 01 through 49) may include a paragraph titled "Related Sections". This paragraph is an aid to the Project Manual user and is not intended to include all Sections which may be related. It is Contractor's obligation to coordinate all Sections whether indicated under "Related Sections" or not.

C. Reference to the General Conditions: In Divisions 01 through 49, a reference to the General Conditions includes by inference all amendments or supplements in the Supplementary Conditions.

1.5 CONTRACTOR USE OF PREMISES

A. Coordinate use of premises under direction of the Owner.

B. Where the Contract Documents identify certain site elements within the construction limits, such as sidewalks, drives, and streets, that must be kept open for public or the Owner's use during construction, the Contractor shall be responsible for protection and maintenance of such elements as well.

C. Except in connection with the safety or protection of persons or the Work or property at the Site or adjacent thereto, all Work at the site shall be restricted to the following hours:
   1. Monday Through Friday (Except Legal Holidays): 7 a.m. to 7 p.m.
   2. Saturday, Sundays or legal holidays with written approval of the Owner.

1.6 OCCUPANCY REQUIREMENTS

A. Owner Occupancy During Construction:
1. The Owner will occupy or utilize premises during select periods of construction for installation of asphalt and track surface. Cooperate with the Owner to minimize conflict and to facilitate the Owner's operations.
2. Access to Abutting Properties: Provide at all times.
3. Access for Emergency Vehicles:
   a. Provide at all times.
   b. Provide at least one clear lane during nonwork periods.
4. Fire Hydrants: Provide access to at all times.
5. Do not block fire access routes.
6. Limit parking for construction vehicles to an area designated by the Owner.

PART 2 - PRODUCTS

2.1 OTHER MATERIALS

A. General: All other materials which are not specified herein and are not indicated on the Drawings, but are required for proper and complete performance of the Work.

B. Procedure:
   1. Select new, first quality material.
   2. Obtain Engineer's review.
   3. Provide and install.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 11 00
SECTION 01 45 35 – TESTING SERVICES FOR BURIED UTILITIES, ROADWAYS, AND SITE PROJECTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes testing services as follows:
   1. Testing services which the Contractor shall pay for as part of the Contractor’s base Bid and will be performed by a testing agency selected by the Contractor:
      a. Bituminous pavement materials.
      b. Pavement compaction tests.
      c. Concrete slump and air entrainment tests.
      d. Concrete cylinder compressive strength tests.
   2. Owner Paid Items:
      a. The Owner may elect to inspect or test or to employ either the Engineer or an independent testing agency to test materials on the Project other than those specified herein.
      b. The cost of this testing will be paid for by the Owner.

B. Testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for verification of compliance with Contract Document requirements.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. AASHTO:
   2. ASTM Specifications, Tests and Test Methods:
      a. C31 - Making and Curing Concrete Test Specimens in the Field.
      b. C33 - Specification for Concrete Aggregates Including Appendix XI.
      c. C39 - Test for Compressive Strength of Cylindrical Concrete Specimens.
      d. C42 - Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
      e. C138 - Test for Unit Weight, Yield and Air Content of Concrete.
      f. C143 - Test for Slump of Portland Cement Concrete.
      g. C172 - Sampling Fresh Concrete.
      h. C173 - Test for Air Content of Freshly Mixed Concrete by the Volumetric Method.
      i. C192 - Making and Curing Concrete Test Specimens in the Laboratory.
      k. C231 - Test for Air Content of Freshly Mixed Concrete by the Pressure Method.
      m. C295 - Standard Guide for Petrographic Examination of Aggregates for Concrete.
      n. C567 - Unit Weight of Structural Lightweight Concrete.
      o. C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
      r. D1556 - Density of Soil In Place by the Sand-Cone Method.
t. D1586 - Penetration Test and Split Barrel Sampling of Soils.

u. D1883 - CBR (California Bearing Ratio) of Laboratory Compacted Soils.

v. D2166 - Unconfined Compressive Strength of Cohesive Soil.

w. D2167 - Density of Unit Weight of Soil In Place by the Rubber Balloon Method.

x. D2922 - Density of Soil and Soil Aggregates by Nuclear Methods.

y. D2937 - Density of Soil in Place by Drive Cylinder Method.

z. D2950 - Test Methods for Density of Bituminous Concrete in Place by Nuclear Methods.


bb. D3740 - Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as used in Engineering Design and Construction.

3. ACI - American Concrete Institute:
   a. 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
   b. 211.1R - Report on Alkali-Aggregate Reactivity.
   c. 301 - Specification for Structural Concrete for Buildings.
   d. 318 - Building Code Requirements for Reinforced Concrete.

4. MDOT Standards: Michigan Cone Test for Determination of Maximum Unit Weight of Granular Soils.

1.4 TEST REQUIREMENTS

A. In accordance with:
   1. Laws and Regulations.
   2. Sections of these Specifications.
   3. Reference procedures and requirements.
   4. Pertinent standards for testing.

B. Testing Agency Qualifications:
   1. Approved by authorities having jurisdiction.
   2. Agency whose primary business is materials and construction testing.
   3. Approved by the Engineer or the Owner.
   4. Objective, competent and independent from the Contractor performing the work to be inspected.
   5. Having adequate equipment, periodically calibrated as required, to perform the special inspections.
   6. Employing experienced personnel educated in conducting, supervising and evaluating special inspections similar in complexity to that required for the Project.

1.5 RETESTING COSTS

A. Retesting:
   1. When initial special inspections of items except soil compaction indicate noncompliance with the Contract Documents, subsequent special inspections occasioned by the noncompliance shall be performed by the same special inspection agency, and the costs thereof will not be reimbursed.

   2. Soil Compaction:
      a. The first retesting of soil compaction shall be paid for in accordance with the provisions of the Contract Documents.
      b. The second and subsequent retesting for soil compaction due to noncompliance with the Contract Documents shall be performed by the same special inspection agency, and the costs thereof will not be reimbursed.

1.6 REPORTS

A. Provide the Engineer’s field representative and Contractor’s superintendent with a draft copy of the daily report prior to leaving the Project Site each day on which testing is performed on the Site.

