

# INVITATION FOR BIDS



FOR

BID NO. 16-156

FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD

DATE BIDS DUE: JULY 20, 2016 BY 1:00 P.M.

NOTE: QUESTIONS CONCERNING THIS SOLICITATION MUST BE E-MAILED NO LATER THAN 5:00 P.M. EASTERN STANDARD TIME ON JULY 1, 2016.

BIDS RECEIVED AFTER 1:00 PM WILL BE RETURNED UNOPENED

IT IS THE BIDDER'S RESPONSIBILITY TO CHECK OUR WEBSITE FOR ANY ADDENDA THAT MAY HAVE BEEN POSTED PRIOR TO THE DUE DATE OF THIS SOLICITATION. BE SURE TO ACKNOWLEDGE THIS INFORMATION ON THE TABLE LOCATED ON PAGE BF-3. FAILURE TO DO SO MAY CAUSE YOUR SUBMITTAL TO BE CONSIDERED NON-RESPONSIVE.

SUBMIT ORIGINAL AND ONE DUPLICATE SET OF BID FORMS TO:

HARFORD COUNTY, MARYLAND  
DEPARTMENT OF PROCUREMENT  
220 SOUTH MAIN STREET  
BEL AIR, MARYLAND 21014-3865

Aaron E. Hall

Procurement Agent

Phone: 410-638-3550

410-879-2000 Ext. 3550

Email: [aehall@harfordcountymd.gov](mailto:aehall@harfordcountymd.gov)

According to the Americans with Disability Act, this document is available in alternative format upon request.



MARYLAND'S NEW CENTER OF OPPORTUNITY



# INVITATION FOR BIDS

BID NO. 16-156

## FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD

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**HARFORD COUNTY, MARYLAND  
DEPARTMENT OF PROCUREMENT  
220 SOUTH MAIN STREET  
BEL AIR, MARYLAND 21014**

**GENERAL INSTRUCTIONS**

**INVITATION FOR BIDS  
BID NO. 16-156**

An original and one (1) duplicate set of bid forms shall be sealed, addressed and **clearly marked with the bid number and due date** to the Department of Procurement for furnishing and delivering:

**FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD**

will be received in the Department of Procurement, Harford County, until 1:00 p.m. Local Time on the due date. All bids submitted will be publicly opened at 1:30 p.m. Local Time on that date in the Main Conference Room, located on the first floor, 220 S. Main Street, Bel Air, Maryland 21014. Verification of all bids and pre-qualifications; if applicable, will occur after bid opening.

PRE-BID CONFERENCE: A Pre-Bid conference will be held for this project on June 23, 2016, in the Fallston Maintenance Complex Conference Room 1809 Fallston Road, Fallston, Maryland 21047 at 10:00 a.m. local time. Attendance is NOT mandatory, but is strongly advised.

**PREQUALIFICATION IS A REQUIREMENT OF THIS BID.**

**CONTRACTOR/BIDDER MUST BE PRE-QUALIFIED IN AREA:  
B-GRADING AND I1-RECREATIONAL**

**BONDS ARE A REQUIREMENT OF THIS BID.**

FAILURE TO SUBMIT BID DEPOSIT CHECK OR BID BOND WHEN REQUIRED WILL NULLIFY BID. BIDS MUST BE ACCOMPANIED BY A BID BOND OR CERTIFIED CHECK IN THE AMOUNT OF 5% OF BID PRICE TOTAL.

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**(PLEASE READ THOROUGHLY)**

**THESE ARE GENERAL INSTRUCTIONS FOR ALL PROJECTS; SHOULD THERE BE A DISCREPANCY BETWEEN THESE GENERAL INSTRUCTIONS AND THE PROJECT REQUIREMENTS AND/OR GENERAL REQUIREMENTS, THE PROJECT REQUIREMENTS AND/OR GENERAL REQUIREMENTS WILL PREVAIL.**

1. **INSTRUCTIONS, FORMS AND SPECIFICATIONS:**  
Instructions, forms and specifications may be obtained by going to our website at [www.harfordcountymd.gov/158/procurement](http://www.harfordcountymd.gov/158/procurement).

- a) All bids are to be submitted in duplicate on and in accordance with forms for this purpose, which are available on our website.

- b) All bids are to be submitted in a sealed envelope with the bid number and name of the bid noted utilizing the attached label.
- c) Bids received after the specified time will be returned to the bidder unopened.
- d) Additional information or clarification of any of the instructions or information contained herein must be obtained from the Department of Procurement.
- e) Should any bidder find discrepancy in the plans or specifications or should the bidder be in doubt as to their meaning or intent of any part thereof, the bidder must prior to bid submission, request clarification from the assigned Procurement Agent, who will issue an addendum or otherwise clarify the matter. Every request for such interpretation should be sent via email to the assigned Procurement Agent and marked "Request for Clarification". The request must be received on or before the due date for questions. Failure to request such clarification is a waiver to any claim by the bidder for expense made necessary by reason of later interpretation of the Contract Documents. All addenda issued during the time for bidding shall form a part of the Contract requirements and shall be considered by the bidders in preparing their bids. Failure of any bidder to receive any addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted.
- f) The County will assume no responsibility for oral communications. All official correspondence in regard to the specifications shall be directed to and will be issued by the assigned Procurement Agent in writing.
- g) Oral bids or modifications of bids will not be acceptable.
- h) Bids must be completed in ink or typewritten by the Bidder with the signature in full. When an unincorporated business is a bidder, the agent who signs the business name to the bids shall state, in addition, the names and addresses of the individuals composing the firm. When a corporation is a bidder, the person signing shall state under the laws of the State the corporation is chartered and the names and titles of the officer having the authority under the bylaws to sign contract. Any one signing the bid as agent must file with it legal evidence of his authority to do so. Post office address, County and State, and telephone number must be given after the signature of the person signing the bid.
- i) Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after this time and date specified shall not be considered. No bidder may withdraw a bid within ninety (90) days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the County and the bidder.

**2. AWARD OF CONTRACT:**

- a) Award may be made to the lowest responsive and responsible bidder. In addition to price, consideration will be given to the following when determining the lowest responsive and responsible bidder; what is in the best interest of Harford County, Maryland; the quality and performance of the goods and services to be supplied; conformity

to specifications; delivery time; previous performance, vendor location, references, and other unique requirements outlined in the request..

- b) Cash discount will be considered in determining award.
- c) Any other considerations for the award will be stated on the bid form or specifications.

**3. TAXES:**

The Contractor will be required to pay the Maryland State Tax on all materials and supplies used on the project in accordance with Maryland State Law.

**4. INSURANCE:**

- a) During the progress of the work, the Contractor shall provide and maintain the insurance set forth below. The Contractor will furnish certificates evidencing that such insurance is in force and will make every reasonable effort to provide that ten (10) days prior notice be given to the County in the event of material change or cancellation.

<u>Type of Coverage</u>	<u>Limits</u>
Workers' Compensation	Statutory Limits
Employer's Liability	\$100,000/accident \$100,000/employee disease \$500,000/disease aggregate
Bodily and Personal Injury	\$1,000,000 per person \$1,000,000 per occurrence
General Liability (including Contractual but excluding Completed Operations)	\$2,000,000 general policy aggregate per project.
Business Automobile Liability Insurance	\$1,000,000 combined single limit for bodily Injury and/or property Damage
Umbrella Excess Liability Insurance	\$1,000,000/occurrence \$1,000,000/aggregate limit
Fire and Extended Coverage (including Vandalism and Malicious Mischief) covering all material and Equipment at the job site furnished Under contract; but excluding Contractor's, subcontractor's Or Owner's tools and equipment And property owned by Employees.	Actual cash value
Special perils as Described in the latest Insurances Services Office form approved in Maryland	Amount of contract sum per loss for all work at the job site.

The County and it's elected or appointed officials and employees is to be additional insured in the Contractor's commercial general liability and umbrella excess insurance.

Contractor shall obtain the above-referenced insurance for the County, himself and his subcontractor in connection with providing goods and services under this contract.

- b) The Contractor shall comply with and qualify under current Workers' Compensation laws and at all times cause every subcontractor who shall be engaged in the work, to comply with and qualify under such laws.
- c) The Contractor shall save the County harmless against loss or damage arising from the Contractor's failure to comply with and qualify under such laws.
- d) The Contractor agrees that if, by any reason of its failure, or failure of any such subcontractor to comply with and qualify under said laws the County shall be required at any time to pay any sum because any employee of Contractor or its subcontractor is or shall be considered as the employee of the County as provided in such Workers' Compensation laws, the Contractor shall repay to the County such sums paid by the County.
- e) Evidence satisfactory to the County that the Contractor and each of its subcontractors have qualified under the Workers' Compensation laws shall be submitted prior to the commencement of the work contemplated.
- f) Policies for commercial general liability insurance must be written to protect the Contractor against claims arising from operations of subcontractors.
- g) In all cases, Certificates of Insurance shall be forwarded to the County. The County shall be listed for notification in event of cancellation. Certificates must be submitted along with the signed contract.
- h) It is understood and agreed that the Contractor has bonded or will bond each of his employees engaged on the Project who have fiduciary responsibility. It is further agreed that the Contractor shall pay to the County any sum or sums recovered from the Bonding Company arising out of acts of said employees involving funds of the County or property of the County. The bonds shall provide that coverage shall extend to and include the property of the County utilized in this project.
- i) Any and all return premiums and dividends for insurance directly charged to the County by the Contractor in connection with this Contract shall belong to and be payable to the County.
- j) The contractor and his subcontractors shall maintain and make available for audit by the insurance company their representative payrolls and other records relating to the work reasonably necessary for the purpose of computing insurance premiums. The Contractor shall assure that such information and records shall also be made available by his subcontractors.
- k) The Contractor and subcontractor shall provide, at their own expense, automobile bodily injury and property damage liability insurance covering all automobiles whether owned, hired, or non-owned operated by or on behalf of the Contractor or subcontractors, with not less than the following limits:

Bodily Injury	\$1,000,000 per person
	\$1,000,000 per occurrence
Property Damage	\$1,000,000 per occurrence

- l) Prior to providing goods or services, the Contractor and subcontractor shall furnish to the County, Certificates of Insurance as evidence of

the existence of such automobile liability insurance. Such certificates shall contain a ten (10) day prior written notice of cancellation or material change to the County.

- m) Contractors or subcontractors may at their own cost and expense obtain insurance additional to that required by the County under this Contract.
- n) The Contractor agrees to indemnify and save harmless Harford County, Maryland, from any and all losses, liabilities, damages, costs and expenses (including cost of defense, settlement, and reasonable attorney's fees), which the County may hereafter incur or be responsible for or pay for (to the extent that the same arises out of or are in connection with providing goods or services) as a result of bodily injuries (including death) to any one person or damage (including loss of use) to any property caused by the sole negligence or wrongful acts of the Contractor (or any of his employees) or any person, firm or corporation (or any employees thereof) directly or indirectly employed or engaged by the Contractor.

**5. RESERVATIONS:**

- a) The County reserves the right to reject any or all bids or parts of bids when, in its judgment, the public interest will be served thereby.
- b) The County, with the approval of the County Attorney, may waive informalities and irregularities in bids (Sec. 41-24 Procurement Law) as the interest of the County may require.
- c) The County may reject a bid as non-responsive if the unit prices bid are mathematically or materially unbalanced.
- d) Interpretation of Quantities in Bid Schedule: The quantities appearing in the prepared bid schedule are approximate only and are prepared for the canvassing of bids. Payment to the Bidder will be made only for the actual quantities of items furnished in accordance with the Contract and it is understood that the scheduled quantities of items to be furnished may be increased, diminished or omitted without in any way invalidating bid prices.
- e) The County may waive minor differences in specifications provided these differences do not violate the specification intent nor materially affect the operation for which the item or items are being purchased nor increase estimated maintenance and repair cost to the County.

**6. DELIVERY:**

- a) Bidders shall guarantee delivery of materials in accordance with such delivery schedule as may be provided in the specifications and bid forms.
- b) All items shall be delivered F.O.B. destination and delivery costs and charges are included in the bid unless otherwise stated in the bid package.
- c) Delivery time may be a factor in award of bid.

**7. COMPETITION, LITERATURE, SAMPLES:**

- a) To better insure fair competition and to permit a determination of the award, bids may be rejected if they show any omission, irregularities, alteration of forms, additions not called for, conditional or unconditional unresponsive bids, or bids obviously unbalanced.
- b) The name of any manufacturer, trade name, or manufacturer or vendor catalog number mentioned in specifications is for the purpose of designating a standard of quality and type and for

no other reason. Even though a particular manufacturer's name or brand is specified, bids will be considered on other brands or on the product of other manufacturers. **Bidders must follow the guidelines as stated in Number 8. Deviation from Specifications below.**

- c) No bidder will be allowed to offer more than one price on each item even though he may believe that he has two or more types or styles that will meet the specifications. Bidders must determine for themselves which item to offer. If the bidders should submit more than one price on any item, all prices for that item may be rejected at the discretion of the Contract Awarding Authority.
- d) A statement of the origin, composition and manufacturer of any or all materials to be used in the work shall be supplied, if requested, on the Bid Form.
- e) Specifications provided are based on County needs and uses, estimated costs of operation and maintenance, and other significant and/or limiting factors to meet County requirements and consistent with County policies. Minimum specifications, and maximum specifications where included, are not established arbitrarily to limit competition or to exclude otherwise competitive bidders.

**8. DEVIATION FROM SPECIFICATIONS:**

In addition to the above requirements, all deviations from the specifications must be submitted in detail by the bidder in writing, **on or before the due date for questions as noted on the cover page of this bid.** The bidder shall indicate clearly the product on which he is bidding and shall supply a sample or sufficient data to enable an intelligent comparison to be made with the particular brand or manufacturer specified. Catalog cuts and descriptive data shall be attached to the original copy of the bid where applicable. Failure to submit the above information may be sufficient grounds for rejection of bids. The absence of a written list of specification deviations at the time of submittal of the bid will hold the bidder strictly accountable to Harford County for furnishing material, equipment or services in full accordance with the specifications as written. Items not meeting the specifications may be rejected upon delivery to the County, and returned to Vendor at Vendor's cost.

**9. INSPECTION:**

All materials, supplies, and/or services delivered or performed for Harford County shall be subject to final inspection by Harford County and/or other independent testing laboratories as may be designated by the Director of Procurement. If the result of one or more of such tests indicates that any part of the materials or supplies are deficient in any respects, the County may reject all or any part of the materials and supplies to be provided under the contract. The Director of Procurement may waive variances in materials, supplies, and/or service upon written recommendation by the County Agency involved in the purchase.

**10. ERRORS IN EXTENSION:**

Where the unit price and the extension price are at variance, the unit price will prevail.

**11. BID DEPOSIT (if applicable):**

- a.) Bids must be accompanied by a Bid Bond or Certified Check in the amount of 5% Bid Price Total.
- b.) Bid deposit of all but the three (3) lowest bidders will usually be returned immediately after determination of the order of bids. The Bid Deposits of the second and third bidders will be returned immediately following the execution of a contract by the determined low bidder.
- c.) If no contract has been awarded within ninety (90) days of the bid opening, bid security will be returned upon the demand of the bidder.
- d.) Where the specifications or instructions provide bond requirements, the check of the successful bidder will be returned upon execution of contract and receipt of Performance Payment and Maintenance Bonds, as required under Section 12 below.

**12. BONDING INFORMATION (if applicable):**

Performance, Payment and Maintenance bonds MUST be submitted on a Harford County Bond Form. Sample Bond Forms are enclosed herewith for your review. The successful bidder will be provided with the proper bond forms upon award of contract. Harford County Government will only accept Bonds from Companies holding certificates of authority as acceptable sureties as published annually in the Federal Register, Department of the Treasurer, Fiscal Service, Department of Circular 570.

**13. PERFORMANCE BOND (if applicable):**

The successful bidder shall be required to furnish a Performance Bond in the amount of 95% of the contract, with the condition that he shall comply in all respects with the terms, conditions and agreements of the contract.

**14. PAYMENT BOND (if applicable):**

The successful bidder shall be required to furnish a Payment Bond in the amount of 95% of the contract for the protection of all subcontractors and material suppliers in accordance with Section 17-130 State Finance and Procurement of the Annotated Code of Maryland.

**15. MAINTENANCE BOND (if applicable):**

The successful bidder shall be required to furnish, a Maintenance Bond in the amount of 10% of the final contract price.

- a) The Contractor shall furnish a maintenance bond in favor of the County in a form and with a surety approved by the Owner, binding the Contractor as principal and the surety to promptly and properly replace any improper work or materials that may become apparent within a period of twelve (12) months following Harford County Acceptance of the Work.
- b) The maintenance bond will be submitted to the Department of Public Works prior to payment of final work estimate.
- c) Upon acceptance by the County of the maintenance bond the sum retained by the County will be paid to the Contractor.
- d) The maintenance bond shall consist of a surety bond in the amount of ten (10) percent of the total construction contract.

- e) The maintenance bond remains in effect for twelve (12) months unless otherwise directed from date of issuance.
- f) A punch list of items of work needing attention or correction will be maintained by the Department of Public Works.
- g) Sixty (60) days prior to expiration of maintenance bond, the Contractor will be notified of items on the punch list with a request for the schedule of completion.
- h) If the Contractor fails to comply with the notification within thirty (30) days, the Department of Public Works will notify the Contractor and send a copy to the bonding company stating that failure to comply with re-notification in two (2) weeks will result in the County completing the items on the punch list and charging the bonding company.
- i) Upon completion of maintenance bond requirements, the Department of Public Works will notify the Contractor of fulfillment of obligations of the bond.

**16. LAW AND REGULATIONS:**

In all operation related to the subject item, all laws and regulations of Harford County and all United States, State of Maryland Laws which are applicable to the Contract must be strictly complied with. The Contractor shall protect and indemnify Harford County and its agents or employees against any claim or liability arising from or based on the violation of any such laws, ordinances or regulations, whether by him or his employees.

**17. SITE VISIT: (if applicable)**

Prior to preparing the bid, the Bidder shall visit the site. He shall be familiar with all existing conditions, making all necessary investigations as to locations of pipe lines and services and all other mater which can affect the work proposed. Bidder shall be familiar with the plans and specifications. The failure or omission of any Bidder to examine any form instrument or document shall in no way relieve any Bidder from any obligation in respect to his bid.

**18. QUALIFICATION AND LICENSE:**

The County may make such investigations as deemed necessary to determine the ability of the bidder to perform the work and the bidder shall furnish the County all such information and data for this purpose as the County may request. The County reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the County that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

**19. FORM OF CONTRACT:**

An appropriate Harford County Contract will be executed in accordance with Section 41-26 of the Harford County Code.

**20. PREQUALIFICATION REQUIREMENTS (if applicable):**

In order to qualify to bid on this project, the Contractor MUST have completed Harford County Contractor's Prequalification Application. All applications are due in the Department of Procurement ten (10) working days prior to the original bid opening date.

**21. COOPERATIVE PURCHASING**

Harford County reserves the right to extend the terms and conditions of this solicitation to any and all other agencies within the state of Maryland as well as any other federal, state, municipal, county, or local governmental agency under the jurisdiction of the United States and it's territories. This shall include but not limited to private schools, parochial schools, non-public schools such as charter schools, special districts, intermediate units, non-profit agencies providing services on behalf of government, and/or state, community and/or private colleges/universities that require these goods, commodities and/or services. This is conditioned upon mutual agreement of all parties pursuant to special requirements, which may be appended thereto. The supplier/contractor agrees to notify the issuing body of those entities that wish to use any contract resulting from this bid and will also provide usage information, which may be requested. A copy of the contract pricing and the bid requirements incorporated in this contract will be supplied to requesting agencies.

Each participating jurisdiction or agency shall enter into its own contract with the Awarded bidder(s) and these contract(s) shall be binding only upon the principals signing such document. Invoices shall be submitted in duplicate "directly" to the ordering jurisdiction for each unit purchased. Disputes over the execution of any contract shall be the responsibility of the participating jurisdiction or agency that entered into that contract. Disputes must be resolved solely between the participating agency and the Award Bidder. Harford County does not assume any responsibility other than to obtain pricing for the specifications provided.

**22. RECIPROCAL PREFERENCE FOR LOCAL BIDDERS:**

- a) When supplies or contractual services are purchased through the bid process established by Chapter 41 of the Harford County Code, the County may give a preference to the local bidder who is the lowest responsible local bidder if:
  - (1) All bids received are for the total amount of unit price, quality and service being equal, the contract shall be awarded to a local bidder;
  - (2) The other county or state gives a preference to its local bidders; and
  - (3) A preference does not conflict with a federal law or grant affecting the purchase of the supplies or contractual services.
- b) A preference given under this section shall be identical to the preference that the other county or state gives to its local bidders.

**23. ELIGIBILITY OF CANDIDATES FOR EMPLOYMENT:**

- a) The E-Verify program is an internet-based employment verification system that allows employers to verify employee status against Federal Social Security and immigration databases.
- b) Harford County encourages employers to utilize the E-Verify program, or an equivalent system, as a means to help employers determine the eligibility of new hires.

**24. FUNDING OUT**

Contractor understands that any Contract, that results from this bid, is subject to the availability of funds and that the unavailability of funds shall automatically terminate this Contract and render it void without liability to the County, except Contractor will be paid for work performed up to the date of termination. The County shall notify Contractor in writing of such event of termination.

**25. NO SMOKING POLICY:**

Harford County has a policy whereby the use of tobacco products, including cigarettes, cigars, pipes, chewing tobacco and snuff is strictly prohibited on County property. The Contractor shall adhere to this policy.

**SUBMIT ORIGINAL AND ONE DUPLICATE SET OF BID FORMS**

**BID FORM**

**BID NO. 16-156**

**FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD**

TO: Director of Procurement  
Harford County, Maryland  
220 South Main Street  
Bel Air, Maryland 21014

From: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Basis of Award:**

1. Contract award may be based on the lowest responsive and responsible bidder. In addition to price, other considerations may be given when determining the lowest responsive and responsible bidder and what is in the best interest of Harford County, Maryland.
2. All bidders **must be** prequalified in all areas specified if applicable.
3. All bidders **must be** registered to do business in the State of Maryland in accordance with the Annotated Code of Maryland Corporations and Associations Sec. 2-102 Formation generally, Sec. 7-202 Registration to do interstate and foreign\* business, and/or Sec. 7-203 Qualification to do intrastate. For information on registering or qualifying a corporation, LLC, LLP or LP call the Maryland Department of Assessments and Taxation (SDAT) at (410) 767-1340.

Sole Proprietors and General Partnerships may call (410) 767-4991 or you may download the SDAT forms at: [www.dat.state.md.us/sdatweb/sdatforms.html](http://www.dat.state.md.us/sdatweb/sdatforms.html) - entity or by calling at (410) 767-1340 or Toll Free (888) 246-5941.

\*"a corporation, association, or joint-stock company organized under the laws of the United States, another state of the United States, a territory, possession, or district of the United States, or a foreign country." Sec. 1-101 Annotated Code of Maryland Corporations and Associations.

4. All bidders **must be** in good standing with Harford County, Maryland. Bidders must resolve any outstanding taxes, fees or accounts with Harford County.
5. **Award will only be made to the lowest responsive and responsible bidder who meets all requirements as specified in Numbers 1-4 above at time of award.**
6. Bid Checklist – Failure to meet requirements A-C below, will result in your bid being rejected as non-responsive:
  - A. We are in good standing with State and Local Governments. Yes\_\_ No\_\_  
Dept. ID as recorded by Maryland Dept. of Assessments and Taxation: \_\_\_\_\_
  - B. We are pre-qualified with Harford County in all stated areas (if applicable)? Yes\_\_ No\_\_ N/A\_\_  
Date of Certificate Expiration: \_\_\_\_\_
  - C. We are submitting the Bid Bond (If Applicable) Yes\_\_ No\_\_ N/A\_\_
  - D. We are submitting one Original & one Duplicate Copy of the Bid Forms. Yes\_\_ No\_\_
  - E. We acknowledge all addenda (If Applicable). Yes\_\_ No\_\_ N/A\_\_

**IT IS THE BIDDER'S RESPONSIBILITY TO CHECK OUR WEBSITE (<http://www.harfordcountymd.gov/158/Procurement>) FOR ANY ADDENDA THAT MAY HAVE BEEN POSTED PRIOR TO THE DUE DATE OF THIS SOLICITATION. BE SURE TO ACKNOWLEDGE THIS INFORMATION ON THE TABLE BELOW. FAILURE TO DO SO MAY CAUSE YOUR SUBMITTAL TO BE NON-RESPONSIVE.**

<b>Addendum No.</b>	<b>Date of Addendum</b>	<b>Acknowledgement/Initials</b>

**BID NO. 16-156**  
**FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD**

ITEM	DESCRIPTION	QUANT.	UNIT PRICE	TOTAL PRICE
1	Mobilization / Demobilization / General Conditions	1	L S	\$ _____
2	Erosion and Sediment Control	1	L S	\$ _____
3	Site Preparation	1	L S	\$ _____
4	Artificial Turf Concrete Curb Construction	1	L.S.	\$ _____
5	Storm Drain & Recharge Trenches	1	L S	\$ _____
6A	Long Pile Synthetic Infilled Turf Surface, FieldTurf XM6-65, per Manufacturer's Recommendations and Stone Base	1	LS	\$ _____
6B	Synthetic Infilled Turf Surface with Secondary (Thatch) Yarn, AstroTurf Gameday Grass 3D 60, per Manufacturer's Recommendations and Stone Base	1	L.S.	\$ _____

7	Athletic Field Equipment, Installation, Shot Put, Discus, Long Jump, Triple Jump, and Pole Vault Improvements	1	L S	\$ _____
8	Restoration of Graded and Disturbed Areas Associated with Synthetic Turf Field	1	L S	\$ _____
9	ADA Field Access Paved Path	1	L S	\$ _____
10	Post Hydrant and 3/4" Copper Water Service Connection	1	L S	\$ _____
11	Track, High Jump, Long Jump, Pole Vault, Surface Repair and Restriping	1	L S	\$ _____
C-1	Contingent Item – Unclassified Excavation Below Paving or Storm Drain Sub-grade, Dispose Material Off-site and Furnish and Place AASHTO#57, CR-6 or #2 Stone Refill	150 CY	\$ _____	\$ _____
C-2	Contingent Item - Furnish and Place Select Backfill Using AASHTO#57 Stone	150 TNS	\$ _____	\$ _____
C-3	Contingent Item - Bituminous Pavement Patch for Areas Less Than 100 SF	25 TNS	\$ _____	\$ _____

C-4	Contingent Item - Bituminous Pavement Patch for Areas Greater Than 100 SF	125 TNS	\$ _____	\$ _____
C-5	Contingent Item - Furnish and Incorporate Portland Cement into Soil Surface	150 TNS	\$ _____	\$ _____
C-6	Contingent Item – Replacement Header Board and Concrete Curb	100 LF	\$ _____	\$ _____

**SYNTHETIC TURF FIELD BID – ALT. ONE Items 1 to 5, 6A, 7, 8, 9, and 10; C-1 to C-6:**

\$ \_\_\_\_\_

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**WRITTEN IN WORDS \*IF NO CENTS, WRITE NO CENTS**

**SYNTHETIC TURF FIELD BID – ALT. TWO Items 1 to 5, 6B, 7, 8, 9, and 10; C-1 to C-6:**

\$ \_\_\_\_\_

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**WRITTEN IN WORDS \*IF NO CENTS, WRITE NO CENTS**

**ALTERNATE: CHAIN LINK FENCE ADDITION**

ITEM	DESCRIPTION	QUANT.	UNIT PRICE	TOTAL PRICE
1	Removal of existing fence and re-installation of approximately 1800 LF of Black Polymer Coated 6 foot high chain link fence with three 12 foot wide double swing gates and two 4'x6' per plans. Blacktop Improvements per plan for the press box access.	1800	LF	\$ _____

**ALTERNATE- CHAIN LINK FENCE ADDITION    Item 1.**

\$ \_\_\_\_\_

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**WRITTEN IN WORDS    \*IF NO CENTS, WRITE NO CENTS**

Discount of Terms of Payment may be considered in determining the award at the sole discretion of the County. Any other considerations for the award will be stated on the specifications and proposal.

Payment Terms: The payment terms shall be considered net 30 days unless otherwise indicated below by the bidder.

Payment Terms: \_\_\_\_\_% net \_\_\_\_\_

(Example, 2% net 15 days. A 2% discount if Harford County pays in 15 days).

If a discounted payment is not applicable to your bid, please initial here to confirm that a discount does not apply. \_\_\_\_\_

This bidder, in compliance with the above-captioned Invitation for Bids has examined the plans, specifications and related documents, and the site of the proposed work (as applicable), is familiar with all the conditions surrounding the proposed project including materials, supplies and services to complete the project in accordance with the contract documents.

Bidder agrees to perform all work described in this Invitation for Bids, for the prices set forth on the Bid Form.

Within 10 days after receiving notice of acceptance of this bid, Bidder will execute the formal contract and deliver it to the Harford County Department of Procurement, with the bonds (if applicable) as required by the General Instructions.

The Bid Deposit attached (if applicable) in the sum of five percent (5%) of the total bid amount becomes the property of the County in the event the contract and bonds are not executed and delivered within the time set forth above, as liquidated damages for the delay and additional expense to the County caused thereby.

## **BID/PROPOSAL AFFIDAVIT**

### **A. AUTHORIZED REPRESENTATIVE**

#### **I HEREBY AFFIRM THAT:**

I am the (title) \_\_\_\_\_ and the duly authorized representative of (name of business) \_\_\_\_\_ and that I possess the legal authority to make this Affidavit on behalf of myself and the business for which I am acting.

### **B. CERTIFICATION REGARDING COMMERCIAL NONDISCRIMINATION**

The undersigned bidder or proposer hereby certifies and agrees that the following information is correct:

In preparing its bid or proposal on this project, the bidder or proposer has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not engaged in “discrimination” as defined in the State Finance and Procurement Article of the Annotated Code of Maryland. “Discrimination” means any disadvantage, difference, distinction, or preference in the solicitation, selection, hiring, or commercial treatment of a vendor, subcontractor, or commercial customer on the basis of race, color, religion, ancestry, or national origin, sex, age, marital status, sexual orientation, or on the basis of disability or any otherwise unlawful use of characteristics regarding the vendors, supplier’s or commercial customer’s employees or owners. “Discrimination” also includes retaliating against any person or other entity for reporting any incident of “discrimination”. Without limiting any other provision of the solicitation on this project, it is understood that, if the certification is false, such false certification constitutes grounds for the State to reject the bid or proposal submitted by the bidder or proposer on this project, and terminate any contract awarded based on the bid or proposal. As part of its bid or proposal, the bidder or proposer herewith submits a list of all instances within the past 4 years where there has been a final adjudicated determination in a legal or administrative proceeding in the state of Maryland that the bidder or proposer discriminated against subcontractors, vendors, suppliers, or commercial customers, and a description of the status or resolution of that determination, including any remedial action taken. Bidder or Proposer agrees to comply in all respects with the State’s Commercial Nondiscrimination Policy as described under the State Finance and Procurement Article of the Annotated Code of Maryland.

**C. AFFIRMATION REGARDING BRIBERY CONVICTIONS**

**I FURTHER AFFIRM THAT:**

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies (as is defined in the State Finance and Procurement Article of the Annotated Code of Maryland), has been convicted of, or has had probation before judgment imposed pursuant to the Annotated Code of Maryland, or has pleaded *nolo contendere* to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows:

(Indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

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**D. AFFIRMATION REGARDING DEBARMENT**

**I FURTHER AFFIRM THAT:**

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows:

(List each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension)

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**E. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES**

**I FURTHER AFFIRM THAT:**

(1) The above business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows: (Indicate the reasons why the affirmation cannot be given without qualification):

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**F. AFFIRMATION REGARDING COLLUSION**

**I FURTHER AFFIRM THAT:**

Neither I, nor to the best of my knowledge, information, and belief, the agents, servants and/or employees of the above business have:

(1) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or proposal that is being submitted;

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or proposal price of the bidder or proposer or contractor or of any competitor, or otherwise taken any action in restraint of free competition in connection with the contract for which the accompanying bid or proposal is submitted.

**G. FINANCIAL DISCLOSURE AFFIRMATION**

**I FURTHER AFFIRM THAT:**

I am aware of, and the above business will comply with, the provisions of the State Finance and Procurement Article of the Annotated Code of Maryland, which require that every business that enters into contracts, leases, or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the

aggregate \$100,000 or more shall, within 30 days of the time when the aggregate value of the contracts, leases, or other agreements reaches \$100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

**H. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION**

**I FURTHER AFFIRM THAT:**

I am aware of, and the above business will comply with the provisions of Article 33, Sections 30-1 through 30-4 *et seq.* of the Annotated Code of Maryland, which require that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, during a calendar year under which the person receives in the aggregate \$100,000 or more shall, on or before February 1, of the following year, file with the Secretary of State of Maryland certain specified information to include disclosure of political contributions in excess of \$500 to a candidate for elective office in any primary or general election.

**I. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT**

**I FURTHER AFFIRM THAT:**

(1) The business named above is a (Check one)  Maryland (domestic) corporation  
 foreign (non-Maryland) corporation

registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that it is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its resident agent filed with the State Department of Assessments and Taxation is:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

(If not applicable, so state).

(2) Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Employment Security Administration, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

#### **J. CONTINGENT FEES**

##### **I FURTHER AFFIRM THAT:**

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee or agent working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee or agent, any fee or any other consideration contingent on the making of the Contract.

#### **K. TROPICAL HARDWOOD AND TROPICAL HARDWOOD PRODUCTS**

Acknowledging §41-19.1 of the Harford County Code, which prohibits the County from making or renewing a contract that requires the use of the tropical hardwoods and tropical hardwood products except in cases where the Director of Procurement determines (1) that there is no acceptable non-tropical hardwood equivalent; or (2) tropical hardwood is required for restoration of a structure designated as historic under federal, state or county law, and requires that any bid or proposal that does not contain this certification be rejected,

##### **I FURTHER AFFIRM THAT:**

No tropical hardwoods or tropical hardwood products (Acapu, Afrormosia, Almon, Amaranth, Amazaque, Aningeria Apitong, Blasa, Banak, Bella Rosa, Bengé, Boire, Bubinga, Cativor, Chenchen, Concobolo, Cordia, Ebony, Gaboon, Iroko, Koa, Koto, Red Lauan, White Lauan, Tanguile, Limba, Louro, Africa Mahogany, American Mahogany, Makore, Movingui, African Padauk, Angola Padauk, Peroba, Purpleheart, Ramin, Rosewook, Sapele, Sonora, Teak, Tigerwood, Wenge, or Zebrawood) shall be supplied to the County or used in connection with the Contract, except as specifically approved by the Director of Procurement.

**L. ACKNOWLEDGEMENT**

**I ACKNOWLEDGE THAT** this Affidavit is furnished to the Purchasing Agent and that nothing in this Affidavit or in any contract arising from this bid or proposal shall be construed to supersede, amend, modify or waive the exercise of any statutory right or remedy with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

**I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.**

Date: \_\_\_\_\_ By \_\_\_\_\_  
(Authorized Representative and Affiant)

Federal Employer Identification Number (FEIN): \_\_\_\_\_

The undersigned acknowledges they have read the Invitation for Bids and all addenda including those posted on the County's website and hereby submits the above Bid.

**BID SUBMITTED BY:**

_____ ENTITY NAME (Must be entity name as registered with Maryland State Department of Assessments & Taxation)	_____ TELEPHONE NUMBER
_____ REPRESENTATIVE & TITLE (TYPE OR PRINT)	_____ FAX NUMBER
_____ REPRESENTATIVE & TITLE (SIGNATURE)	_____ E-MAIL ADDRESS
_____ ADDRESS	_____ MD. CONTRACTOR'S LICENSE NO.
_____ DATE	_____ DATE AND PLACE OF ISSUE

Per Section 1(h) of the General Instructions, if company is unincorporated, list below the names and addresses of individuals composing the firm.

Name \_\_\_\_\_ Address \_\_\_\_\_

Name \_\_\_\_\_ Address \_\_\_\_\_

**HARFORD COUNTY, MARYLAND  
MAINTENANCE BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

\*\*\*\*\*

Surety: \_\_\_\_\_

Resident Agent's Name & Address \_\_\_\_\_

A corporation of the State of \_\_\_\_\_, and authorized to do business in the State of Maryland.

\_\_\_\_\_  
Name and Address of any other person who must receive notice of any breach or nonperformance of Principal.

\*\*\*\*\*

Obligee: HARFORD COUNTY, MARYLAND  
220 S. Main Street  
Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

\*\*\*\*\*

Penal Sum of Bond (Express in Words and Figures) \_\_\_\_\_

Date Bond Executed \_\_\_\_\_

\*\*\*\*\*

Complete Description of Maintenance Agreement \_\_\_\_\_

Agreement Number \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal named above, are held and firmly bound unto the Obligee, Harford County, Maryland, in the Penal Sum of this Maintenance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors and assigns, jointly and severally, firmly by these Presents. However, where Surety is composed of corporations acting as co-sureties, we, the co-sureties bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a Maintenance Agreement (the "Agreement") with Harford County, Maryland, by and through the Department named above acting for Harford County, Maryland, which Agreement is described as shown above and incorporated herein by reference. The Agreement and all items incorporated into the Agreement, together with any and all changes, extensions of time, alterations, modifications, or additions to the Agreement approved by the Director of the above-named Department (the "Director"), or to the work to be performed thereunder or to the Plans, Specifications and Special Provisions, or any of them, or to any other items incorporated into the Agreement shall hereinafter be referred to as "The Agreement."

WHEREAS, it is one of the conditions precedent to the final award of the Agreement that this Maintenance Bond be executed.

NOW, THEREFORE, during the original term of said Agreement, during any extensions hereto that may be granted by the Director, and during the guarantee and warranty period, if any, required under the Agreement, unless otherwise stated therein, this Maintenance Bond shall remain in full force and effect for a period of \_\_\_\_ year(s) from the date of acceptance by the Director.

Whenever Principal shall be declared by the Director to be in default under the Agreement, the Surety may, within 15 days after notice of default from the Director, notify the Director of its election to either promptly proceed to remedy the default or promptly proceed to complete the Agreement in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above-stated options, then the Director may have any and/or all remaining work under the Agreement completed, Surety to remain liable hereunder for all expenses of completion up to but not exceeding the Penal Sum stated above. Surety will immediately forfeit and pay Obligee all or part of the Penal Sum, as demanded by the Director.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this Maintenance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Agreement or to the work or to the Specifications.

This Maintenance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Maintenance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture have signed below, each member has set forth his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: The corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below, and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

\*\*\*\*\*

In Presence of: (Witness) \_\_\_\_\_ Individual Principal  
\_\_\_\_\_ as to \_\_\_\_\_  
\*\*\*\*\*

In Presence of: (Witness) \_\_\_\_\_ Co-Partnership Principal  
\_\_\_\_\_

\_\_\_\_\_ as to BY: \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ as to \_\_\_\_\_

\_\_\_\_\_ as to \_\_\_\_\_  
\*\*\*\*\*

Attest: \_\_\_\_\_ Corporate Principal  
\_\_\_\_\_ as to \_\_\_\_\_

BY: \_\_\_\_\_  
President

Attest: \_\_\_\_\_ Surety:  
\_\_\_\_\_ as to \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

Business Address of Surety \_\_\_\_\_  
\_\_\_\_\_

Bonding Agent's Name and Address:  
\_\_\_\_\_  
\_\_\_\_\_

**HARFORD COUNTY, MARYLAND  
PAYMENT BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

Surety

Resident Agent's Name & Address:

A corporation of the State of \_\_\_\_\_, and  
authorized to do business in the State of Maryland.

Name and address of any other person who must receive notice of  
any breach of nonperformance of contractor/ principal:

Owner: HARFORD COUNTY, MARYLAND  
220 S. Main Street, Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

Bond Amount \_\_\_\_\_

Date Bond Executed: \_\_\_\_\_

Complete Description of Construction Contract

Contract Number: \_\_\_\_\_

Contract Amount: \_\_\_\_\_

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
  - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
  - 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment of labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 11) of any claims, demands, liens or suits and tendered defence of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
  - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 11) and send a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
  - 4.2 Claimants who do not have a direct contract with the Contractor:
    - .1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
    - .2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
    - .3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 11) and sent a copy, or notice thereof, to the owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
  - 6.1 Send an answer to the Claimant, with a copy to the Owner, within 60 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
  - 6.2 Pay or arrange for payment of any undisputed amounts.
7. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under the Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
8. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

9. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
10. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3; or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
11. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
12. When this bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
13. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
14. DEFINITIONS:
  - 14.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors and all other items for which a mechanic's lien may be asserted in the jurisdiction where labor, materials or equipment were furnished.
  - 14.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
  - 14.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

\*\*\*\*\*  
 In Presence of: (Witness) \_\_\_\_\_ as to \_\_\_\_\_ Individual Principal  
 \_\_\_\_\_

\*\*\*\*\*  
 In Presence of: (Witness) \_\_\_\_\_ Co-Partnership Principal  
 \_\_\_\_\_

\_\_\_\_\_ as to By: \_\_\_\_\_  
 \_\_\_\_\_ as to \_\_\_\_\_  
 \_\_\_\_\_ as to \_\_\_\_\_

\*\*\*\*\*

Attest \_\_\_\_\_ Corporate Principal  
 \_\_\_\_\_

\_\_\_\_\_ as to By: \_\_\_\_\_  
 \_\_\_\_\_ President

\*\*\*\*\*  
 Attest \_\_\_\_\_ Surety  
 \_\_\_\_\_

\_\_\_\_\_ as to \_\_\_\_\_  
 By: \_\_\_\_\_

Title: \_\_\_\_\_  
 Business Address of Surety:  
 \_\_\_\_\_

\_\_\_\_\_

Owner: Harford County, Maryland  
 Department of Procurement  
 220 S. Main Street  
 Bel Air, Maryland 21014

Bonding Agent's Name and Address:  
 \_\_\_\_\_  
 \_\_\_\_\_

**HARFORD COUNTY, MARYLAND  
PERFORMANCE BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

Surety

Resident Agent's Name & Address:

A corporation of the State of \_\_\_\_\_, and authorized  
to do business in the State of Maryland.

\_\_\_\_\_  
Name and address of any other person who must receive notice of  
any breach of nonperformance of principal:  
\_\_\_\_\_

Obligee: HARFORD COUNTY, MARYLAND  
220 S. Main Street, Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

Penal Sum of Bond (express in words and figures) \_\_\_\_\_

Date Bond Executed: \_\_\_\_\_

Complete Description of Agreement \_\_\_\_\_

Agreement Number: \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal named above and Surety named above, are held and firmly bound unto the Obligee, Harford County, Maryland, in the Penal Sum of this Performance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors and assigns, jointly and severally, firmly by these presents. However, where Surety is composed of corporations acting as co-sureties, we the co-sureties, bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a join action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a Performance Agreement, (the "Agreement"), with Harford County, Maryland, by and through the Department named above acting for Harford County, Maryland, which Agreement is described as shown above, and incorporated herein by reference. The Agreement and all items incorporated into the Agreement, together with any and all changes, extensions of time, alterations, modifications, or additions to the Agreement approved by the Director of the above-named Department, (the "Director"), or to the work to be performed thereunder or to the Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the Agreement shall hereinafter be referred to as "the Agreement."

WHEREAS, it is one of the conditions precedent to the final award of the Agreement that this Performance Bond be executed.

NOW, THEREFORE, during the original term of said Agreement, during any extensions thereto that may be granted by the Director, and during the guarantee and warranty period, if any, required under the Agreement, unless otherwise stated therein, this Performance Bond shall remain in full force and effect unless and until the following terms and conditions are met:

1. Principal shall well and truly perform the Agreement; and
2. Principal and Surety shall comply with the terms and conditions in this Performance Bond.

Whenever Principal shall be declared by the Director to be in default under the Agreement, the Surety may, within 15 days after notice of default from the Director, notify the Director of its election to either promptly proceed to remedy the default or promptly proceed to complete the Agreement in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above-stated options, then the Director may have any and/or all remaining work under the Agreement completed. Surety to remain liable hereunder for all expenses of completion up to but not exceeding the Penal Sum stated above. Surety will immediately forfeit and pay to Obligee all or part of the Penal Sum, as demanded by the Director.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Agreement or to the work or to the Specifications.

This Performance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and/or the Laws of Harford County, Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Performance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture have signed below, each member has set forth below his or her title as general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: The corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below, and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

---

In Presence of: (Witness) \_\_\_\_\_ Individual Principal  
\_\_\_\_\_ as to \_\_\_\_\_

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In Presence of: (Witness) \_\_\_\_\_ Co-Partnership Principal  
\_\_\_\_\_ as to By: \_\_\_\_\_  
\_\_\_\_\_ as to \_\_\_\_\_  
\_\_\_\_\_ as to \_\_\_\_\_

---

Attest \_\_\_\_\_ Corporate Principal  
\_\_\_\_\_ as to By: \_\_\_\_\_  
President

---

Attest \_\_\_\_\_ Surety  
\_\_\_\_\_ as to \_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_  
Business Address of Surety:  
\_\_\_\_\_

Bonding Agent's Name and Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# HARFORD COUNTY CONSTRUCTION CONTRACT

**CONTRACT NO.  
INSERT TITLE**

**THIS CONTRACT**, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 2016, by and between **HARFORD COUNTY, MARYLAND**, a body corporate and politic of the State of Maryland, sometimes hereinafter referred to as "County," and **INSERT COMPANY AND ADDRESS** sometimes hereinafter referred to as "Contractor."

**WHEREAS**, the County requires **INSERT REQUIREMENT** (Project); and

**WHEREAS**, the County issued a formal Invitation for Bid (IFB)/Request for Proposal (RFP) to obtain bids/proposals from qualified contractor's to construction the Project; and

**WHEREAS**, the Contractor submitted a bid/proposal dated **INSERT DATE** to provide the required services (Bid); and

**WHEREAS**, the County and the Contractor desire to enter into a contract.

**NOW, THEREFORE**, in consideration of the mutual promises and covenants contained herein, and the recitals, which are incorporated by reference herein, the County and the Contractor, intending to be legally bound, agree as follows:

## **SECTION I: CONTRACT DOCUMENTS**

The contract between the County and the Contractor shall consist of this Harford County Construction Contract; the approved plans and specification for the Project; the IFB/RFP and any documents referenced therein; and the following addenda to the IFB/RFP, including any document referenced therein; **INSERT ADDENDUM NUMBER AND DATE**; Contractor's Bid/RFP (including the Bid Form and Bid Affidavits/Price Proposal and Proposal Affidavit) (collectively referred to as the "Contract").

## **SECTION II: SCOPE OF WORK**

A. The Contractor shall furnish all labor, materials, equipment, tools and other facilities and services, as required to complete the Project in accordance with the requirements of the Contract.

B. The Contractor shall perform all work under this Contract in a diligent and workmanlike manner, and shall exercise the degree of skill and expertise as is customarily employed by similar contractors performing similar work.

C. Specifications, plans and drawings referenced in this Contract remain the property of the County.

### **SECTION III: TIME OF COMPLETION**

A. Subsequent to the execution of this Contract, the County shall give notice to the Contractor to proceed with the work beginning on a specified day.

B. The work to be performed under this Contract shall be fully and finally completed within \_\_\_\_\_ ( ) consecutive calendar days from the starting date as specified in the Notice-to-Proceed.

### **SECTION IV: CONTRACT SUM**

A. The total contract sum for the performance of the work described herein is \_\_\_\_\_ (\_\_\_\_\_).

B. Payment will be made in accordance with the Project Specifications.

### **SECTION V: ACCEPTANCE AND FINAL PAYMENT**

A. Total contract sum, \_\_\_\_\_ (\_\_\_\_\_) subject to additions and deductions by a change order or contract modification, shall be paid to the Contractor for all work under this Contract.

B. Payment of the above stated amount shall be based upon applications for payment submitted to the County, and payments shall be progress payments made monthly to the Contractor by the County. At the beginning of each month, Contractor will submit to the County, a request for payment in the form of an itemized statement which must show each item listed in the Bid Form/Price Proposal, percentage complete, payment requested and the new balance remaining for the item. Upon approval of said request for payment by the County, payment shall be made to the Contractor.

C. The County will retain a portion of the amount due the Contractor, in accordance with the following:

1. The County shall withhold not more than 10 percent (10%) of the payment claimed, in an application for payment, until the work is 50 percent (50%) complete.

2. When the work is 50 percent (50%) complete the Contractor may request a reduction of the withholding to a lower percentage. Any reduction in the percentage shall be made at the sole discretion of the Director and will be considered only if the Contractor is making satisfactory progress and there is no specific cause for greater withholding. At no time shall the total retainage be less than 5% of the payment claimed for all work satisfactorily completed to date.

3. The County may reinstate up to 10 percent (10%) withholding, if the Contractor is not making satisfactory progress or if there is other specific cause for such withholding.

D. Upon completion of the work, the Contractor shall submit a written final estimate, based upon the County's measurement of the whole amount of authorized work performed by the Contractor and the value thereof under the terms of the Contract, and shall certify to the County, the completion of the work and the amount of the final estimate. All monthly estimates are subject to correction in the final estimate. The County's measurements upon which the final estimate is based, shall be final and conclusive. The final estimate shall be submitted to the County for confirmation that the work for which payment is claimed has been performed.

E. Upon approval of the final estimate, the County will notify the Contractor, in writing, of the final acceptance of the work. Out of the amount representing the payment due under the final estimate, the County will deduct such sum as is necessary so that the total retainage held by the County is ten percent (10%) of the final estimate, in addition to any and all other amounts under the Contract that it is entitled or required to retain, and shall hold said sum for a period of twelve (12) months from and after the date of payment of the final estimate.

F. Such part as may be necessary, or all of said retained sum, shall be applied to any expense to which the County may be subjected, during the said period of twelve (12) months, in repairing any defects found in the work under the Contract, which may be deemed to have been caused by failure of the Contractor to comply with the terms of the Contract, or to any breach of the Contract whatsoever on the part of the Contractor. The County shall be empowered to make any required repairs or renewals during said period, if after notice, the Contractor shall refuse or neglect to do said required work or make satisfactory progress thereon, within such period as the County shall consider necessary or reasonable. In case of an emergency, the County shall be empowered to make any required repairs without notice to the Contractor. Where such emergency repairs have been made without prior notice to the Contractor, the County shall so advise the Contractor as soon as possible thereafter. The right of expenditure of any retainage as provided for above, shall be in addition to the County's right to proceed against any and all bonds posted as security by the Contractor.

G. Within thirty (30) days after the approval of the final estimate, the County will pay to the Contractor, the amount remaining after deducting from the total amount of the final estimate, all such sums as have heretofore been paid to the Contractor under the provisions of the Contract, and also such amounts as the County has or may be authorized under the Contract to reserve or retain.

H. In lieu of the ten percent (10%) retainage described in Section V, Paragraph E, above, the Contractor may furnish to the County a maintenance bond in an amount equal to ten percent (10%) of the total contract sum to cover a twelve (12) month period

beginning with the date of "Final Acceptance" of all work performed by the Contractor to protect the County against faulty work appearing after final payment and arising within one year from final acceptance. Upon receipt of said maintenance bond, the County will pay to the Contractor any retainage withheld prior to submission and acceptance of the maintenance bond. At the end of the aforesaid twelve (12) month period, if no defects are found or if defects found have been satisfactorily corrected, the maintenance bond or all retained fees will be returned.

I. Prior to issuance of the certification described in Section, Paragraph D, the Contractor shall submit evidence satisfactory to the County that all payrolls, material bills and other indebtedness connected with this work have been paid.

J. The making and acceptance of final payment shall constitute a waiver of all claims by the Contractor against the County.

#### **SECTION VI: NON-COMPLETION**

A. In the event that full completion of the Contract is materially delayed or the work cannot be completed through no fault of the Contractor, and the Director of the Department of Public Works so certifies, the County shall, without terminating the Contract, make payment of the sum due for that portion of the work completed and accepted by the Department of Public Works. Such payment shall not constitute a waiver of claims by the County against the Contractor.

B. In the event that the work is not completed within the specified time period and the causes of delay are within the control of the Contractor, or the Contractor otherwise fails to perform under the terms of this Contract, the Contractor shall pay to the County liquidated damages of \_\_\_\_\_ ( ) per calendar day.

C. Completion, as it relates to liquidated damages, means that the work under the Contract has been fully accomplished to the satisfaction of the County and the County has fully accepted, by formal written notice and by no other means, the work.

#### **SECTION VII: BONDS**

The Contractor shall furnish the County with a payment and a performance bond in the amount of ninety five percent (95%) of the contract price, at the time of execution of this Contract. Upon completion and acceptance of work, and except as otherwise provided herein, Contractor will be required to post a ten percent (10%) maintenance bond for a one year period in accordance with Section V, subsection H. The bonds shall be executed by a surety company authorized to do business in the State of Maryland and all bonds securing this project shall be made payable to Harford County, Maryland.

## SECTION VIII: GENERAL PROVISIONS

A. Non-Discrimination in Employment: The Contractor agrees: (a) not to discriminate in any manner against an employee or applicant for employment because of race, color, religion, creed, age, sex, marital status, national origin, ancestry, or physical or mental handicap unrelated in nature and extent so as reasonably to preclude the performance of such employment; (b) to include a provision similar to that contained in subsection (a), above, in any subcontract except a subcontract for standard commercial supplies or raw materials; and (c) to post and to cause subcontractors to post in conspicuous places available to employees and applicants for employment, notices setting forth the substance of this clause.

B. Contingent Fee Prohibition: The Contractor warrants that it has not employed or retained any person, partnership, corporation or other entity, other than a bona fide employee or agent working for the Contractor, to solicit or secure this Contract, and that it has not paid or agreed to pay any person, partnership, corporation or other entity, other than a bona fide employee or agent, any fee or any other consideration contingent on the making of this Contract.

C. Delays and Extensions of Time: The Contractor agrees to prosecute the work continuously and diligently.

D. Non-Collusion: The Contractor, its agents, servants and/or employees, to the best of its knowledge and belief, have not in any way colluded with anyone for and on behalf of the Contractor, or themselves, to obtain information that would give the Contractor an unfair advantage over other Contractors, nor has it colluded with anyone for and on behalf of the Contractor, or itself, to gain any favoritism in the award of this Contract.

E. Governing Law: The Contract shall be governed by the laws of the State of Maryland and Harford County, Maryland, and where applicable, any federal law or regulation.

F. Successors and Assigns: The County and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract. Neither party to the Contract shall assign the Contract or subcontract it as a whole without the previous written consent of the other, nor shall the Contractor assign any monies due or to become due to it hereunder without the previous written consent of the County.

G. Written Notice:

(a) Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last

business address known to the person giving the notice; and

(b) All notices and correspondence hereunder shall be in writing and shall be deemed to have been duly given if personally delivered to the named person or, if mailed first-class, postage prepaid, addressed as follows:

**CONTRACTOR:** INSERT COMPANY NAME, ADDRESS AND CONTACT

**COUNTY:** Harford County, Maryland  
220 South Main Street  
Bel Air, Maryland 21014  
Attn: Karen D. Myers, CPPB  
Director  
Department of Procurement

H. Rights and Remedies:

1. The duties and obligations imposed by the Contract and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligation, rights and remedies otherwise imposed or available by law.

2. No action or failure to act by the County or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

#### **SECTION IX: CLEANING UP**

A. The Contractor at all times shall keep the premises free from the accumulation of waste materials or rubbish caused by its operations. At the completion of the work, it shall remove all waste materials and rubbish from and about the Project, as well as its tools, construction equipment, machinery and surplus materials.

B. If the Contractor fails to clean up at the completion of the work, the County may do so and the cost thereof shall be charged to the Contractor.

#### **SECTION X: SUBCONTRACTORS**

A. A subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the work at the site. The term "subcontractor" is referred to throughout the Contract as if singular in number and means a subcontractor or its authorized representative. The term "subcontractor" does not include any separate contractor of its subcontractor.

B. A sub-subcontractor is a person or entity who has a direct or indirect contract with a subcontractor to perform any of the work at the site. The term "sub-subcontractor" is

referred to throughout the Contract as if singular in number and means a sub-contractor or an authorized representative thereof.

C. Unless otherwise required by the Contract or the bidding documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the County, in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the work. Within ten (10) calendar days after receipt thereof, the County will reply to the Contractor, in writing, stating whether or not the County, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the County to reply within said ten (10) calendar days shall constitute notice of no reasonable objection.

D. The Contractor shall not contract with any proposed person or entity to whom the County has made reasonable objection. The Contractor shall not be required to contract with anyone to whom it has a reasonable objection.

E. If the County has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the County has no reasonable objection.

F. The Contractor shall make no substitution for any subcontractor, person or entity previously selected if the County makes reasonable objection to such substitution.

#### **SECTION XI: SUBCONTRACTUAL RELATIONS**

By an appropriate written agreement, the Contractor shall require each subcontractor, to the extent of the work to be performed by the subcontractor, to be bound to the Contract by the terms of the Contract, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the County. Said agreement shall preserve and protect the rights of the County under the Contract, with respect to the work to be performed by the subcontractor, so that the subcontracting thereof will not prejudice such rights, and shall allow to the subcontractor, unless specifically provided otherwise in the Contractor-subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these documents, has against the County. Where appropriate, the Contractor shall require each subcontractor to enter into similar agreements with his sub-subcontractors.

#### **SECTION XII: WORK BY COUNTY OR BY SEPARATE CONTRACTOR**

A. The County reserves the right to perform work related to the Project with its own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the County, it shall make such claim as provided elsewhere in the Contract.

B. When separate contracts are awarded for different portions of the Project or other work in the site, the term "Contractor" in the contract in each case shall mean the

contractor who executes each separate agreement.

C. The County will provide for the coordination of the work of its forces and of each separate contractor with the work of the Contractor, who shall cooperate therewith.

D. The Contractor shall afford the County and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate its work with theirs, as required by the Contract Documents.

E. If any part of the Contractor's work depends, for proper execution or results, upon the work of the County or any separate contractor, the Contractor shall, prior to proceeding with the work, promptly report to the County any apparent discrepancies or defects.

F. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefore.

G. Should the Contractor wrongfully cause damage to the work or property of the County, or to other work on the site, the Contractor shall promptly remedy such damages.

H. Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall, upon due notice, promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues or initiates an arbitration proceeding against the County on account of any damage alleged to have been caused by the Contractor, the County shall notify the Contractor who shall defend such proceedings at the Contractor's expense, and if any judgment or award against the County arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the County for all attorney's fees and court or arbitration costs which the County has incurred.

### **SECTION XIII: INSPECTION**

A. The Director of the Department of Public Works, his designee or construction manager shall inspect all construction as it progresses and shall determine whether or not the County will accept the project upon completion.

B. The Department of Public Works inspectors have full authority on a project site to require that a project be completed in accordance with plans and specifications. In case of a dispute arising on a job site, the inspector shall report the dispute to the Director of the Department of Public Works or his designee.

### **SECTION XIV: ADDITIONAL WORK**

No claim for extra work or materials not specifically provided by this Contract done by the Contractor will be allowed by the County unless such extra work or materials is

ordered in writing. Verbal orders ordering more work or materials for the Project are ineffective and of no force and effect.

## **SECTION XV: TIME EXTENSION**

The County shall allow for extension of time in the completion of work under the Contract in the event of delays such as acts of God, acts of the County, labor disputes, material shortages, adverse weather conditions not reasonably anticipated, unavoidable casualties and other causes beyond the reasonable control of the Contractor. Said delays and reasons therefore shall be reported to the County in writing by the Contractor. If the County determines the cause of delays to be justified, then the time for completion of work under the Contract shall be extended for such reasonable time as the County may determine.

## **SECTION XVI: PROTECTION OF PERSONS OR PROPERTY**

A. Safety Precautions and Programs: The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work.

B. Safety of Persons and Property: The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

1. All employees on the work site and all other persons who may be affected thereby.
2. All the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of its sub-contractors or sub-subcontractors; and
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

C. The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

D. The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.

E. When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the work, the Contractor shall exercise the

utmost care and shall carry on such activities under the supervision of properly qualified personnel.

F. The Contractor shall promptly remedy all damage or loss to any property referred to above caused in whole or in part by the Contractor, any subcontractor, and sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under this Contract, except damage or loss attributable to the acts or omissions of the County or anyone directly or indirectly employed by the County, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor.

G. Indemnification - Unsafe Working Environment. Contractor agrees to indemnify the County and to hold the County harmless for any injury or malady suffered by any agent, employee or servant of Contractor including any subcontractor or independent contractor of Contractor (collectively hereinafter "agent"). Furthermore, Contractor agrees to adhere to all applicable and pertinent OSHA and MOSH rules, regulations and guidelines, to adhere to all Harford County ordinances, laws, rules, and regulations, and to follow and apply safe construction practices in order to promote and provide a safe working environment. Contractor agrees to indemnify and pay the County for any attorneys fees incurred by the County in the defense of any claim against the County for an injury resulting from Contractor's negligent failure: (1) to provide a safe working environment; (2) to follow safe construction practices; (3) to inspect, supervise or review the job site, any construction activities or any plan or specification prepared by Contractor or his agent; or (4) to comply with any OSHA MOSH, or County ordinance, law, rule, or regulation. Contractor agrees to pay all court costs and any settlement or judgement incurred by the County as a result of any such suit or claim.

## **SECTION XVII: TERMINATION FOR CONVENIENCE**

The performance of work under this Contract may be terminated by the County in accordance with this clause in whole, or from time to time in part, whenever the County shall determine that such termination is in the best interest of the County. The County will pay all reasonable costs associated with this Contract that the Contractor has incurred up to the date of termination and all reasonable costs associated with termination of the Contract. However, the Contractor shall not be reimbursed for any anticipatory profits, i.e. profits that have not been earned up to the date of termination.

## **SECTION XVIII: TERMINATION FOR CAUSE**

A. If the Contractor is adjudged as bankrupt, or if it makes a general assignment for the benefit of the creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if it fails to make prompt payment to subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contract, then the County,

after certifying that sufficient cause exists to justify such action, may without prejudice to any right or remedy and after giving the Contractor and its surety, if any, seven (7) days' written notice, terminate the employment of the Contractor and take possession of the site and all materials, equipment, tools, construction equipment and machinery thereon owned by the contractor and may finish the work by whatever method it may deem expedient. In such case the contractor shall not be entitled to receive any further payment until the work is finished.

B. If the unpaid balance of the contract sum exceeds the cost of finishing the work, including compensation for additional engineering services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the County.

### **SECTION XIX: WARRANTIES**

A. The Contractor warrants, to the County, that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract. All work not properly approved and authorized may be considered defective. If required by the County, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

B. The Contractor shall promptly correct all work rejected by the County as defective or as failing to conform to the Contract, whether observed before or after substantial completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work, including compensation for the additional engineering services made necessary thereby.

C. The Contractor shall remove from the site all portions of the work which are defective or nonconforming and which have not been corrected, unless removal is waived by the County.

D. If the Contractor fails to correct defective or nonconforming work, the County may correct it at the expense of the Contractor.

### **SECTION XX: RETENTION OF RECORDS**

The Contractor shall retain and maintain all records and documents related to this Contract for three (3) years after final payment by the County hereunder or as necessitated by any applicable statute limitations, whichever is longer, and shall make them available for inspection and audit by authorized representatives of the County, including the procurement officer or designee, at all reasonable times.

### **SECTION XXI: COMPLIANCE WITH LAWS**

The Contractor hereby warrants that it is qualified to do business in the State of

Maryland and that it will take such action as, from time to time hereafter, may be necessary to remain so qualified; and it is not in arrears with respect to the payment of monies due and owing the State of Maryland, or any department or unit thereof, including but not limited to the payment of taxes and employee benefits, and that it shall not become so in arrears during the term of this Contract; and it further agrees to comply with all federal, State and local laws, regulations and ordinances applicable to its activities and obligations under this Contract.

## **SECTION XXII: CHANGE ORDERS**

The County, without invalidating the Contract, may order changes in the work within the general scope of the Contract consisting of additions, deletions or other revisions; and the contract sum and the contract time will be adjusted accordingly. All such changes in the work shall be authorized by a properly certified change order. All change orders must be approved by the Director of Procurement and/or the County Board of Estimates as appropriate. No oral changes to this Contract shall be effective.

## **SECTION XXIII: SUPREMACY CLAUSE**

In the event of a conflict between the terms and conditions of this Contract and the specifications and any document referenced therein, the parties agree that this Contract shall control interpretation of any inconsistency. However, the documents shall, to the greatest extent possible, be construed to be consistent.

## **SECTION XXIV: SUSPENSION OF WORK**

A. The County may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the Contractor, which will fix the date on which the work will be resumed. Contractor shall resume the work on the date so fixed. Contractor shall be allowed an increase in the contract price and an extension of the contract time directly attributable to any suspension if the Contractor makes an approved claim.

B. The County will, if it suspends work as described above, provide an equitable adjustment to the Contractor. Only the additional costs associated with the following items will be recoverable by the Contractor as an equitable adjustment for delay in an approved claim:

- (a) Non-salaried labor expenses;
- (b) Costs of materials;
- (c) Equipment costs; and
- (d) Costs of extended job-site overhead.

All costs claimed must be adequately documented by actual records maintained in the usual course of business. Claims in excess of ten percent (10%) of the contract price must be approved by the Harford County Board of Estimates, but shall not be construed

and calculated as a change order for the purposes of exceeding the ten percent (10%) threshold of the contract price, thereby requiring Board of Estimates approval.

**SECTION XXV: EXECUTION IN COUNTERPARTS**

This Contract may be executed in one or more counterparts and shall be deemed valid if delivered electronically (e.g., facsimile, PDF, ink or digital stamp, etc.), each of which will be considered an original instrument, but all of which will be considered one and the same Contract and will become binding when one or more counterparts have been signed by each of the Parties hereto and delivered to the other.

**IN WITNESS WHEREOF**, the parties hereto have executed this Contract, the day and year first above written.

**WITNESS/ATTEST:**

**NAME OF COMPANY**

\_\_\_\_\_

BY:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name and Title

**WITNESS/ATTEST:**

**HARFORD COUNTY, MARYLAND**

\_\_\_\_\_

By:

\_\_\_\_\_  
Karen D. Myers, CPPB  
Director of Procurement and  
Secretary, Board of Estimates

Approved for form and legal sufficiency.

Approved for financial sufficiency.

\_\_\_\_\_  
Margaret Hartka  
Senior Assistant County Attorney

\_\_\_\_\_  
Robert F. Sandlass, Jr.  
Treasurer

Reviewed and Concur.

\_\_\_\_\_  
Jeffrey M. Stratmeyer  
Acting Director, Department of Public Works

Approved by the Board of Estimates the \_\_\_\_\_ day of \_\_\_\_\_, 2016.

This Contract was fully executed on the \_\_\_\_\_ day of \_\_\_\_\_, 2016.

SAMPLE

**HARFORD COUNTY, MARYLAND  
MAINTENANCE BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

\*\*\*\*\*  
Surety: \_\_\_\_\_

Resident Agent's Name & Address  
\_\_\_\_\_  
\_\_\_\_\_

A corporation of the State of \_\_\_\_\_, and authorized to  
do business in the State of Maryland.

\_\_\_\_\_  
Name and Address of any other person who must receive notice of any  
breach or nonperformance of Principal.  
\_\_\_\_\_  
\_\_\_\_\_

Obligee: HARFORD COUNTY, MARYLAND  
220 S. Main Street  
Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

\*\*\*\*\*  
Penal Sum of Bond (Express in Words and Figures) \_\_\_\_\_

Date Bond Executed \_\_\_\_\_  
\*\*\*\*\*

Complete Description of Maintenance Agreement \_\_\_\_\_

Agreement Number \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal named above, are held and firmly bound unto the Obligee, Harford County, Maryland, in the Penal Sum of this Maintenance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors and assigns, jointly and severally, firmly by these Presents. However, where Surety is composed of corporations acting as co-sureties, we, the co-sureties bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a Maintenance Agreement (the "Agreement") with Harford County, Maryland, by and through the Department named above acting for Harford County, Maryland, which Agreement is described as shown above and incorporated herein by reference. The Agreement and all items incorporated into the Agreement, together with any and all changes, extensions of time, alterations, modifications, or additions to the Agreement approved by the Director of the above-named Department (the "Director"), or to the work to be performed thereunder or to the Plans, Specifications and Special Provisions, or any of them, or to any other items incorporated into the Agreement shall hereinafter be referred to as "The Agreement."

WHEREAS, it is one of the conditions precedent to the final award of the Agreement that this Maintenance Bond be executed.

NOW, THEREFORE, during the original term of said Agreement, during any extensions hereto that may be granted by the Director, and during the guarantee and warranty period, if any, required under the Agreement, unless otherwise stated therein, this Maintenance Bond shall remain in full force and effect for a period of \_\_\_\_ year(s) from the date of acceptance by the Director.

Whenever Principal shall be declared by the Director to be in default under the Agreement, the Surety may, within 15 days after notice of default from the Director, notify the Director of its election to either promptly proceed to remedy the default or promptly proceed to complete the Agreement in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above-stated options, then the Director may have any and/or all remaining work under the Agreement completed, Surety to remain liable hereunder for all expenses of completion up to but not exceeding the Penal Sum stated above. Surety will immediately forfeit and pay Obligee all or part of the Penal Sum, as demanded by the Director.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this Maintenance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Agreement or to the work or to the Specifications.

This Maintenance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Maintenance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture have signed below, each member has set forth his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: The corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below, and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

\*\*\*\*\*

In Presence of: (Witness) \_\_\_\_\_ Individual Principal  
\_\_\_\_\_ as to \_\_\_\_\_  
\*\*\*\*\*

In Presence of: (Witness) \_\_\_\_\_ Co-Partnership Principal  
\_\_\_\_\_

\_\_\_\_\_ as to BY: \_\_\_\_\_

\_\_\_\_\_ as to \_\_\_\_\_

\_\_\_\_\_ as to \_\_\_\_\_  
\*\*\*\*\*

Attest: \_\_\_\_\_ Corporate Principal  
\_\_\_\_\_ as to \_\_\_\_\_

BY: \_\_\_\_\_  
President

Attest: \_\_\_\_\_ Surety:  
\_\_\_\_\_ as to \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

Business Address of Surety \_\_\_\_\_  
\_\_\_\_\_

Bonding Agent's Name and Address:  
\_\_\_\_\_  
\_\_\_\_\_

**HARFORD COUNTY, MARYLAND  
PAYMENT BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

Surety

Resident Agent's Name & Address:

A corporation of the State of \_\_\_\_\_, and  
authorized to do business in the State of Maryland.

\_\_\_\_\_  
Name and address of any other person who must receive notice of  
any breach of nonperformance of contractor/  
principal: \_\_\_\_\_

Owner: HARFORD COUNTY, MARYLAND  
220 S. Main Street, Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

Bond Amount \_\_\_\_\_

Date Bond Executed: \_\_\_\_\_

Complete Description of Construction Contract

Contract Number: \_\_\_\_\_

Contract Amount: \_\_\_\_\_

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
  - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
  - 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment of labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 11) of any claims, demands, liens or suits and tendered defence of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
  - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 11) and send a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
  - 4.2 Claimants who do not have a direct contract with the Contractor:
    - .1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
    - .2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
    - .3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 11) and sent a copy, or notice thereof, to the owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
  - 6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
  - 6.2 Pay or arrange for payment of any undisputed amounts.
7. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under the Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
8. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

9. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

10. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or

part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3; or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

- 11. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
- 12. When this bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- 13. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

14. DEFINITIONS:

- 14.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors and all other items for which a mechanic's lien may be asserted in the jurisdiction where labor, materials or equipment were furnished.
- 14.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 14.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

\*\*\*\*\*  
 In Presence of: (Witness) \_\_\_\_\_ as to Individual Principal  
 \_\_\_\_\_

\*\*\*\*\*  
 In Presence of: (Witness) \_\_\_\_\_ as to Co-Partnership Principal  
 \_\_\_\_\_

\_\_\_\_\_ as to By: \_\_\_\_\_  
 \_\_\_\_\_ as to \_\_\_\_\_  
 \_\_\_\_\_ as to \_\_\_\_\_  
 \*\*\*\*\*

Attest \_\_\_\_\_ Corporate Principal  
 \_\_\_\_\_ as to By: \_\_\_\_\_  
 \_\_\_\_\_ President  
 \*\*\*\*\*

Attest \_\_\_\_\_ Surety  
 \_\_\_\_\_ as to \_\_\_\_\_  
 By: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Business Address of Surety:  
 \_\_\_\_\_  
 \_\_\_\_\_

Owner: Harford County, Maryland  
 Department of Procurement  
 220 S. Main Street  
 Bel Air, Maryland 21014

Bonding Agent's Name and Address:  
 \_\_\_\_\_  
 \_\_\_\_\_

**HARFORD COUNTY, MARYLAND  
PERFORMANCE BOND**

Principal \_\_\_\_\_

Business Address of Principal \_\_\_\_\_

Surety

Resident Agent's Name & Address:

A corporation of the State of \_\_\_\_\_, and authorized  
to do business in the State of Maryland.