B. Provide typed copies of testing agency reports, inspections, and certifications within 5 business days to:
   1. The Engineer’s Office: One copy.
   2. The Contractor’s Office: One copy.
1.7 SCHEDULING TESTING

A. Coordinate and schedule the work of the independent testing agency.
   1. Notify the Engineer and the independent testing agency 48 hours prior to the expected time when testing services will be required.
   2. Provide access to the Work as necessary for the agency to properly perform its functions.

B. Establishing Schedule: By advance discussion with the Engineer and independent testing agency, determine the time required to perform tests and to issue findings.

C. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the independent testing agency as required.

D. Adherence to Schedule: When the independent testing agency is ready to test according to the determined schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra costs for testing attributable to the delay will be paid by the Contractor.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 TESTING REQUIREMENTS

A. Testing Bituminous Paving:
   1. The testing agency shall provide quality control and testing services that will be monitored by the Engineer’s field representatives continuously during paving.
   2. The testing agency shall take 1 mixture sample per day and 1 test per 1,000 tons of material placed.
      a. This sample shall be taken randomly from the back of the hauling unit.
      b. This sample shall be large enough to provide the Contractor, testing agency, and Engineer with an equal split of the sample.
      c. The testing agency shall test the samples for the following:
         1) 50 blow Marshall bulk specific gravity or a 50 gyration gyratory compactor bulk specific gravity ($G_{mb}$).
         2) Theoretical Maximum Density (TMD) (AASHTO T209) or maximum specific gravity of paving mixture (no air voids) ($G_{mm}$).
         3) % Asphalt binder.
         4) Aggregate gradation and % crushed aggregate.
      d. With the above information and the mix design aggregate effective specific gravity, calculate the following:
         1) Mixture air voids.
         2) Mixture voids in the mineral aggregate (VMA) using bulk specific gravity of aggregate ($G_{sb}$).
         3) % Asphalt binder.
   3. The results of these tests shall be compared to the approved mix design and must be within the tolerances indicated below or all additional truck loads of non-compliant material shall be removed from the Site.
      a. The material supplier shall then make recommendations to the Engineer of how the mixture will be revised to meet the Specifications.
      b. The results of these tests and the split samples must be presented to the Engineer before mixture production begins the following day.
      c. If the Engineer wishes to test the split samples, they may use the supplier’s laboratory and equipment.
      d. The Engineer reserves the right to work with the supplier and modify the supplier’s mix design to ensure the product meets the Drawings and Specification requirements.
      e. This may include increasing asphalt content and adjusting aggregate gradations within the bituminous mixture composition specification.
### Testing/Verification Tolerances

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<th>Parameter</th>
<th>Single test</th>
<th>Average of 2 or more tests</th>
<th>Comments</th>
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<td>-1.0%+0.5%</td>
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<td>VMA</td>
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<tr>
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<tr>
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<td>±0.3%</td>
<td>&gt;0.4% less than JMF may be subject to reduced payment</td>
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<td>Max 1.6</td>
<td>Result must be less than 1.6</td>
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<td>#200 sieve</td>
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<td>±1.0%</td>
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<tr>
<td>Crushed Particles</td>
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<td>±10%</td>
<td>&gt;10% less than JMF may be subject to reduced payment</td>
</tr>
</tbody>
</table>

4. The Contractor shall have the testing agency’s density technician and a density gage available whenever paving is occurring. This technician and gage shall monitor placement and compaction of asphalt to verify the maximum density possible is being achieved.

5. The testing agency shall take 1 core on each 25,000 square feet of new parking lot.
   a. The percent compaction of these cores shall be calculated using the TMD of the approved mix design (JMF) unless otherwise directed and the results used for determining compliance with this Specification.
   b. The daily average in place density:
      1) Low/medium Volume Roads: 95.0% of the mixture’s TMD or greater with a minimum density of 94% of TMD.
      2) Heavy Volume Roads: 94% of the mixtures TMD or greater with a minimum density of 93% TMD.
   c. Areas that are not compacted to the specified daily average will be evaluated by the Engineer and may either be removed or subject to a price reduction.

6. Thickness: In place compacted thickness tested in accordance with ASTM D3549.

7. Surface Smoothness:
   a. Test finished surface of each hot mix asphalt course for smoothness, using 10 foot straightedge applied parallel with and at right angles to centerline of paved area, or by measuring depths of bird baths immediately after a rain.

8. Workmanship:
   a. Finished Surfaces, Especially in High Visibility Areas: Smooth, free of cracks, raveling or spalling holes, rake or roller marks and depressions, or bird baths.
   b. Problem Areas Identified: Correct by removing, paving or reheating and re-rolling if possible.

9. Test Reports:
   a. Summarize the results of the bituminous paving using the "Report of Verification/Acceptance Testing & Core Density."
   b. Electronically submit this document to the Project team on a daily basis prior to the placement of any subsequent pavement.

10. Porous Bituminous Asphalt:
    a. Mix Verification (ASTM D2172): One test per 1,000 ton placed or fraction thereof.
    b. Weight Slips:
       1) Furnish weight slips for material incorporated in the Project.
       2) Verify that the required tonnage has been applied by calculating and submitting yield for each day of work.
    c. Compaction and Thickness Testing:
       1) Nuclear Gage (ASTM D2950): Minimum 5 per day or 1 test per 7,500 square feet.
       2) Pavement Cores: Minimum 2 per day or 1 test per 20,000 square feet or as directed.
d. Field Infiltration Test:
   1) In accordance with ASTM C1701.
   2) One test per 25,000 square feet.
   3) Witnessed by Engineer.

e. Surface Smoothness: Test using a 10 foot straightedge applied parallel to and at right angles with the centerline.