Name and address of any other person who must receive notice of  
any breach of nonperformance of principal:

Obligee: HARFORD COUNTY, MARYLAND  
220 S. Main Street, Bel Air, Maryland 21014

BY: Director of Administration  
THRU: Director of Procurement

Penal Sum of Bond (express in words and figures) \_\_\_\_\_

Date Bond Executed: \_\_\_\_\_

Complete Description of Agreement \_\_\_\_\_

Agreement Number: \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal named above and Surety named above, are held and firmly bound unto the Obligee, Harford County, Maryland, in the Penal Sum of this Performance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors and assigns, jointly and severally, firmly by these presents. However, where Surety is composed of corporations acting as co-sureties, we the co-sureties, bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a join action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a Performance Agreement, (the "Agreement"), with Harford County, Maryland, by and through the Department named above acting for Harford County, Maryland, which Agreement is described as shown above, and incorporated herein by reference. The Agreement and all items incorporated into the Agreement, together with any and all changes, extensions of time, alterations, modifications, or additions to the Agreement approved by the Director of the above-named Department, (the "Director"), or to the work to be performed thereunder or to the Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the Agreement shall hereinafter be referred to as "the Agreement."

WHEREAS, it is one of the conditions precedent to the final award of the Agreement that this Performance Bond be executed.

NOW, THEREFORE, during the original term of said Agreement, during any extensions thereto that may be granted by the Director, and during the guarantee and warranty period, if any, required under the Agreement, unless otherwise stated therein, this Performance Bond shall remain in full force and effect unless and until the following terms and conditions are met:

1. Principal shall well and truly perform the Agreement; and
2. Principal and Surety shall comply with the terms and conditions in this Performance Bond.

Whenever Principal shall be declared by the Director to be in default under the Agreement, the Surety may, within 15 days after notice of default from the Director, notify the Director of its election to either promptly proceed to remedy the default or promptly proceed to complete the Agreement in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above-stated options, then the Director may have any and/or all remaining work under the Agreement completed. Surety to remain liable hereunder for all expenses of completion up to but not exceeding the Penal Sum stated above. Surety will immediately forfeit and pay to Obligee all or part of the Penal Sum, as demanded by the Director.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Agreement or to the work or to the Specifications.

This Performance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and/or the Laws of Harford County, Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Performance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture have signed below, each member has set forth below his or her title as general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has cause the following: The corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below, and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

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In Presence of: (Witness) \_\_\_\_\_ Individual Principal  
\_\_\_\_\_ as to \_\_\_\_\_

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In Presence of: (Witness) \_\_\_\_\_ Co-Partnership Principal  
\_\_\_\_\_ as to \_\_\_\_\_  
\_\_\_\_\_ as to \_\_\_\_\_  
\_\_\_\_\_ as to \_\_\_\_\_

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Attest \_\_\_\_\_ Corporate Principal  
\_\_\_\_\_ as to \_\_\_\_\_  
By: \_\_\_\_\_  
President

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Attest \_\_\_\_\_ Surety  
\_\_\_\_\_ as to \_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_  
Business Address of Surety:  
\_\_\_\_\_  
\_\_\_\_\_

Bonding Agent's Name and Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## GENERAL CONDITIONS

These are Harford County's General Conditions for all projects. Should there be a discrepancy between these General Conditions and the Project Requirements, the Project Requirements will prevail.

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## GC.1 DEFINITIONS

- a. The Contract Documents consist of the Construction Contract, the Invitation for Bids including related Plans and Specifications and all other documents including all modifications thereof incorporated in the documents before their execution (addenda to the bid documents). These form the Contract. The Contract may be amended from time to time by written agreement (Change Order), duly authorized and executed by the parties hereto. The Contract Documents are intended to be complimentary and in case of a conflict, the more stringent shall apply. The Contract shall be made in and governed by the laws of the State of Maryland and Harford County.
- b. The County, the Contractor, and the Architect or Engineer are those mentioned as such in the Contract. They are treated throughout the Contract Documents as if each were of the singular number and neutral gender.
  - (1) Contractor or Successful Bidder - Each shall refer to the individual or company to whom the contract is awarded including all sub-contractors (builders, mechanics, architects and engineers, etc.).
  - (2) County, Director, Project Manager or Inspector - Each shall refer to the Harford County Director of Public Works or his/her authorized representative.
  - (3) Architect or Engineer - The individual or firm responsible for the preparation of Plans and Specifications for the project.
- c. Substantial Completion or Substantially Complete: Shall be the date certified by the County when all requirements of the Contract Documents are met, with the exception of minor punch list items, and when the owner can fully occupy and utilize the Work for the use for which it is intended.
- d. Conditional Acceptance: Shall be the date the County occupies all or a portion of the work when the entire project is not Substantially Complete.
- e. Final Acceptance: Shall be the date the County occupies all of the work when the entire project is complete.
- f. Notice to Proceed date: The date authorized in writing by the County for the Contractor to begin work.
- g. Contract Completion Date: The date that all work or phase of the work, as defined by the contract documents, must be completed. This shall be the Notice to Proceed date plus the number of days allowed in the contract. This date may be revised by Change Order when a time extension is justified and approved. Separate phases of the project may have different contract completion dates.

- h. The word “day” will be defined in the Project Requirement as working day or calendar day.
- i. Provide shall mean furnish and install.
- j. Unbalanced Bid:
  - (1) Mathematically Unbalanced Bid: A bid containing lump sum or unit bid items that do not include reasonable labor, equipment and material costs plus a reasonable proportionate share of the bidders anticipated profit, overhead cost and other indirect cost.
  - (2) Materially Unbalanced Bid: A bid generating a reasonable doubt that award to the bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost.

## GC.2 AUTHORITIES

- a. The Director of Public Works or his authorized representative shall be the sole judge of the intent and meaning of the Drawings and Specifications and his decisions thereon and his interpretation thereof shall be final, conclusive and binding on all parties.
- b. The Architect or Engineer will serve as an advisor to the County on technical matters pertaining to the project. The Architect or Engineer may inspect the work, review submittals, and make revisions to the plans and specifications subject to approval by the County. The Architect or Engineer shall not have the authority to direct the work of the Contractor. Any direction by the Architect or Engineer must be through the County.

## GC.3 RESPONSIBILITY FOR COMPLETE PROJECT

- a. It is the responsibility of the Contractor to construct the work under this contract so that it will be completed and finished in every detail. If mention has been omitted in the Contract Documents of any items of work or materials usually furnished or necessary for the completion of or proper functioning of the construction, it will be included without extra payment.
- b. The plans and specifications are intended to cover a complete project, including equipment and appurtenances and it shall be distinctly understood that failure to mention specifically any work which would normally be required to complete the project shall not relieve the Contractor of his responsibility to perform such work.

#### GC.4 OBLIGATIONS AND LIABILITY OF CONTRACTOR

- a. The Contractor shall do all the work and perform and furnish all the labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies and all other things (except as otherwise expressly provided herein) necessary and as herein specified for the proper performance and completion of the Work in the manner and within the time hereinafter specified, in strict accordance with the Drawings, Specifications and other Contract Documents, in conformity with the directions and to the satisfaction of the County, and at the prices herein agreed upon.
- b. All parts of the Work and all fixtures, equipment, apparatus and other items indicated on the Drawings and not mentioned in the Specifications, or vice versa, and all work and material usual and necessary to make the Work complete in all its parts, including all incidental work necessary to make it complete and satisfactory and ready for use and operation, whether or not they are indicated on the Drawings or in the Specifications, shall be furnished and executed the same as if they were called for both by the Drawings and by the Specifications.
- c. Except for shutdowns as specified herein, or as may be determined necessary by the County, the existing facilities must be kept in service to the full extent of their capacity. Where any shutdowns on the existing facilities may be required to build the new work, the Contractor shall schedule his operations at the convenience of the County.
- d. The Contractor shall indemnify and save harmless the County, the Architect/Engineer and their respective officers, agents, servants and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgments, awards, losses, damages, costs and expenses, including attorneys' fees, on account of bodily injury, sickness, disease or death sustained by any person or persons or injury or damage to or destruction of any property, directly or indirectly arising out of, relating to or in connection with the Work, whether or not due to or claimed to be due in whole or in part to the active, passive or concurrent negligence or fault of the Contractor, his officers, agents, servants or employees, any of his subcontractors, the County, the Architect/Engineer or any of their respective officers, agents, servants or employees and/or any other person or persons, and whether or not such claims, demands, suits or proceedings are just, unjust, groundless, false or fraudulent; and the Contractor shall and does hereby assume and agrees to pay for the defense of all such claims, demands, suits and proceedings, provided, however, that the Contractor shall not be required to indemnify the Architect/Engineer, his officers, agents, servants or employees, against any such damages occasioned solely by defects in maps, plans, drawings, designs or specifications prepared, acquired or used by the Architect/Engineer and/or solely by the negligence or fault of the Architect/Engineer; and provided further, that the Contractor shall not be

required to indemnify the County, his officers, agents, servants, or employees, against any such damages occasioned solely by acts or omissions of the County other than supervisory acts or omissions of the County in the work.

- e. The Contractor shall have complete responsibility for the work and the protection thereof, and for preventing injuries to persons and damage to the Work and property and utilities on or about the Work, until final completion and final acceptance thereof. He shall in no way be relieved of his responsibility by any right of the County to give permission or directions relating to any part of the Work, by any such permission or directions given, or by failure of the County to give such permission or directions.
- f. The Contractor shall conduct his operations so as not to damage existing structures or work installed either by him or by other contractors. In case of any such damage resulting from his operations, he shall repair and make good as new the damaged portions at his own expense with the consent of the damaged party. In the event that consent is not given, the Contractor shall continue liable for the damage caused.
- g. The Contractor shall be as fully responsible to the County for the acts and omissions of his subcontractors, their officers, agents, servants and employees as he is for his own acts and omissions and those of his own officers, agents, servants and employees.
- h. Should the Contractor sustain any loss, damage or delay through any act or omission of any other contractor or any subcontractor of any such other contractor, the Contractor shall have no claim against the County therefore, other than for an extension of time, but shall have recourse solely to such other contractor or subcontractor.
- i. The Contractor shall promptly pay all federal, state and local taxes which may be assessed against him in connection with the Work or his operations under the Contract including, but not limited to, taxes attributable to the purchase of material and equipment, to the performance of services, and the employment of persons in the prosecution of the Work.

## GC.5 WORKMANSHIP

All workmanship shall be of good quality. Whenever the method of the Work or manner of procedure is not specifically stated or shown in the Contract Documents, then it is intended that the best standard practice shall be adhered to. Recommendations of the manufacturers of approved materials shall be considered as a part of these specifications and all material shall be applied, installed, connected, erected, used, cleaned and conditioned as so called for. This, however, does not eliminate any additional or more stringent requirements in these specifications surpassing manufacturer's recommendations.

## GC.6 CONTRACTOR SUPERVISION

- a. The Contractor shall be solely responsible for supervision of the Work, shall give the work the constant attention necessary to ensure the expeditious and orderly progress thereof, and shall cooperate with the County in every possible way.
- b. At all times, the Contractor shall have as his agent on the Work a competent superintendent capable of reading and thoroughly understanding the Drawings and Specifications, with full authority to execute the work without delay and to supply promptly such labor, services, materials, equipment, plant, apparatus, appliances, tools, supplies and other items as may be required. Such superintendent shall not be removed from the Work without the prior written consent of the County.
- c. The Contractor shall submit the name and qualifications of the superintendent for the County's approval at or before the pre-construction meeting. The County reserves the right to reject or remove at any time during the work any superintendent that is in the County's opinion unacceptable.

## GC.7 PRE-CONSTRUCTION MEETING

- a. A pre-construction meeting shall be scheduled prior to the date of the Notice to Proceed and the actual start of construction, the date to be determined by the County.
- b. Location: A central site, convenient for all parties, designated by the County.
- c. Attendance:
  - (1) County Representatives
    - (a) Department of Procurement
    - (b) Department of Public Works
    - (c) Using Agency

- (2) Architect or Engineer as appropriate
- (3) Contractor
- (4) Contractor's superintendent
- (5) Major subcontractors
- (6) Others as appropriate

#### GC.8 PROGRESS MEETINGS

- a. The Contractor shall attend bi-weekly progress meetings, and specially called meetings throughout the progress of the work.
- b. Frequency of meetings may be adjusted as required by progress of the work.
- c. Meetings will be held at site, or as designated by the County.

#### GC.9 PERMITS

- a. The Contractor shall obtain or assist the County in obtaining all permits required in connection with the work. The Contractor shall file necessary plans, prepare documents, give proper notices and obtain necessary approvals for all permits associated with the project whether the permit was obtained by the County or the Contractor.
- b. The Contractor shall be responsible for complying with all applicable provisions of the permits.
- c. The Contractor shall be responsible for closing out all permits and obtaining Use and Occupancy certificates (where applicable) and shall deliver inspection and approval certificates to the County prior to issuance of Substantial Completion.

#### GC.10 TESTING AND CERTIFICATIONS:

- a. Various plans and specifications references may indicate that the owner will contract with an independent testing agency. These statements if any are in error. The Contractor will be responsible for all applicable testing and certifications in order to complete the project and to obtain final approvals for this project. This shall include, but not be limited to soils testing, concrete testing, steel erection and certifications, mechanical and electrical testing.
- b. The Contractor shall engage the services of a Maryland Registered Professional Engineer to inspect, certify, and provide as-built drawings for the stormwater management facilities (SWM). The responsible engineer must attend the preconstruction meeting associated with the SWM or grading permit.
- c. Any exceptions to this General Condition will be detailed in the Project Requirements only.

#### GC.11 EQUAL OR APPROVED EQUAL

- a. Where any article is specified by proprietary name, trade name, and/or name of manufacturer, with or without the addition of such expressions as "or equal" or "or approved equal", it is to be understood that the article named or the quality thereof is intended, subject to the approval of the Director as to the quality thereof, and it is distinctly understood (1) that the Director is to use his own judgment in determining from time to time, whether or not any article or thing proposed to be substituted in the equal of any article or thing so specified; (2) that the decision of the Director on all questions of equality shall be final; (3) that, in the event of any adverse decision of the Director, no claim shall be made or allowed against the County.
- b. An offer of any article or material by the Contractor for an article or material specified may raise the presumption that it is for the purpose of saving money. If in such case, the article or material is approved, the County shall be given credit of the difference in the net cost to the Contractor of the article or material submitted and the price at which he could have obtained the lowest priced article or material specified. For convenience in checking the credit, if any, the Contractor shall submit these figures when the offer is made, and no article or materials will be considered without such figures.
- c. If the Contractor proposes an innovative alternative product, the County may at its sole discretion share the cost savings commensurate with the benefit to the County.

#### GC.12 ACCESS TO WORK

The County, the Architect/Engineer, their officers, agents, servants and employees may at any and all times and for any and all purposes, enter upon the Work and the site thereof and the premises used by the Contractor, and the Contractor shall at all times provide safe and proper facilities therefore.

### GC.13 EXAMINATION OF WORK

- a. All work including the fabrication and source of supply is subject to inspection by the County, the Architect/Engineer and those agencies required by law to inspect specific items.
- b. The County shall be furnished by the Contractor with every reasonable facility for examining and inspecting the Work and for ascertaining that the Work is being performed in accordance with the requirements and intent of the Contract, even to the extent of requiring the uncovering or taking down portions of finished work by the Contractor.
- c. Examination or inspection of the Work shall not relieve the Contractor of any of his obligations to perform and complete the Work as required by the Contract.

### GC.14 PAYMENTS

- a. General

Lump Sum Contract - Lump sum contracts shall include, for the bid price, all costs of materials and services for which the Contractor shall be paid under the contract, plus profit. No further or additional compensation is due and owing the Contractor except as the contract may be modified to provide.

- b. Schedule of Values

At or before the pre-construction meeting, the Contractor shall submit to the County, a schedule of values of the various portions of the Work; aggregating the total Contract Sum, prepared in such form and supported by such data to substantiate its correctness as the County may require. Each item in the schedule of values shall include its proper share of overhead and profit. This schedule of values, when approved by the County, shall be used only as a basis for the Contractor's monthly estimates. No payments shall be made prior to having an approved schedule of values.

- c. Unit Price/Contingent Items

Unit prices, where directed, shall be paid for by measurements of all quantities of work and material, according to the specifications and drawings and the working lines that may be given. No allowance will be made for any excess above the quantities required by the specifications, drawings and lines on any part of the work, except where such excess material has been supplied or work done by written order of the County and in the absence of default or negligence on the part of the Contractor. Should the dimensions of any part of the work or of the materials be less than those required by the drawings or directions of the County, only the

actual quantities placed will be allowed in the measurements. Payment will be made only after a satisfactory check of test procedures outlined in Specifications.

- (1) Where unit price work is directed, following the completion of the work and before final payment is made therefore, the County shall make final measurements to determine the quantities of various items of work performed as the basis for final settlement. The Contractor, in case of unit price items, will be paid for the actual amount of work performed and for the actual amount of materials in place, in accordance with these specifications as shown by the final measurements.

d. Monthly Estimates

- (1) Upon completion of the work, the Contractor shall make a written final estimate, based upon the County's measurement of the whole amount of authorized work done by the Contractor, and the value thereof under the terms of the contract, and shall certify to the County, the completion of the work and the amount of the final estimate. All monthly estimates are subject to correction in the final estimate. The County's measurements, upon which the final estimate is based, shall be final and conclusive. The estimate shall be submitted to the County, for confirmation that the work for which payment is claimed, has been performed.
- (2) The final payment shall not become due until the Contractor submits to the County: (1) an Affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the County or its property might in any way be responsible, have been paid or otherwise satisfied; (2) consent of surety to final payment; and (3) as herein described other data establishing payment, such as receipts.

GC.15 PAYMENTS WITHHELD

- a. The County may withhold the whole or part of any payment to such extent as may be necessary to protect the County from loss on account of:
  - (1) Defective work not remedied.
  - (2) A reasonable doubt that the Contract can be completed for the balance then unpaid.
  - (3) Reasonable indication that the work will not be completed within the Contract time.
  - (4) Unsatisfactory prosecution of the work by the Contractor.

- (5) Improper storage of materials and equipment.
  - (6) For shop drawing review for work beyond the second review.
  - (7) Non-submission of project close-out documents including but not limited to permit approvals, as-built drawings, and O&M manuals.
  - (8) Payment for inspection services for work beyond normal County working hours.
- b. When the above items are remedied, payment will be made for amounts withheld because of them.

#### GC.16 WORKING HOURS

- a. Normal County working hours are Monday through Friday, 7:00 A.M. to 3:00 P.M. excluding County Holidays. County holidays include:
- New Year's Day
  - Dr. Martin Luther King's Birthday
  - President's Day
  - Memorial Day
  - Independence Day
  - Labor Day
  - Veteran's Day
  - Thanksgiving Day
  - Friday after Thanksgiving
  - Christmas Day
- b. All Contractor work shall be performed during normal County working hours unless approved by the County. Any requests to work during other than normal working hours must be made to the County at least 24 hours in advance (except for emergency situations).
- c. The Contractor shall pay to the County for work performed by the County's Inspector during periods other than normal County working hours at a rate per hour as indicated in the project requirements. This shall apply to hours worked at the Contractor's convenience as opposed to work requested by the County or otherwise required in the contract documents.
- d. The Contractor may request to work outside normal County working hours without a County inspector being present for work that can easily be inspected the following normal work day. This work must be coordinated in advance with the County Inspector.
- e. The County has sole authority to approve or disapprove any such requests and to determine if the cost for the Inspector's work is applicable.

- f. The cost for inspection services beyond the normal County working hours shall be deducted from the Contractor's monthly estimates and documented as a change order.

#### GC.17 SCHEDULE OF WORK

- a. The Contractor shall prepare a project schedule in the form of a Gantt or CPM chart. The schedule must identify all significant tasks and mile stones and must clearly delineate start dates, completion dates, and dependencies between tasks. The schedule must include submittal and review time, acquisition/fabrication times (especially for long lead items) and installation/construction times. The schedule must include adequate time for project close-out and punch list work.
- b. To the extent feasible, activities related to a specific physical area of the project shall be grouped on the schedule for ease of understanding and simplification. The selection and number of activities shall be subject to the review of the County.
- c. The Contractor shall submit his proposed schedule of work at the pre-construction meeting.
- d. The schedule shall be updated on a monthly basis. Updates shall be submitted with requests for payment. Failure to update the schedule may result in rejection or delay of payment requests.

#### GC.18 TIME FOR COMPLETION

- a. The time for completion shall begin on the date indicated on the Notice-to-Proceed, and shall end on the expiration of the number of days set forth in the contract or special provisions.
- b. The rate of progress shall be such that the Work shall be performed and completed in accordance with the Contract before the expiration of the time limit stipulated.
- c. It is agreed that the rate of progress herein required has been purposely made long enough to allow for the ordinary and foreseeable delays incident to construction work of this character. No extension of time will be given for ordinary or foreseeable delays, inclement weather, or accidents; and the occurrence of such will not relieve the Contractor from the necessity of maintaining this rate of progress and completing the Work within the stipulated time limit.
- d. In the event of delays caused by acts of God, acts of Government, unforeseeable natural catastrophe, unforeseeable and unavoidable labor disputes, or other causes or contingencies clearly beyond the control or responsibility and without the fault or negligence of the Contractor, his subcontractors or suppliers, the Contractor may be entitled to additional

time to perform and complete the Work, provided that the Contractor shall within forty-eight (48) hours from the beginning of such delay notify the County in writing. Acts of God will be defined as events where a major disaster or emergency has been declared for the area where the work is commencing, by the Governor of Maryland.

- e. The Contractor shall apply for any extension of time in writing, setting forth in detail the reasons and causes of delay including an estimate of the probable effect of such delay on the progress of the work. The Contractor shall submit his application for extension to the County not more than 20 days after the commencement of the delay; otherwise the application for extension shall be waived.
- f. Upon receipt of such application, the County shall review and evaluate the cause and extent of the delay. If, under the terms of the Contract, the delay is properly excusable, the County will, in writing, appropriately extend the time for completion of the Work.
- g. The Contractor agrees that he shall not have or assert any claim for nor shall he be entitled to any additional compensation or damages on account of such delays.
- h. Delays caused by the failure of the Contractor's material men, manufacturers, and dealers to furnish approved working drawings, materials, fixtures equipment, appliances, or other fittings on time or the failure of subcontractors to perform their work in conformity with the approved progress schedule shall not constitute a basis for extension of time.

#### GC.19 LIQUIDATED DAMAGES

- a. It is hereby understood and mutually agreed, by and between the Contractor and the County and its elected or appointed officials and employees, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this contract, and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the Notice to Proceed. It is further agreed that time is of the essence of each and every portion of this Contract.
- b. The Contractor agrees that the work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time for completion. It is expressly understood and agreed, by and between the Contractor and the County, that the time for completion, takes into consideration the average climatic range and usual industrial conditions prevailing in this locality.

- c. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the County, then the Contractor does hereby agree, as a part of consideration for the awarding of the contract, to pay to the County the amount set forth in the Project Requirements for each calendar day or as otherwise described in the Project Requirements, past the date of Substantial Completion, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day or as otherwise described in the Project Requirements, that the Contractor shall be in fault after the time stipulated in the contract for completing the work.
- d. The said amount is fixed and agreed upon by and between the Contractor and the County because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the County would in such event sustain, and said amount is agreed to be the amount of damages which the County would sustain and said amount shall be retained from time to time by the County from current periodical estimates.

#### GC.20 SHOP DRAWINGS/PRODUCT SUBMITTALS

- a. The Contractor will be required to submit a complete and detailed listing of anticipated submittals during the course of the Contract. The Contractor will coordinate his submittals with those of his subcontractors and suppliers and will identify each submittal as specified. The anticipated submission due date for each submittal must be indicated along with the date on which its return is anticipated. For planning purposes, the County will usually return shop drawings fourteen (14) working days after receipt. However, longer durations for review will not be considered a basis for a claim unless the Contractor notifies the County that a delay in review time will ultimately delay the project. This notification must be made along with the submittal in order to be valid.
- b. The Submittal Schedule must be submitted at the pre-construction meeting. The Submittal Schedule will then be accepted or revised as required and the Contractor will incorporate the dates and review durations into his Progress Schedule.
- c. A maximum of two submissions of each shop drawing or product submittal by the Contractor will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the County to fulfill stipulations of the drawings and Specifications, and which are required by the Contractor's neglect or failure to comply with the requirements of the drawings and Specifications, or to make those modifications and/or corrections ordered by the County in review of the first two submissions of each shop drawing, will be reviewed and checked as deemed necessary by the County and the cost of such review and checking, as determined by the County and based upon an hourly rate as set forth in the Project Requirements, will be deducted from the Contractor's monthly invoices or from monies retained under the

provisions of these Specifications. It is therefore incumbent upon the Contractor to make all modifications and/or corrections as may be required by the County in an accurate, complete, and timely fashion.

- d. The approval of shop drawings shall not relieve the Contractor from his responsibility to furnish all materials and perform all work as required by the contract documents. Neither the County nor the Architect/Engineer will be responsible for errors or omissions on the drawings furnished by the Contractor, even though drawings furnished containing such errors are inadvertently approved.

#### GC.21 FIELD ENGINEERING

The Contractor shall provide any pay for civil, structural or other professional field engineering services specified or required to execute the Contractor's construction methods.

#### GC.22 COUNTY'S RIGHT TO DO WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the County, may after three days written notice to the Contractor without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. The amount charged to the Contractor shall be computed in accordance with Article on "Payments" hereof.

#### GC.23 DELAY BY COUNTY

The County may delay the beginning of the Work or any part thereof if the necessary lands or rights-of-way or permits for such work shall not have been obtained. The Contractor shall have no claim for additional compensation or damages on account of such delay, but shall be entitled only to an extension of time as hereinafter provided.

#### GC.24 EXISTING UTILITIES

- a. The Contractor shall be responsible for verifying all utilities as shown on the contract drawings and shall have site marked by "Miss Utility" along with performing test pits where utilities are indicated on contract drawings. The completeness or accuracy of the information is not guaranteed. The Contractor shall take all necessary and proper steps to protect the continuance of such utilities. The Contractor shall notify "Miss Utility", 1-800-257-7777 at least 48 hours prior to starting work.
- b. In case of damage to utilities shown on the drawings or marked by Miss Utility, or due to the Contractor's failure to have the utilities marked by Miss Utility, the Contractor shall have such utilities restored to a condition equal to that which existed prior to damage at his entire cost and expense.

- c. In case of damage to utilities encountered that are completely unforeseen the Contractor shall notify the County immediately. Costs to repair such damage to unforeseen utilities will not be the Contractor's responsibility.

#### GC.25 PROTECTION OF WORK, PROPERTY AND STRUCTURES

- a. The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the County's property from injury or loss arising in connection with this Contract. He shall make good any such damage, injury or loss, except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the County. He shall adequately protect adjacent property as provided by law and the Contract Documents.
- b. The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workmen and the public and shall post suitable railings, barricades, detour signs, danger signals or danger signs, warning fence, etc., warning against the hazards created, open trenches, materials or supplies after delivery, and shall provide watchmen on the work by day or night, all as necessary for the public safety, and for the prevention of accidents. These precautions shall comply with the provision of all applicable safety regulations and/or as directed by the County.
- c. The Contractor is cautioned that he must at all times maintain access to the existing facilities during the course of the Work in a manner prescribed by the Contract Documents and in cooperation with Harford County.
- d. The Contractor must keep the job site free from accumulation of waste material or rubbish caused by his operations.
- e. The Contractor shall store equipment, materials, fuels, explosives, etc. in a manner and in locations complying with all safety regulations and he shall avoid interference with vehicular traffic traveling to the existing facilities, and he shall not endanger vehicles, personnel or employees of the County.
- f. The Contractor shall, at his own expense, sustain in their place and protect from direct or indirect injury all equipment, pipes, poles, tracks, walls, buildings and other structures or property in the vicinity of his work, whether above or below the ground, within buildings or structures, or that may appear in the trench. He shall at all times have sufficient quantity of timber and plank, chains, ropes, etc. on-site and shall use them as necessary for sheeting his excavation and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened. The Contractor shall take all risks attending the presence or proximity of pipes, poles, tracks, walls, buildings, and other structures and property, or every kind and description, in or over his trenches or in the vicinity of his work, whether above or below the surface of the ground or

within buildings or structures. He shall be responsible for all damages and assume all expenses for direct or indirect injury caused by his work, to any of them or to any person or property by reason of injury to them, whether or not such structures are shown on the drawings.

## GC.26 CHANGES IN THE WORK

- a. The County, without invalidating the Contract, may order changes in the work within the general scope of the Contract consisting of additions, deletions or other revisions; and the contract sum and the contract time will be adjusted accordingly. All such changes in the work shall be authorized by a properly certified change order. All change orders shall be approved by the Director of Procurement and/or the County board of Estimates as appropriate. No oral changes to this Contract shall be effective.
  - (1) The amount of compensation to be paid to the Contractor for any extra work as so ordered shall be determined as follows:
    - (a) Unit Prices, if any, as set forth in the Contract.
    - (b) Unit Prices as mutually agreed.
    - (c) Lump Sum as mutually agreed.
    - (d) Time and material as mutually agreed.
    - (e) Time and Material Not-to-Exceed as mutually agreed.
    - (f) Other method as mutually agreed to be fair and reasonable.
  - (2) The following allowances shall be the basis for estimating lump sum proposals or for time and material work.
    - (a) LABOR. Wages of necessary day laborers and foreman actually employed on extra work, for such time as they are so employed plus forty-five (45) percent. This 45% shall include and cover all overhead, insurance, worker's compensation, fringe benefits, etc. Superintendent's time will not be allowed.
    - (b) MATERIALS. Actual purchase price, as paid by the Contractor, including any discounts, for materials actually incorporated into the extra work, to which cost shall be added an amount equal to fifteen (15) percent, plus the prevailing Maryland State Sales Tax.
    - (c) EQUIPMENT. Rental for vehicles, or heavy equipment or machinery while actually and actively used on the extra

work. Rental rates shall be actual audited daily costs, but not to exceed, 100% of the current rates recommended by the Associated Equipment Distributors based on the following schedule:

If the time of use is 3 days or less, figure hourly rates from the schedule of rates per day; if time of use is more than 3 days and less than 3 weeks, figure the hourly rate from the schedule of rates per week. If time of use is more than 3 weeks, figure the hourly rate from the schedule of rates per month; to compute hourly rate, use 8 hours per day, 40 hours per week, 176 hours per month.

- (d) SUBCONTRACTING. The prime Contractor shall receive the cost of work performed by an authorized Subcontractor as determined in (a), (b), and (c) above plus a ten (10) percent administrative allowance. Applies only to direct sub-contractors of the prime Contractor.
  - (e) Payment for extra work shall not include any allowance for the time of superintendents, timekeepers, or of any workmen or foremen not employed upon the extra work in question for a definitely and easily ascertainable period, nor the use, maintenance or repair of tools, nor for the maintenance, operation or repair of machinery, nor for the office accounting, engineering, or administrative expenses, indirect labor, nor for any rent, transportation, interest, depreciation or bonding cost or any other overhead, collateral or estimated expense, nor for any profit, all of which costs shall be deemed to be, and shall be, included in the allowance described in (a), (b), (c) and (d) above.
  - (f) The Contractor shall provide documentation to the County when requested as the County deems necessary to adequately evaluate the cost of materials, equipment or manpower. The County may contact suppliers or employees directly to verify information provided by the Contractor.
- (3) ADDITIONAL TIME. The Contractor may request additional time for changes in the work, provided that it can be reasonably demonstrated that the change has an effect on the critical path. When appropriate, additional time may be granted for a specific item of work without changing the overall Time for Completion for the project or the associated Liquidated Damages. Additional time, if approved, will be incorporated in the Change Order document.
- (4) All extra work shall be done as economically and expeditiously as possible, and under sufficient but not disproportionate supervision. Labor shall be furnished at the current rates and materials shall be charged at the lowest market prices. The County may, at its option,

furnish any materials required for extra work and the Contractor shall not be entitled to any allowance or percentage on materials so furnished; and likewise the County may supply any necessary machinery or equipment, and the Contractor shall not be entitled to any allowance thereupon.

- (5) The decision of the County shall be final and binding upon all questions relating to extra work.
- (6) All extra work shall be considered a part of the Contractor's responsibility to perform if required extra work and to make satisfactory progress in its execution.

#### GC.27 CHANGES NOT TO AFFECT BONDS

It is distinctly agreed and understood that any changes made in the Work or the Drawings or Specifications therefore (whether such changes increase or decrease the amount thereof or the time required for its performance) or any changes in the manner of time of payments made by the County to the Contractor, or any other modifications of the Contract, shall in no way annul, release, diminish or affect the liability of the Surety on the CONTRACT BONDS given by the Contractor, it being the intent hereof that notwithstanding such changes the liability of the Surety on said bonds continue and remain in full force and effect.

#### GC.28 CHANGE DIRECTIVE

When the County and Contractor disagree on the terms of a change or perceived change to the work, the County may issue a Change Directive instructing the contractor to proceed with the work without delay. The Change Directive will contain a complete description of the work. Upon issuance of a Change Directive, the Contractor shall be solely responsible for any impact resulting from a delay in proceeding with the work. The Contractor will be responsible for maintaining detailed records for time and material expended under the change directive. If a change is warranted, the time and material shall be paid in accordance with the guidelines stated in Change Orders.

#### GC.29 CLAIMS FOR EXTRA WORK

- a. If the Contractor shall claim compensation for any damage sustained by reason of the acts of the County, or any official or agent thereof, he shall within 7 days after sustaining of such damage, make a written statement to the County, of the nature of the damage sustained, and shall, within 21 days after the occurrence of and alleged cause for damage, file with the County, an itemized statement of the details and amount of such damage.
- b. Whenever it shall appear to the Contractor that, due to the exigencies of the work, he is about to incur damage, owing to the neglect or refusal of the County to issue an extra work order or to any other cause whatever,

he shall at once notify the County in writing, of such fact and state the nature of his/her possible claim, in order that the County may obtain necessary and authentic information to guide future consideration and action on such claim and unless the Contractor shall comply with this requirement, his claim for damage shall be forfeited and invalidated. Such notifications shall not take the place of, but shall be in addition to, written statement herein above required to be submitted within 7 days after the occurrence of and alleged cause for damage.

- c. In any case where the Contractor deems extra compensation is due to him for work or materials not clearly covered in the contract, or not ordered by the County as an extra, as defined herein, the Contractor shall notify the County in writing, of his claim for such extra compensation and receive the approval of the County before he begins the work on which he bases the claim. If such notification is not given, or the County is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor is deemed to have waived the claim for such extra compensation and/or not have had a valid claim initially. In case the claim is found to be just, it shall be allowed and paid as an extra as provided for herein.

#### GC.30 DEFECTIVE WORK

- a. Until Final Acceptance, the Contractor shall promptly, without charge, repair, correct or replace work, equipment, materials, apparatus or parts thereof which are defective, damaged or unsuitable or which in any way fail to comply with or be in strict accordance with the provisions and requirements of the Contract or applicable guarantee and shall pay to the County all resulting costs, expenses, losses or damages suffered by the County.
- b. If any material, equipment, apparatus or other items brought upon the site for use or incorporation in the Work, or selected for the same, is rejected by the County as unsuitable or not in conformity with the Specifications or any of the other Contract Documents, the Contractor shall forthwith remove such materials, equipment, apparatus and other items from the site of the Work and shall at his own cost and expense make good and replace the same and any material furnished by the County which shall be damaged or rendered defective by the handling or improper installation by the Contractor, his agents, servants, employees or subcontractors.

### GC.31 WARRANTY – MAINTENANCE PERIOD

- a. Unless otherwise provided in the specifications, the Contractor guarantees all work to be in accordance with contract requirements and free from defective or inferior materials, equipment, and workmanship for one year after the date of Substantial Completion by the County
- b. If, within any guarantee period, the County finds that warranted work needs to be repaired or changed because of the use of materials, equipment, or workmanship which, in his opinion are inferior, defective, or not in accordance with the terms of the contract, he will so inform the Contractor in writing and the Contractor shall promptly and without additional expense to the County:
  - (1) Place in satisfactory condition all of such warranted work.
  - (2) Satisfactorily correct all damages to equipment, the building or contents thereof, which is the result of such unsatisfactory warranted work; and
  - (3) Satisfactorily correct any work, materials, and equipment that are disturbed in fulfilling the guarantee, including any disturbed work, materials, and equipment that may have been warranted under another contract.
  - (4) Should the Contractor fail to proceed promptly in accordance with the guarantee, the County may have such work performed at the expense of the Contractor.
- c. Any special warranties that may be required under the contract shall be subject to the stipulations set forth herein, insofar as they do not conflict with the provisions of such special guarantees.
- d. The Contractor shall obtain each transferable warranty of equipment, materials or installation thereof which is furnished by any manufacturer, supplier or installer. In addition, the Contractor shall obtain and furnish to the County all information which is required in order to make any such warranty legally binding and effective, and shall submit both the information and the guarantee to the County in sufficient time to permit the County to meet any time limit requirements specified in the warranty or, if no time limit is specified, prior to completion and acceptance of all work under this contract.

### GC.32 NO SMOKING

Harford County has a policy whereby the use of tobacco products, including cigarettes, cigars, pipes, chewing tobacco and snuff is strictly prohibited on County property. The Contractor shall adhere to this policy.

### GC.33 ILLEGAL IMMIGRANT LABOR

The use of illegal immigrant labor to fulfill contracts solicited by Harford County Government is in violation of the law and is strictly prohibited. Contractors and subcontractors must verify employment eligibility of workers in order to assure that they are not violating Federal/State/Local laws regarding illegal immigration. A compliance audit may be conducted.

### GC.34 FOREIGN LANGUAGE TRANSLATOR REQUIREMENT

Harford County Government requires an awarded bidder to have on site, a full time interpreter that is fluent in speaking and understanding an employee's native language if the Contractor has on site an employee that does not speak English.

Failure of an awarded bidder to have on site, full time, an interpreter that is fluent in speaking and understanding an employee's native language for those employees that do not speak English is reason for immediate Termination for Cause.

## **PROJECT CLOSEOUT**

### GC.35 SUBSTANTIAL COMPLETION

Upon determining that the Work may be Substantially Complete, as defined by these Contract Documents, the Contractor shall submit the following to the County:

- a. A letter requesting an inspection and certifying that the Work is, in the opinion of the Contractor, substantially complete.
- b. Warranties, workmanship bonds, maintenance agreements, final certifications and any other documents required, by the Contract Documents, to be submitted upon Substantial Completion.
- c. Any releases required to provide the County unrestricted use of the Work and access to services and utilities including, but not limited to, occupancy permits and operating certificates.
- d. Tools, spare parts, extra stock and any similar items which the Contractor is required to deliver to the County.
- e. Written notice that final change-over of permanent locks has been completed and submittal of keys to the County.
- f. Documentation that start-up testing of systems has been successfully completed and a written certification that temporary facilities, construction tools and other materials not belonging to the County have been removed from the site.

- g. Operation and maintenance manuals (submittal of manuals shall precede training of County personnel).
- h. A certification that Final Cleaning, as described in the Project Requirements, has been completed.

#### GC.36 INSPECTION FOR SUBSTANTIAL COMPLETION

- a. Upon receipt of a request for inspection and all documentation and submittals described in GC.31, the County shall schedule an inspection of the Work. In the event the County finds, upon commencing the inspection, that the Work is not substantially completed, the County may, at its discretion, terminate the inspection.
- b. If the County determines, following inspection, that the Work is Substantially Complete, as defined by these contract documents, the County shall prepare and issue a Certificate of Substantial Completion.
- c. If work remains to be completed, the County shall provide a list to the Contractor showing all items of work that must be completed or corrected. The list of construction items to be completed or corrected shall be referred to as the punch list, and shall be issued to the Contractor within 7 days of the inspection.
- d. If the initial inspection is terminated by the County as described in section GC.31, above, the Contractor must request a re-inspection in writing at least seven days prior to the date of the re-inspection. For the first and subsequent re-inspections, the County shall bill, and the Contractor shall pay, the costs incurred by the County for its inspector(s) and for any consulting engineer(s) or inspector(s) required by the County to be present during the re-inspection.
- e. In the event the Contractor wishes to request a waiver from one or more of the requirements including in GC.31, above, a written request shall be submitted to the County with a description of the requirement, an explanation of the reason why the requirement could not be met and a date by which the requirement will be met.

#### GC.37 CONDITIONAL ACCEPTANCE

The County, at its sole discretion, may issue a Certificate of Conditional Acceptance if it determines that one or more of the requirements in GC.31 may be waived or deferred. The Certificate may include such conditions as the County deems necessary to ultimately fulfill all requirements.

## GC.38 OPERATIONS AND MAINTENANCE MANUALS

- a. Contractor shall organize operating and maintenance data into suitable sets of manageable size, bound, properly indexed and contained in individual heavy-duty 2-inch (maximum), 3-ring vinyl-covered binders with clear view panels on covers and spine, with pocket folders for folded sheet information. Binders shall be labeled on the front and spine of each binder as Operations and Maintenance Manual, Project Title and Bid Number, Volume # of #. Provide tabbed fly-leaf for each separate product or piece of equipment. Provide three complete sets unless otherwise directed.
- b. Content of Manual (as applicable)

Table of Contents

List of Sub-Contractors

Warranties

System Description and Sequence of Operation

Drawings

Product Data

Installation Instructions

Operations and Maintenance Instructions

- (1) Table of Contents: A complete table of contents shall be inserted in the front of each volume.
- (2) List of Subcontractors: A complete list of subcontractors (including the general contractor) shall be inserted after the table of contents in each volume. Include the Company name and address and phone number, POC name(s) and phone number(s), and a description of the work items for which the sub-contractor is responsible.
- (3) Warranties: Copy of each warranty, and bond issued shall be included in the first volume only – following the list of sub-contractors. Provide information sheets for County's personnel to use, listing proper procedures in the event of failure and instances which might affect the validity of warranties or bonds.
- (4) System Description and Sequence of Operation: For each HVAC systems and other complex systems, provide written text describing the various components of the system and a detailed sequence of operations. Provide balance reports and initial set point information.
- (5) Drawings: Supplement the System Description and Sequence of Operations with drawings as necessary to clearly illustrate relations of component parts of equipment and systems, and control and flow diagrams. Coordinate drawings with information in project record documents to assure correct illustration of complete

installation. Do not use project record documents as maintenance drawings.

- (6) Product Data: Include only those sheets which are pertinent to the specified product and annotate each sheet to clearly identify the specific product or part installed and clearly identify the data applicable to the installation. Delete (or neatly line through) inapplicable information.
- (7) Installation Instructions: Provide copies of the operations and maintenance instructions provided by the manufacturer.
- (8) Operations and Maintenance Instructions: Provide copies of the operations and maintenance instructions provided by the manufacturer. Provide product model number and serial numbers in the O&M Instructions or other appropriate place.

c. Submittal Schedule

A maximum of two submissions of each operations and maintenance manual will be reviewed, checked and commented upon without charge to the Contractor. Any additional submissions which are ordered by the County to fulfill stipulations of the drawings and specifications, and which are required by the Contractor's neglect or failure to comply with the requirements of the drawings and Specifications, or to make those modifications and/or corrections ordered by the County in the review of the first two submissions of each operations and maintenance manual, will be reviewed and checked as deemed necessary by the County and the cost of such review and checking, as determined by the County, and based upon a rate per hour as indicated in the project requirements, will be deducted from the Contractor's invoices or from monies retained under the provisions of these Specifications. It is therefore incumbent upon the Contractor to make all modifications and/or corrections as may be required by the County in an accurate, complete, and timely fashion.

GC.39 RECORD DRAWINGS (As-Built Drawings)

- a. "Record Drawings" shall mean one or more sets of Contract Drawings and Shop Drawings marked only as necessary to show the actual locations of Work as installed.
- b. Record Drawings shall be protected from deterioration or loss and shall be maintained in a secure, fire-resistant location when not in use. The Contractor shall provide the County access to Record Drawings during normal working hours.
- c. Where the actual installed location of work differs from the Contract Drawings, Contractor shall mark whichever drawing is most capable of

showing conditions fully and accurately. Where Shop Drawings are used, a cross-reference shall be recorded at the corresponding location on the Contract Drawings, giving particular attention to concealed elements that would be difficult to measure and record at a later date.

- d. Record Drawings shall be marked using primarily a red erasable pencil. Other colors may be used to distinguish between variations in separate categories of the Work.
- e. Change Order numbers and Addenda numbers shall be marked on Record Drawings at appropriate locations.
- f. Change Order numbers and Addenda numbers shall be marked on Record Drawings at appropriate locations.

#### GC.40 TRAINING

- a. The Contractor shall arrange for each installer of equipment to meet with the county's personnel and provide instruction in proper operation and maintenance. In the event the County does not find the instruction provided by the installers acceptable or complete, Contractor shall arrange to have the manufacturers' representative(s) provide appropriate instruction. Topics shall, at a minimum, include the following as appropriate:

- Maintenance manuals
- Record documents
- Spare parts and materials
- Tools
- Lubricants
- Fuels
- Identification systems
- Control sequences
- Hazards
- Cleaning
- Warranties and bonds
- Maintenance agreements and similar continuing commitments

- b. The Contractor shall demonstrate the following procedures as appropriate:

- Start-up
- Shutdown
- Emergency operations
- Noise and vibration adjustments
- Safety procedures
- Economy and efficiency adjustments
- Effective energy utilization

## GC.41 FINAL CLEANING

- a. General: General cleaning during construction is required by the General Conditions and included in Section Temporary Facilities.
- b. Cleaning: Contractor shall employ experienced workers or professional cleaners for final cleaning. Each surface or unit shall be cleaned to the condition expected in a normal, commercial building cleaning and maintenance program. Contractor shall comply with manufacturers' instructions regarding the use of cleaning solutions or substances.
- c. Contractor shall complete the following cleaning operations before requesting inspection for Certification of Substantial Completion:
  - (1) Remove temporary labels.
  - (2) Clean transparent materials, including mirrors and glass in doors and windows.
  - (3) Remove glazing compound and other substances that are noticeable vision-obscuring materials.
  - (4) Replace chipped or broken glass and other damaged transparent materials.
  - (5) Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances.
  - (6) Restore reflective surfaces to their original reflective condition.
  - (7) Leave concrete floors broom clean.
  - (8) Wax resilient floors.
  - (9) Vacuum carpeted surfaces.
  - (10) Architect/Engineer may require shampooing of carpets if substantial soiling has occurred prior to final acceptance.
  - (11) Wipe surfaces of mechanical and electrical equipment.
    - (a) Remove excess lubrication and other substances.
    - (b) Clean plumbing fixtures to a sanitary condition.
    - (c) Clean light fixtures and lamps.

- (d) Clean the site, including landscape development areas, of rubbish, litter and other foreign substances.
  - (e) Sweep paved areas broom clean; remove stains, spills and other foreign deposits.
  - (f) Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
  - (g) Contractor shall engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- d. Removal of Protection: Contractor shall remove temporary protection and facilities installed for protection of the work during construction.
  - e. Compliance: Contractor shall comply with all applicable County, State, Federal or other codes, rules or regulations creating safety standards for cleaning. Contractor shall not burn waste materials, bury debris or excess materials on County property or discharge volatile, harmful or dangerous materials into drainage systems. Contractor shall remove waste materials from the site and dispose of them in a lawful manner.
  - f. Where extra materials of value remaining after completion of associated work have become the County's property, Contractor shall arrange for disposition of these materials as directed.

# **PROJECT REQUIREMENTS**

**FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD IMPROVEMENTS  
BID NO. 16-156**

**SPECIAL PROVISIONS**

1.0 Scope of Work

- A. This project is referred to as "Fallston High School Synthetic Turf Field Improvements" and more specifically as Harford County Invitation for Bid No. 16-156. The Contractor shall furnish all materials and labor, equipment, tools, supervision and other facilities and services, as required for the construction of the Synthetic Turf Field access improvements; track length adjustments and improvements.
- B. The work to be performed under this Contract is described in the General Conditions, Detailed Technical Specifications, Special Provisions, Special Conditions, Specification Appendix, plans and drawings issued with the Invitation for Bid (IFB), any addendum to the IFB, and the Contract Agreement.
- C. The Contractor shall perform all work under this Contract in a diligent and workmanlike manner, and shall exercise the degree of skill and expertise as is customarily employed by similar Contractors performing similar work.
- D. Location: 2301 Carrs Mill Road  
Fallston, MD 21047  
ADC Map 16, Grid 11F

2.0 Notice to Proceed

- A. Notice to Proceed will be given to the Contractor by The Director of Procurement. The Contractor shall begin work within ten (10) days after receipt of such notice. For the purpose of this Contract "work" includes the preparation and submittal of shop drawings and mobilization.
- B. A Pre-Construction Meeting shall be scheduled prior to the date of the Notice to Proceed and the actual start of construction, the date to be determined by the County.
- C. The Contractor shall conduct bi-weekly progress meetings, and specially called meetings throughout the progress of the work.

3.0 Time for Completion

This project shall be completed within 120 calendar days from the date of Notice to Proceed.

4.0 Liquidated Damages

- A. For each calendar day that the Contractor is in default in completing the work to be done under this Contract, the Contractor shall pay the County liquidated damages which the County will suffer by reason of such default. The County shall be fully Authorized and empowered to deduct and retain the amount of any damages determined as monies due the Contract or under the Contract at any time after such damages are incurred. Permitting the Contractor to finish work, or any part of it, after the period of time of completion may have been extended, shall in no way operate as a waiver on the part of the County of any of its rights under the Contract. The amount of liquidated damages shall be Five Hundred Dollars (\$500) per calendar day.
- B. Any Contractor who experiences a stop work order for a sediment control or grading violation will be charged the contractual specified amount of liquidated damage per day for everyday of shut down regardless of their status on the approved project schedule, whether the Contractor finishes on time, after or prior to the scheduled completion date.

5.0 Basis of Award

Award will be made in accordance with Section 41-26 of the Harford County Code. The contract resulting from this solicitation will be awarded to the responsible bidder submitting the lowest, responsive bid for the selected alternative.

6.0 Sub-Letting and Assignment

- A. The contractor shall give his personal attention constantly to the faithful performance of the work, shall keep the same under his own control, and shall not assign the Contract by power of attorney or otherwise, nor sublet the work or any part thereof, without the previous written consent of the Director. He shall state to the Director, in writing, the name of each subcontractor he intends to employ, the portion of the work which he is to do, or the materials which he is to furnish, his place of business and such other information as the Director may require in order to know whether such subcontractors are reputable and reliable, and able to perform the work or to furnish the materials as called for in the Specifications. A subcontractor may not sublet work assigned to him.
- B. The Contractor shall not, either legally or equitable, assign any of the moneys payable under the Contract, or his claims thereto, unless by and with the like consent of the Director.
- C. The Contractor shall not be released from any of his liabilities or obligations under his Contract should any subcontractors fail to perform in a satisfactory manner the work undertaken by him or them.
- D. The Contractor shall be as fully responsible to the County for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of person directly employed by him.
- E. Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the County.

## 7.0 Site Inspection

- A. The bidder is expected to become familiar with, and take into consideration, site conditions that may affect the work and **to check all dimensions at the site.**
- B. Each bidder must become thoroughly acquainted as to the character and nature of the work to be done. Furthermore, each bidder must make a careful examination of the site and the work and inform himself fully as to the difficulties to be encountered in performance of the work, the facilities for delivering, storing and placing materials and equipment and other conditions relating to construction and labor.
- C. No plea of ignorance of conditions that exist, or may hereafter exist, on the site of the work or difficulties that may be encountered in the execution of the work, as a result of failure to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every detail all the requirements of the Contract documents and to complete the work for the consideration set forth therein, or as a basis for any claim whatsoever.
- D. Insofar as possible, the Contractor, in carrying out the job must employ such methods or means as will not cause unnecessary interruption of, or interference with the High School operations.

## 8.0 Weather Conditions

In the event of temporary suspension of work or during inclement weather, or whenever the Inspector shall direct, the Contractor will have materials and work carefully protected against damage or injury from the weather. If, in the opinion of the Inspector, any work or materials have been damaged or injured by reason of failure on the part of the contractor or any subcontractors to so protect work, such work and materials shall be removed and replaced at the expense of the Contractor.

## 9.0 Storage of Materials

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces and not on the ground and shall be placed under cover when directed. Stored materials shall be located so as to facilitate proper inspection. Crated materials shall remain crated until ready for installation. Lawns, grass plots or other private property shall not be used for storage purposes without the written permission of the owner or lessee.

## 10.0 Stormwater Management As-Built Certification

The Contractor shall employ a Professional Engineer licensed in the State of Maryland to certify that the stormwater storage media shown on the drawings was constructed as shown on the As-Built Plans and meets the Approved Plans and Specifications. The Contractor is responsible for the preparation of the Stormwater Management As-Built Drawings and the completion of all geo-technical testing, monitoring, and photographs required and in sufficient detail for the Engineer's Certification. The certifying engineer, employed by the contractor, shall make all necessary revisions to the as-built drawings and obtain storm water management approval from Harford County DPW Engineering prior

to final payment.

11.0 Approved Synthetic Turf Manufacturers

The approved synthetic turf manufacturers and products listed in Specification Section 02730 have stone base cross sections and drainage characteristics which are required to meet the stormwater management criteria established for this project. Given the time requirements for stormwater management re-design and permit amendments that may be required, coupled with the practicality of bidding an unknown stormwater management system that may be required for a turf system with a lesser stone base thickness and storage, or a turf system with an impermeable backing, no alternative turf system shall be approved.

12.0 Permits and References

The contractor shall adhere to the terms and conditions of the various permits issued for this project. This shall include permits and approvals from Harford County, the provisions of the NPDES Stormwater Permit for Construction Activities and any other applicable permits.

END OF SECTION

**FALLSTON HIGH SCHOOL  
SYNTHETIC TURF FIELD IMPROVEMENTS  
BID NO. 16-156**

**SPECIAL CONDITIONS**

1.0 General

- A. The project site is located on the N/E side of Fallston High School property at 2301 Carrs Mill Road, Fallston, Maryland 21047. The location is as shown on the vicinity map on the project drawings.
- B. These Special Conditions are hereby made a part of the Contract. In case of any conflict with the specifications, the Special Conditions shall govern.
- C. The Contract Documents consist of these Special Conditions, the Project Manual, any and all subsequent addenda or additions thereto, and the Drawings.
- D. Work in this contract includes excavation near existing structures and utilities. The Contractor shall take all precautions necessary to assure that such structures are not damaged or undermined during construction.
- E. All excavation shall be unclassified. Explosives may not be used in this project.

2.0 Field Engineering

- A. Contractor shall provide and pay for field engineering services required for the project, including but not limited to:
  - 1. Survey stakeout, and subgrade and finished stone grade certification work required in execution of the project;
  - 2. Civil, structural or other professional engineering services required to execute the Contractor's construction methods.
  - 3. Geotechnical field quality control, testing and reporting services.
- B. The surveyor, engineer or land surveyor shall be licensed in the State of Maryland.
- C. The existing survey control points are identified on the Drawings.

3.0 Submittals

- A. All shop drawings shall be in accordance with pertinent sections of the specifications.
- B. In addition to the submittals required elsewhere in the contract documents, the following items will require shop submittals from the Contractor.
  - 1. Storm drain pipe
  - 2. Synthetic turf products and all related appurtenances
  - 3. Field marking plans

- 4. Portland cement and asphaltic concrete mixes
- 5. Athletic equipment and installations

C. The Contractor shall submit to the County a detailed description of proposed construction sequence for the synthetic turf field installation.

#### 4.0 Construction Entrances

- A. The Contractor shall be responsible for all exploration, design, materials, construction, maintenance, and all safety and traffic control measures necessary at the work site entrances during ingress/egress of large equipment or delivery trucks. Contractor is also responsible for maintaining the high school access roads through the use of stone stabilizing, timber matting or other means approved by Owner as necessary to prevent excessive ruts or heaves. The Contractor is advised that the construction access roads cross pedestrian paths, parking areas and roadways used by students and staff of the high school. Safety of the public is paramount.
- B. The Contractor shall be responsible for restoring the construction access roads to original condition to the satisfaction of the Owner. Roadway repair shall be paid at the appropriate Contingent Bid Item.

#### 5.0 Temporary Water Supply

If necessary, the Contractor shall be responsible for providing and maintaining, at his expense, a temporary water supply for construction purposes. Water is available at the concession building located at the gated entrance to the track/field area. The water supply shall include all items necessary for a complete and frost-proof system such as pipes, fittings, meters (if required by HCPS), connections, hoses, insulation etc.

#### 6.0 Temporary Sanitary Facilities

The Contractor shall be responsible for providing and maintaining adequate sanitary facilities for crews and subcontractors through out the term of this contract. The Contractor shall keep the facilities clean and shall comply with all local and state health requirements and sanitary regulations.

#### 7.0 Rigging and Hoisting

The Contractor shall furnish all cranes and necessary services for the erection and delivery onto the work site of all materials and equipment. The Contractor shall remove the same from the premises when they are no longer required.

#### 8.0 Emergency Contractor Availability

- A. The Contractor shall provide 24-hour availability of Contractor services should an emergency arise. A list of telephone and/or pager numbers shall be provided for emergency contact of key contractor and subcontractor personnel.

- B. The Contractor shall compile and submit to the County at the pre-construction meeting a complete list of principal contacts of at least two responsible representatives of each trade or subcontractor to be employed for this contract. The list shall include the person's complete name, company, and phone numbers for work, home, vehicle, beeper, fax, etc., and description of responsibility relating to the contract work.

9.0 Permits

The Contractor shall adhere to the terms of the MDE NPDES General Permit for Stormwater from Construction Activities, the Harford County Grading Permit and the Harford County SWM Permit.

10.0 Special Instructions to the Contractor

- A. The Contractor shall determine the specific locations of all utilities and shall take whatever precautions are necessary to prevent damage to or interruption of utility services during construction. If any utilities are damaged due to construction activities, the Contractor shall make all necessary repairs prior to completion of the project, at his own expense. The Contractor shall notify "Miss Utility" or a private location company and the Owner prior to any excavation.
- B. While test borings accurately indicate subsurface conditions for boring locations on the date taken, the Owner and the Engineer assume no responsibility for actual conditions which may be encountered in the execution of the Contract. Should Contractor rely, for any purpose, upon accuracy or completeness of said borings, or log thereof, he does so at his own risk.
- C. The Contractor will be required to restore any utilities disturbed during construction, prior to the completion of the project, to a condition equal to or better than existing at the time of the Award of Contract, at his own expense. Repairs of public or park roadways within the limits of the property shall be in accordance with the direction of the Owner and shall be limited to the repair, filling, compacting and/or repaving of potholes or depressions caused by the Contractor or his subcontractors or suppliers.
- D. The Contractor's attention is directed to the fact that access to the project site is via public roads. The access to project site shall be through the Fallston High School property from Carrs Mill Road. Extreme care shall be exercised when transporting heavy equipment and materials over public roads to prevent damage
- E. All unsuitable and excess material, including construction debris shall be hauled off the project site and disposed of in an acceptable manner. Excess suitable material shall be placed and graded to the lines and grades shown on the drawings for final grading and stabilization purposes. Excess soil is tentatively approved to be disposed of at Youths Benefit Elementary School at 1901 Fallston Road, Fallston, MD 21047. Should the material be deemed unsuitable, it shall be removed to and legally disposed of off site.

END OF SPECIAL CONDITIONS

SECTION 01010  
SUMMARY OF WORK

## 1.0 GENERAL:

- A. The Contractor shall provide all labor, materials, equipment, subcontractors and services necessary for the completion "Fallston High School Synthetic Turf Field Improvements", located on the grounds of the Fallston High School at 2301 Carrs Mill Road, Fallston MD, 21047.
- B. The purpose of this contract is to provide for wear-resistant, all-season playing surface for football, soccer, lacrosse, field hockey, and track sporting events. Soil excavated for the installation of the synthetic surface shall be removed from the site and disposed of, at the contractor's expense, at a site with an approved grading permit, (See SC10E). Miscellaneous other work included in the project are demolition of miscellaneous items such as irrigation sprinklers, piping; installation of storm drain piping and inlet; installations of a shot put pad and a discus pad; ADA field access paved pathway and resurfacing equipment replacement for existing long jump, triple jump, and pole vault improvements. Installation of water service connection and post hydrant, and an add alternate installation of a new chain link fence and gates.

## 2.0 WORK INCLUDED UNDER THIS CONTRACT:

- A. The work to be done is that work shown on the Drawings and called for in the Project Manual and Specifications. The Contractor shall furnish all implements, machinery, tools, equipment, material, and labor necessary to the performance of the work and shall furnish and make all effort necessary to complete the project in a workman-like manner to the satisfaction of the County.
- B. All incidental, minor, and miscellaneous items, work and materials for which no payment is specifically provided, and any items, work and materials not specified or shown which are necessary to complete the work, or which may be fairly implied as included, shall be done and furnished by the Contractor without extra charge.
- C. Specifically, the items of work to be performed under this contract include, but are not limited to, the following:
1. Installation and post-construction removal of sediment control measures and establishment of a contractor's staging area where shown.
  2. Demolition and removal of football goal posts; concrete throwing pad; irrigation sprinkler heads, and miscellaneous piping; perimeter field under drain.
  3. Excavation of soil in existing athletic field area and removal of unsuitable and excess material off-site.
  4. Removal of track and header curb per plans. Saw cutting removal and patching for cuts across the track asphalt paving track edge and installing concrete nailer curbing.
  5. Installation of header curb and nailer board per plans. Furnishing and installation perforated perimeter drain pipe in stone-filled, geotextile-lined trench; HDPE storm drain pipe; transverse drain tile.
  6. Furnishing and installing geotextile fabric, base drainage stone, and finish drainage stone.
  7. Furnishing and installation of synthetic turf material, including field infill material, grooming, and trimming of fibers.

8. Furnishing and installation of two offset football goals with recessed foundation boxes, two soccer goals for recessed installation, 10' high ball stopping fence including post ground sleeves and plug removal tool, one discus pad, and one shot put pad.
9. Construction of ADA paved access path, 8" storm drain, removal, and disposal of existing path as indicated on plans.
10. Resurfacing/Equipment replacement for existing long jump, triple jump, and pole vault improvements.
11. Installation of a ¾" copper water service connection and post hydrant as indicated on the construction plans.
12. Removal of existing fence and re-installation of black polymer-coated 6-foot high chain link fence, three 12-foot wide double swing gates, two 4' x 6' gates per the proposed construction plans. Remove existing asphalt and repave section from the purposed track to the press box entrance per construction plans.
13. Furnish and install Two (2) 8" to existing storm drain at bleacher access to field.

END OF SECTION 01010

SECTION 01025  
MEASUREMENT AND PAYMENT

## 1.0 GENERAL REQUIREMENTS

- A. Payment will be made at the unit and/or lump sum prices bid. Bid prices shall include and cover the furnishing of all labor, equipment, and materials, and performance of all work in accordance with the Contract Documents.
- B. All work covered by the Contract Drawings and Project Manual will be paid for under the items listed in the Bid Form. The absence from the Bid Forms of bid items specifically described in the specifications or shown on the Drawings shall be interpreted as meaning that the cost of such work shall be included in the prices bid for related items.

## 2.0 DESCRIPTION OF BID ITEMS

- A. The Sum of bid items shall include all material, labor, equipment, cleaning, shoring, rentals, rock coring, excavation, backfill, overhead, profit, insurance, and incidentals necessary to cover the finished work of the several kinds of work specified.
- B. Maintenance of traffic, construction stake-out, painting, maintenance of installed work during the construction and guarantee periods, etc. shall be considered incidental to and included in the appropriate related bid item.
- C. Description

Synthetic Turf Field Bid ItemsBid Item 1 - "Mobilization/ Demobilization/General Conditions"

- a. Description: Mobilization shall include, but not necessarily be limited to, the performance of preparatory construction operations, including the movement of personnel and equipment to and from the project site; application, fee payment and acquisition for all necessary permits (i.e., sediment control standard plan for off-site stockpile and staging areas if needed, etc); construction stakeout and maintenance of same; the establishment of the Contractor's staging and stockpile areas, sanitary facilities and other facilities necessary to complete work; costs for shop drawing preparation and processing; costs for erosion and sediment control measures for off-site staging and stockpile areas if needed; and staging/stockpile area removal and cleanup seeding mulching restoration site cleanup. The cost of required insurance and bonds, and office administration, shall be included in this item.
- b. Measurement: Mobilization will not be measured but will be paid for on a lump sum basis.
- c. Payment: When the Contractor has established the necessary facilities as expressed above, an allowance of 50% of the lump sum price will be payable as part of the first monthly estimate. The remaining fifty percent (50%) will be paid in even increments for each of the projected remaining monthly estimates.

Bid Item 2 - "Erosion and Sediment Control"

- a. Description: Erosion and Sediment Control Mobilization shall include, but not necessarily be limited to, the installation of all erosion and sediment control measures as shown on the approved sediment control plan such as stabilized construction entrances, silt fence and super silt; the maintenance of same throughout the duration of the project; and the spreading of temporary stabilization measures

such as seeding and/or mulching throughout the duration of the project. This item shall also include the installation and maintenance of the running track protection measures (steel plates and stone) for equipment access.

- b. Measurement: Erosion and Sediment Control will not be measured but will be paid for on a lump sum basis.
- c. Payment: When the Contractor has installed the necessary measures shown on the approved E&SC plan and as expressed above, an allowance of 50% of the lump sum price will be payable as part of the next monthly estimate. The remaining fifty percent (50%) will be paid in even increments for each of the projected remaining monthly estimates.

Bid Item 3 - "Site Preparation"

- a. Description: Site Preparation shall include, but not necessarily be limited to, the performance of contractor-directed geo-technical services, demolition including removal of the existing irrigation system piping and controls, clearing, stripping, stockpiling and re-spreading topsoil, excavation to and compaction of the athletic field sub-grade, disposal of all excess excavated materials off-site, refill, final grading to lines and grades per the Contract Documents, incidental underground electric line relocation and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory site preparation.
- b. Measurement: Site Preparation will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 4 - "Artificial Turf Concrete Curb Construction"

- a. Description: Concrete Curb Construction shall include, but not necessarily be limited to, the saw cutting the inside edge of the existing running track pavement, the installation of stone sub base, the installation of concrete forms, and the furnishing, placement and finishing of concrete for the synthetic turf edge anchoring curb at all location required, the installation of control and expansion joints per the Contract Documents, and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory concrete curb construction.
- b. Measurement: Concrete Curb Construction will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 5 - "Storm Drain & Recharge Trenches"

- a. Description: Storm Drain shall include, but not necessarily be limited to, all storm drainage located outside of the inner edge of the existing running track, and shall include the sawcutting and repair of the running track surface, the excavation and refill and stone base placement for the furnishing and installation of solid or slotted plastic storm drain pipe, inlet or manhole structures, re-construction and refurbishing of a rip-rap outfall channel, and installation of the stone on slotted recharge trench including filter cloth, washed stone, hardware cloth-wrapped perforated distribution pipe, monitoring well/cleanout per the Contract Documents, and all other incidental items not specifically covered in the

Bid Item description herein but required for a complete and satisfactory installation of the outside storm drain and related structures outside of the inner edge of the existing running track.

- b. Measurement: Storm Drain & Recharge Trenches will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 6A - "Long Pile Synthetic Infilled Turf Surface"

- a. Description: Long Pile Synthetic Infilled Turf Surface shall include, but not necessarily be limited to, the furnishing, installation and grading of the base and finish drainage stone; the installation of the underlying geotextile fabric, interior and perimeter drainage trench and piping; the installation of the referenced synthetic turf surface with all required field striping by an approved, certified turf installer, including all gluing, sewing, edge connection, coordination and placement of openings for athletic field equipment; infill material placement and leveling; trimming, cleaning and testing of the installed surface per the Contract Documents, and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory installation of the drainage system and long pile synthetic infilled turf surface.
- b. Measurement: Long Pile Synthetic Infilled Turf Surface will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 6B - "Synthetic Infilled Turf Surface with Secondary (Thatch) Yarn"

- a. Description: Synthetic Infilled Turf Surface with Secondary (Thatch) Yarn shall include, but not necessarily be limited to, the furnishing, installation and grading of the base and finish drainage stone; the installation of the underlying geotextile fabric, interior and perimeter drainage trench and piping; the installation of the referenced synthetic turf surface with all required field striping by an approved, certified turf installer, including all gluing, sewing, edge connection, coordination and placement of openings for athletic field equipment; infill material placement and leveling; trimming, cleaning and testing of the installed surface per the Contract Documents, and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory installation of the drainage system and synthetic infilled turf surface with secondary (thatch) yarn.
- b. Measurement: Synthetic Infilled Turf Surface with Secondary (Thatch) Yarn will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item No. 7 - "Athletic Field Equipment and Installation"

- a. Description: Athletic Field Equipment shall include, but not necessarily be limited to, the furnishing and installation of two football goal posts, two soccer goals, shot put pad, discus pad including ground inserts for cage supplied by others, ball stopper fencing, sleeves, posts and all related accessories, coordination with the site and turf field contractors, long jump, triple jump, and pole vault per the Contract Documents and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory installation of the athletic field equipment.

- b. Measurement: Athletic Field Equipment will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the items actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 8 - "Restoration of Graded and Disturbed Areas Associated with Synthetic Turf Field"

- a. Description: Restoration of Graded and Disturbed Areas shall include, but not necessarily be limited to, fine grading, spreading of topsoil in all disturbed earth areas, fertilizing, seeding and mulching and establishing grass cover, and final removal of all sediment control measures, per the Contract Documents, and all other incidental items not specifically covered in the Bid Item description herein but required for a complete and satisfactory restoration of graded and disturbed areas.
- b. Measurement: Restoration of Graded and Disturbed Areas will not be measured but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 9 - "Construction of ADA Field Access"

- a. Description: Construction of an ADA Field Access paved path to include all grading, base material, drains, and paving as well as removal and disposal of existing pathway.
- b. Measurement: Will be paid for in a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

Bid Item 10 - "Post Hydrant and Water Service Connection"

- a. Description: Post Hydrant and Water Service Connection shall include, but not necessarily be limited to, the test pitting of the existing water main at the connection point, furnishing, and installation of a water post hydrant, gravel drain pit, copper water service tube, tapping saddle, tap, corporation, curb stop, valve box, and all related accessories per the Contract Documents, and all other incidental items not specifically covered in the Bid Item description herein, but required for a complete and satisfactory installation of the post hydrant and water service connection.
- b. Measurement: Post Hydrant and Water Service Connection will not be measured, but will be paid for on a lump sum basis.
- c. Payment: Payment for the above item will be made monthly based upon the estimated percentage of the item actually completed as mutually agreed upon between the County and the Contractor.

D. Description - Contingent Bid Items

Payment for contingent items will be made only where, when and in the amounts directed in writing by the County. No payment will be made for quantities in excess of those ordered by the County nor for those quantities placed by default or by negligence on the part of the Contractor. Payment will be made at the bid price stipulated in the Construction Bid Form. Each unit price shall include the cost for all labor, materials, tools, overhead, profit and commissions necessary to complete the item.

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Contingent Bid Item C-1 - “Unclassified Excavation Below Paving or Storm Drain Sub-grade, Dispose Material off-site and Furnish and Place AASHTO#57, CR-6 or #2 Stone Refill”

- a. Description: Payment for unclassified excavation below paving or storm drain sub-grade, dispose material off-site and furnish and place AASHTO#57, CR-6 or #2 Stone refill will be made at the unit price bid per cubic yard, respectively, for the actual amount excavated within the lines, to the depths and at the locations as may be directed by the County. Payment for excavation and stone refill used within trenches shall be in accordance with the trench payment width detail in the Harford County DPW (Road Code) Book of Standard Details for the pipe diameter under consideration.

Contingent Item C-2 - “Furnish and Place Select Backfill Using AASHTO #57 Stone”

- a. Description: Payment for furnishing and placing select backfill using AASHTO #57 stone will be made at the unit price bid per ton for the actual amount placed within the lines, to the depths and at the locations as may be directed by the County.

Contingent Bid Item C-3 - “Bituminous Pavement Patch for Areas Less Than 100 SF ”

- a. Description: Payment for bituminous pavement patch for areas less than 100 SF will be made at the unit price bid per ton for the actual amount placed within the lines, to the depths and at the locations as may be directed by the County for minor areas. The contingent bid item shall include saw cutting, existing pavement removal and disposal, and bituminous paving with Superpave 12.5 mm PG 64-22 placed in repair areas of less than 100 SF.