B. Concrete Testing:
1. Point of sampling and the method of securing the Samples:
   a. Determined by the independent testing agency.
   b. In accordance with ASTM C172.
2. Slump Tests:
   a. Perform slump tests in accordance with ASTM C143.
   b. Perform 1 slump test on the Site for each truckload of concrete.
   c. At the Engineer’s request, also perform slump tests at batch plant before adding water reducer.
   d. Perform more slump tests if deemed necessary by the Engineer.
3. Perform 1 air-entraining test in accordance with ASTM C231 or C173 for each truckload of concrete.
4. Test the concrete unit weight in accordance with ASTM C138 or C567, as applicable.
5. Test the air content and fresh concrete temperature of each set of concrete cylinders.
6. Concrete Cylinder Testing:
   b. Take concrete cylinder Sample set as follows:
      1) Once for each 150 cubic yards (or fraction thereof) of each class of concrete placed each day, nor less than.
      2) Once for each 2,500 square feet of sidewalk or paving surface area placed each day.
   c. Concrete Cylinder Sample Set: Consist of 4 standard 6-inch cylinders.
   d. Handle cylinders carefully.
   e. Onsite Storage:
      1) Handle cylinders carefully.
      2) 12 hours, minimum, 48 hours maximum.
      3) Store at a temperature range of 60 to 80 degrees F and in a moist environment.
      4) Shield from direct sunlight and radiant heat.
      5) Construct heated or water bath enclosures, as applicable, if conditions require.
      6) Cylinder samples taken to establish adequate strength for form removal earlier than 28 days shall be cured in locations that represent the conditions under which the structural concrete will be cured.
   f. Laboratory Curing: For duration of curing after onsite storage.
   g. Test 1 of the cylinders at 7 days and 2 cylinders at 28 days. Save 1 cylinder as a spare.
   h. Acceptance and evaluation of the concrete shall be based on ACI 301.

END OF SECTION 01 45 35
SECTION 31 10 13 – SITE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the major items listed below:
   1. Clearing Site of materials associated with the Fisher Track and Field Event areas, including asphalt pavement and track borders and bordering grass.
   2. Removal of the following man-made items:
      a. Asphalt.
      b. Wood borders.
      c. Trench Drain Grates (inside lane of track).

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the Work of this Section shall comply with the following:
   1. State DOT Current Standards:
      a. Specifications for Construction.

1.4 DEFINITIONS

A. Terms: Surface Improvements: Pavement, walks, drives, curbs, curb and gutter, improved lawns, monuments, property irons, reference points and similar improvements.

1.5 QUALITY ASSURANCE

A. Interference:
   1. Ensure that Site preparation work does not unduly interfere with pedestrian and vehicular traffic.
   2. Obtain Engineer's and governing authority's approvals prior to closing a public street.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 PREPARATION

A. Soil Erosion Control: Provide soil erosion control in accordance with measures indicated on Drawings.

B. Maintain designated temporary roadways, walkways, and detours for vehicular and pedestrian traffic.
3.2 APPLICATION

A. Clearing: Remove items requiring removal under this Section from area indicated on Drawings and proposed track pavement area.

B. Removal of Sod: Cut to a straight line at the expected excavation limits with sod cutter.

C. Prevent Construction Operations from Damaging or Disturbing:
   1. Trees or roots of trees which are to remain.
   2. Surface improvements which are to remain.

3.3 DISPOSAL OF EXCESS MATERIAL

A. General:
   1. Remove and properly dispose of all material not needed to complete Project.
   2. Dispose of excess material at a location off the Site.
   3. Dispose of excess topsoil at a location off the Site.
   4. Disposal of materials shall not violate laws, rules, regulations and the like regarding the filling of flood plains, wetlands and other environmentally sensitive areas.
   5. Provide adequate controls to maintain disposal sites in a neat and safe conditions by periodic leveling of material, the control of erosion and such other practices as are necessary.

END OF SECTION 31 10 13
SECTION 32 12 16 – ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the furnishing and installation of the Hot Mix Asphalt (HMA) base course, HMA leveling course, and HMA surface course.

1.3 REFERENCES

A. Comply with standards in effect as of the date of the Contract Documents except for those having different revision dates as referenced in the codes or as indicated on the Drawings.

B. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:

1. ASTM - Current Standards:
   b. D979 – Sampling Bituminous Paving Mixtures.
   d. D2041 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixture
   e. D2950 - Test Method for Density of Bituminous Concrete in Place by Nuclear Method.
   f. D2995 - Estimating Application Rate of Bituminous Distributors.

2. Asphalt Institute (AI):
   a. MS-2 Mix Design Methods.
   b. SP-1 Performance Grade Asphalt Binder Specification and Testing.
   c. IS-210 Procedures for Improving the Precision of HMA Volumetric Calculations.

3. AASHTO – Current Standards:
   b. MP-1 Superpave Performance-Graded Binder Specification.
   c. MP-15 Use of Recycled Asphalt Shingles as an Additive in HMA Mixtures.
   f. T 283 - Moisture Susceptibility of Asphaltic Concrete Mixtures.
   g. T 304 - Uncompacted Void Content of Fine Aggregate, Method A.

4. United States Department of Transportation - Federal Highway Administration:

5. State DOT Current Standards:
   c. Design Pavement Guidelines
1.4 SUBMITTALS

A. HMA Mix Design:
   1. Job Mix Formula (JMF) previously approved by state DOT.
      b. Other States: Submit state DOT form indicating preapproved DOT mix design and required documentation.
   2. Job Mix Formula (JMF) not previously approved by state DOT:
      a. Michigan: MDOT 1855 mod form or Form 1911 with regression table.
      b. Other States: Submit DOT or other suitable bituminous mix design communication with all required information to evaluate mix design in accordance with current standards.
   3. Aggregates:
      a. Source, type, gradation and other required information to evaluate aggregates in accordance with current standards.
      b. Certification that aggregates used in HMA mix meet DOT specifications.

B. Quality Assurance/Control Submittals: Contractor's Quality Control Plan for projects with more than 1,500 tons or greater than 1 day paving

C. Provide a detailed schedule for construction.

1.5 QUALITY ASSURANCE

A. Pre-Paving Meeting:
   1. Required for projects greater than 1,500 tons or more than 1 day paving;
   2. Optional for projects less than 1,500 tons or 1 day paving.
   3. Meeting held at a time mutually agreed upon with Engineer, Owner (optional), Contractor and subcontractors involved in the paving work.
   4. Discussion of proposed schedule and methods of accomplishing all phases of the paving work.
   5. Minutes distributed to all in attendance.

B. Installation Personnel Qualifications:
   1. Trained and experienced in the fabrication and installation of the materials and equipment.
   2. Knowledgeable of the design.

C. Testing of HMA Materials:
   1. In accordance with Division 01 Section "Testing Services for Buried Utilities, Roadways, and Site Projects."
   2. In accordance with approved Contractor’s Quality Control Plan.
   3. In accordance with all applicable standards.

D. Weight Slips: Furnish weight slips to Engineer, or engineer’s representative for material incorporated in the Project to verify that the required tonnage has been applied.

1.6 DELIVERY, STORAGE AND HANDLING

A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation.

B. Reject damaged, deteriorated or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Reclaimed Asphaltic Materials (RAM):
   1. Reclaimed Asphalt Pavement (RAP) and/or Fractionated Reclaimed Asphalt Pavement (FRAP) as percent of total weight of the mixture:
      a. HMA Base: Maximum 35%. State DOT blending requirements; AASHTO M323.
      b. HMA Binder/Leveling: Maximum 25%. Use virgin binder one grade softer, for both high and low temperature, than specified if RAP greater than 20%.
      c. HMA Surface: Maximum 20%. No change in binder selection.
      d. HMA Mixtures With Polymer Asphalt: Maximum 10%.
      e. Greater than 25% RAP/FRAP or Combination: Use virgin asphalt binder grade in accordance with State DOT blending requirements and AASHTO M 323.
   2. Reclaimed Asphalt Shingles (RAS):
      a. In accordance with State DOT requirements.
      b. May replace up to 5% of RAP/FRAP component in HMA mixture.
      c. Maximum Particle size = 1/2 inch.
      d. Maximum deleterious materials = 1.5%
   3. Bond Coat: SS-1h, CSS-1h.
   4. Top Course:
      a. HMA Mixture :36A.
      c. Air voids modified to 3% using regression for light traffic applications.

2.2 EQUIPMENT

A. Pavers:
   1. Provide an approved self-powered machine capable of spreading and finishing the bituminous mixture to the cross section and grade as indicated on the Drawings.
      a. Supporting wheels, treads, or other devices that ride on the prepared base.
      b. Screeds the full width of the bituminous mixture being applied using an oscillating or vibrating screed.
      c. Equipped with a hopper and an automatic material-depth control device so that each distributing auger and corresponding feeder responds automatically to provide for a constant level of mix ahead of the screed unit to the full width being paved.
   2. Provide paver with approved automatic screed control:
      a. System of sensor-operated devices, which follow reference lines or surfaces on one or both sides of the paver.
      b. Adjust speed of the paver to produce the best results.
   3. When approved extensions are added to the main screed, provide with the same vibrating screed or tamper action as the main unit of the paver, except for paving variable width areas.
      a. Equip the extensions with a continuation of the automatically controlled spreading augers to within 18 inches of the outside edge of the extension, or as directed.
      b. Provide the main screed and any extensions with an approved method of heat distribution and retention.
   4. For Shoulders and Widening:
      a. A self-propelled mechanical spreader capable of maintaining the proper width, depth, and slope without causing segregation of the material.
      b. For base courses up to 10-1/2 feet in width and for leveling and top courses up to 8 feet in width.
B. Rollers:
1. Provide rollers and maintain rolling patterns to achieve required densities to produce a neat, tightly bonded joint that meets surface tolerances
2. Steel-Wheeled Rollers:
   a. Self-propelled, vibratory or static, tandem rollers; or self-propelled static 3-wheeled rollers.
   b. Vibratory Rollers:
      1) Capable of reversing without backlash and equipped with spray attachment for moistening all rollers and scrapers.
      2) Frequency of at least 2,400 vpm and amplitude setting low.
      3) Equipped with a shutoff to deactivate the vibrators when roller speed is less than 0.5 mph and provision to lock in the manufacturer’s recommended speed.
3. Pneumatic-Tired Rollers:
   a. Self-propelled type with a total weight, including ballast, not less than 8 tons nor greater than 30 tons.
   b. Equipped with a minimum of 7 wheels situated on the axles in such a way that the rear group of tires will not follow in the tracks of the forward group, but will be so spaced that a minimum tire path overlap of 1/2-inch is obtained.
   c. Smooth tires capable of being inflated to the pressure recommended by the Manufacturer of the roller or as directed.
   d. Tire Pressures: Maximum variation 5 psi.

PART 3 - EXECUTION

3.1 PREPARATION

A. Test subgrade, subbase or aggregate base for density.
   1. Rework surfaces that have become too wet or dry to provide the required density. Do not pave on wet or saturated aggregates.
   2. Required Density: Minimum 95% of Maximum Density ASTM D1557.

B. Proof or Test Rolling:
   1. Field test the uniformity and stability of the subgrade and subbase.
   2. Loaded dump truck or other approved equipment over entire area in each of 2 perpendicular directions.
   3. Areas indicated or as designated by Engineer or field representative.
   4. In presence of Engineer or field representative.
   5. Repair/undercut unstable or yielding areas as directed.

C. Fine Grading:
   1. Immediately prior to placing paving materials, test the subgrade or aggregate base course for conformity to the elevations and cross-section as indicated on the Drawings.
   2. Fine grade as necessary to bring base course into conformance with the proper elevation and cross-section.
   3. Compact areas which have been re-graded to minimum 95% Maximum Density ASTM D1557.

D. Do not place HMA material until the surface to be paved upon has been inspected and approved by Engineer.

3.2 TOLERANCES

A. Pavement Placement MUST be accompanied by a Licensed Surveyor to validate pavement surface elevation tolerance as required by synthetic track material provider and NCAA requirements for track surface construction.