Contingent Bid Item C-4 - “Bituminous Pavement Patch for Areas Greater Than 100 SF ”

- a. Description: Payment for bituminous pavement patch for areas greater than 100 SF will be made at the unit price bid per ton for the actual amount placed within the lines, to the depths and at the locations as may be directed by the County for major areas. The contingent bid item shall include saw cutting, existing pavement removal and disposal, and bituminous paving with Superpave 12.5 mm PG 64-22 placed in repair areas of more than 100 SF.

Contingent Item C-5 - “Furnish and Incorporate Portland Cement into Soil Surface”

- a. Description: Payment for furnishing and incorporating into the soil surface Portland cement will be made at the unit price bid per ton for the actual amount furnished, incorporated into the surface soil where directed by the County or its designated representatives.

Contingent Item C-6 – “Replacement Header Concrete Curb”

- a. Description: The Sum of bid item shall include all material, labor, equipment, excavation, and backfill. Replace any additional header concrete curb necessary on site with payment on L.F.

Alternate: Chain Link Fence Addition –

- a. Description of Payment: Removal of existing fence and installation of 1800 LF of Black Polymer coated 6’ high chain link fence with three 12’ wide swing gates, two 4’x6’ gates, blacktop improvements per plan for press box access.
- b. Measure of Payment will be on a L.F. basis.
- c. Payment: Will be paid 100% when complete.

END OF SECTION 01025

SECTION 02050  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

A. Extent of selective demolition work is indicated on drawings. Note that the demolition and new construction work will be performed in stages as indicated on the drawings.

B. Types of Selective Demolition Work: Demolition requires the selective removal and subsequent off-site disposal of all items listed on the drawings, or otherwise required, including the following:

Sawcutting and removal of inside edge of existing asphalt track and header curb

Removal of irrigation emitters, irrigation control panel, feed piping and related items

Removal of existing football goal posts and foundations, and existing concrete pad

Removal or disconnection of existing field perimeter underdrain

1.03 SUBMISSIONS

Not Applicable

1.04 JOB CONDITIONS

A. Protections: Provide temporary barricades and other forms of protection as required to protect the general public from injury due to selective demolition work.

1. Remove protections at completion of work.

B. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

C. Notification: The following agencies are required to be contacted prior to mobilization and site demolition:

1. Miss Utility 1-800-257-7777

3. Harford County DPW – Capital Projects (410) 638-3457.

- D. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
  - 1. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- E. Explosives: Use of explosives will not be permitted.
- F. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
- G. Environmental Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
  - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

## PART 2 - PRODUCTS

(Not Applicable).

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

### 3.02 DEMOLITION

- A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on the Contract Documents.

### 3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations from site. Transport and legally dispose of materials off site.
  - 1. If suspected hazardous materials are encountered during demolition operations, immediately cease operations in the affected area and promptly notify the Owner. Comply with all applicable regulations, laws, and ordinances concerning the handling of hazardous materials.

### 3.04 CLEAN-UP AND REPAIR

- A. Backfill voids left open as a result of demolition activities with clean, suitable fill.
- B. Upon completion of demolition work, remove tools, equipment and demolished materials from site.

END OF SECTION 02050

SECTION 02110  
SITE PREPARATION AND SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
1. Protection of existing trees indicated to remain.
  2. Removal of trees and other vegetation (if required).
  3. Topsoil stripping.
  4. Clearing and grubbing.

1.03 PROJECT CONDITIONS

- A. Traffic: Conduct site clearing operations to ensure minimum interference with road, drives and other adjacent occupied or used facilities. Do not close or obstruct road, drives, parking areas or other occupied or used facilities without permission from authorities having jurisdiction and Owner. Coordinate work with Owner such that minimum interruption of parking arrangements during construction will occur.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements on the school property.
- C. Restore damaged improvements to their original condition, as acceptable to property owners.
- D. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

3.01 SITE CLEARING

- A. General: Remove trees, shrubs, grass and other vegetation or obstructions as required to permit

installation of new construction. Remove items as specifically indicated. "Removal" includes digging out and off-site disposing of stumps and roots. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.

- B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.
  2. Stockpile topsoil in storage piles in areas indicated or as indicated by sediment control inspector. Construct storage piles to provide free drainage of surface water.
  3. Dispose of unsuitable or excess topsoil off-site at a location with an active grading permit and approved sediment controls in place.
- C. Clearing and Grubbing: If required, clear site of trees, shrubs and other vegetation, except for those indicated to remain.
1. Completely remove stumps, roots, and other debris protruding through ground surface.
  2. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in accordance with Section 02200 of the specifications.
- D. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.

### 3.02 DISPOSAL OF WASTE MATERIALS

- A. Burning on Owner's Property: Burning is not permitted on Owner's property.
- B. Removal from Owner's Property: Remove waste materials, excavated soils from athletic field and access sidewalk, and unsuitable or excess topsoil from Owner's property and dispose of in a legal manner.

END OF SECTION 02110

SECTION 02200  
EARTHWORK

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

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

## 1.02 SUMMARY

## A. This Section includes the following:

1. Preparing and grading subgrades for synthetic turf, slabs-on-grade, walks, pavements, and landscaping.
2. Excavating and backfilling for buildings and structures.
3. Drainage and moisture-control fill course for slabs-on-grade.
4. Subbase course for walks and pavements.
5. Subsurface drainage backfill for walls and trenches.
6. Excavating and backfilling trenches within building lines.
7. Excavating and backfilling for underground utilities and appurtenances.

## B. Related Sections: The following Sections contain requirements that relate to this Section.

1. Division 2 Section "Site Clearing" for site stripping, grubbing, topsoil removal, and tree protection.
2. Division 2 Section "Lawns and Grasses" for finish grading, including placing and preparing topsoil for lawns and planting.

## C. Confirmation of Boring Data

1. No additional compensation shall be allowed for the Contractor for failure to fully investigate the site or for the neglect of the information contained in the Boring Logs.

## 1.03 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement, synthetic turf or walk.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Drainage Fill: Course of washed granular material supporting slab-on-grade placed to cut off upward capillary flow of pore water.
- G. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Owner. Unauthorized excavation, as well as remedial work directed by the Owner, shall be at the subcontractor's expense.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- I. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.
- J. Additional Excavation: When excavation has reached required subgrade elevations, notify the Construction Manager and testing agency, who will inspect the conditions. The Contractor is responsible for scheduling the inspections such that there is no delay to the project.

#### 1.04 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for the following:
  - 1. Each type of plastic warning tape.
  - 2. Filter fabric.
- C. Samples of the following:
  - 1. 12-by-12-inch sample of filter fabric.

#### 1.05 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Testing and Inspection Service: The Contractor shall employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing. All testing results shall be supplied to the County for verification.

- C. Preinstallation Conference: Attend conference at Project site to comply with requirements of Division 1 Section "Project Meetings."
1. Before commencing earthwork, meet with Owner, representatives of the governing authorities, Geotechnical Engineer, independent testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements.

#### 1.06 PROJECT CONDITIONS

- A. Site Information: Data in subsurface investigation reports was used for the basis of the design and are available to the subcontractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between soil borings. The Owner will not be responsible for interpretations or conclusions drawn from this data by the subcontractor. Additional test borings and other exploratory operations may be performed by the subcontractor, at the subcontractor's option; however, no change in the contract sum will be authorized for such additional exploration.
- B. Use of Explosives: Use of explosives is not permitted.
- C. Backfilling below design sub-grade areas: The backfilling operation required to bring actual grades to the grade elevations shown on the drawings as existing grades.
1. The on-site excavated material is tentatively approved to be disposed of at Youths Benefit Elementary School, 1901 Fallston Road, Fallston MD 21047. Should the material be deemed unsuitable, it shall be removed and legally disposed of off-site. If the Testing Agency verifies that the on-site excavated material complies with these specifications for backfill material, then the Contractor may use it to backfill this area to grade.
  2. Any additional backfill material necessary to complete this operation shall be imported from off-site as directed by the Testing Agency and shall comply with these specifications. The Testing Agency will verify that off-site borrow complies with requirements of these specifications and is suitable for use as backfill.
  3. This backfilling operation shall be the first earthwork operation performed on site after establishment of the sediment control devices, stripping of topsoil and testing and/or stabilization of existing subgrade as required.
- D. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the County or others except when permitted in writing by the County, then only after acceptable temporary utility services have been provided. If existing utilities are indicated to be abandoned, the Contractor shall remove such utility, if necessary, at no additional cost to the Owner.
1. Provide a minimum 48 hours notice to the County before interrupting any utility.
- E. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shutoff services if lines are active. Small diameter plastic sprinkler piping may be mixed in the excavated soil and become part of the fill material.
- F. Should uncharted or incorrectly charted, piping or other utilities be encountered during excavation, consult utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of

- G. Moisture Sensitive Soils:
1. The onsite founding materials are moisture sensitive and will be disturbed by excessive construction activity.
  2. The exposed founding materials shall be protected against detrimental changes in engineering qualities as a result of disturbance from rain or frost.
  3. Surface runoff shall be drained away from the excavations and not allowed to pond.
  4. If possible, concrete shall be placed in the footings the same day the excavations are made, or the founding materials may be covered by 3" deep mud mats in order to protect the founding soil from becoming saturated due to forecasted precipitation and/or disturbed due to excessive construction activity during the placement of steel reinforcement.
  5. The presence of moisture sensitive fine-grained soils poses the potential for high moisture content. Soils may be found to be well above their optimum moisture content; consequently, the on-site soils may require dicing, aeration, and/or manipulation to achieve efficient compaction.
  6. Any regions exhibiting poor drainage characteristics, and low lying areas, shall be expected to display moisture contents which are excessively high for normal earthwork operations.
  7. Any standing water shall be drained or pumped into approved sediment control facilities prior to commencement of earthwork.
  8. Excavations near to subgrade and all fills should be protected from traffic of heavy equipment, including heavy compaction equipment, when on-site soils exhibit high moisture contents, in order to minimize pumping and a generalized deterioration of these materials.
- J. The Contractor is solely responsible for the protection of the sub-grade until it receives final surface treatment and shall maintain the sub-grade as suitable and acceptable to the County and Testing Agency at all times. He shall be completely responsible for restoration or replacement of the sub-grade due to moisture damage, construction traffic, or any other cause. Repair or replacement of the sub-grade as often as required shall be performed at no additional cost to the Owner.
- K. Protect and do not disturb short aggregate piers installed. Disturbance of the aggregate piers may require complete re-installation of the pier by the Contractor at no additional cost to the owner. Contractor shall use extreme caution when excavating in the vicinity of an aggregate pier.

## PART 2 - PRODUCTS

### 2.01 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, ML, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter. Maximum dry density shall equal or exceed 110 pcf.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, MH, CL, CH, OL,

OH, and PT or as determined by the Geotechnical Engineer.

- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Subbase and Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Subbase or base materials, or those materials approved by the geotechnical testing agency as suitable for backfill and fill materials.
- G. Bedding Material and Drainage Fill: As described in the specification sections related to artificial turf base materials.
- H. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.
- I. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

## 2.02 ACCESSORIES

- A. Warning Tape: Polyethylene plastic tape meeting the specifications of Section 02720, "Storm Sewerage", shall consist of a metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried in accordance with the construction drawings.
- B. Filter Fabric: Filter fabric shall be Filter X, Mirafi 140 N, Mirafi 1000X, Stabilinka T140N, or approved equal for silt fence and super silt fence. Fabric shall be Mirafi 600X or approved equal for under stabilized construction entrance and all riprap.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Tree protection is specified in the Division 2 Section "Site Clearing."

### 3.02 DEWATERING

- A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation. Do

not allow water to accumulate in excavations.

- C. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundations bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, and sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
  - 1. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water to be removed from excavation to collecting or runoff areas. Do not use foundation or pipeline excavations as temporary drainage ditches.

### 3.03 BACKFILLING BELOW-GRADE AREAS

- A. When quantities of suitable soil material, in accordance with the specifications, are not available on site to meet finish design grades. Contractor shall import suitable material from off-site in quantities required, at no additional cost to the Owner.
- B. Use satisfactory soil materials, as defined by ASTM D 2487 and identified in paragraph 2.01/B of this specification section, free from debris, trash, frozen materials, roots, rocks larger than 6 inches in diameter, and other organic matter. All material must contain no more than 45 percent finer than a #200 sieve size; have a liquid limit of less than 40 and a plasticity index less than 10.
- C. Prior to placement of compacted structural fill, the fill subgrade should be stripped of organic layers and then proofrolled under the observation of the Owners Testing Agency. A minimum 20-ton dump truck should be used for proofrolling. Areas of subgrade that exhibit pumping or contain organic material should be removed down to firm, natural soils or addressed at the direction of the Testing Agency.
- D. Place fill materials in horizontal layers not exceeding 8 inches in loose depth. In lawn and unpaved areas compact each layer to a density not less than 90% of the maximum density when tested in accordance with ASTM D 698. In synthetic turf, walkway and pavement areas, the top 12 inches of fill should be compacted to 95% of the maximum density when tested in accordance with ASTM D 698. Fill materials should be placed at moisture contents within +/- 2 points of the optimum moisture content. No compacted fill shall be placed unless a soils technician is present to monitor fill compaction.

### 3.04 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: All excavation is unclassified and includes excavation of earth and rock to required subgrade elevations. The following classifications of excavation will be made when encountering rock below subgrade:
  - 1. Earth Excavation includes excavation of pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; together with soil and other materials encountered that are not classified as rock or authorized excavation.
  - 2. Rock Excavation includes removal and disposal of rock material and obstructions 2 cu. yd. or more in volume, that cannot be removed by the following heavy-duty track mounted rock

excavating equipment without systematic drilling or ripping:

Caterpillar 215D LC hydraulic excavator, or equivalent, equipped with a 42 inch wide short-tip-radius rock bucket for excavation footings and trenches less than 10 feet wide and pits less than 30 feet in either length or width.

Caterpillar Model No. D8T bulldozer with ripper.

### 3.05 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations. No slope shall exceed 2:1 without consent by the Owner's engineer.

### 3.06 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.05 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
  - 1. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

### 3.07 EXCAVATION FOR SYNTHETIC TURF, WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

### 3.08 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe, unless otherwise indicated.
  - 1. Clearance: 12 inches minimum each side of pipe.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes. Remove stones and sharp objects to avoid point loading.
  - 1. For pipes less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe on bedding as specified in the Harford County Standards and Specifications, latest edition.

2. For pipes 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill or as specified on the civil drawings.
3. Where encountering rock or another unyielding bearing surface, carry trench excavation 6 inches below invert elevation to receive bedding course.

### 3.09 APPROVAL OF SUBGRADE

- A. Notify the testing agency and County when excavations have reached required subgrade.
- B. When the Owner's representative determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  1. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Owner's representative.

### 3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Owner.
  1. Fill unauthorized excavations under other construction as directed by the Owner.

### 3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.
  1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.12 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
  1. Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
  2. Surveying locations of underground utilities for record documents.
  3. Testing, inspecting, and approval of underground utilities.
  4. Concrete formwork removal.

5. Removal of trash and debris from excavation.
6. Removal of temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
8. Installation of plastic warning tape over sanitary sewer.

### 3.13 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes.
- B. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- C. Coordinate backfilling with utilities testing.
- D. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
- E. Place and compact final backfill of satisfactory soil material to final subgrade.
- F. Install warning tape directly above utilities, as indicated on the construction drawings and in these specifications.

### 3.14 SUBSURFACE DRAINAGE BACKFILL

- A. Subsurface Drain: Place a layer of filter fabric around perimeter of drainage trench or at footing, as indicated. Place a 6-inch compacted course of filtering material on filter fabric to support drainage pipe. After installing and testing, encase drainage pipe in a minimum of 6 inches of compacted filtering material and wrap in filter fabric, overlapping edges at least 6 inches.
- B. Drainage Backfill: Place and compact drainage backfill of filtering material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of filter fabric, overlapping edges at least 6 inches.
- C. Impervious Fill: Place and compact impervious fill material over drainage backfill to final subgrade.

### 3.15 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
  1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material

will bond with existing surface.

- B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
  - 1. Under grass, use satisfactory excavated or borrow soil material.
  - 2. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material.
  - 3. Under steps and ramps, use subbase material.

### 3.16 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
    - a. Stockpile or spread and dry removed wet satisfactory soil material.

### 3.17 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. All fill material shall be compacted at 95% of maximum dry density for areas under pavements, walkways and synthetic turf areas, and 90% of maximum dry density for lawn or unpaved areas, meeting AASHTO T-99 and ASTM D-698 specifications..
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to AASHTO T-99 and ASTM D 698:
  - 1. Under structures, building slabs, steps, and pavements, compact the top 24 inches below subgrade of in situ material and each layer of backfill or fill material at 95 percent maximum dry density and 92% below two feet of subgrade. Full depth structural fill should extend a minimum 10 feet beyond the perimeter of the building.
  - 2. Under walkways, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density and 90% below one foot below subgrade.
  - 3. Under lawn or unpaved areas, compact the top 12 inches below subgrade and each layer of

backfill or fill material at 90 percent maximum dry density and 88% below one foot of subgrade.

### 3.18 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between existing adjacent grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Providing that ponding doesn't occur, finish subgrades to required elevations within the following tolerances:
  - 1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
  - 2. Walks: Plus or minus 1/2 inch.
  - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading Inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge. Coordinate subgrade elevations with finish floor elevations in accordance with architectural plans.

### 3.19 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.
  - 1. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections and thickness to not less than 95 percent of ASTM D 4254 relative density.
  - 2. Shape subbase and base to required crown elevations and cross-slope grades.
  - 3. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
  - 4. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.20 DRAINAGE FILL

- A. Under slabs-on-grade, place drainage fill course on prepared subgrade.
  - 1. Compact drainage fill to required cross sections and thickness.
  - 2. When compacted thickness of drainage fill is 6 inches or less, place materials in a single

layer.

3. When compacted thickness of drainage fill exceeds 6 inches thick place materials in equal layers, with no layer more than 6 inches thick nor less than 3 inches thick when compacted.

### 3.21 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
  1. Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.
    - a. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
    - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at weekly intervals as directed by Owner.
  2. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to Owner.
  3. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2,000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
  4. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but no fewer than two tests.
- B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

### 3.22 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
  1. Scarify or remove and replace material to depth directed by the Owner's representative;

reshape and recompact at optimum moisture content to the required density.

- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.23 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

### 3.24 EROSION AND SEDIMENT CONTROL

- A. All sediment and erosion control measures shall conform to the following guidelines:
  - 1. 2011 Maryland "Standards and Specifications for Soil Erosion and Sediment Control".

END OF SECTION 02200

SECTION 02511  
HOT-MIXED ASPHALT PAVING

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

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

## 1.02 SUMMARY

- A. This Section includes provisions for hot-mixed asphalt paving over prepared subbase.
- B. Prepared subbase is specified in Division 2, Section 02200, and on the drawings.
- C. Proof rolling of prepared subbase is included in this Section.

## 1.03 SUBMITTALS

- A. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

## 1.04 SITE CONDITIONS

- A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 deg F (4 deg C) and when base is dry. Base course may be placed when air temperature is above 30 deg F (minus 1 deg C) and rising.

- B. Grade Control: Establish and maintain required lines and elevations.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.
- B. Coarse Aggregate: Sound, angular crushed stone, crushed gravel, or properly cured crushed blast furnace slag, complying with ASTM D 692-88.
- C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone, properly cured blast furnace slag, gravel, or combinations thereof, complying with ASTM D 1073.

- D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with ASTM D 242.
- E. Asphalt Cement: ASTM D 3381 for viscosity-graded material; ASTM D 946 for penetration-graded material.
- F. Tack Coat: Emulsified asphalt; ASTM D 977.
- G. Lane Marking Paint: Alkyd-resin type, ready-mixed complying with AASHTO M 248, Type I.
  - Color: White for line markings, 4" wide
  - Blue for handicapped parking symbols, 4" wide
  - Yellow for centerline of road, double 4" wide

## 2.02 ASPHALT-AGGREGATE MIXTURE

- A. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with MSHA specifications and as specified on the drawings.

## PART 3 - EXECUTION

### 3.01 SURFACE PREPARATION

- A. General: Remove loose material from compacted subbase surface immediately before applying prime coat.
- B. Proof-roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
- C. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.
- D. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into hot-mixed asphalt pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.
  - Allow to dry until at proper condition to receive paving.
- E. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

### 3.02 PLACING MIX

- A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 deg F (107 deg C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.
- B. Paver Placing: Place in strips not less than 10 feet wide, unless otherwise acceptable to the Owner's representative. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.

- C. 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 hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

### 3.03 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.  
  
Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- B. 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.
- C. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- D. 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 95 percent laboratory density.
- E. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.04 TRAFFIC AND LANE MARKINGS

- A. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- B. Striping: Use chlorinated-rubber base traffic lane-marking paint, factory-mixed, quick-drying, and non-bleeding.  
  
Do not apply traffic and lane marking paint until layout and placement have been verified with the Owner.  
  
Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 12 to 15 mils dry thickness.

### 3.05 FIELD QUALITY CONTROL

- A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness will be done by the Contractor's testing agent. Repair or remove and replace unacceptable paving as directed by the laboratory, and approved by the Testing Agency's

representative.

- B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:
1. Base Course: Plus or minus 1/2 inch.
  2. Surface Course: Plus or minus 1/4 inch.
- C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
1. Base Course Surface: 1/2 inch.
  2. Wearing Course Surface: 1/4 inch.
  3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

END OF SECTION 02511

SECTION 02520  
PORTLAND CEMENT CONCRETE PAVING

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.02 SUMMARY

- A. Extent of portland cement concrete paving is shown on drawings, including artificial turf field perimeter curb, walkways, roadway curbs and mowing strips.
- B. Prepared subbase is specified in Division 2, Section 02200.
- C. Concrete and related materials are specified in their appropriate sections of Harford County Standard Specifications for Construction and Materials.

## 1.03 SUBMITTALS

- A. Provide samples, manufacturer's product data, test reports, and materials' certifications as required in referenced sections for concrete and joint fillers and sealers.

## 1.04 QUALITY ASSURANCE

- A. Codes and Standards: Comply with local governing regulations if more stringent than herein specified.

## 1.05 JOB CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
  - 1. Use flexible spring steel forms or laminated boards to form radius bends as required.
  - 2. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

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- B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185.
1. Furnish in flat sheets, not rolls, unless otherwise acceptable to the Owner.
- C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
- D. Joint Dowel Bars: Shall be Form-Rite Concrete Accessories Co.'s "Form-Rite Load Transfer Unit" or approved equal.
- E. Concrete Materials: Comply with requirements of the appropriate sections of Harford County Standard Specifications for Construction and Materials for concrete materials, admixtures, bonding materials, curing materials, and others as required.
- F. Expansion Joint Materials: Comply with requirements of the appropriate sections of Harford County Standard Specifications for Construction and Materials for preformed expansion joint fillers and sealers.
- G. Liquid-Membrane Forming and Sealing Curing Compound: Comply with ASTM C 309, Type I, Class A unless other type acceptable to the Owner. Moisture loss no more than 0.055 gr./sq. cm. when applied at 200 sq. ft. / gal.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
- "Masterseal"; Master Builders.
  - "A-H 3 Way Sealer"; Anti-Hydro Waterproofing Co.
  - "Ecocure"; Euclid Chemical Co.
  - "Clear Seal"; A. C. Horn.
  - "J-20 Acrylic Cure"; Dayton Superior.
  - "Sure Cure"; Kaufman Products Inc.
  - "AR -30" W.R. Meadows. "Spartan-Cote"; The Burke Co.
  - "Sealkure"; Toch Div. - Carboline.
  - "Kure-N-Seal"; Sonneborn-Contech.
  - "Polyclear"; Upco Chemical/USM Corp.
  - "L&M Cure"; L & M Construction Chemicals.
  - "Klearseal"; Setcon Industries.
  - "LR-152"; Protex Industries.
  - "Hardtop"; Gifford - Hill.
  - or approved equal.
- H. Bonding Compound: Polyvinyl acetate or acrylic base, re-wettable type.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
- "J-40 Bonding Agent"; Dayton Superior Corp.
  - "Weldcrete"; Larsen Products.
  - "Intralok"; W.R. Meadows.
  - "Everbond"; L & M Construction Chemicals.
  - "EucoWeld"; Euclid Chemical Co.
  - "Hornweld"; A. C. Horn.
  - "Sonocrete"; Sonneborn-Contech.
-

"Acrylic Bondcrete"; The Burke Co.  
or approved equal.

- I. Epoxy Adhesive: ASTM C 881, 2-component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
  1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include but are not limited to the following:

"Epoxite"; A. C. Horn.  
"Edoco 2118 Epoxy Adhesive"; Edoco Technical Prod.  
"Sikadur Hi-Mod"; Sika Chemical Corp.  
"Euco Epoxy 463 or 615"; Euclid Chemical Co.  
"Patch and Bond Epoxy"; The Burke Co.  
"Sure-Poxy"; Kaufman Products Inc.  
or approved equal.

## 2.02 CONCRETE MIX, DESIGN, AND TESTING

- A. Comply with requirements of applicable Division 3 sections for concrete mix design, sampling and testing, and quality control and as herein specified.
- B. Design mix to produce normal-weight concrete consisting of portland cement, aggregate, water-reducing or high-range water-reducing admixture (superplasticizer), air-entraining admixture, and water to produce the following properties:
  1. Compressive Strength: 4,000 psi minimum at 28 days for load-bearing pavements and artificial turf field perimeter curb, and as otherwise indicated for other miscellaneous paving such as mowing strips.
  2. Slump Limits: 8 inches minimum for concrete containing high-range water-reducing admixture (superplasticizer); 3 to 5 inches for other concrete.
  3. Air Content: 5 to 8 percent.

## PART 3 - EXECUTION

### 3.01 SURFACE PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.
- B. Proof-roll prepared subbase surface to check for unstable areas and need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.

### 3.02 FORM CONSTRUCTION

- A. Set forms to required grades and lines, braced and secured. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:

1. Top of forms not more than 1/8 inch in 10 feet.
  2. Vertical face on longitudinal axis, not more than 1/4 inch in 10 feet.
- C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

### 3.03 REINFORCEMENT

- A. Locate, place and support reinforcement as specified in Division 3 sections, unless otherwise indicated herein and on the drawings.

### 3.04 CONCRETE PLACEMENT

- A. General: Comply with requirements of Division 3 sections for mixing and placing concrete, and as herein specified.
- B. Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- C. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 1/2 hour, place a construction joint.

When adjacent pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.

- D. Curbs: Automatic machine may be used for curbs placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results that meet or exceed minimums specified. Machine placement must produce curbs to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.
- E. Slabs at Buildings: Where proposed walks or pads are to be placed up to doorways, the top grade of the walk, regardless of the proposed grade shown on the site plan, shall be set with the doorway threshold for the entire length of the door.

### 3.05 JOINTS

- A. General: Construct expansion, weakened-plane (contraction), and construction joints true to line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.

When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

- B. Curbs and Mowing Strips: Construct contraction joints in 10-foot sections except where shorter sections are necessary for closures. No section shall be shorter than 5 feet.

Construct expansion joints every 50 feet or to coincide with those in adjoining concrete pavements; construct expansion joints where tangent and curved curbs sections meet.

- C. Weakened-Plane (Contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, as follows:

1. Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.
2. Sawed Joints: Form weakened-plane joints with powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
3. Inserts: Use embedded strips of metal or sealed wood to form weakened-plane joints. Set strips into plastic concrete and carefully remove strips after concrete has hardened.

- D. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for more than 1/2 hour, except where such placements terminate at expansion joints.

1. Construct joints as shown or, if not shown, use standard metal keyway-section forms.
2. Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.

- E. Expansion Joints: Provide premolded joint filler for expansion joints where indicated above and at abutting concrete curbs, inlets, structures, walks, and other fixed objects, unless otherwise indicated.

1. Extend joint fillers full width and depth of joint, not less than 1/2 inch or more than 1 inch below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.
2. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together.
3. Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.

- F. Fillers and Sealants: Comply with requirements of applicable sections for preparation of joints, materials, installation, and performance.

### 3.06 CONCRETE FINISHING

- A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
- B. After floating, test surface for trueness with a 10-ft. straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
- C. Work edges of slabs, curbs, and formed joints with an edging tool, and round to 1/2-inch radius, unless otherwise indicated. Eliminate tool marks on concrete surfaces.
- D. After completion of floating and when excess moisture or surface sheen has disappeared, complete troweling and finish surface as follows:
  - 1. Broom finish by drawing a fine-hair broom across concrete surface perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to the Owner's representative.
  - 2. On inclined slab surfaces such as handicap ramps, provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic.
- E. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by the Owner.

### 3.07 CURING

- A. Protect and cure finished concrete paving in compliance with applicable requirements of appropriate sections of Harford County Standard Specifications for Construction and Materials. Use membrane-forming curing and sealing compound or approved moist-curing methods.

### 3.08 REPAIRS AND PROTECTIONS

- A. Repair or replace broken or defective concrete, as directed by County.
- B. Drill test cores where directed by Owner when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just before final inspection.

END OF SECTION 02520

SECTION 02530  
TRACK PAVING

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

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

## 1.02 SUMMARY

- A. This Section includes provisions for hot-mixed asphalt paving over prepared subbase.
- B. Prepared subbase is specified in Section 02200 – "Earthwork".
- C. Related Sections: Section 02511 – "Hot-Mixed Asphalt Paving".

## 1.03 SUBMISSIONS

- A. General: Submit each item in this Article according to the General Conditions.
- B. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

## 1.04 SITE CONDITIONS

- A. Grade Control: Establish and maintain required lines and elevations.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. Rubber Pavement Course: Reflex-1 V.L.S., or approved equal, consisting of a combination of uniformly graded rubber granules thoroughly saturated with carboxylated styrene butadiene binders. The gradation of the rubber granules shall be between one and six millimeters containing less than 4% dust retained on a number 30 sieve. The binders shall contain a minimum of 50% resin solids.
- B. Coarse Aggregate: Sound, angular crushed stone, crushed gravel or properly cured crushed blast furnace slag, complying with ASTM D 692-88.
- C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone properly cured blast furnace slag, gravel, or combinations thereof, complying with ASTM D 1073.
- D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with ASTM D 242.

- E. Asphalt Cement: ASTM C 3381 for viscosity-graded material; ASTM D 946 for penetration-graded material.
- F. Prime Coat: Cut-back asphalt type, ASTM D 2027; MC-30, MC-70 or MC-250.
- G. Tack Coat: Emulsified asphalt; ASTM D 977.
- H. Lane Marking Paint: Alkyd-resin type, ready-mixed complying with AASHTO M 248, Type I. Color and width shall comply with the National Federation of State High Schools Rule Book.

## 2.02 ASPHALT-AGGREGATE MIXTURE

- A. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with MSHA specifications and as specified on the drawings.

## PART 3 - EXECUTION

### 3.01 PLACING BASE COURSE

- A. Furnish and install soil stabilization fabric (Mirafi 500X or approved equal) over the entire area in accordance with manufacturer's guidelines.
- B. Furnish and install 6 inches of crusher run base in two courses, comprised of 3 inches of CR-6 each.
- C. Furnish and install 4 inches asphalt base course, HMA Superpave 12.5 mm. Tack coat to be applied prior to finished paving.

### 3.02 PLACING LEVELING COURSE

- A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 deg F (107 deg C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.
- B. Furnish and install 1 ½" asphalt leveling course, HMA Superpave 12.5 mm.  
  
Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.
- C. 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 hot-mixed asphalt course. Clean contact surfaces and apply tack coat.
- D. Allow leveling course to cure for a minimum of 14 days before placing rubber pavement course.

### 3.03 RUBBER PAVEMENT COURSE

- A. Install rubber pavement course in accordance with manufacturer's guidelines.

- B. Before rubber pavement course installation, the asphalt pavement shall be checked for cracks or low areas. All deficiencies shall be corrected before rubber pavement installation. Repaired areas shall be allowed to cure prior to application of synthetic surface. Cure time may vary dependent on method of repair selected.
- C. The entire surface shall be cleaned of all dirt and debris and shall be free of all grease, oils and other foreign materials prior to the application of the rubber pavement.
- D. After the asphalt leveling course has cured for a minimum of 14 days a prime coat consisting of carboxylated styrene butadiene binder (mixed 1 part water to 1 part binder) shall be applied at a rate of .05 gallons per square yard.

Note: Asphalt emulsions may not be used as prime coat (or in any other part of the system) due to thermal sensitivity.

Note: All binder application rates are in undiluted form. During application, the binder shall be mixed at no greater than a one to one ratio with water to aid migration through the surface.

- E. A layer of 3 to 6 millimeter S.B.R. rubber granules shall be spread evenly by means of mechanical spreader, (or manually) at rate of approximately 2 pounds per square yard. This layer shall be saturated with the binder at a rate of approximately 0.1 gallon per square yard using mixing and spray equipment as approved by the Manufacturer.
- F. A second layer of 3 to 6 millimeter S.B.R. rubber granules shall be spread in the same manner at a rate of approximately 2.50 pounds per square yard and shall be saturated with the binder at a rate of approximately 0.2 gallon per square yard.
- G. The third course of 2 to 4 millimeter S.B.R. rubber granules shall be applied in the same manner at a rate of approximately 3 pounds per square yard and saturated with the binder at a rate of approximately 0.2 gallon per square yard.
- H. A final layer of 1 to 3 millimeter S.B.R. rubber granules shall be spread at a rate of approximately 2 pounds per square yard and saturated with the binders at a rate of approximately 0.2 gallon per square yard. Before spraying, the binders shall be mixed with dispersed pigment at a rate of not less than 2 gallons per 55 gallons of binder.
- I. A final spray coat of pigmented binder shall be applied at the rate of .05 gallon per square yard to insure uniformity.

#### 3.04 LANE MARKINGS

- A. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- B. Track markings shall comply with the National Federation of State High Schools Rules Book.

Do not apply lane marking paint until layout and placement have been verified with the Owner.

Apply paint with mechanical to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 12 to 15 mils dry thickness.

## 3.05 FIELD QUALITY CONTROL

- A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness will be done by a Contractor's independent testing laboratory and approved by the Owner. Repair or remove and replace unacceptable paving as directed by the laboratory, and approved by the owner's representative.
- B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations.
  - 1. Base Course: Plus or minus  $\frac{1}{2}$  inch.
  - 2. Leveling Course: Plus or minus  $\frac{1}{4}$  inch.
- C. Surface Smoothness: Test finished surface of each course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
  - 1. Leveling Course Surface:  $\frac{1}{4}$  inch.
  - 2. Rubber Pavement Course Surface:  $\frac{1}{8}$  inch.

END OF SECTION 02530

SECTION 02665  
POST HYDRANT

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

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

## 1.02 SUMMARY

- A. This Section includes water system piping and post hydrant for potable water service.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Section 02200 – Earthwork, for pipe trench excavation and backfill.

## 1.03 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure Ratings: Except where otherwise indicated, 150 psig (1035 kPa) is the minimum pressure requirements for water system piping and post hydrants.

## 1.04 SUBMITTALS

- A. General: Submit the following according to the General Conditions of the Contract.
- B. Manufacturer, product data, including pressure rating and rated capacity for the following:
  - Tapping saddle and corporation stop
  - Copper tubing and fittings
  - Curb stop and curb box
  - Post hydrant
  - Identification materials.
- C. Test reports specified in "Field Quality Control" Article in Part 3.
- E. Maintenance data: Include data for the following:
  - Post hydrant.

## 1.05 QUALITY ASSURANCE

- A. Comply with standards of authorities having jurisdiction for potable water piping and plumbing systems. Include materials, installation, testing, and disinfection.
- B. Product Options: Water systems specialties and accessories are based on specific types, manufacturers, and models indicated. Components by other manufacturers but having equal performance characteristics may be considered, provided deviations in dimensions, operation, and other characteristics do not change design concept or intended performance as judged by Engineer. The burden of proof of equality of products is on Contractor.

## 1.06 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.

- B. Verify that water system piping may be installed in compliance with original design and referenced standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

- 1. Tapping Saddle: Ford Meter Box Co.  
Romac  
Smith-blair  
Mueller  
JCM
- 2. Corporation and Curb Stops: Ford  
Mueller  
McDonald
- 3. Curb Box: Bingham & Taylor
- 4. Copper Tube & Fittings: Halstead  
Reading  
Cerro  
Mueller Tubing Co.  
Howell Metals  
Cambridge-Lee

2.02 COPPER TUBE AND FITTINGS

- A. Tube less than 3-inches in diameter shall be Type K, annealed tubing meeting the material, chemical and mechanical requirements of ASTM B 88.
- B. Copper tube couplings shall be no-lead all brass per AWWA C-800 with EPDM rubber compression joints.

2.03 TAPPING SADDLE

- A. Tapping saddles shall be manufactured of high strength ductile iron, ASTM A536, protected with a fusion-applied epoxy or nylon fused (10-12 mil) coating. Saddles shall be furnished with Type 304 stainless steel straps with a minimum 2-inch wide bearing area and a rubber gasket suitable for potable water.

2.04 CORPORATON AND CURB STOPS

- A. Corporation and curb stops shall be ¼-turn ball type, no-lead all brass per AWWA C-800 with EPDM rubber compression joints on outlet of corporation and both ends of curb stop. Inlet of corporation shall be tapered thread per AWWA.

## 2.05 CURB BOX

- A. Curb boxes shall be cast-iron top section and cover with lettering "WATER," bottom section with base of size to fit over curb stop and barrel approximately 2-1/2 inches in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.
- B. Provide one steel tee-handle operating wrench. Wrench shall have tee handle with one pointed end, stem of length to operate curb stop, and slot-fitting operating end.

## 2.05 POST HYDRANT

- A. Self-draining, non-freeze post hydrant with cast iron casing guard and no-lead brazing ring and USDA approved lubricants for 3/4-inch hose connection and inlet. The depth to the inlet connection shall be as shown on the drawings. Provide two (2) "T" handle keys, and a no-lead, all brass street elbow at base. Unit shall be Fig. No. 5910 as manufactured by Jay R. Smith Manufacturing co., or approved equal.

## 2.06 IDENTIFICATION

- A. Non-metallic Plastic Underground Warning Tapes: Polyethylene plastic tape, core, 6 inches (150 mm) wide by 4 mils (1 mm) thick, solid blue in color with continuously printed caption in black letters "CAUTION - WATER LINE BURIED BELOW."

## PART 3 - EXECUTION

## 3.01 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 2 Section "Earthwork."

## 3.02 JOINT CONSTRUCTION

- A. Copper tube: The service piping shall have a minimum of joints.

## 3.04 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated except where deviations to layout are approved on coordination drawings.
- B. Install components having pressure rating equal to or greater than system operating pressure.
- C. Install piping free of sags and bends.
- D. Bury piping at minimum depth of 42 inches below finished grade.
- E. Install post hydrant in accordance with the manufacturer's instructions. Provide a gravel drainage pit at the base of the post hydrant in accordance with the detail shown on the drawing.

## 3.05 IDENTIFICATION INSTALLATION

- A. Install continuous plastic underground warning tape during back-filling of trench for underground water service piping. Locate 6 inches (150 mm) to 8 inches (200 mm) below finished grade, directly over piping.

## 3.06 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct hydrostatic pressure test at 200 psi test pressure. Increase pressure in 50-psig increments. Hold at test pressure for 15 minutes, then decrease to 0 psig. There shall be no pressure drop over the time period. Remake leaking joints with new materials and repeat test until leakage is within above limits.

## 3.07 CLEANING

- A. Clean and disinfect water distribution piping as follows:
  - 1. Purge new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired prior to use.
  - 2. Use purging and disinfecting procedure described in AWWA C651 or as described below:
    - a. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
    - b. Fill system or part of system with water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) system or part thereof and allow to stand for 24 hours.
    - c. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 parts per million of chlorine; isolate and allow to stand for 3 hours.
    - d. Following allowed standing time, flush system with clean, potable water until chlorine does not remain in water coming from system.
    - e. Submit water samples in sterile bottles to authority having jurisdiction. Repeat procedure if biological examination made by authority shows evidence of contamination.
- B. Prepare reports for purging and disinfecting activities and submit to the County.

END OF SECTION 02665

SECTION 02710  
SYNTHETIC TURF BASE CONSTRUCTION

## PART 1 – GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Included Division 2 through Division 3 technical specifications.

## 1.02 SUMMARY

- A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all playing field sub-drainage and related work as shown on the Drawings and/or specified herein.
- B. Perimeter edge details required for the synthetic turf shall be as detailed and recommended by the Turf Provider, and as approved by the County. Supply and installation of these details will be under the scope of work of the base contractor (see Section 02731 – Synthetic Grass Turf), not that of the Synthetic Turf Installer.
  - 1. Scope of work: The general extent of the sub-drainage and base construction work is shown on the Drawings and includes, but is not limited to the following:
    - a. Restore sub-grade to meet grading and compaction requirements inside of synthetic field surfaces. (See Earthwork Section 02200 for requirements).
    - b. Verification of sub-grade elevation tolerances through conformance surveying
    - c. Trenching for all sub-drainage lines per specification Section 02200
    - d. Lining trenches and sub-grade with geo-textile filter fabric
    - e. Construction and installation of field sub-drainage laterals, collectors, storm drains and outfalls.
    - f. Construction and installation of sub-drainage structures and assemblies including storm drain inlets and coring of existing inlets.
    - g. Backfilling and compaction of trenches
    - h. Installation of synthetic turf perimeter edge attachment system
    - i. Installation of goal posts and other field equipment
    - j. Installation and compaction of drainage stone fill material as playing field sub-base
    - k. Verification of Drainage Base elevation tolerances through conformance surveying
  - 2. Related sections can include, but may not be limited to:
    - a. Section 02200 - Earthwork
    - b. Section 02730 - Synthetic Turf Athletic Surface

## 1.03 REGULATORY REQUIREMENTS AND REFERENCES

- A. American Association of State Highway and Transportation Officials:
  - 1. AASHTO T180 – Standard Specification for Moisture-Density Relations of Soils Using a 10-lb. Rammer and an 18" Drop.

## B. American Society for Testing and Materials:

1. ASTM C136 Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM C702 Reducing Samples of Aggregate to Testing Size.
3. ASTM D75 Sampling Aggregates
4. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>).
5. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000-lbf/ft<sup>3</sup>).
6. ASTM D2235 – Standard Specification for Solvent Cement for Acrylonitrile – Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
7. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
8. ASTM D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
9. ASTM D2564 – Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
10. ASTM D2729 – Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
11. ASTM D2855 – Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
12. ASTM D2922 – Standard Test Method for Density of Soil and Soil aggregate in Place by Nuclear Methods.
13. ASTM D3017 – Standard Test Method for Water Content of Soil and Rock in place by Nuclear Methods.
14. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
15. ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Material.
16. ASTM D4253 – Standard Test Method for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
17. ASTM D4254 – Standard Test Method for Minimum Index and Unit Weight of Soils and Calculation of Relative Density.
18. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

## 1.04 SUBMITTALS

- A. Conform to requirements of applicable Division One and Division Two specifications, General Conditions and Special Provisions.
- B. *Proposers Qualifications:* Contractor shall be actively and directly engaged in the installation of competition-level Division I and/or Division II, NCAA (collegiate) or NFHS artificial athletic field base construction. Provide proof of five (5) such installations that have been in use for two (2) or more years. Provide a type-written description of each similar type construction experience with names and phone numbers of client contact, date of installation, and so forth with bid.
  1. Any contractor not able to meet the above requirement shall submit a statement of considerations that may qualify him/her as a qualified bidder. Items include, but are not limited to:
    - a. Resumes of personnel allocated for this project.
    - b. Listing of type of equipment to be used on construction.

- c. All contractors shall submit a proposed schedule for the project.
    - d. Note that this list may be altered as deemed appropriate by County or County.
  2. The County shall review this information, and make a recommendation to the County to accept or reject the qualifications of the proposed contractor. The County decision will be final.
- C. Pre-Construction Submittals: Prior to construction, Contractor shall submit the following:
  1. Cut-sheets or samples of all products proposed for construction drainage lines or structures.
  2. *Material Testing:* Contractor shall submit one-gallon composite sample of drainage base stone and finishing stone. The Testing Agent will evaluate these materials using the appropriate ASTM protocol. This sample will be used to comparison with all subsequent submitted for approval during construction.
  3. Submit a particle gradation analysis in graph and table form for each product specified. Approval of the Engineer of an analysis does not constitute approval of the actual product, which may be subject to additional testing.
- D. Testing During Construction: Contractor shall submit the following during construction:
  1. Material Testing during Construction: To ensure that the quality of drainage stone materials remain constant from point of supply to jobsite.
  2. Perform in-place density and moisture content tests to determine degree of compaction and material moisture condition per ASTM D2922 and ASTM D3017.
- E. Post Construction Submittals:
  1. Certification: Submit certification signed by Contractor that installed materials conform to specified requirements and drainage system was successfully checked and tested prior to covering with drainage gravel.
  2. Record Drawings:
    - a. Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts and slope gradients as applicable.
    - b. Maintain progress drawings on the construction site at all times during installation of the sub-drainage system. Make a daily record of all work installed each day until completion of the work.
  3. Compaction tests per the requirements set forth in Section 02200 for sub-grade preparation and compaction.

#### 1.05 QUALITY ASSURANCE

- A. Restore sub-grade to meet grading and compaction requirements inside of playing fields. (See Earthwork Section 02200 for requirements).
- B. The Contractor is responsible for verifying the quality of the work and shall perform compaction and density tests on request of the County to check compliance with these specifications. A copy of the test reports shall be furnished to the County.
- C. The County's Testing Agent may perform compaction and density tests to check compliance with these specifications.

- D. The County may require that an independent testing laboratory test imported materials at any time. If the material is found to be non-compliant with the Contract, the Contractor shall bear the cost of testing, removal of all non-compliant materials from the Project Site, and replacement of the materials with materials meeting the requirements of the Contract. If the materials tested are found to be compliant with the requirements of the Contract, the County will reimburse the Contractor for costs incurred by testing plus mark-ups as allowed for elsewhere in the Contract.
- E. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the County prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.
- F. Material Testing: Testing During Construction: To ensure that the quality of drainage stone materials remain constant from point of supply to jobsite, the following protocol shall be used:
1. Prior to shipment from the supplier, Contractor shall submit a one-gallon composite sample representative of the first 250 tons of the base and finish drainage stone material to be shipped to the site. The Testing Agent will evaluate this sample using gradation testing per ASTM D422, Standard Test Method for Particle-Size Analysis of Soils. The results will be provided to the County, and upon approval, the material may be shipped to the site.
  2. Thereafter, prior to shipping, the Contractor shall submit a one-gallon composite sample of the base and finish drainage stone representing every 250 tons to be shipped to the site to be compared with the pre-construction sample. The results of each subsequent test will be provided to the County, and upon approval, the representative amount of material may be shipped to the site.
  3. Payment for testing of each sample is the responsibility of the Contractor. Any test that must be repeated, due to a failing sample(s) or a shortage of supply, shall be borne by the Contractor.
  4. If visual analysis of shipped materials suggests a change in material quality, additional testing is required. If an on-site sample fails, immediately stop all placement activities until authorized to continue by the County.
  5. Conformance Survey of Sub-Grade: The Contractor shall perform a conformance survey by a licensed surveyor, before any placement of the drainage stone, on a 25-foot grid over the sub-grade of the entire playing field. County will require three (3) working days to review survey. After view, the survey will be returned to Contractor with areas of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to base drainage stone.
    - a. Tolerance for Sub-Grade: Sub-grade shall be verified using laser-operation survey instruments. Finish Grade must be within  $\frac{1}{2}$  on an inch plus or minus from the elevations shown on the plans. In addition, the sub-grade shall be measured so that no point within the 25-foot grid deviates more than  $\frac{3}{4}$  of an inch from any other point within the 25-foot grid.
- F. Quality assurance testing of the in place sub-base materials, prior to synthetic turf installation, should include the following:

1. Conformance Survey of Finish Stone: The Contractor shall perform a conformance survey by a licensed surveyor, before any placement of the synthetic turf, on a 10-foot grid over the finish stone of the entire playing field. Provide spot elevations, based on the established benchmark, at each grid intersection and at the intersection of the perimeter and the grid. Submit a drawing showing the results of the above survey. The drawing shall include the scaled grid, all spot elevations and show contours at ¼" intervals of variation from the ideal planes. Interpolate spot elevations as required to provide contours. County will require three (3) working days to review survey. After review, the survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to turf installation
  - a. Tolerance for Finish Stone: Finish stone elevations shall be verified using laser-operation survey instruments. Finish Grade must be within ¼ of an inch plus or minus from the elevations shown on the plans. In addition, the finish stone shall be measured so that no point within the 10-foot grid deviates more than ½ of an inch from any other point within the 10-foot grid.
2. Density testing per ASTM D2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods, for each 5,000 square feet of installed sub-base.
3. Percolation Testing: Infiltration testing per BSI 7044 Method #4, Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer, for each 10,000 square feet of installed sub-base, or other equivalent percolation test.
4. Material soundness testing on the basis of a Magnesium Sulfate Soundness Loss after 4 cycles of 20% or less.
5. Other special tests that may be suggested or recommended by manufacturers.

#### 1.06 PROTECTION OF PROJECT SITE

- A. Make provisions for, and take the necessary precautions to protect existing and new work from damage during the entire life of the project.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Store pipe neatly and orderly, stacked and blocked to prevent damage. Cracked, checked, spalled or otherwise damaged pipe shall be removed from site.
- B. Use of chain slings shall not be permitted.
- C. All piping, fittings and related materials shall be carefully handled at all times.
- D. All pipelines, fittings and drainage structures shall be kept clean and closed during construction.
- E. Store and protect all tested and approved drainage stone materials prior to delivery.

#### 1.08 PROJECT/SITE CONDITIONS

- A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the County.

#### 1.09 SEQUENCING AND SCHEDULING

- A. Coordinate work of this section with all other work contained in the Contract Documents.

1.10 WARRANTY

- A. All materials and workmanship shall be guaranteed for a period of one year beginning at Notice of Substantial Completion.

PART 2 – PRODUCTS

2.01 PIPE MATERIALS

- A. Furnish drainage pipe complete with bends, reducers, adapters, couplings, collars, and joint materials.
- B. Corrugated Polyethylene Pipe
  - 1. High-density polyethylene perforated corrugated pipe with an integrally formed smooth waterway. Nominal sizes shall have a full circular cross-section, with an outer corrugated pipe wall and an essentially smooth inner wall (waterway). Corrugations may be either annular or spiral. All sizes shall conform to the AASHTO classification "Type S". Pipe manufacturer for this specification shall comply with the requirements for test methods, dimensions, and markings found in MSHTO Designations M252 and M294. Pipe and fittings shall be made from virgin PE compounds which conform to the requirements of cell class 324420C as defined and described in ASTM D 3350.

The minimum parallel plate stiffness values when tested in accordance with ASTM D2412 shall be as follows:

Diameter	Pipe Stiffness
4 inch (100 mm)	50 psi (340 kPa)
6 inch (150 mm)	50 psi (340 kPa)
8 inch (200 mm)	50 psi (340 kPa)
10 inch (250 mm)	50 psi (340 kPa)
12 inch (300 mm)	50 psi (340 kPa)
15 inch (375 mm)	42 psi (290 kPa)

- 2. The fittings shall not reduce or impair the overall integrity or function of the pipeline. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as "tees", "wyes", and end caps. These fittings may be installed by various methods, such as snap-on, screw-on, bell and spigot, and wrap around. Provide nylon straps for compressive pipe connections as required by manufacturer.
- 3. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Only fittings supplied or recommended by the pipe manufacturer shall be used. Where designated on the plans and as required by the manufacturer, a neoprene or rubber gasket shall be supplied.
- 4. Installation of the pipe specified above shall be in accordance with ASTM Recommended Practice D2321 as covered elsewhere in these specifications.
- 5. The athletic field perimeter drainage pipe shall be perforated in accordance with AASHTO M 252. Other drainage pipe shall be non-perforated.

- 6. Corrugated Polyethylene Pipe and Fittings shall be N-12 drainage pipe as manufactured by Advanced Drainage Systems, Inc. or approved equal.

C. Reinforced Concrete Pipe

- 1. Reinforced concrete storm drain pipe and end sections shall be Class IV in accordance with AASHTO M 170.

2.02 GEOTEXTILE FILTER FABRIC

- A. Provide non-woven geotextile filter fabric in the areas designated on the Details. Geo-textile filter fabric should conform to the following minimum specifications:

Property	Test Method	Typical Values
Grab Strength	ASTM D 4632	80 lb.
Puncture Strength	ASTM D 4833	50 lb.
Burst Strength	ASTM D 3786	150 psi
Trapezoid Tear	ASTM D 4533	30 lb.
Permeability	ASTM D 4491	0.1 cm/sec
Apparent Opening Size	ASTM D 4751	#50 Sieve size
Permittivity	ASTM D 4491	2.0 sec <sup>-1</sup>

2.03 FIELD BASE AGGREGATES

A. General

- 1. Provide Aggregates with the specified properties.
- 2. Provide independent laboratory test results (supplier lab results will not be accepted) identifying performance to the properties specified in the units identified here.
- 3. Material shall contain less than 1/10 of 1% organic material by weight as measured by burn test.
- 4. All surfaces of individual particles shall be fractured. No worn or naturally occurring faces shall be present.

- B. BASE DRAINAGE STONE: Base drainage stone to be placed over geo-textile filter fabric shall meet the following criteria:

U.S. Standard Sieve Mesh	Allowable Range % Passing
2 inch (50 mm)	100%
1.5 inch (38 mm)	90%-100%
1 inch (25 mm)	75%-100%
¾ inch (19 mm)	65%-100%
½ inch (12.5 mm)	55%-100%
3/8 inch (9.5 mm)	40%-100%
¼ inch (6.3 mm)	25%-90%
US #4 (4.75 mm)	15%-85%
US #8 (2.36 mm)	0%-65%
US #16 (1.18 mm)	0%-50%
US #30 (600 um)	0%-35%
US #60 (250 um)	0%-15%
US #100 (150 um)	0%-8%
US #200 (75 um)	0%-5%

- 1. This material must meet the following requirements for acceptance:
  - a. Using the standard structural stability equation:  

$$D60/D10 > 5 \text{ and } 1 < D30 \text{ (squared)}/D10(D60) < 3$$
  - b. Permeability requirements for the Base Drainage Stone should be greater than 50 inches per hour.

D. **FINISH DRAINAGE STONE:** Finish drainage stone to be placed over base drainage stone shall meet the following criteria:

U.S. Standard Sieve Mesh	Allowable Range % Passing
½ inch (12.5 mm)	100%
3/8 inch (9.5 mm)	85%-100%
¼ inch (6.3 mm)	75%-100%
US #4 (4.75 mm)	60%-90%
US #8 (2.36 mm)	35%-75%
US #16 (1.18 mm)	10%-55%
US #30 (600 um)	0%-40%
US #60 (250 um)	0%-15%
US #100 (150 um)	0%-8%
US #200 (75 um)	0%-2%

- 1. This material must meet the following requirements for acceptance:
  - a. Using the standard structural stability equation:  

$$D60/D10 > 5 \text{ and } 1 < D30 \text{ (squared)}/D10(D60) < 3$$
  - b. Permeability requirements for the Finish Drainage Stone should be greater than 14 inches per hour.

E. **SEPARATION OF DRAINAGE STONE:** The Finish drainage stone and Base drainage stone together shall meet the following criteria:

- 1. This material together must meet the following requirements for acceptance:
  - a. Using the standard bridging equation:  

$$\frac{D85 \text{ of Finishing Stone}}{D15 \text{ of Base Stone}} > 2 \text{ and } 3 < \frac{D50 \text{ of Base Stone}}{D15 \text{ of Base Stone}} < 6$$
  - b. Porosity requirements for both stones should be greater than 25%.

F. Soft limestone and shale materials are not suitable for drainage stone. Questionable materials should be evaluated using a sulfate soundness test (ASTM C-88) and LA Abrasion Test (ASTM C-131). The drainage stone should meet both of the following stability requirements:

Test Method	Criteria
Sulfate Soundness (C-88)	Not to exceed 12% Loss
LA Abrasion (ASTM C-131)	Not to exceed 40

## 2.04 CAULKING

- A. Contractor shall provide waterproof caulking at all fabricated pipe connections.

## 2.05 WATERPROOF GROUT

- A. Provide waterproof grout as indicated on plans and details.

## 2.06 POURED-IN-PLACE CONCRETE

- A. Provide poured-in-place concrete in accordance with Section 02520 – Portland Cement Concrete Paving as indicated on plans and details as required for installation of edge curbs goal posts and other field equipment.

## 2.07 SYNTHETIC TURF PERIMETER EDGE ATTACHMENT SYSTEM

- A. Formed in place concrete as required by the Synthetic Turf Provider.

## 2.08 RIP RAP OUTLET PROTECTION

- A. Rip rap stone shall be Class I in accordance with Sections 901.02 and 901.03 of the Harford County DPW Standard Specifications and Details for Construction and Materials, and the details shown on the plans.

## PART 3 – EXECUTION

## 3.01 EXAMINATION

- A. Verify that area is ready to receive work, and excavation, dimensions, and elevations are as indicated on Drawings.
- B. Beginning of installation means acceptance of existing conditions.

## 3.02 PROTECTION OF WORK IN PROGRESS

- A. It is the responsibility of the Contractor to protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic. Alert the Engineer to the presence or likelihood of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.
- B. Do not work frozen soils.
- C. Protect soils from excessive moisture. During periods of prolonged precipitation, take aggressive steps to avoid over-saturation, erosion, or homogenization of soils by covering with protective plastic sheeting, collection and controlled dewatering, detention for sediment removal, and allowing excessively wetted soils to remain fallow until approved by the Engineer as appropriate for continued work.
- D. Apply supplemental moisture to overly dry soils.

- E. Do not operate heavy equipment near excavations where trench wall or cut-slope failure may result.

### 3.03 PREPARATION OF SUB-GRADE

- A. Restore sub-grade to meet grading and compaction requirements inside of playing fields per Specification Section 02200. Provide testing to confirm compaction conditions.
- B. Using laser operation survey instruments, the Contractor shall verify that sub-grade has been prepared according to specification with regard to compaction, grade tolerances and is free of debris to beginning work.
- C. The field sub-grade shall be final graded to form a smooth, clean basin free of any debris and/or loose soil to the tolerances specified in Section 02200. The stone drainage base shall not be installed until all sub-grading and drainage are completed in order to avoid the mixing of other soil and materials with the drainage materials.

### 3.04 TRENCHING

- A. Excavate to required elevations. Trench width shall not exceed dimensions shown on the details.
- B. Contractor shall use great care so as not to disturb the sub-grades of the field. Contractor will make provisions to avoid rutting of the field surface. Equipment used to install sub-drainage shall have large floatation tires. Under no circumstances will loaded rubber-tired vehicles or equipment with a loading rate in excess of 5-lbs/in<sup>2</sup> be allowed on the sub-grade prior to or during excavation, placement of pipelines, or gravel placement. Do not leave any wheel ruts.
- C. Contractor shall remove stones or other hard objects over 2-inch in diameter that could damage drainage pipe or impede consistent backfilling or compaction.

### 3.05 SUB-DRAINAGE PIPE INSTALLATION

- A. Install geo-textile fabric as required in the trenches as shown in the details.
- B. Install and join pipe and pipe fittings in accordance with manufacturers' instructions.
- C. Laying Drain Pipe: Provide full bearing for each pipe section throughout its length, to true grades and alignment, and continuous slope in direction of flow. Lay pipe to slope gradients noted on Drawings, with maximum variation from true slope of 1/8 inch in 25 feet.
- D. Provide recesses in excavation bottom to receive bells for drainpipe having bell and spigot ends. Lay pipe with bells facing up slope with spigot end entered fully into adjacent bell. Seal joint in accordance with codes.
- E. All laterals and collector pipes shall be jointed by snap couplings with soil tight gaskets on both ends.
- F. Geo-textile fabric used in the sub-drainage trenches should be laid or folded over to protect the drainage stone from contamination of soil materials during any sub-grade grading activities.
- G. Request inspection by the County prior to placing gravel drainage fill over pipe.
- H. Protection of Pipe

1. Protect pipe and drainage stone cover from damage or displacement until placement of artificial turf begins. Do not use compaction equipment directly over pipe until sufficient drainage stone has been placed to insure that equipment will not damage or disturb pipe.
  2. Fold installed filter fabric over the trench to cover the drainage stone material until placement of base materials. Pin as necessary to prevent any runoff from contaminating trenches.
- I. Trench Backfilling and Compaction
    1. Backfilling Lateral Trenches: Fill lateral trenches with Base Drainage Stone in maximum 6-inch lifts, consolidating each lift. Do not displace or damage drainage pipe when compacting. Exercise care to prevent disturbance to the sub-grade elevations or compaction.
    2. Backfilling Collector Trenches: Fill collector trenches with Base Drainage Stone in maximum 6-inch lifts. Do not displace or damage drainage pipe when compacting. Exercise care to prevent disturbance to the sub-grade elevations or compaction.
    3. All drainage stone material shall be compacted to not less than 95% of maximum dry density, with a moisture content between 3% below and 2% above optimum moisture content in accordance with ASTM D698. Material shall be tamped, vibrated or other operations necessary to provide a stable compacted installation.
  - J. Connect collectors to storm drainage structure, or structures as set forth by the drawings.
  - K. Testing Drain Lines: Test or check lines after all connections are made to assure free flow of water through the system. Remove obstructions and debris, replace damaged components, and retest system until satisfactory.
- 3.06 SUB-GRADE VERIFICATION
- A. Upon installation of the sub-drainage system, the Contractor shall submit to the County for review, the sub-grade conformance survey, performed by a licensed surveyor, before any placement of the drainage stone, on a 25-foot grid over the sub-grade of the entire playing field.
    1. Tolerance for Sub-Grade: Sub-grade shall be verified using laser-operation survey instruments. Finish Grade must be within  $\frac{1}{2}$  of an inch plus or minus from the elevations shown on the plans. In addition, the sub-grade shall be measured so that no point within the 25-foot grid deviating more than  $\frac{3}{4}$  of an inch from any other point within the 25-foot grid.
  - B. After review, the conformance survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to base drainage stone installation.
- 3.07 INSTALLATION OF SYNTHETIC TURF PERIMETER EDGE
- A. Install synthetic turf perimeter edge attachment system in accordance with manufacturer's instructions.
- 3.08 INSTALLATION OF GOAL POSTS AND OTHER FIELD EQUIPMENT
- A. Install goal posts and other field equipment in accordance with manufacturer's instructions.
- 3.09 GEOTEXTILE FILTER FABRIC INSTALLATION

## A. General

1. Install geotextile without wrinkles, folds, or excessive tension. Anchor ends and long runs with materials specified for installation above the geotextile, typically Base Course Aggregate. Do not anchor fabric with soil.

## B. Definitions

1. Course: completed installation of fabric across the width of the finished field surface.
2. Longitudinal Seam(s): Seams created which run in the longest parallels axis of the finished field surface, within a single installed course of fabric.
3. Transverse Seam(s): Seams running across the width of the finished field surface, between courses.

## C. Installation of Geotextile Filter Fabric

1. Install individual courses of fabric across the width of the field and adjacent areas identified as receiving geotextile.
2. Begin at area of the generally lowest Base Course Aggregate compacted elevation.
3. The fabric folded over the sub-drainage trenches shall be unfolded and overlaid on the sub-grade fabric.
4. Lay fabric smooth over the full cross-section without wrinkles, folds, or excessive tension.
5. Install fabric with no more than one longitudinal seam per course. Overlap fabric a minimum of 36" at each longitudinal seam. Create longitudinal seams within the middle half of the field only. Offset longitudinal seams in adjacent courses of fabric a minimum of 50'. Install the fabric of the generally upslope side of each longitudinal seam above that of the downslope side.
6. There shall be no longitudinal seams within 20' of any trench or abrupt change in grade installed in previous operations.
7. Overlap adjacent courses of fabric 18" (transverse seam). Run the generally upslope course 18" over the generally downslope course.
8. Install two initial courses of fabric for the Engineer's inspection and approval prior to continuing fabric installation.

## 3.10 PREPARATION OF FIELD BASE AGGREGATE (FINISH AND BASE DRAINAGE STONE)

- A. Prior to commencing the base aggregate, confirm that geotextile has been approved by the County as satisfactorily installed.
- B. Protect the approved work as installation of Field Base is commenced and completed.
- C. Do not operate machinery directly on approved geotextile.

- D. Place approved Base Drainage Stone in a manner that will minimize disturbance to the subgrade geotextile installation. Use only approved transport methods for placement of materials. Thoroughly cover subgrade geotextile with sufficient Base Drainage Stone to evenly distribute compressive forces of placement operation.
- E. Spread initial lift of Base Drainage Stone to the depth specified to allow installation of Place and mechanically compact in lifts not exceeding 9" at any one time. Perform compaction with a static roller of sufficient weight to insure proper compaction.
- F. Prior to installation of Finishing Stone, perform testing in a minimum of four locations indicating initial lift of Base Drainage Stone is at 95% of maximum density.
- G. After all lifts of drainage base stone have been installed, this surface should be proof rolled to lock in and stabilize the drainage stone. The County should observe this being performed.
- H. Place approved Finishing Stone in a manner that will minimize disturbance to the approved Base Drainage Stone installation. Use only approved transport methods for placement of materials.
- I. Spread a single lift of Finishing Stone to the depth specified, allowing for compaction. Perform compaction with a static roller of sufficient weight to insure proper compaction.
- J. Provide complete compaction to the lines, grades, and slopes indicated on the Contract Drawings.
- K. Coordinate approval of Finishing Stone Aggregate installation with the requirements of Section 02730 Synthetic Turf Athletic Surface.
- L. Drainage stone throughout the field shall be carefully smoothed and compacted. The entire playing field surface shall then be checked for irregularities and adjusted to a uniform grade per the grading plans.
- M. The Contractor shall submit to the County for review, the sub-base conformance survey, performed by a licensed surveyor, before any placement of the turf, on a 25-foot grid over the sub-grade of the entire playing field.
  - 1. Tolerance for Finish Stone: Finish stone elevations shall be verified using laser-operation survey instruments. Finish Grade must be within  $\frac{1}{4}$  of an inch plus or minus from the elevations shown on the plans. In addition, the finish stone shall be measured so that no point within the 25-foot grid deviates more than  $\frac{1}{2}$  of an inch from any other point within the 25-foot grid.
  - 2. After review, the conformance survey will be returned to Contractor with area but of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to turf installation.
- N. The Contractor's Testing Agent shall perform six infiltration tests on the completed finishing stone to check compliance with these specifications. If the material is found to be non-compliant with the Contract, the Contractor shall bear the cost of testing, removal of all non-compliant materials from the Project Site, and replacement of the materials with materials meeting the requirements of the Contract. If the materials tested are found to be compliant with the requirements of the Contract, the County will reimburse the Contractor for costs incurred by testing plus mark-ups as allowed for elsewhere in the Contract.

### 3.11 REMOVAL OF EXCESS AND WASTE MATERIALS

- A. Remove waste materials, including materials not allowed for fill, backfill or site grading, and dispose of it in approved manner off County's property. Remove from the site all excess excavated material from the installation of the drainage pipe and other improvements inside of the playing field.

3.12 EXAMINATION OF THE BASE BY THE SYNTHETIC TURF INSTALLATION SUPERVISOR

- A. The Turf Installation Supervisor shall verify that all sub-base, drainage and leveling is complete prior to installation and that the sub-base meets all tolerance-to-grade requirements.
- B. The surface to receive the synthetic turf shall be inspected by the Installer, and prior to the beginning of installation, the Installer must accept in writing the sub-base surface planarity. The surface must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.
- C. Confirm the compaction of the aggregate base.
- D. Confirm by on-site inspection and testing that the sub-base is acceptably permeable.

END OF SECTION 02710

SECTION 02730  
SYNTHETIC TURF ATHLETIC SURFACE

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.
- B. Included Division 2 through Division 3 technical specifications.

## 1.02 SUMMARY

- A. This section covers the furnishing of fabrication and design documents, all labor, materials and equipment necessary to install, in place, a synthetic turf athletic surface for the athletic fields, which shall meet performance criteria outlined below. The installation of all new materials shall be performed in strict accordance with these specifications, the manufacturer's instructions and the approved design documents.
- B. Perimeter edge details required for the synthetic turf shall be as detailed and recommended by the Turf Provider, and as approved by the County. Supply and installation of these details will be under the scope of work of the base contractor (see Section 02710 – Synthetic Turf Base Construction), not that of the Synthetic Turf Installer.
- C. Scope of Work: The general extent of the work and project limits as shown on the Drawings and can include, but may not be limited to the following.
  - 1. Provide an inspection and certification of subsurface drainage system and free draining subbase prior to commencement of subsequent work.
  - 2. Furnish and install Synthetic Turf Athletic Surface complete with field markings, inlaid lines and numbers as required including resilient underlayment where applicable, and resilient infill mix.
  - 3. Provide attachment methods for field openings and perimeter conditions.
  - 4. Provide post construction field maintenance instructions, field maintenance training and product warrantee.
  - 5. Furnish attic stock.
  - 6. Turf Installation contractor shall have an independent Testing Agent Perform G-Max testing and provide written results to the Owner indicating G-Max rating at installation and at the end of the first year warranty period.
- D. Related sections can include, but may not be limited to:
  - 1. Section 03400 Pre-Cast Concrete Structures
  - 2. Section 02710 Synthetic Turf Base Construction
  - 3. Section 02110 Site Clearing
  - 4. Section 02520 Portland Cement Concrete Paving
  - 5. Section 10500 Athletic Field Equipment

## 1.03 REGULATORY REQUIREMENTS AND REFERENCES

- A. Regulatory requirements and references follow the current guidelines set forth by the various governing bodies listed below. Unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable. Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.
1. American Society for Testing and Materials (ASTM)
  2. Consumer Products Safety Commission (CPSC)
  3. Federation Internationale de Football Association (FIFA)
  4. International Field Hockey Association (FIH)
  5. International Amateur Athletic Federation (IAAF)
  6. National Collegiate Athletic Association (NCAA)
  7. National Federation of State High School Associations (NFSHSA)
  8. USA Field (USAFH)
  9. United States Lacrosse (USL)
  10. United States Soccer Federation (USSF)
- B. References follow the current guidelines set forth by the governing body listed below. Unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.
1. ASTM Standard Test Methods
    - a. D1335 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
    - b. D1338 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
    - c. D1682 - Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
    - d. D1907 - Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method
    - e. D2256 - Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method
    - f. D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor covering Materials
    - g. D3218 - Standard Specification for Polyolefin Monofilaments
    - h. D3385 - Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring infiltrometer
    - i. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity
    - j. D5034 - Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)

- k. D5793 - Standard Test Method for Binding Sites Per Unit Length or Width of Pile Yarn Floor Coverings
- l. D5823 - Standard Test Method for Tuft Height of Pile Floor Coverings
- m. D5848 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
- n. D7138 - Standard Test Method to Determine Melting Temperature of Synthetic Fibers
- o. F355 - Standard Test Method for Shock-Absorbing Properties of Playing Surfaces.
- p. F1015 - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing surfaces
- q. F1551 - Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials
- r. F1936 - Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field

#### 1.04 QUALITY ASSURANCE

- A. Synthetic Turf Surface Provider: Synthetic turf athletic surface shall be provided by an experienced vendor, manufacturer or provider which shall have supplied a minimum of 50 outdoor synthetic turf athletic surfaces of the type specified of 50,000 square feet or greater within the last five (5) years. Provide a written description of each facility including name, address, date installed and the phone number of the owner's representative.
- B. Synthetic Turf Surface Installer: Synthetic turf surface installation shall be provided by an experienced contractor which shall have installed a minimum of 25 outdoor synthetic turf athletic surfaces of the type specified of 50,000 square feet or greater within the last five (5) years. Provide a written description of each facility including name, address, date installed and the phone number of the owner's representative.
- C. The synthetic turf surfaces installation crew whether subcontracted or employed by the turf company shall have the following competent workmen skilled in this specific type of synthetic grass installation on site daily during the entire installation.
  - 1. Prior to the beginning of installation the Installer of the synthetic turf shall inspect the subbase. The installer will accept the sub-base in writing when the Contractor provides test results for compaction planarity and permeability that are in compliance with the synthetic turf manufacturer's specifications. The Installer shall have the dimensions of the field and locations for markings measured by a registered surveyor to verify conformity to the specifications and applicable standards.
  - 2. The Manufacturer shall a representative on site during the complete fabric and infill installation to certify the installation and warranty compliance.