B. Lateral Inclination across full width of track: 1:100 (1.0%) maximum slope.

C. Downward Inclination in running direction: 1:1000 (0.1%) maximum slope.

D. High Jump Area downward inclination of the last 15 meters shall not exceed 1:250 (0.4%) in running direction toward the center of the cross bar.
E. Immediately before placing the bituminous material, remove excess loose material remaining on the surface.

3.3 INSTALLATION

A. Weather and Seasonal Limitations:
1. As required by DOT Construction Specifications.
2. Do not schedule paving if local radar shows rain in forecast, unless paving can be completed prior to rain event.

B. Transportation of Mixtures
1. Use trucks that have tight, clean, smooth metal beds from which the entire quantity of the mixture is discharged smoothly into the spreading equipment.
2. Maintain temperature of the mixture discharge from the hauling unit at the target placement temperature or as directed.
   a. Acceptance Range for HMA at Point of Discharge:
      1) Minimum 250 degrees F to maximum 350 degrees F.
      2) HMA mixes less than 250 degrees F or greater than 350 degrees F at point of discharge:
         a) Do not place mix unless approved by Engineer.
         b) Remove mix from Site and dispose off Site unless approved by Engineer.
         c) No additional cost to project.
   b. If transporting at prevailing temperature below 50 degrees F or when haul times exceed 30 minutes, insulate truck beds and ensure all covers are fastened.
3. Apply approved release agent to hauling unit to prevent adhesion of the mixture to the bed surface.

C. Placement of the Mixture:
1. To the fullest extent practicable, spread all mixtures with an asphalt paver.
   a. In areas inaccessible to a paver, mixtures may be spread with a motor grader or mechanical device approved by the Engineer.
   b. Complete placement of each course over the full width of the section under construction on each day’s run unless otherwise directed by the Engineer.
2. Provide a uniformly finished surface at all times, free from tearing or other blemishes that would require hand work.
3. Spread all mixtures without segregation to the cross sections indicated on the Drawings.
4. When paving ramps or shoulders, or when the grade of a concrete gutter or other existing installation must be met, use the automatic grade reference and slope control devices as directed.
5. Whenever a breakdown or malfunction of the automatic controls occurs, operate the equipment manually for the remainder of the normal working day, provided this method of operation will produce results as required.
6. Coordinate the spreading of the mixture with the required roller coverage, considering the rate of cooling of the mixture as affected by lift thickness and environmental conditions.
7. Coordinate the work such that at the completion of each day’s paving operations, all lanes will have been resurfaced to within 1 load of the same point-of-ending.

D. Placing Bituminous Leveling and Top Course Mixtures:
1. Place HMA in lifts not to exceed the maximum application rates as recommended by State DOT for the mixture specified.
2. Place the HMA mixture by an approved self-propelled mechanical paver to such a depth that when compacted, it will have the thickness specified or as directed.
3. Adjust the paver to that speed which gives the best results for the type of paver being used and which coordinates satisfactorily with the rate of delivery of the mixture to the paver to provide a uniform rate of placing the mixture without intermittent operation of the paver.
4. When delays result in slowing paving operations such that the temperature of the mat immediately behind the screed falls below 200 degrees F:
   a. Stop paving and place a transverse construction joint.
   b. If the temperature of the mat falls below 190 degrees F prior to any rolling - remove and replace the mat at Contractor’s expense.
5. Place the HMA mixture to the required cross section and as indicated on the Drawings.

6. Whenever the temperature of the previously placed mat falls below 170 degrees F prior to placement of the adjacent mat:
   a. Tack coat the vertical edges of the initial mat with bituminous bond coat material before the mixture is placed on the adjacent section.
   b. In placing the mixture adjacent to joints, and rake or broom to provide a dense smooth connection.

7. Connections with existing surfaces at the beginning and ending of resurfacing sections and at intersections.
   a. Construct by feathering out the mix at the rate of approximately 1-inch per 25 feet, unless butt joints are used.
   b. After compaction has been completed, spray the first 3 feet of the joint and 1-foot of area not surfaced with bituminous bond coat, sanded, and rolled.
   c. This work shall be accomplished within the concurrent construction season.

8. If the lanes are being constructed with 2 or more pavers in echelon, match the loose depth of bituminous mixture from each paver at the longitudinal joints.

9. Thickness: In place compacted thickness tested in accordance with ASTM D3549.
   a. Thickness must be within 1/4-inch of specified thickness during both leveling and top course paving.

10. Smoothness requirements:
    a. Refer to Specification 32 18 23 Synthetic Track Surface System
    b. Correct variations in excess of the specified tolerance as directed. Remove and replace pavement as directed by Engineer.

11. Weighing Loads: Each load of bituminous mixture accepted by Engineer shall be weighed to the nearest 20 pounds on an approved scale having an automatic print-out system.

12. Weather and Seasonal Limitations:
    a. Do not place HMA or apply tack/bond coat when precipitation is imminent or when surface moisture will prevent satisfactory curing.
    b. Unless otherwise approved by Engineer in writing, temperature requirements for placing HMA mixtures will be in accordance with the table below.
    c. HMA paving will not be allowed below minimum temperatures in table or when there is frost on or in the grade or on the existing surface.