3. One lead installer onsite which has which has been certified in writing as competent in the installation of this synthetic surface, including sewing seams and proper installation of the infill mixture. Installed a minimum of twenty five (25) synthetic turf athletic surfaces of the type specified of 50.000 square feet or greater. Must be able to speak and interpret English language.
  4. Four (4) additional crew members onsite which shall have individually installed a minimum of eight (8) synthetic turf athletic surfaces of the type specified of 50.000 square feet or greater.
  5. The installation crew personnel qualifications shall include the individual's resume. Project list and contact information (cell phone) to allow the owners representatives the opportunity to verify employment and or subcontractor status at any time leading up to and during the installation of the project. Substitution of installation crew personnel shall be approved by the Owner's Representation and shall meet the minimum qualifications specified above.
  6. At any time after the award of the contract and before the completion of the project, should any member of the approved installation crew or subcontractor discontinue their relationship with the synthetic turf installation contractor or turf provider the Owners Representative must be immediately notified. Failure to provide installation crew personnel meeting the minimum qualifications shall be considered a default of the contract requirements.
- D. Any synthetic turf surface installation crew not able to meet the above requirement shall submit a statement of considerations that may qualify him/her as a qualified bidder. Items include, but are not limited to:
1. Resumes of personnel allocated for this project.
  2. Listing of type of equipment to be used on construction.
  3. Proposed schedule for the project.
  4. Note that this list may be altered as deemed appropriate by the County.
  5. The County shall review this information, and accept or reject the qualifications of the proposed contractor. The County's decision will be final.
- E. Source Limitations: Obtain synthetic turf surface including turf yarn and carpet backing from a single manufacturer, supplier or vendor. Provide additional components including anchoring materials, seaming products, binders, adhesives, resilient underlayment (where applicable) from single sources.
- F. The synthetic turf provider and installation contractor shall inspect the sub-base and provide written approval and acceptance of the sub-base before the installation of the synthetic turf surfacing material. The synthetic turf provider shall provide a certification that the sub-base construction does not void any provision of the product warrantee. Commencement of work indicates acceptance of underlying substrates.
- G. Quality assurance testing for in place system performance shall include the following:
1. In-place G-max rating of the synthetic turf system per ASTM F355 & F1936, Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Test Method A. System G-max rating shall not be less than 70 nor exceed 130 at installation. System shall not exceed a G-Max rating of 165 during the warranty period Specify G-max

test locations, such as centerline of playing field and other areas subject to more usage, environmental conditions during the test, and other subjective parameters that might significantly affect the test results.

2. The Synthetic Turf Surface Provider shall provide two separate G-max tests one at field acceptance, and another prior to the end of the one year guarantee. Testing shall be performed by an independent, third party testing firm that has no manufacturer related ties or sponsorship.
3. Percolation testing: Infiltration testing per ASTM D3385, Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer, for each 10,000 square feet of installed synthetic turf surface, or other equivalent percolation test.
4. Conformance Survey of Infill Materials (where applicable): The County shall perform a conformance survey on a 20-foot grid over the finish surface of the entire playing field using a dial gauge. After review, the survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to final acceptance. Tolerance for Infill Materials shall be within  $\frac{1}{4}$  of an inch plus or minus from the elevations shown on the plans.

#### 1.05 SUBMITTALS

- A. Submittals will be used as a basis to verify product quality, performance, and installation procedures. As a minimum, the proposer will provide written certification of ASTM product test results listed in the specification applying to the Synthetic Turf Athletic Surface including resilient underlayment (where applicable), and resilient infill mix.
  1. Upon notification of being the lowest responsive bidder provide the following information for evaluation of compliance with these specifications.
    - a. Provide Bidder Qualifications as per section 1.04 A-E Quality Assurance of this specification.
    - b. Provide (where applicable) an analysis and representation of the resilient infill material and resilient underlayment composition.
    - c. Provide documentation as to sources of component materials and related characteristics.
    - d. Provide complete description and documentation that selected system meets or exceeds all performance criteria contained in this specification.
    - e. If an "or equal" product is substituted in place of the specified approved products, written certification must be submitted that the turf product can be installed over the designed base on the plans that has been pre-approved for Storm Water Management and meets the specified products specifications.
    - f. The Turf Contractor and the Turf Manufacturer (if different from the company) shall provide a sample copy of insured non-prorated warranty and pre-paid, non-cancelable warranty insurance policy or Warranty Bond.
- B. Manufacturer's Literature

1. Provide written approval and acceptance of the sub-base before the installation of the synthetic turf surfacing material by both the synthetic turf provider and installation contractor.
  2. Provide certification that the sub-base construction does not void any provision of the product warrantee.
  3. Provide MSDA sheets, equipment warrantees and manufacturer information for all materials required in this specification.
  4. Provide construction schedule and a schedule of values for each construction component.
  5. Provide written product warrantees and third party insurance policies (where applicable) by the synthetic turf surface provider.
  6. Provide delivery, shipping manifests and bills of lading for all synthetic turf materials and components delivered to the site within two (2) days of delivery.
  7. Operational and Maintenance Data: Submit manufacturer's data in a three ring binder, labeled and indexed. Describe maintenance procedures, required equipment and projected manpower to accomplish required maintenance procedures. Include requirements for replacement of infill materials and procedures for painting temporary markings.
  8. Provide statements and documentation for surface cleaning factors and maintenance protocols for fluid spills, animal waste, pathogens, vandalism, food and debris.
- C. Shop Drawings
1. Submit shop drawings for the synthetic turf surface including edge details, field openings, penetrations, sections and accessories.
  2. Provide an underlayment (if applicable) and seaming plan at 1"=20'-0"
  3. Provide a field marking and dimensioning plan which includes field lines, boundaries, numbers, hashes, ticks, logos and other field markings in compliance by the regulatory sports agency and the drawings.
- D. Product Samples
1. Provide color samples of manufacturer's standard fiber for approval.
  2. Provide one quart samples of sand and rubber infill materials along with material sieve analysis (where applicable).
  3. Sample of resilient underlayment system (where applicable).
- E. Testing Certification: Submit certified copies of independent (third-party) laboratory reports on ASTM tests as follows for the synthetic turf product:
1. Primary Yarn, Pile Height, Face Weight, Total Fabric Weight, Primary & Secondary Backing Weights, ASTM D418 or D5848.
  2. Tuft Bind, ASTM D1335

3. Grab Tear Strength, ASTM D1682 or D5034
4. Pill Burn Test. ASTM D2859
5. Water Permeability
6. Impact Attenuation. Gmax , 135 at installation ASTM F355 and F1936

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Provide delivery of all materials required to complete the work of this section. Store all materials in such a manner as to prevent ground contact or exposure to sun, wind, or rain. Pay particular attention to maintaining infill materials as dry and flowable. Handle all materials in accordance with the manufacturer's recommendations or requirements for maintenance of the requirements of warranty. The installation contractor shall coordinate storage of products on-site in an orderly manner not to impede the work or reasonable use of the project site.
- B. Deliver materials in original, unopened containers with original labels intact and legible, which state the guaranteed analysis.
- C. All bulk material that is not being placed on a clean non-contaminating surface must be shipped with an acceptable overage quantity to accommodate the lost material due to contamination. The County will confirm percentage based on site condition. Shipping records for bulk infill material must be provided to the County prior final sign off of the project.

#### 1.07 PROJECT CONDITIONS

- A. Comply with the environmental protection and safety requirements of the County and all governmental authorities having jurisdiction.
- B. Keep dust to a minimum.
- C. Maintain streets and walks free of mud, dirt and debris.
- D. Restoration of Damaged Property: When or where in the execution of the work under this contract, any direct or indirect damage injury is done to public or private property by or on account of any act, omission, neglect, or misconduct, the Contractor, at no additional cost to the County, shall restore the damaged property to a condition equal to that existing before damage or injury was done.
- E. Synthetic turf installation operations shall not be conducted under the following conditions:
  1. Ambient air and material temperatures are at 40 degrees F and falling.
  2. High winds
  3. Excessively wet conditions. Surfaces and materials shall be dry. Adhesives should not be applied within 12 hours after rainfall, or when rainfall is eminent.
  4. Conditions exist, or are pending, that will be unsuitable for the installation of the system as set forth by the manufacturer.
- F. Construction Surveying: The Contractor shall be responsible for all construction surveying required for the proper layout and location of all work covered hereunder.
- G. As provided for in other Division 2 Sections, the in-fill synthetic turf field subgrade shall be a smooth, clean surface free of any debris and/or loose soil to the tolerances specified. Before compaction the Subgrade shall have been raked clean of any extraneous material including, but not limited to, branches, twigs, and other vegetative material; large cobbles, frozen or clumped soil, glass, plastic, or

other debris.

- H. Avoid contamination of materials during construction and installation of synthetic turf field.
- I. Work under this Section shall include all fees, permits, licenses, and required inspections by governing agencies.

#### 1.08 WARRANTIES

- A. The Contractor shall submit documentation of its fill term manufacturer's warranty and proof of a third party insurer (where applicable) which guarantees usability and playability on a non-prorated basis. Warranty will cover all materials, workmanship, and entire synthetic turf surface performance for a period of eight (8) years from the date of Substantial 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 Contractor warrants that during the period of the warranty that all materials and components, and the installed system meets or exceeds the product and performance specifications set forth herein.
- C. The turf shall not fade in that the synthetic turf material shall remain a uniform color with no significant loss of color during the warranty period.
- D. The length and weight of the face yarn or pile shall not have been decreased by more than 10% per year according to ASTM D418, nor exceed 50% during the warranty period.
- E. Synthetic turf system Gmax values for all points of sampling or testing, as determined and set forth using the ASTM F355 & F1936 protocol and additional requirements of the warranty, shall be 70 – 125 G-max upon installation. The system must maintain a G-Max rating between 125 and 165 per ASTM F1936 during the warranty period. Any increase shall not exceed 5% in any single year.
- F. The exposed fiber will not wear excessively as represented by a loss of more than 5% per year of the exposed fiber (fiber above the infill).
- G. Fabric seams shall remain attached and shall not separate or become unattached.
- H. The synthetic turf surface shall drain vertically a minimum of 14" per hour without visible accumulation of surface water. If the synthetic turf surface does not drain in accordance with this specification punching the carpet backing or any method creating additional holes in the backing other than the designed drainage holes will not be permitted. The removal and replacement of the infill will be permitted given there is no damage to the fibers in the process. Damage to the fibers will be determined by the County. Remediation of the impaired drainage must be approved by the County.
- I. The artificial turf system shall be in strict compliance with the recommended installation standards for infill height and free pile height as required by the fiber/yarn manufacturers.
  - 1. The maximum recommended free pile height (fibers showing over the infill as required by the yarn manufacturer) needs to be maintained over the life of warranty and settling of the infill material needs to be factored into the installation process to comply with the yarn manufacturer's warranty.
  - 2. If the field is found to have settled to a point lower than the recommended amount for "Free

Pile Height" the field will be classified as noncompliant and the provider must make remediation by adding additional infill material with a maximum of 5 months from the date of notice.

3. A copy of the yarn manufacturer's warranty must be provided showing all terms, condition, exclusions and limitations on the product and circumstances that can void the warranty.
4. The warranty being provided to the County by the successful bidder/turf company must reflect the same base minimum guidelines recommended by the yarn/fiber manufacturer. The warranty may be more restrictive but cannot fall below the minimum standard of the yarn manufacturer.

#### 1.09 MAINTENANCE SERVICE

- A. Contractor must schedule with Owners representatives a maintenance demonstration on the proper technics of maintaining the surface. Owner will provide equipment on site.

### PART 2 – PRODUCTS

#### 2.01 SYNTHETIC FIELD SYSTEM GENERAL DESCRIPTION

- A. A synthetic turf carpet (with a shock pad if required by the manufacturer) consisting of a polyethylene and/or nylon slit film or monofilament fiber, tufted into a permeable primary backing with a secondary backing or polyurethane coating.
- B. An infill system comprised of ground rubber and/or mixed silica sand. The infill material fills the voids between the fibers allowing the fibers to remain vertical and non-directional.
- C. Synthetic Turf rolls shall be a minimum of 15 feet wide. Rolls shall be of sufficient length (1' min. overage) to cover from sideline to sideline without head seams.
- D. Edge Restraint: The method for restraining the edge of the synthetic turf shall be hidden, stable, non-degradable, and not visible when construction is complete. All edge conditions must be addressed, including where the synthetic turf abuts skinned infield, paved areas, or concrete conditions.
- E. Acceptable Manufacturer(s)
  1. FieldTurf/Tarkett; 5211 Mitchell Bridge Road; Dalton, GA 30721; (TEL: 800-724-2969)
  2. General Sports Venue (AstroTurf); 11550 Common Oaks Drive, Suite 206; Raleigh, N.C. 27614; (TEL: 919-488-5820; 410-382-8912)
  3. Or approved equal
    - a. If an Or Equal product is substituted in place of the specified approved products, written certification must be submitted that the turf product can be installed over the designed base on the plans that has been pre-approved for Storm Water Management and provide documentation that the substitute meets the specified products specifications listed below.

#### 2.02 SYNTHETIC INFILLED TURF SURFACE WITH SECONDARY (THATCH) YARN

- A. The synthetic infilled turf surface shall consist of primary monofilament or parallel cut polyethylene fibers and secondary monofilament nylon yarn tufted into a primary perforated backing with a secondary polyurethane coating. The synthetic turf shall be AstroTurf Gameday Grass 3D 60.
- B. The synthetic infilled turf carpet shall meet the following requirements.

Property	Standard	Specification
Primary Fiber Type	--	Polyethylene
Primary Fiber Denier	ASTM D1577	10,800 nominal
Secondary (Thatch) Fiber Type	--	Nylon
Secondary Fiber Denier	ASTM D1577	5,040 nominal
Pile Height	ASTM D5823	2.25 inches nominal
Face Weight	ASTM D5848	60 oz./sq. yd., minimum
Primary Backing	--	[2] 13/PIC/5 PIC woven
Primary Backing Weight	ASTM D5848	8.0 oz/sq. yd. minimum
Secondary Coating	ASTM D5848	Polyurethane
Secondary Coating Weight	ASTM D5848	26 oz/sq. yd. minimum
Tuft Bind	ASTM D1335	>8 lbs. (without infill)
Grab Tear (width)	ASTM D5034	>200 lbs/force
Grab Tear (length)	ASTM D5034	>200 lbs/force
Elongation to Break	ASTM D5034	>50%
Yarn Breaking Strength	ASTM D5034	>20 lbs. to break
Yarn Melting Point	ASTM D789	248 F°
Stitch Rate	ASTM D5793	2.0 inches
Machine Gauge	ASTM D5793	3/8 inch
Impact Attenuation, Gmax	ASTM F1936	=<130 at installation =<180 over field life
Water Permeability (with infill)	ASTM F1551	>30 inches/hour
Pill Burn Test	ASTM D2859	Pass

2.03 CONVENTIONAL SYNTHETIC INFILLED TURF SURFACE

- A. The synthetic infilled turf surface shall consist of monofilament or parallel cut polyethylene fibers tufted into a primary perforated backing with a secondary polyurethane coating. The synthetic turf shall be AstroTurf Gameday Grass XPE 42.
- B. The conventional synthetic infilled turf carpet shall meet the following requirements.

Property	Standard	Specification
Primary Fiber Type	--	Polyethylene
Primary Fiber Denier	ASTM D1577	10,000 nominal
Pile Height	ASTM D5823	2.25 inches nominal
Total Pile Weight	ASTM D5848	42 oz./sq. yd., minimum
Primary Backing	--	[2] 13/PIC/5 PIC woven
Primary Backing Weight	ASTM D5848	8.0 oz/sq. yd. minimum
Secondary Coating	ASTM D5848	Polyurethane
Secondary Coating Weight	ASTM D5848	22 oz/sq. yd. minimum
Tuft Bind	ASTM D1335	>8 lbs. (without infill)
Grab Tear (width)	ASTM D5034	>200 lbs/force
Grab Tear (length)	ASTM D5034	>200 lbs/force
Elongation to Break	ASTM D5034	>50%

Yarn Breaking Strength	ASTM D5034	>20 lbs. to break
Yarn Melting Point	ASTM D789	248 F°
Stitch Rate	ASTM D5793	3.1 inches
Machine Gauge	ASTM D5793	3/8 inch
Impact Attenuation, Gmax	ASTM F1936	=<130 at installation =<180 over field life
Water Permeability (with infill)	ASTM F1551	>30 inches/hour
Pill Burn Test	ASTM D2859	Pass

#### 2.04 LONG PILE SYNTHETIC INFILLED TURF SURFACE

- A. The synthetic infilled turf surface shall consist of “spined” monofilament polyethylene fibers tufted into a primary perforated backing with a secondary urethane coating. The synthetic turf shall be FieldTurf XM6-65.
- B. The long pile synthetic infilled turf carpet shall meet the following requirements.

Property	Standard	Specification
Primary Fiber Type	--	Polyethylene
Primary Fiber Denier	ASTM D1577	10,800 nominal
Pile Height	ASTM D5823	2.50 inches minimum
Total Pile Weight	ASTM D5848	35 oz./sq. yd., minimum
Primary Backing	--	Polypropylene fabric, double-layer
Primary Backing Weight	ASTM D5848	7.0 oz/sq. yd. minimum
Secondary Coating	ASTM D5848	Heat-activated urethane
Secondary Coating Weight	ASTM D5848	13 oz/sq. yd. minimum
Tuft Bind	ASTM D1335	>8 lbs. (without infill)
Grab Tear (width)	ASTM D5034	>200 lbs/force
Grab Tear (length)	ASTM D5034	>200 lbs/force
Elongation to Break	ASTM D5034	>50%
Yarn Breaking Strength	ASTM D5034	=>24 lbs. to break
Yarn Melting Point	ASTM D789	248 F°
Machine Gauge	ASTM D5793	¾ inch
Impact Attenuation, Gmax	ASTM F1936	=<130 at installation =<180 over field life
Water Permeability (with infill)	ASTM F1551	>40 inches/hour
Pill Burn Test	ASTM D2859	Pass

#### 2.05 RESILIENT INFILL MATERIALS

- A. Resilient infill materials shall be uniformly filled to a depth which meets the system specification after settlement, and consist of a homogeneous mixture meeting the following criteria.

Property	Standard	Specification
Rubber Granule Composition		Black SBR or EPDM
Rubber Sieve Analysis	ASTM D5644	0.5 mm – 1.0 mm #18 sieve: 100% passing #35 sieve: >80% passing #50 sieve: >0.5% passing

Rubber Quantity		Must meet system Specifications
Total Ash Content (SRB)		5% - 8%
Sand Granules Shape		Angular & sub-angular
		Particles are not acceptable
Sand Sieve Analysis	ASTM E11	#16 sieve: 100% passing #30 sieve: <80% passing #50 sieve: <0.5% passing
Compacted Bulk Density	ASTM C29	96-110 lbs./sq. ft.
Sand Quantity		Must meet system Specifications
Hardness		=7.0 Mohs
Moisture Content	ASTM C566	<0.1%
Specific Gravity	ASTM C128	2.65 g/cm <sup>3</sup>
Total Infill weight	ASTM D5848	Must meet system Specifications
Depth of Infill	Depth from top infill to Surface of fabric	Must meet system specifications
Tolerance of infill depth		.25 in
Pill Burn Test	ASTM D2859	Pass (as installed)

2.06 SHOCK ABSORBING PAD (if required)

A. Prefabricated shock absorbing pad system shall meet the following requirements:

<b>Property</b>	<b>Standard</b>	<b>Specification</b>
Shock Pad type		Prefabricated
Thickness		>.750" +/-10%
Tolerance		Meets specification at every point (+0.25")
Density		4.0 lbs/cu Ft. +/-10%
Weight		>38 oz/sq. yd.
Tear Resistance	ASTM D624	>30 psi
Compression Resistance	ASTM D1667	10-12 psi (25%)
T-Peel Strength (secondary pad)	ASTM D 1876	
Hydrolytic Stability	ASTM D2126	
Tensile Strength	ASTM D412	>75 psi
Elongation to Break	ASTM D412	>125%
Delamination Strength	ASTM D3936	
Permeability		>15" Per Hour
Component Warrantee	Minimum	8 Years
Shock Pad Type		

2.07 MISCELLANEOUS MATERIALS

A. Seaming Tape: Tape for securing inlaid lines and reference tick marks in the tufted synthetic turf surfaces shall be high quality coated cordura seam tape made especially for artificial turf applications with a minimum width of 15" inches.

- B. Adhesives: Adhesives for bonding tufted artificial turf shall be hot melt or a one part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces, Scotch Plains, NJ (908) 233-6803 or approved equal. The adhesive shall be amended per the manufacturer specification during adverse weather conditions.
- C. Sewing Cord: Cord shall be high strength durable outdoor cord routinely used for synthetic turf surfaces and Union Special sewing machines or equivalent.

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. The installation shall be performed in full compliance with approved Shop Drawings.
- B. Only trained technicians, skilled in the installation of athletic caliber synthetic turf systems working under the direct supervision of the approved installer supervisors, shall undertake any cutting, sewing, gluing, shearing and topdressing or brushing operations.
- C. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer and be competent in the installation of this material, including sewing seams and proper installation of the Infill mixture.
- D. Designs, markings, layouts and materials shall conform to all currently applicable National Federation of State High School Associations (NFSHSA) rules. And/or other rules or standards that may apply to this type of synthetic grass installation. Designs, markings and layouts shall first be approved by the Engineer or Owner in the form of final shop drawings. All markings will be in full compliance with final shop drawings.

#### 3.02 CERTIFICATION

- A. A written "Certification of Acceptance of the Base Construction" is required from the Manufacturer prior to installation of the synthetic surfacing material. This certification shall include but not limited to the acceptance of:
  - 1. The Subgrade and stone base construction is completely acceptable and warrantable for the application of work specified in this section.
  - 2. The materials and method of installation of the base materials is in conformance with manufacturer's current requirements for subsurface base construction and synthetic turf application.
  - 3. The base construction is totally suitable for the work to proceed with the assurance that the final installation of the work under this section and other related sections will result in a high quality athletic surface fully warranted for the period and use specified herein.
  - 4. All discrepancies between the required materials, application and tolerance requirements noted by the installer shall be brought to the attention of the County. Failure to immediately notify the County of any prior work that does not meet the required specifications for installation of the athletic turf surfacing system shall be considered as acceptance by the installer on the non-conforming work.

5. The system and its component materials and the necessary methods of construction are in compliance with all governing jurisdictions for construction of this project.

### 3.03 INSTALLATION OF SYNTHETIC TURF SURFACE

- A. Install in accordance with Manufacturer's instructions. The Turf Contractor shall 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 County, verifying that the changes do not in any way affect the warranty. Infill materials shall be approved by the Manufacturer and installed in accordance with the Manufacturer's standard procedures.
- B. The carpet rolls are to be installed directly over the properly prepared aggregate base. Extreme care should be taken to avoid disturbing the aggregate base both in regard to compaction and planarity. It is suggested that a 2-5 ton static roller is on site and available to repair and properly compact any disturbed areas of the aggregate base.
- C. The full width rolls shall be laid out across the field. Turf shall be of sufficient length to permit full cross-field installation from sideline to sideline. No head or cross seams will be allowed in the main playing area between the sidelines. Utilizing standard state of the art procedures, each roll shall be bound properly to the next. When all of the rolls of the playing surface have been installed the sideline areas shall be installed at right angles to the playing field turf.
- D. For sewn installation, all seams shall be sewn using double bagger stitches and polyester thread or adhered using seaming tape and high grade adhesive (per the manufacturer's standard procedures). Seams shall be flat, tight, and permanent with no separation or fraying.
- E. For glued installation adhesives shall be hot-melt or a one-part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces of Scotch Plains, NJ or approved equal.
- F. Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied. The infill material shall be installed to a depth determined by the Manufacturer.
- G. The Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional. The Infill installation consists of a base layer of sand followed by a homogenous mixture of the sand and ground rubber. A final application of specifically sized rubber completes the system. The Infill shall be installed to a depth per manufacturer's recommendations. Infill density shall consist of no less than 6 pounds of sand and at least 3 pounds of rubber per square foot or per approved manufacturer's specifications. The Infill shall be placed so that there is a void of no less than  $\frac{3}{4}$ " to the top of the fibers. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and Owner's Representative at no additional cost to the Owner.
- H. Prior to the application of any line painting the turf shall be fibrillated by means of a nylon rotary brush to provide the look, feel, and safety of optimally maintained natural grass,

including subtle undulations normally associated with natural grass athletic fields.

- I. Synthetic turf shall be attached to the perimeter edge detail in accordance with the Manufacturer's standard procedures.
- J. Conformance with building codes: system shall meet applicable codes and ordinances.

### 3.04 EXAMINATION

- A. Verify that all sub-base, drainage and leveling is complete prior to installation.
- B. The surface to receive the synthetic turf shall be inspected by the Installer, and prior to the beginning of installation, the Installer must accept the sub-base in writing. The acceptance will depend on the owner providing the installer with test results indicating that compaction, planarity and permeability are in compliance with the synthetic turf manufacturer's specifications. The surface must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.
- C. The compaction of the aggregate base shall be 95%, according to the Modified Proctor procedure (ASTM D1557), and the surface tolerance shall not exceed 0-111 inch over 10 feet and 0-', from design grade. The Contractor shall furnish evidence of same for the field prior to commencement of the turf installation.
- D. Beginning of installation means acceptance of existing conditions.

### 3.05 SYNTHETIC TURF CARPET

- A. After acceptance of the constructed base (granular drainage blanket), the carpet is to be laid out on the site and consecutive panels to be sewn together at the seams using procedures approved by the manufacturer using a subcontractor approved by the manufacturer.
- B. Use extreme care maneuvering rolled carpet into place. Protect finished base aggregates and tile installation from disturbance. Replace and re-compact disturbances to original lines, grades, and densities.
- C. Note climatic conditions during placement of individual segments of carpet materials. Make allowances for heat and cold as necessary to provide uniform elongation and tension.
- D. Lay carpet uniformly smooth throughout, with no wrinkles, folds, or overly tight areas.
- E. The bristles of any brooms used, either during the original installation, or in subsequent maintenance, shall be of nylon only, shall under no circumstances include any metal and must be approved by the manufacturer.
- F. Any carpet panels exhibiting yarn or fiber from different dye lots which result in a discernable visible appearance shall be rejected.
- G. Any carpet panels exhibiting tufting, yarn or secondary coating defects in excess of 5% which in the County's opinion would impair bonding of adhesives, vertical drainage, stability of yarn or degrades

the performance of the turf surface shall be rejected.

### 3.06 BONDING OF MATERIAL SURFACES

- A. The adhesive bonding of all system material components shall provide a permanent, tight, and secure and hazard free athletic playing surface. The following components, at a minimum, shall meet this requirement. Bonding of:
1. Shock absorbing pad to the base material (if required)
  2. Turf to pad
  3. Turf to seam tape (if tape is used)
  4. All turf to terminal edges
- B. The bonding design and work shall be such that all surface joint and seams shall remain as required throughout the warranty period as a minimum.

### 3.07 SHOCK ABSORBING (as required)

- A. The shock absorbing pad materials is to be approved by the manufacturer, and shall be installed according to the manufacturer's approved procedures by qualified installers.

### 3.08 SEAM CONSTRUCTION

- A. Edges and seams are to be constructed in strict accordance with manufacturer's instructions.
- B. The synthetic turf surface shall be installed using sewing techniques for the main seams and glue or hot melt for the inlays. All sewn seams will be done with high strength durable outdoor cord routinely used for synthetic turf surfaces and Union Special sewing machines or equivalent. Once sewn all main seams must be reinforced with an adhesive product possessing a scrim or seaming tape type reinforcement carrier. Seams shall be indiscernible at the completion of the installation. Shearing of fiber or yarn to achieve a uniform system height must be approved by the County.
- C. All seams widths are to be the absolute minimum and as approved. All seams (butt joints) shall be traverse to the field direction of play. No head seams are allowed on the playing surface. All lateral seams (if sewn) are to be sewn with a double stitch.
- D. Seams shall be sown or glued so that the exposed primary backing does not exceed 3/4" maximum.
- E. Remove fibers from the stitch line prior to sewing the carpet panels.
- F. For main seams that are glue or hot melt. Adhesives for bonding tufted artificial turf shall be hot melt or a one part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces, Scotch Plains, NJ (908) 233-6803 or approved equal. The adhesive shall be amended per the manufacturer specification during adverse weather conditions.

### 3.09 FIELD MARKINGS

- A. Field marking, lines, yard line numbers, hashes and logos shall be as approved by owner prior to fabrication and installation. The Owner reserves the right to reject any turf panels not properly turf in

accordance with the seaming plan.

- B. Field of play perimeter lines and field lines shall be tufted into the turf carpet as shown on the plans. Numbers logos and hash markings are to be inlaid prior to insertion of the infill.
- C. All inlays (lines, numbers, letters, hash marks and logos) must be reinforced with a mechanical attachment such as hand sewing to secure the corners and edges down to the seaming tape or primary backing. This process is in addition to the adhesive process of securing the inlays. Adhesives for bonding tufted artificial turf shall be hot melt or a one part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces, Scotch Plains, NJ (908) 233-6803 or approved equal. The adhesive shall be amended per the manufacturer specification during adverse weather conditions.
- D. All synthetic turf carpet used for field marking must be the same yam, type and height.
- E. Under no circumstances will inlays or repairs of less than 4 inches in width be allowed.
- F. The field will have the following lines tufted or inlaid according to NFSHSA standards:
  - 1. Football: as outlined on the contract drawings. Color shall be white, except where noted.
    - a) Sidelines
    - b) 5-yd lines
    - c) Goal lines
    - d) Player's box
    - e) Coach's box
    - f) 10 yard numbers and arrows
    - g) 1-yd hash markings
    - h) Inbound hash markings
    - i) Extra point lines
    - j) Kick off markings
  - 2. Soccer, Girls Lacrosse, Boys Lacrosse, Field Hockey as noted on Plan Sheet C03.

### 3.10 RESILIENT IN-FILL MATERIALS

- A. The infill materials to be approved by the manufacturer, and shall be inserted according to the manufacturer's approved procedures by qualified installers.
- B. Precisely blend the infill materials to obtain a homogeneous mix (as required).
- C. Install and compact the infill materials so that the infill is settled and will meet the system specifications throughout the warrantee.
- D. The infill shall consist of a resilient-layered, granular system comprising selected and graded dust-free silica sand and/or SBR rubber crumb.
- E. These materials shall be approved by the manufacturer and delivered to the job site in appropriate containers.

## 3.11 MAINTENANCE EQUIPMENT AND MATERIAL STOCKPILE

- A. Stockpile the following additional materials for Owner's future use at an on-site location to be determined for repair stock.
- B. The Synthetic Turf Provider will provide the following additional material:
  - 1. One hundred sixty (160) linear feet of one (1) normal roll width (15') to the owner of green
  - 2. One hundred sixty (160) linear feet by one (1) foot widths of colored turf. Colors — yellow, white, blue
  - 3. Five (5) linear feet by one (1') widths of colored turf. Colors — orange, maroon
  - 4. Two containers of resilient infill materials.
  - 5. One (1) case seaming tape

## 3.12 RECORD DRAWINGS

- A. Maintain progress drawings on the construction site at all times during installation of the synthetic field system. Make a daily record of all work installed each day until completion of the work.

## 3.13 OWNER'S INSTRUCTIONS

- A. The Synthetic Turf Provider shall instruct the County's maintenance staff on the care and maintenance of the synthetic turf surface, by providing a training session post construction.
- B. Notify County 48 hours in advance when instructions are to be given.
- C. Provide Five (5) complete maintenance manuals to be given to the County; plus (1) electronic copy.
- D. Furnish copies of manufacturer's literature, samples, certifications, or laboratory analytical data for the synthetic turf surface.

## 3.13 PROJECT CLOSEOUT

- A. Remove all debris, excess materials, etc. from site and leave work in clean, orderly and acceptable condition.
- B. Provide all submittals, quality assurance tests, manuals, equipment and warranties.
- C. One Year Inspection: The County shall be responsible for having performed a conformance survey on a 20-foot grid over the finish surface of the entire playing field using a g max testing accelerometer. After review, the survey will be returned to Synthetic Turf Installer with areas out of tolerance noted for correction. Synthetic Turf Installer will be required to correct areas out of tolerance and certify that corrections have been made. The Synthetic Turf provider will conduct an ASTM-F355/F1936 impact test using an independent lab and provide the results to the County.

END OF SECTION 02730

SECTION 02821  
CHAIN-LINK FENCES

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

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

## 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Aluminized steel chain-link fabric.
  - 2. Black coated steel chain-link fabric.
  - 3. Aluminized steel framework.
  - 4. Black coated steel framework.
- B. Related Sections include the following:
  - 1. Section 02200 "Earthwork" for filling and for grading work.
  - 2. Section 02520 "Portland Cement Concrete Paving" for mowing strip where noted on contract documents.

## 1.03 DEFINITIONS

- A. CLFMI: Chain Link Fence Manufacturers Institute.
- B. Zn-5-Al-MM Alloy: Zinc-5 percent aluminum-mischmetal alloy.

## 1.04 SUBMISSIONS

- A. General: Submit each item in this Article according to the Conditions of the Contract.
- B. Product Data: Material descriptions, construction details, dimensions of individual components and profiles, and finishes for the following:
  - 1. Fence posts, rails, and fittings.
  - 2. Chain-link fabric, reinforcements, and attachments.
- C. Product Certificates: Signed by manufacturers of chain-link fences certifying that products furnished comply with requirements.

## 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed chain-link fences similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Source Limitations for Chain-Link Fences: Obtain grade, finish, type, and variety of component for chain-link fences from one source with resources to provide chain-link fences and backstops of consistent quality in appearance and physical properties.

## 1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and backstops shown on the Contract Documents in relation to property survey and existing structures. Verify dimensions by field measurements.

## PART 2 - PRODUCTS

## 2.01 CHAIN-LINK FENCE FABRIC

- A. Black coated Steel Chain-Link Fence Fabric: Height indicated on the Contract Documents. Provide fabric fabricated in one-piece widths for fencing in height of 6 feet and less. Comply with CLFMI's "Product Manual" and with requirements indicated below:
  - 1. Mesh and Wire Size: 9 gage with 2" mesh.
  - 2. Black coated in summary of work: AASHTO M274, with black polymer coating applied to steel wire before weaving, Type II, black coating at not less than 2 oz./sq. ft. (610 g/sq. m) of uncoated wire surface.
  - 3. Coat selvage ends of fabric that is metallic coated during the weaving process with manufacturer's standard clear protective coating.
- B. Selvage: Knuckled at both selvages.

## 2.02 INDUSTRIAL FENCE FRAMING

- A. Round Steel Pipe: Cold-formed, electric-resistance-welded steel pipe. Comply with ASTM F 1043, Material Design Group IC, with minimum yield strength of 50,000 psi (344 MPa); and the following external and internal coatings and strength and stiffness requirements:
  - 1. Coating: Black coating consisting of not less than 1.8-oz./sq. ft.
  - 2. Line, End, Corner, and Pull Posts and Top Rail: Per requirements for Heavy Industrial Fence.
- B. Post Brace Rails: Match top rail for coating and strength and stiffness requirements. Provide brace rail with truss rod assembly for each gate, end, and pull post. Provide two brace rails extending in opposing directions, each with truss rod assembly, for each corner post and for pull posts. Provide

rail ends and clamps for attaching rails to posts.

- C. Top Rails: Fabricate top rail from lengths 21 feet or longer, with swaged-end or fabricated for expansion-type coupling, forming a continuous rail along top of chain-link fabric.

## 2.03 TENSION WIRE

- A. General: Provide horizontal tension wire at the following locations:

1. Location: As indicated on the Contract Documents.

- B. Metallic-Coated Steel Wire: 0.177-inch- (4.5-mm-) diameter, marcelled tension wire complying with ASTM A 824 and the following:

1. Coating: Black coating at not less than 0.8 oz./sq. ft. (244 g/sq. m) of uncoated wire surface.

## 2.04 INDUSTRIAL SWING GATES

- A. General: Comply with ASTM F 900 for the following swing-gate types:

1. Single gate.

2. Double gate.

- B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1083 and ASTM F 1043 for materials and protective coatings.

- C. Frames and Bracing: Fabricate members from round galvanized steel tubing with outside dimension and weight according to ASTM F 900 for the following gate fabric height:

1. Gate Fabric Height: 6 feet (1.83m) or less.

2. Gate Fabric Height: More than 6 feet (1.83m).

- D. Frame Corner Construction: As follows:

1. Welded or assembled with corner fittings and 5 1/6-inch (7.9mm) diameter, adjustable truss rods for panels 5 feet (1.52m) wide or wider.