<table>
<thead>
<tr>
<th>Temperature of the Surface Being Overlaid</th>
<th>Rate of Application of Bituminous Material (lbs/square yard)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120 to 200</td>
</tr>
<tr>
<td></td>
<td>120 to 200</td>
</tr>
<tr>
<td>35 to 39</td>
<td>330 degrees F</td>
</tr>
<tr>
<td>40 to 49</td>
<td>330 degrees F</td>
</tr>
<tr>
<td>50 to 59</td>
<td>315 degrees F</td>
</tr>
<tr>
<td>60 to 69</td>
<td>300 degrees F</td>
</tr>
<tr>
<td>70 to 79</td>
<td>285 degrees F</td>
</tr>
<tr>
<td>80 to 89</td>
<td>270 degrees F</td>
</tr>
<tr>
<td>90 and over</td>
<td>270 degrees F</td>
</tr>
</tbody>
</table>

E. Rolling:
   1. Compact each layer of HMA to the required density, free of all roller marks.
   2. Begin rolling of the HMA mixture as soon after placing as it will bear the roller without undue displacement, picking up the mat, or cracking.
      a. Roll longitudinally at the extreme sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drive wheel of the roller.
      b. Complete alternate passes of the roller using slightly different lengths.
3. Complete the required roller coverage during the period of time in which the temperature of the mixture is sufficient for the roller coverage to be effective in compaction of the mixture.
4. Use tandem steel-wheeled rollers for the final rolling operation on each layer of HMA.
5. Keep surface of steel rollers completely moist with water when rolling.
6. Operate vibratory rollers in the static mode when used for finish rolling or pinching the joint.
7. In Areas Inaccessible to Rollers:
   a. Thoroughly compact the mixture with hot, hand tampers or with mechanical tampers.
   b. Trench rollers or rollers filled with compression strips may be used in depressed areas.

F. Bond or Tack Coat:
1. Clean contact surfaces of sand, dirt, or other objectionable material before applying bond coat.
2. Apply to existing bituminous material and to the vertical edge of the adjacent pavement or curb and gutter, prior to applying new bituminous when:
   a. Paving over milled surface.
   b. Paving over old pavement.
   c. Paving over new pavement.
   d. Adjacent pavement face that is below 170 degrees F.
3. Distributor Vehicle:
   a. Use identical overlapping nozzle spray pattern.
   b. Maintain temperature and pressure that result in a constant uniform application rate.
   c. Provide means for determination of the volume of tack applied to a surface area.
4. Apply tack coat to vertical surfaces and provide uniform application.
5. Application Rate:
   a. 0.05 to 0.1 gallons per square yard for paved surfaces.
   b. Increase application rate 20 to 30% for milled or very rough surfaces.
   c. Increase application rate 50% for vertical edge of adjacent pavement or structure.
   d. Calculate yield by dividing gallons used by square yards covered.
6. Prevent bond or tack coat from coming into contact with structures near the areas to be paved.
7. Allow emulsified asphalt tack coat to break, as indicated by color change from brown to black before HMA paving is placed.
8. Do not place tack coat if local radar shows rain in forecast, unless paving can be completed prior to rain event.

G. Acceptance Density Range:
1. Low Volume Roads/Parking Lots:
   a. Acceptable Range: 93 to 97% of the TMD.
   b. Average Daily Density: ≥ 94%.
2. For smaller projects, the engineer may elect to accept the project without density testing:
   a. Compact all patching, widening, wedging, base, leveling and surface layers of asphalt paving until no further consolidation is visible under the action of the compacting equipment and roller marks are eliminated
   b. Use two or more rollers per paver if placing more than approximately 165 tons of mixture per hour.
   c. Basis of Acceptance: Engineer’s visual examination.

H. Construction Joints:
1. Thoroughly compact all joints to produce a neat, tightly bonded joint that meets surface tolerances and density requirements.
2. Transverse Joints:
   a. Construct when mixture placement operations are suspended
   b. Thoroughly compact the forward end by rolling before the mixture has cooled.
   c. When work is resumed, vertically cut the end for full depth of the layer unless a formed edge is constructed as approved by the Engineer.
   d. When road must remain open to traffic construct temporary taper before allowing traffic on new surface:
      1) Cut vertical joint and remove excess HMA.
      2) Place burlap, canvas or paper as a bond breaker ahead of and against the vertical face.
      3) Place HMA against the bond breaker and taper from new mat to existing surface.
      4) Extend temporary taper 5 feet for each inch of mat thickness or as directed by Engineer.
      5) Thoroughly compact and cool the temporary taper.
3. Longitudinal Joints:
   a. Construct parallel to centerline of road.
   b. Multiple Lift Construction: Offset minimum 6 inches from previously placed joint.
   c. Vertical Longitudinal Joint:
      1) Apply uniform tack coat over joint face of existing pavement with a surface temperature less than 170 degrees F.
      2) Place HMA so that it uniformly overlaps the first lane approximately 1 inch
      3) Roll the longitudinal joint from the hot side, 1/2 foot to 1 foot away from the joint for the first pass.
      4) Subsequent Passes: Overlap the cold side by 1/2-foot to 1 foot.
   d. Tapered Overlapping Longitudinal Joint:
      1) Taper the HMA mat at the slope no greater than 1:12.
      2) Extend tapered portion beyond the lane width.
      3) Place 1/2-inch to 1 inch notch at the top of the taper on all courses of paving.
      4) Compact the formed taper section with a weighted roller as wide as the taper.
      5) Apply uniform tack coat to the surface of the taper before the adjacent lane is placed.
   e. Longitudinal Joint Compaction:
      1) Joint Density: Minimum 90% TMD ($G_{mm}$).
      2) Joint Density with echelon paving; same as adjacent mat.

3.4 CLEANING

A. Prior to acceptance of the work, clean the pavement and related areas to remove dirt and stones.

END OF SECTION 32 12 16
SECTION 32 18 23 – SYNTHETIC TRACK SURFACE SYSTEM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The synthetic surfacing contractor shall provide all labor, materials, tools, equipment, supervision and services necessary for the complete installation of the synthetic track surface system, and related work as indicated on Drawings and specified herein.

1. The installation of all new materials shall be performed in strict accordance with the manufacturer's installation instructions and in accordance with all approved shop drawings.

2. The synthetic surfacing contractor shall refer to the drawings for the required locations of the synthetic track surfacing to be installed. All quantities and dimensions shall be field verified by the synthetic surfacing contractor.

1.2 SPECIFIC SCOPE OF WORK

A. Install an NCAA/IAAF approved, synthetic track surface system.

B. Layout and paint all track lines and event markings as required and specified by current NCAA/IAAF rules.

1.3 COORDINATION

A. The synthetic surfacing contractor shall coordinate the work specified with the general contractor so as to perform the work during a period and in a manner acceptable to the owner, engineer and general contractor.

1.4 RELATED SECTIONS

A. Section 311013 "Site Preparation".

B. Section 321216 "Asphalt Paving".

1.5 REFERENCES

A. Applicable Publications:

1. Codes and standards follow the current guidelines set forth by the NCAA AND IAAF, along with the current material testing guidelines as published by the American Society of Testing Materials (ASTM).

B. Performance Standards:

1. The new synthetic track surfacing system shall exhibit the following minimum performance standards:

   a. Thickness 12-15mm
   b. Shore A Hardness 45-60 (ASTM D-2240)
   c. Elongation at Break -75% (ASTM D-412)
   d. Compression Set Recovery 85%-90% over 24 hour period (ASTM 395-89)
   e. Abrasion Resistance 0.25 grams loss after 1000 cycles (ASTM D-501)
   f. Coefficient of Friction Dry: 0.75-0.8 Wet: 0.70 -0.75 (ASTM D-1984)
   g. Resilience 35%-41% (ASTM D-2632)
   h. Tear Resistance 45 psi (ASTM D-624)

1.6 SUBMITTALS

A. The following submittals for each type of product indicated must be received with the bid submittal.

1. Standard printed specifications of the synthetic track surfacing system to be installed on this project.

2. Detailed warranty information.

3. A synthetic track surfacing system sample 12" x 12" in size, of the same type and color synthetic track surfacing system to be installed on this project.
4. An installation list of outdoor track facilities installed within the last ten (10) years, using the exact synthetic track surfacing system specified herein.
5. An affidavit attesting that the synthetic track surfacing material to be installed meets the requirements defined by the manufacturers currently published specifications and any modifications outlined in those technical specifications.

B. Shop Drawings: Submit Shop Drawings indicating location and color of all striping lines per NCAA/IAAF standards for all event surfaces on which synthetic track surface material is installed, prior to application. Striped items to be included but not limited to runways, runway markings, foul lines, lane lines, exchange zones, start lines, finish lines, and any related markings.

C. Test Reports: Submit test reports that verify manufacturer's specifications for products to be installed.
   1. Provide and submit testing results of asphalt substrate and subgrade, and letter of acceptance signed by installer and manufacturer of test results prior to installation of synthetic track surface.
   2. Submit certificate of accuracy from registered engineer or land surveyor stating that track measures specified distance in lanes from start to finish.
   3. Submit letter from synthetic surfacing material manufacturer stating that surfacing contractor is qualified to install surfacing material manufacturer's synthetic surface system.
   4. Submit evidence that synthetic surfacing contractor holds necessary contractor's license to install synthetic surfacing.

D. Prior to Final Acceptance, submit to the Owner:
   1. Three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic track surface system, including painting and permanent markings.
   2. Project Record Documents: Record actual locations of seams, drains, or other pertinent information.
   3. Warranty: Submit Manufacturer's Warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.
      a. Submit copy of warranty insurance coverage with warranty.

1.7 QUALITY ASSURANCE

A. The contractor and the manufacturer must be the same.

B. The contractor must have a minimum of 7-years' experience in the installation of synthetic track surfacing.

C. The contractor shall be able to furnish evidence that they have been in business for a period of not less than 3 years, under the present name, and if required, furnish financial statements for each of the past 3 years.

D. The contractor must have installed a minimum of 6 outdoor track facilities in the last 2 years using the exact, NCAA/IAAF certified synthetic track surfacing, as specified herein with the contractor bidding this project.

E. The contractor is required to provide documentation that shows the selected specified and installed product meets NCAA and IAAF Performance Specification for Synthetic Surfaced Athletic Tracks (Outdoor) and is certified in terms of the NCAA and IAAF certifications system as updated to present day.

F. Contractor is to provide a list of completed facilities, minimum of 10 which are certified to meet NCAA/IAAF rules and regulations, utilizing the same product as specified.

G. Preinstallation Conference: Conduct conference at Project site. Review methods and procedures related to synthetic track surfacing system application including but not limited to, the following:
   1. Substrate conditions.
   2. Layout and paint all track lines and event markings as required and specified by current NCAA/IAAF rules.
1.8 DELIVERY, STORAGE, AND PROTECTION

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store in weathertight location and protect from damage during delivery storage and handling.

1.9 WARRANTIES

A. Track Surfacing System shall be fully guaranteed against faulty workmanship and material failure for a period of five (5) years from date of acceptance.
1. Minimum five (5) years.
2. Voluntary Alternate of an Additional five (5) years (total of 10 year warranty).

B. Synthetic surfacing material found to be defective as a result of faulty workmanship and/or material failure shall be replaced or repaired at no charge, upon written notification within the life of the Warranty.

PART 2 - PRODUCTS

2.1 SYNTHETIC TRACK SURFACING SYSTEM

A. Manufacturers:

1. **Beynon:**
   a. **BSS 300:**
      1) Plyurethane Basemat, Two-Component Impermeable Sealer, Two-Component Polyurethane Wear Layer with Virgin EPDM Granuals.
      2) Color: Southern Blue.
   b. **Upgrade Option: BSS 1000**
      1) Full pour system with Force Reduction Layer, 2-C Polyurethane and Mesh SBR Intermixed and Virgin EPDM 2-C Polyurethane wear layer.
      2) Color: Southern Blue.

2. **Nagle AstroTurf:**
   a. **Spurtan BSS:**
      1) Polyurethane bound impermeable base mat with structural spray finish, sealed with two-component Qualipur polyurethane mixed with EPDM powdered rubber, two coats of one component Qualipur structural spray mixed with EPDM spray rubber.
      2) Color: Berlin Blue.
   b. **Upgrade Option: Spurtan BV:**
      1) Polyurethane bound impermeable SBR base mat, sealed with two-component Qualipur polyurethane mixed with EPDM powdered rubber, topped with two component colored polyurethane with an embedded EPDM broadcast finish.
      2) Color: Steel Blue.