- E. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and weight according to ASTM 900 for the following gate fabric heights and leaf widths:

1. Gate Fabric Height by Leaf Width: 6 feet (1.83m) or less by 4 feet (1.22m) or less.

2. Gate Fabric Height by Leaf Width: 6 feet (1.83m) or less by over 4 feet (1.22m) by not over

- 10 feet (3.05m).
3. Gate Fabric Height by Leaf Width: 6 feet (1.83m) or less by over 10 feet (3.05m) but not over 18 feet (5.49m).
  4. Gate Fabric Height by Leaf Width: Over 6 feet (1.83m) by 6 feet (1.83m) or less.
  5. Gate Fabric Height by Leaf Width: Over 6 feet (1.83m) by over 12 feet (3.66m) but not over 12 feet (3.66m).
  6. Gate Fabric Height by Leaf Width: Over 6 feet (1.83m) by over 12 feet (3.66m) but not over 18 feet (5.49m).
  7. Gate Fabric Height by Leaf Width: Over 6 feet (1.83m) by over 18 feet (5.49m) but not over 24 feet (7.32m).
- F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops and, for each gate leaf more than 5 feet (1.5m) wide, keepers. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.

## 2.05 FITTINGS

- A. General: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.
- B. Post and Line Caps: Black coating at not less than 0.8 oz./sq. ft. Provide weathertight closure cap for each post.
  1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: Black coating at not less than 0.8 oz./sq. ft. Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
  1. Top Rail Sleeves: Black coating at not less than 0.8 oz./sq. ft, pressed steel or round steel tubing. Not less than 6 inches (153 mm) long.
  2. Rail Clamps: Black coating at not less than 0.8 oz./sq. ft., pressed steel. Provide line and corner boulevard clamps for connecting rails in the fence line to line posts.
- E. Tension and Brace Bands: Black coating at not less than 0.8 oz./sq. ft pressed steel
- F. Tension Bars: Black coating at not less than 0.8 oz./sq. ft steel, length not less than 2 inches (50 mm) shorter than full height of chain-link fabric. Provide two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Black coating at not less than 0.8 oz./sq. ft steel rod and turnbuckle or other means of adjustment.

- H. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F 626:
1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
    - a. Black Coating Steel: 0.148-inch (3.76-mm-) diameter wire; thickness matching coating thickness of chain-link fence fabric.
  2. Power-driven fasteners.
  3. Round Wire Hog Rings: Black coating at not less than 0.8 oz./sq. ft steel for attaching chain-link fabric to horizontal tension wires.

## 2.06 CAST-IN-PLACE CONCRETE

- A. General: Comply with ACI 301 for cast-in-place concrete.
- B. Materials: Portland cement complying with ASTM C 150 aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94.
1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi (20.7- MPa) compressive strength (28 days), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum size aggregate.
- C. Materials: Dry-packaged concrete mix complying with ASTM C 387 for normal-weight concrete mixed with potable water according to manufacturer's written instructions.

## 2.07 GROUT AND ANCHORING CEMENT

- A. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior applications.

## 2.08 FENCE GROUNDING

- A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.
1. Material Above Finished Grade: Aluminum.
  2. Material On or Below Finished Grade: Copper.
  3. Bonding Jumpers: Braided copper tape, 1 inch (25 mm) wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

- B. Connectors and Ground Rods: Listed in UL 467.
  - 1. Connectors for Below-Grade Use: Exothermic welded type.
  - 2. Ground Rods: Copper-clad steel.
    - a. Size: 5/8 inch by 96 inches (16 by 2400 mm).

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance.
  - 1. Do not begin installation before final grading is completed, unless otherwise permitted by the Engineer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.02 PREPARATION

- A. Stake locations of fence lines, backstops, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

#### 3.03 INSTALLATION, GENERAL

- A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
- C. Post Setting: Hand-excavate holes for post foundations in firm, undisturbed or compacted soil. Set posts in concrete footing. Protect portion of posts aboveground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Using mechanical devices to set line posts per ASTM F 567 is permitted. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during placement and finishing operations until concrete is sufficiently cured.
  - 1. Dimensions and Profile: As indicated on the Contract Documents.
  - 2. Exposed Concrete Footings: Extend concrete 2 inches (50 mm) above grade, smooth, and shape to shed water.
  - 3. Concealed Concrete Footings: Stop footings below grade as indicated on Contract Documents to allow covering with surface material.
  - 4. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete

for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

5. Posts Set into Concrete in Voids: Form or core drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

### 3.04 CHAIN-LINK FENCE INSTALLATION

- A. Corner Posts: Locate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on the Contract Documents.
- B. Line Posts: Space line posts uniformly as indicated on the Contract Documents.
- C. Post Bracing Assemblies: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at posts and at both sides of corner and pull posts. Locate horizontal braces at midheight of fabric on fences with top rail and at two-thirds fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- D. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- (3.05-mm-) diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches (609 mm) o.c. Install tension wire in locations indicated before stretching fabric.
  1. Bottom Tension Wire: Install tension wire within 6 inches (150 mm) of bottom of fabric and tie to each post with not less than same gage and type of wire.
- E. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.
- F. Intermediate Rails: Install in one piece at as indicated on the Contract Drawings, spanning between posts, using fittings, special offset fittings, and accessories.
- G. Black Coating Chain-Link Fabric: Apply fabric to framework. Leave 2 inches (50 mm) between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- H. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches (380 mm) o.c.
- I. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts 12 inches (304 mm) o.c. and to braces 24 inches (609 mm) o.c.
- J. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

### 3.05 GROUNDING AND BONDING

- A. Fence Grounding: Install at each end of new section of fence.
- B. Grounding Method: At each grounding location, drive a ground rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:
  1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
  2. Make connections with clean, bare metal at points of contact.
  3. Make black coating -to-steel connections with stainless-steel separators and mechanical clamps.
  4. Make black coating -to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
  5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- C. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

### 3.06 FIELD QUALITY CONTROL

- A. Ground-Resistance Testing Agency: 2A Contractor shall engage a qualified independent testing agency to perform field quality-control testing.
- B. Ground-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure ground resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by two-point method according to IEEE 81.
- C. Desired Maximum Grounding Resistance Value: 25 ohms.
- D. Excessive Ground Resistance: If resistance to ground exceeds desired value, notify the Architect/Engineer promptly. Include recommendations to reduce ground resistance and proposal to accomplish recommended work.
- E. Report: Prepare test reports, certified by testing agency, of ground resistance at each test location.

Include observations of weather and other phenomena that may affect test results.

END OF SECTION 02821

SECTION 02920  
LAWNS AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding.
2. Sodding.

1.2 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- I. Surface Soil: Whatever soil is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 SUBMITTALS

- A. Certification of each grass seed mixture.

## 1.4 QUALITY ASSURANCE

- A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 1. Pesticide Applicator (if required): State licensed, commercial.
- B. Soil Analysis: Furnish soil analysis and a written report.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.

## 1.6 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
  - 1. Seeded Turf: 60 days from date of planting completion.
  - 2. Sodded Turf: 30 days from date of planting completion.

## PART 2 - PRODUCTS

## 2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

## 2.2 TURFGRASS SOD

- A. Turfgrass Sod: Certified complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

### 2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
  - 1. Class: T, with a minimum of 99 percent passing through No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through No. 60 (0.25-mm) sieve.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 (0.30-mm) sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

### 2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch (12.5-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, with a pH range of 3.4 to 4.8.
- C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

## 2.5 FERTILIZERS

- A. Fertilizer: Granular or pelleted fertilizer in accordance with the approved erosion and sediment control plans.

## 2.6 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

## PART 3 - EXECUTION

## 3.1 TURF AREA PREPARATION

- A. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain County's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

## 3.2 SEEDING

- A. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. Do not seed against existing trees.
- B. Sow seed at a total rate shown on the approved erosion and sediment control plan seeding chart.
- C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes less than 3(H):1(V) by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
- A. Protect seeded areas with slopes 3(H):1(V) and greater by using erosion and sediment control matting specified on the grading and/or the erosion and sediment control plans. Install and anchor the matting in accordance with the mat manufacturer's recommendations.

### 3.3 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  - 1. Lay sod across angle of slopes exceeding 3(H):1(V).
  - 2. Anchor sod on slopes exceeding 6:1 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.

### 3.4 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, re-grade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain height appropriate for species without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings.
- C. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

### 3.5 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by County:
  - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).
  - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

END OF SECTION 02920

SECTION 03300  
CAST-IN-PLACE CONCRETE

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
  - 1. Section 02200 "Earthwork" for drainage fills under slabs-on-grade.

## 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of Product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

## 1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.
- D. Floor surface flatness and levelness measurements.

## 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code – Reinforcing Steel."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. ACI 301, "Specifications for Structural Concrete,"
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

## PART 2 - PRODUCTS

### 2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

### 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I or Type III.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
  - 1. Maximum Coarse-Aggregate Size: between ¾" and 1 ½" nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Lightweight Aggregate: ASTM C 330, 3/8- inch nominal maximum aggregate size.

- D. Water: ASTM C 94/C 94M and potable.

## 2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing, and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.5 VAPOR RETARDERS

- A. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

## 2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing, and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.7 RELATED MATERIALS

- A. Expansion- and Isolation – Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

## 2.8 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50. Consider inserting minimum cementitious material content for mix designs.
- D. Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: 3000 psi at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.40.
  - 3. Slump Limit: 5 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch.
  - 4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of deliver for 1- ½- inch nominal maximum aggregate size.
  - 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for ¾-inch nominal maximum aggregate size.
  - 6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

## 2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnished batch ticket information.
  - 1. When air temperature is between 85 and 90 degree F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degree F, reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

## 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

## 3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

## 3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions:
  - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

## 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

## 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
- C. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- D. Cold-Weather Placement: Comply with ACI 306.1.
- E. Hot-Weather Placement: Comply with ACI 301.

### 3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view or to receive finish.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
  - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent unformed surfaces.

Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### 3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface defects that would telegraph through applied coatings or floor coverings.
  - 1. Apply a trowel finish to surfaces to be covered with resilient flooring.
  - 2. Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed  $\frac{1}{4}$  inch.
- C. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces. While concrete is still plastic, slightly scarify surface with a fine broom.
  - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

### 3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period
    - a. Removal: After curing period has elapsed, remove curing compound without-

damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and re place concrete that cannot be repaired and patched to Architect's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 03300

SECTION 03400  
PRECAST CONCRETE STRUCTURES

## PART 1 - GENERAL

## A. Description

Precast concrete utility structures shall include, but not necessarily be limited to, furnishing and installing precast concrete structures, manholes, inlets, inlet covers, and other miscellaneous structures of the configuration and to the extent indicated and in accordance with the Contract Documents.

## B. Quality Assurance

The County will inspect all materials before, during and after installation to ensure compliance with the Contract Documents.

## PART 2 - PRODUCTS

## A. Detailed Material Requirements

1. Portland cement concrete shall meet the requirements specified in the Harford County Standard Specifications for Construction Materials except as modified herein. Portland cement for units to be used in sanitary sewer systems shall be type II.
2. Concrete Reinforcement: Concrete reinforcement shall meet the requirements specified in Harford County Standard Specifications for Construction Materials.
3. Water shall be potable.
4. Joint Seals Between Sections: Joint sealing material for use in vaults shall be cold-applied preformed sealing compound that meets the manufacturer's recommendations and County approval.
5. Steps shall be as specified in the Standard Details.
6. Granular Bedding: Granular bedding beneath precast units shall meet the requirements of AASHTO M 43, No. 57.
7. Non-Shrink Mortar: Non-shrink cement mortar shall be as specified in Harford County Standard Specifications for Construction Materials.

## PART 3 - EXECUTION

## A. Design Criteria

## 1. General

- a. Structural design for precast units shall be prepared by a Maryland-registered Professional Engineer for the precast concrete manufacturer. Units shall be designed for HS 20 load

designation or 300 pounds per square foot live load, whichever is most critical for determining the concrete and steel stresses.

- b. Where more than one standard is referenced for any given unit, should there be a conflict, the more stringent requirement as determined by the County, shall apply.
  - c. Unit configuration shall be as shown on the Plans and/or Standard Details.
  - d. Distribution of earth loading and live load shall be in accordance with ASTM C 857 or ASTM C 890.
  - e. Walls shall be designed using an equivalent fluid pressure of 83 pounds per cubic foot and a 2 foot surcharge. The units shall also be designed to resist all stress encountered during casting, handling, and erection.
2. Manholes
- a. Precast concrete manholes and grade rings shall meet the requirements of ASTM C 478 except that the minimum compressive strength of the concrete shall be 4000 psi. The maximum individual grade ring height shall be 3 inches.
  - b. Joints shall meet the requirements of ASTM C 443, shall be self-centering, and shall form a uniform water tight joint.
3. Miscellaneous Water and Wastewater Structures
- Miscellaneous water and wastewater structures not otherwise covered shall meet the requirements of ASTM C 913.
4. Shop Drawings Submittals
- a. Provide drawings of manufacture's structural foundation and recommended installation requirements prior to installation for approval.

B. Fabrication

1. The precast units shall be factory cast. Job site casting will not be permitted. Concrete in the precast elements shall be continuously placed to prevent formation of seams. The finished units shall be free of voids and cracks. Exposed corners and edges shall be beveled. All inserts shall be securely attached or embedded in their proper location.
2. Concrete strength of all precast units at 28 days shall be 4000 psi minimum, unless otherwise specified. It shall be the precast unit manufacturer's responsibility to insure that the specified concrete strength is maintained throughout production of the units. Mix design shall be those previously used by the manufacturer which have proven satisfactory for casting units similar to those specified and producing the required strength. All precast concrete shall be air entrained in accordance with AASHTO M154. Admixtures containing calcium chloride shall not be used.
3. Wall sleeves or gaskets for piping, sumps, steps, access hatches, and other inserts as shown on the Plans and/or Standard Details shall be cast into the structure or inserted at the place of manufacture.

## C. Product Handling

1. No precast unit shall be shipped in less than 7 days from date of manufacturer, unless the unit has been tested and is shown to be in full compliance with the Specifications. Date of manufacture shall be stamped on each unit.
2. Precast sections shall be transported and handled with proper equipment to protect the elements from damage. Sections shall be handled by means of lifting inserts embedded in the concrete. Damaged sections that cannot be satisfactorily repaired by the manufacturer shall be replaced by new sections at no additional cost to the Owner.
3. Manufacturer shall identify each manhole section with an identification number that corresponds to the manhole number noted on the contract drawings.

## D. Installation

1. Excavation, foundation preparation, backfill, and compaction shall be as specified in Section 02200.
2. Precast units shall be installed where and as shown on the Contract Documents and Standard Details or as directed by the Engineer.
3. Field modifications of precast units, such as cutting or enlarging holes or slots, will not be permitted without the specific approval of the precast unit's manufacturer and the County. Permitted modifications shall be made by the manufacturer in strict accordance with County approval and the manufacturer's directions and recommendations.
4. Mating surfaces shall be cleaned of all foreign materials such as dirt, mud, stones, etc., and where appropriate, joint sealing materials applied prior to assembly of the units.
5. Grade rings shall be set on a full bed of mortar.

END OF SECTION 03400

SECTION 10500  
ATHLETIC FIELD EQUIPMENT

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. This Section includes furnishing and installing new athletic field, upgrade or supplement existing equipment being removed and disposed of as part of this turf project.

## 1.02 REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. U.S. Tennis Court and Track Builders Association
  2. National Federation of State High School Associations (NFSHSA)
  3. Manufacturers Data and Recommended Installation Requirements.

## 1.03 MANUFACTURERS

- A. All athletic and sporting field equipment, accessories and parts shall be as manufactured by AAE (Aluminum Athletic Equipment Co.), or approved equal:

AAE (Aluminum Athletic Equipment Co.)  
1000 Enterprise Drive  
Royersford, PA 19468  
Ph: 1-800-523-5471

## 1.04 SUBMITTALS

- A. Manufacturers Product Data

1. Provide manufacturer's product literature, technical specifications and other data in accordance with the general and supplemental conditions prior to ordering equipment and/or actual field installation work.

- B. Shop Drawings

1. Provide drawings of manufacturer's recommended installation and foundation requirements prior to actual field installation work.

## 1.05 QUALITY ASSURANCE

- A. Manufacturers warranties shall pass to the County and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

## 1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Any defects shall be noted and reported to the County.
- B. Replacements, if necessary, shall be immediately re-ordered so as to minimize any conflict with the construction schedule.

- C. Sound materials shall be stored above the ground under protective cover or indoors so as to provide proper protection.

## PART 2 - PRODUCTS

### 2.01 Equipment and associated accessories and parts to be furnished:

- A. Ground Sleeve Model Ball Stopper Net System (2 Total, See plans for lengths):

1. AAE Model #HBS-1:

Posts: Straight Uprights 2-3'8" O.D. x 3/16" wall x 12'-6" lg. 6063T6 aluminum extrusion with three predrilled heights at 9'-6" H, 10'-0" H and 10'-6" H. Posts to be spaced evenly approximately every 20'-0" or less. As net expands over time, customer shall be able to utilize the higher holes by moving hardware. A predrilled hole at bottom of posts is for net attachment with hardware.

Ground Sleeves: 2-7/8" O.D. (2-1/2" I.D.) x 3/16" wall x 24" long, 6063T6 aluminum extrusion, includes LD polyethylene plug with removal tab.

Net: 9'-6" high. #N361, 1-3/4" sq. black UV-treated knotted nylon net, 360 lb. tensile strength, 1/4" MFP rope border all four sides, plus a 1/4" MFP rope border 6" offset from bottom of net for additional net to stop balls from going under, pre-attached sewn in 3/16" dia. galvanized clear coated cable.

Hardware: All stainless steel, galvanized and brass hardware, and eyebolt for top/bottom of post to secure net.

2. AAE Model # GSP-2.50 (See plans for quantity):

Tamper-proof Ground Sleeve Plug: UHMW tapered plug with removal slot, accessory plug for use when system is removed at end of season.

3. AAE Model # GSP-RT (1 Total):

Ground Sleeve Plug Removal Tool: Stainless steel removal tool to be used with GSP-2.50 Plug.

- B. 8 Ft Offset Football Goal:

1. AAE Model #ASG-HS/8 (2 Total):

Offset Football Goal: Provide all related accessories, hardware and mounting hardware. Color: yellow.

2. AAE Model #FBC-GA/HSG (2 Total):

Goal Post Foundation Box and Cover: Provide set of half covers for goal center post, all accessories and predrilled holes for artificial turf installation.

3. AAE Model GP4R Goal Post Pad (2 Total): per plan detail

- C. Soccer Goal for Recessed Installation (2 Total):
1. AAE Model #SGR-P:  
Soccer Goal: Provide full frame assembly, net, anchor assembly, and all accessories, hardware and mounting hardware. Color: white.
  2. AAE Model #SGAB-GP:  
Soccer Groundbar Anchor Bracket for 8' Offset Football Goal: Provide complete assembly including anchor bracket, vinyl-coated anchor chain and all hardware.
  3. AAE Model RW-SG-P 10" Semi Pneumatic Wheel ( 2 sets Total)
  4. AAE Model Soccer Net SN/3/4/6 ( 2 Total)
- D. Pole Vault Box (1 Total):
1. AAE Model #SSVB  
Pole Vault Box: Provide stainless steel pole vault with foundation concrete embedment tangs and perimeter flange.
  2. AAE Model #SSVC-X:  
Pole Vault Box Cover: Provide stainless steel pole vault box cover with extra reinforcement with rubber pad on underside of central support post. Synthetic track surface of 3/8" thickness shall be applied to cover by contractor.
- E. Long Jump (1 Total):
1. AAE Model #PFS-HS:  
Sand Pit Form: Provide high school stainless steel pit form for concrete slab embedment, with foundation concrete embedment tangs and perimeter flanges.
  2. AAE Model #VMPC:  
Sand Pit Cover: Provide vinyl mesh sand pit cover. The cover dimensions shall be as shown on the plans and color to be chosen by County.
  3. AAE Model #HTB-16X:  
Take-Off Board: Provide long jump take-off board with normal 16-inch width and 48-inch length with factory- applied synthetic surface.
- F. Discus Net Inserts:
1. Model # HSDC  
High School Model Discus Cage.
- G. Shot Put Toe Board
1. Model # SSG/BSN  
Shot Put Toe Board: Polyethylene shaped to conform to official specifications.

## PART 3 - EXECUTION

## 3.01 INSPECTION

- A. Examine the areas and conditions where equipment and systems are to be installed and notify the contractor of conditions detrimental to the proper and timely installation and completion of the work.
- B. Do not proceed with the work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable and to the satisfaction of the Engineer or County.

## 3.02 INSTALLATION

- A. All athletic equipment shall be installed as indicated on approved submittals as recommended, in strict accordance with manufacturer's written directions or as indicated on the drawings and specified herein.
- B. All concrete footings for athletic equipment shall be installed as indicated on the submittal drawings and in accordance with Section 03300 – Cast-in-Place Concrete.
- C. N/A - All sleeves required for athletic equipment installation shall be set plumb and true to line and grade in concrete as indicated on the drawings and per manufacturer's recommendation.
- D. All athletic equipment shall be installed in strict accordance with the latest rules. Regulations and specifications governing that sport or event for which it is being installed.

## 3.03 TESTING, ADJUSTMENT AND OPERATION

- A. All athletic equipment requiring testing, adjustments and operation shall be tested for proper operation and adjusted to conform to specified standards.
- B. Provide certifications as required indicating that equipment has been tested and adjusted to conform to specified standards.
- C. Provide operating and maintenance instructions and manuals to the County for the proper operation and care of equipment after equipment has been tested and adjusted to conform to specified standards.

## 3.04 CLEANING

- A. Upon completion of work remove all trash and debris from the work area and leave in clean condition.

END OF SECTION 10500

## APPENDIX

- NPDES General Permit for Stormwater Associated with Construction Activity
- Harford Soil Conservation District Sediment Control Approval Letter
- Harford County Grading Permit
- Harford County Stormwater Management Permit
- Report of Subsurface Exploration



**GENERAL PERMIT FOR STORMWATER ASSOCIATED  
WITH CONSTRUCTION ACTIVITY**

**State Discharge Permit Number:**

**MDRCM01I0**

**Effective Date:** 5/8/2015

**Expiration Date:** 12/31/2019

NOTE: If site work is complete per Part II. I. prior to the expiration date, the permittee must submit a Notice of Termination and terminate the permit.

Pursuant to the provisions of Title 9 of the Environment Article, Annotated Code of Maryland, and regulations promulgated thereunder, and the provisions of the Clean Water Act, 33 U.S.C., Section 1251 et. seq., and implementing regulations 40 CFR Parts 122, 123, 124 and 125, the Department of the Environment hereby establishes conditions and requirements pertinent to stormwater associated with construction activity at the site described below and authorizes:

**Harford County Parks & Recreation  
1809 Fallston Road  
Fallston, Maryland 21047**

TO DISCHARGE STORMWATER FROM:

**Fallston High School Turf Field**  
construction project on  
**2.36** acres  
at property located at  
**2301 Carrs Mill Road, Fallston, Maryland 21047**

*If the current erosion and sediment control plan approval covers only part of the entire site covered by this permit, this permit does not authorize discharges from the other portions of the site until the appropriate erosion and sediment control approval authority approves the erosion and sediment control plan for those portions.*

TO:  
**Surface waters -- Elbow Creek**

which is  
**Waters protected for Recreational Trout Waters and Public Water Supply**

in accordance with the 2014 General Permit. The vicinity map submitted with the Notice of Intent is considered incorporated herein and made a part hereof.



# MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101 • [www.mde.maryland.gov](http://www.mde.maryland.gov)

Larry Hogan  
Governor

Ben Grumbles  
Secretary

Boyd Rutherford  
Lieutenant Governor

Date of Permit Issuance: 5/8/2015

Harford County Parks & Recreation

1809 Fallston Road

Fallston, Maryland 21047

RE: **MDRCM0110**

Dear Mr. Dave Goodwin:

Please find enclosed documentation of coverage under the 2014 General Permit for Stormwater Associated with Construction Activity (MDRC) for:

**Fallston High School Turf Field**

issued to

**Harford County Parks & Recreation**

Please note that the effective date of coverage under the General Permit is the date on the attached cover sheet. If the current erosion and sediment control plan approval covers only part of the entire site covered by this permit, be advised that this permit does not authorize discharges from the other portions of the site until the appropriate erosion and sediment control approval authority approves the erosion and sediment control plan for those portions. The permit also requires that the site have an approved stormwater management plan (unless exempt or waived by the stormwater approval authority) prior to earth disturbance. Part IV.C.3 of the permit requires the permittee to use the standard written report form as provided by MDE. The form is available on MDE's website at the following location both as a fillable Microsoft Word form and as an Adobe Acrobat file.

<http://go.usa.gov/gFMW>

Print this letter and the cover sheet and keep them with your permit file. In addition, download the 2014 General Permit from the above website, print it for your permit file, and refer to it to ensure compliance with its terms. Submit any modifications to this coverage, Transfers of Authorization, or Notices of Termination via the ePermits portal. If your contact information changes, update it through the ePermits portal.

Your cooperation in this matter is appreciated. If you have any questions, please call the administrative team for the General Permit at (410) 537-3019.

Sincerely,

Heather L. Nelson, Acting Director  
Compliance Program  
Water Management Administration





**Harford Soil Conservation District**  
**2205 Commerce Road, Suite C**  
**Forest Hill, MD 21050-2576**  
**410-838-6181 ext. 3**

May 5, 2015

Harford County Dept of Parks & Recreation  
702 North Tollgate Road  
Bel Air, MD 21014-3865

Dear Sir:

Upon staff recommendation, the Harford Soil Conservation District Board of Supervisors approves the sediment control plan for FALLSTON HIGH SCHOOL SYNTHETIC TURF FIELD- 59817. The staff has reviewed and discussed this plan with the consulting engineers or developer, and is familiar with the site. The practices to be installed are considered adequate to provide sediment control during construction.

Appropriate sediment control measures will be installed before grading, construction, etc. is started. Approval is limited to the site covered by this plan and to the work proposed. Major changes in the project or the inclusion of additional disturbed area require that a new or revised plan be submitted to the Department of Public Works subject to District approval.

District approval of this plan for sediment control in no way relieves the owner/developer of his responsibility to obtain all necessary permits from regulatory federal, state, and local agencies prior to construction.

Yours truly,

Board of Supervisors  
Harford Soil Conservation District

cc: Harford County Planning and Zoning  
DPW/Engineering Services  
Engineer/Consultant

**Conservation ♦ Development ♦ Self-Government**

**BARRY GLASSMAN**  
HARFORD COUNTY EXECUTIVE

**BILLY BONIFACE**  
DIRECTOR OF ADMINISTRATION



**TIMOTHY F. WHITTIE, P.E.**  
DIRECTOR OF PUBLIC WORKS

GRADING PERMIT NUMBER: 15-59817-001

ISSUE DATE: 05/15/2015

EXPIRATION DATE: 05/06/2017

SUBDIVISION NAME: FALLSTON HIGH SCHOOL TURF FIELD

LOCATION: 2301 CARRS MILL RD FALLSTON MD 21047

COMMENTS: P084117

**OWNER INFORMATION:**

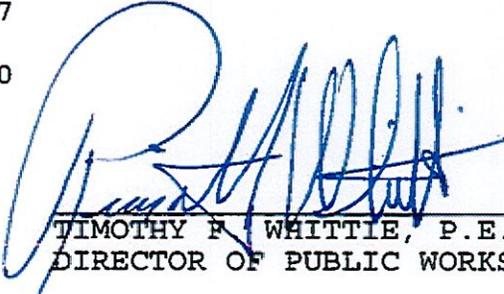
NAME: HARFORD COUNTY PARKS & RECREATION  
ADDRESS: 702 N TOLLGATE RD  
CITY, ST, ZIP: BEL AIR, MD 21014  
PHONE: (410) 638-4754

**AGENT/CONTRACT PURCHASER INFORMATION:**

NAME: HARFORD COUNTY PARKS & RECREATION  
ADDRESS: 702 N TOLLGATE RD  
CITY, ST, ZIP: BEL AIR, MD 21014  
PHONE: (410) 638-4754

ENGINEERING FIRM: BAY STATE LAND SERVICES  
ENGINEER: MITCH ENSOR PM  
PHONE: (410) 879-4747

BOND AMOUNT: \$.00

  
5.15.15  
TIMOTHY F. WHITTIE, P.E.  
DIRECTOR OF PUBLIC WORKS

THE HOLDER OF THIS PERMIT SHALL GIVE AT LEAST 48 HOURS ADVANCE NOTICE TO BUREAU OF CONSTRUCTION MANAGEMENT (410-638-3127) BEFORE ANY LAND DISTURBANCE IS UNDERTAKEN.

CAUTION: IT IS THE RESPONSIBILITY OF THE PERMITTEE TO UPDATE PLANS AND PERMITS AS REQUIRED PRIOR TO THEIR EXPIRATION. THIS PERMIT CANNOT BE EXTENDED.

*Maryland's New Center Of Opportunity*

410.638.3285 | 410.879.2000 | TTY Maryland Relay 711 | [www.harfordcountymd.gov](http://www.harfordcountymd.gov)

212 South Bond Street, Bel Air, Maryland 21014

THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST

**BARRY GLASSMAN**  
HARFORD COUNTY EXECUTIVE

**BILLY BONIFACE**  
DIRECTOR OF ADMINISTRATION



**TIMOTHY F. WHITTIE, P.E.**  
DIRECTOR OF PUBLIC WORKS

STORMWATER MANAGEMENT PERMIT NUMBER: 15-99951-001

ISSUE DATE: 05/15/2015

EXPIRATION DATE: 05/04/2017

SUBDIVISION NAME: FALLSTON HIGH SCHOOL TURF FIELD

LOCATION: 2301 CARRS MILL RD FALLSTON MD 21047

COMMENTS: P084117

OWNER INFORMATION:

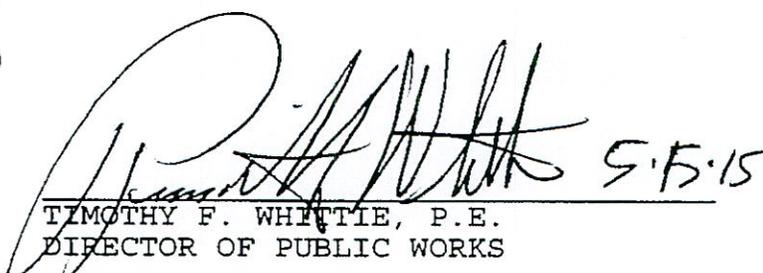
NAME: HARFORD COUNTY PARKS & RECREATION  
ADDRESS: 702 N TOLLGATE RD  
CITY, ST, ZIP: BEL AIR, MD 21014  
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**Report of Subsurface Exploration:**

**Fallston High School**

**Synthetic Turf Field**

**Fallston, Maryland**

**March 13, 2015**

**Prepared by:**

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## **1)--INTRODUCTION**

### **GENERAL**

This report presents the results of a subsurface investigation performed at the proposed Fallston High School, Synthetic Turf Field project located at the intersection of Maryland Route 152 and Carrs Mill Road in Fallston, Maryland. Results of our analysis as well as design and construction recommendations are included in this report.

### **PROPOSED CONSTRUCTION**

Proposed construction is to consist of installing a synthetic turf field and associated drainage areas in the location of the current football field and track area. The synthetic turf field section will consist of 11-5/8 inches of stone drainage layer overlaid by 1-3/4 inches of stone dust. A synthetic turf overlay will be installed on top of this section.

### **SCOPE OF SERVICES**

Scope of services included determination of existing soil types and conditions as well as groundwater levels. Recommendations regarding the construction of the construction and are included in this investigation.

### **EXISTING SITE CONDITIONS**

The site is the current location of the football field and surrounding running track. The site is relatively level with a slight rise along the center of the existing football field.

## **2)--GEOLOGY & SUBSURFACE CONDITIONS**

### **GEOLOGIC SETTING**

According to the United States Department of Agriculture, Custom Soil Resource Report for Harford County Area, Maryland, the site contains three types of soil. The central to southern areas of the site is composed of Chrome channery silty clay loams. The northern area of the site is composed of both the Kelly silt loam and Kelly very stony silt loam. All soils are predominately fine grained.

Soils encountered during the subsurface exploration were consistent with the soils described in the Custom Soil Resource Report.

### **SUBSURFACE EXPLORATION PROGRAM**

Subsurface exploration was conducted on December 16, 2014 (test pits) and February 23, 2015 (soil borings). A total of 5 test pits were advanced in the areas of proposed construction. Three test pits were advanced to a maximum depth of three feet in the areas of the proposed turf field. Two test pits were advanced to a maximum depth of nine feet in the areas of the proposed drainage trenches. A total of 8 soil borings were advanced to a maximum depth of five feet in the areas of the proposed turf field. Soil borings were conducted by directly pushing a 2-inch outside diameter split spoon sampler 60 inches into the existing soils by means of hydraulics.

### **SUBSURFACE/ GROUNDWATER CONDITIONS**

The subsurface excavation encountered soils consistent with the USDA Custom Soils Report. Previously placed fill was encountered in the upper two feet in test pits TP-3 and TP-5, located on the existing football field. Groundwater was encountered at the interface between the

fill soils and original soils in these test pits. This groundwater appeared to be locally perched. Groundwater was not encountered in the remainder of the test pits or soil borings.

### **3)--GEOTECHNICAL EVALUATIONS & DESIGN RECOMMENDATIONS**

#### **GEOTECHNICAL ISSUES**

The on-site soil conditions generally consisted of predominately fine grained soils with high moisture contents. This will likely present problems during controlled filling operations. *For this reason we recommend that the project be constructed only in the summer months during lengthy periods of dry weather.*

### **4)--CONSTRUCTION RECOMMENDATIONS**

#### **GENERAL SITE PREPARATION**

Prior to placing compacted fill, the site should be cleared and grubbed, removing all topsoil, organics, and debris. The areas of previously placed fill should be removed as well. Positive drainage should be maintained at all times during the site preparation phase, directing runoff to the proposed storm water management facilities.

#### **SUBGRADE PREPARATION**

Following clearing and grubbing operations, the area should be proof-rolled utilizing a loaded tandem axle dump truck in order to identify unstable soil conditions. Proof rolling should be observed by a qualified geotechnical engineer and unstable soils should be identified and removed until stable soils are encountered. Proof rolling should be performed during periods of dry weather in order to avoid damaging an otherwise suitable subgrade.

## **FILL MATERIALS, PLACEMENT, & COMPACTION REQUIREMENTS**

Soils used as backfill should be placed in 8-inch loose lifts prior to compaction. Structural fill beneath the proposed synthetic turf field, and walkways should be compacted to a minimum of 95% of standard proctor (T-99) maximum dry density value. Soils used in the areas of proposed lawn and unpaved areas should be compacted to a minimum of 90% of standard proctor (T-99) maximum dry density value.

## **EXISTING ON-SITE SOILS**

Existing soils are predominately fine-grained soils with high moisture contents. The high moisture contents of these soils will not permit them to be immediately re-useable. Drying of the soils will be required in order to lower the moisture content. This is generally not feasible for trench backfill due to the time constraints involved with closing up trench excavations. For this reason select backfill may be required to be imported. Alternatively, chemical stabilization of the soils may be utilized involving the use of Portland cement or quick-lime being added to the soils to reduce the moisture content and stabilize the soils. If these methods are attempted, additional laboratory testing will be required in order to determine the correct ratios for optimum compaction.

Alternatively, additional stone may be used to fill the over-excavated volume prior to constructing the proposed turf field section.

## **SELECT BACKFILL**

Off-site fill materials should have a Unified Soils Classification of GW, GP, GM, SW, SP, or ML with a maximum dry density equal to or greater than 110 pcf. Moisture contents

should be within 2% of the optimum moisture required for compaction. Soils should be placed in 8-inch loose lifts and be compacted to a minimum of 95% of Standard Proctor (T-99) maximum dry density.

### **5)--GEOTECHNICAL LIMITATIONS**

This report was prepared as an aid in design and construction of the proposed project in accordance with generally accepted soil and foundation engineering principles and practices; no other warranty, expressed or implied, is made. Analysis and recommendations are based upon limited data obtained at specific site locations. Variations may occur between the observed locations and may require further analysis or revisions to our recommendations. In the event that site conditions during construction do not conform to the information contained in this report, please contact our office before proceeding. Bay State Geo-Structural assumes no responsibility for interpretations made by others based upon this report.

**APPENDIX**

