3. **EPIQ Track:**
   a. **X1000**
      1) Impermeable synthetic surface of two-layer, sandwich type construction. Base layer – SBR rubber with single component polyurethane compound binding agent. Pigmented two-component polyurethane seal coat squeegee applied and top coat of EPDM granules with two-component full pour polyurethane.
      2) Color: Blue.
   b. **Upgrade Option: G4000:**
      1) Poured-in-place impermeable multi-layered application. Base layer consists of two-component polyurethane and SBR or EPDM granules. Top layer is flow applied of same pigmented polyurethane and embedded pigmented EPDM rubber granules.
      2) Color: Blue.

4. Approved Equal.
B. Track Materials:
   1. Track Surface as indicated on the drawings shall be:
      a. Polyurethane Synthetic Track Surfacing System.
      b. Thickness: 13mm (minimum).
      c. Color: Blue.
      d. Seamless.
      e. EPDM rubber textured finish.
   2. Primers: Primer shall be water-based SBR latex, specifically formulated to be compatible with the asphalt base and track surfacing material.
   3. EPDM granuals: The granules for the base course shall 1-3 mm.
   4. Polyurethane Binder: Binder material as specified by manufacturer.
   5. Line Marking Paint: All line and event markings shall be applied by experienced personnel utilizing an acrylic paint compatible with the synthetic track surfacing and in compliance with NCAA rules.

C. Track Curb:
   1. 2"x2" aluminum track curbing with rounded corners.
   2. Form fitted and manufactured to required track layout.
   3. Elevated ½" above surface for unimpeded drainage.
   4. Meet NCAA and IAAF rules and requirements.
   5. TCBM – Mill Finish Aluminum Track Curb
      a. Sportsfield Specialists, Inc.
      b. P.O Box 231
      c. 41155 State Highway 10
      d. Delhi, NY 13753
      e. www.sportsfieldspecialties.com
   6. Or Approved Equal.

PART 3 - EXECUTION

3.1 GENERAL

A. The installation shall be performed in full compliance with approved Shop Drawings.

B. Examine subbase and site conditions, with synthetic track surfacing system installer present, for compliance with manufacturer's written instructions.

C. Subbase:
   1. For NCAA AND IAAF certification the following criteria must be followed. The track surface, i.e. asphalt substrate, shall not vary from planned cross slope by more than ± .2%, with a maximum lateral slope outside to inside of 1%, and a maximum slope of 0.1% in any running direction. The finished asphalt shall not vary under a 10' straight edge more than 1/8".
   2. It should be the responsibility of the asphalt paving contractor to flood the surface immediately after the asphalt is capable of handling traffic, but within 24 hours. If, after 20 minutes of drying time, there are any birdbaths evident, it shall be the responsibility of the engineer, in conjunction with the surfacing contractor, to determine the method of correction. No cold tar patching, skin patching or sand mix patching will be acceptable.
   3. Any spills (hydraulic, diesel, motor oil, etc.) must be completely removed either by chipping out or removing and replacing the new, keyed in asphalt. The minimum depth of any asphalt replacement shall be 1 inch. The minimum curing time for asphalt base is 28 days. It shall be the responsibility of the surfacing contractor to determine if the asphalt substrate has cured sufficiently prior to the application of latex and rubber surfacing system.
   4. It shall be the responsibility of the assigned independent testing agency to determine if the asphalt substrate meets all design specifications, i.e. cross slopes, planarity and specific project criteria. After all the above conditions are met, the synthetic surfacing contractor must provide, in writing, a letter of acceptance of the planarity of the asphalt receiving base, the test results of the asphalt substrate provided by the testing agency before work can commence.
D. Total thickness of the synthetic track surfacing system shall average minimum 13mm.

A. Equipment: Synthetic Track Surfacing Systems shall be processed and installed by specifically designed machinery and equipment. An approved mixer tank with mechanical agitation and the capability to maintain the required pressure for spraying.

3.2 INSTALLATION - GENERAL

A. Replacement of Trench Drain Grates: Refer to Drawings.

B. Asphalt Pavement Improvements: Refer to Section 32 12 16 Asphalt Paving.

C. Site Conditions:
   1. Installation shall not take place if adjacent or concurrent construction generates excessive dust, abrasives or any other by-product that, in the opinion of the installer, would be harmful to the track material, until completion of such works.
   2. If, in the opinion of the installer of the synthetic material, the weather and/or climatic conditions are detrimental to the proper installation of the surfacing materials, work shall be delayed until conditions are acceptable. Required installation temperature is fifty degrees Fahrenheit and rising. Installation shall be executed only in dry conditions.

D. Install in accordance with Manufacturer’s instructions.

E. Polyurethane System:
   1. Upon written acceptance of the subbase surface by the synthetic surfacing contractor the synthetic track surfacing system shall be installed using the following applications procedures.
   2. The entire surface shall be clean and free of dirt, oil, grease or any other material upon arrival of the installation team.
   3. Prime entire surface area with a compatible polyurethane binder, thickness as specified by manufacturer.
   4. Spread a layer of EPD granules evenly and sprayed with binder, at a rate and thickness as specified by manufacturer. Repeat layering to obtain 13mm thickness, minimum, uniform.

F. Line Striping and Event Markings:
   1. The contractor shall consult with the owner and architect prior to start of his calculations and striping for determination of the finish line location, events to be run, location of lane numbers and additional markings.
   2. Line striping and event markings shall be laid out in accordance with current NCAA/IAAF rules.
   3. Calculations shall be made to the nearest 0.001'. These shall be rounded to the nearest 0.01' for marking.
   4. A transit or Theodolite capable of reading direct to 20 seconds shall set angles.
   5. Measurement shall be made with a steel tape in engineering scale that will read directly to 0.01'.
   6. All lines unless otherwise noted in drawings shall have a width of 5cm (approximately 2”).
   7. Track certification as to its accuracy for the correct distance of 400m around the track oval shall be provided.
   8. Upon completion of the installation, the owner shall be supplied with all necessary computations and drawings as well as a certified survey and letter of certification attesting to the accuracy of the markings.

3.3 CLEAN UP/CLOSE OUT