

**CONTRACT NAME: PROFESSIONAL SERVICES  
AGREEMENT BETWEEN BFS LANDSCAPE ARCHITECTS  
AND DAVIS JOINT UNIFIED SCHOOL DISTRICT**

**BRIEF DESCRIPTION OF CONTRACT:** This is an agreement between the BFS Landscape Architects and Davis Joint Unified School District to prepare and develop plans and specifications for the athletic sports field turf replacement for Davis High School.

**FISCAL IMPACT:** The cost of these services is included in the 2017-2018 approved budget.

**DAVIS JOINT UNIFIED SCHOOL DISTRICT**  
**PROFESSIONAL SERVICES AGREEMENT**

**THIS PROFESSIONAL SERVICES AGREEMENT** (the "Agreement") is made and entered into as of September 14, 2017 (the "Effective Date") by and between the Davis Joint Unified School District, a public school district of the State of California (the "District"), and BFS Landscape Architects, a Licensed Landscape Architect ("Provider"). The District and the Provider are collectively referred to in this Agreement individually as "Party" and collectively as the "Parties." This Agreement is made with reference to the following facts:

**WHEREAS**, the District requires services and/or advice of a highly specialized and technical nature in connection with certain financial, economic, accounting, consulting and/or administrative matters and such services and advice are not available within the District and cannot be performed satisfactorily by District employees; and

**WHEREAS**, Provider possesses the necessary expert knowledge, experience, and ability to perform services not available through District personnel, and Provider is specially experienced and competent to provide to the District certain specialized services and/or advice in one or more of the foregoing areas; and

**WHEREAS**, the District desires to engage Provider pursuant to Government Code Section 53060 because of Provider's special expertise and experience, and Provider desires to be engaged by the District; and

**WHEREAS**, the District and Provider desire to reduce to writing the terms and conditions of the District's engagement of Provider; and

**NOW, THEREFORE**, in consideration of the mutual covenants set forth below, the Parties hereby agree as follows:

**ARTICLE 1.**  
**SERVICES TO BE PERFORMED BY PROVIDER**

**Section 1.1 Performance Of Services.**

Provider agrees to perform services for the District as described in Appendix A to this Agreement (the "Services") and shall provide other services as may be requested by the District from time to time.

**Section 1.2 Method Of Performance And General Supervision.**

Provider will determine the methods, details, and means of performing the Services required by this Agreement. Subject to the foregoing, the District retains the right to inspect, to stop work, to prescribe alterations and generally to monitor Provider's work to ensure its conformity with the terms of this Agreement.

### **Section 1.3 Employment Of Assistants.**

Provider may, at Provider's own expense, employ such assistants as Provider deems necessary to perform the services required of Provider by this Agreement. District may not control, direct, or supervise Provider's assistants or Providers in the performance of those services.

### **Section 1.4 Provider's Certifications, Representations and Warranties**

Provider makes the following certifications, representations and warranties for the benefit of the District. Provider acknowledges and agrees that the District, in deciding to engage Provider pursuant to this Agreement, is relying upon the truth and validity of the following certifications, representation and warranties and their effectiveness throughout the term of this Agreement and the course of Provider's engagement hereunder.

(a) Provider is qualified in all respects to provide to the District all of the services contemplated by this Agreement and, to the extent required by any applicable law, Provider has all such licenses and/or governmental approvals as would be required to carry out and perform for the benefit of the District, such services as are called for hereunder.

(b) Provider, in providing the services and in otherwise carrying out its obligations to the District under this Agreement, shall, at all times, comply with all applicable federal, state, and local laws, rules, regulations, and ordinances, including workers' compensation and equal protection and non-discrimination laws.

(c) Provider will perform their services hereunder in a professional manner, using the degree of care and skill ordinarily exercised by, and consistent with, the current professional practices and standards of a professional practicing in California. The Provider will furnish, at their expense, those services that are set forth in this Agreement and represents that such services are within the technical and professional areas of expertise of the Provider or any sub-Provider the Provider has engaged or will engage to perform the service(s).

## **ARTICLE 2. TERM AND TERMINATION**

### **Section 2.1 Term.**

(a) This Agreement shall become effective on the Effective Date and shall continue through August 31, 2018 (the "Term"), unless the Agreement is earlier terminated by either Party in accordance with Section 2.2, below. Pursuant to Education Code Section 17596, the Agreement Term including all renewals shall not exceed five (5) years.

### **Section 2.2 Termination.**

(a) This Agreement may be terminated by either Party upon fourteen (14) days written notice to the other Party in the event of a substantial failure of performance by such other Party, including insolvency of Provider or if the District should decide to abandon or indefinitely postpone the Project.

(b) In the event of a termination based upon abandonment or postponement by District, the District shall pay the Provider for all services performed and all expenses incurred under this

Agreement supported by documentary evidence, including payroll records, and expense reports up until the date of the abandonment or postponement, plus any sums due to the Provider for Board-approved extra services. In ascertaining the services actually rendered hereunder up to the date of termination of this Agreement, consideration shall be given to both completed work and work in process of completion and to complete and incomplete drawings and other documents, whether delivered to the District or in the possession of the Provider. In the event termination is for a substantial failure of performance, all damages and costs associated with the termination, including increased Provider and replacement Provider costs, shall be deducted from payments to the Provider.

(c) In the event a termination for cause is determined to have been made wrongfully, or without cause, then the termination shall be treated as a termination for convenience in accordance with Section 2.2 (d) below, and Provider shall have no greater rights than they would have had if a termination for convenience had been effected in the first instance. No other loss, cost, damage, expense or liability may be claimed, requested or recovered by Provider.

(d) This Agreement may be terminated for convenience by District without cause, upon twenty (20) days written notice to the Provider. In the event of a termination without cause, the District shall pay to the Provider for all services performed and all expenses incurred under this Agreement supported by documentary evidence, including payroll records, and expense reports up until the date of notice of termination, plus any sums due the Provider for Board-approved extra services. In ascertaining the services actually rendered hereunder up to the date of termination of this Agreement, consideration shall be given to both completed work and work in process of completion and to other documents, whether delivered to the District or in the possession of the Provider.

(e) In the event of a dispute between the Parties as to performance of the work or the interpretation of this Agreement, or payment or nonpayment for work performed or not performed, the Parties shall attempt to resolve the dispute. Pending resolution of this dispute, Provider agrees to continue the work diligently to completion. If the dispute is not resolved, Provider agrees it will neither rescind the Agreement nor stop the progress of the work, but Provider's sole remedy shall be to submit such controversy to determination by a court having competent jurisdiction of the dispute, after the Project has been completed, and not before. The Parties may agree in writing to submit any dispute between the Parties to arbitration. The District agrees to pay the Provider the undisputed amounts due under this Agreement.

The Parties understand and agree that this Termination Article shall govern all termination rights and procedures between the Parties. Any termination provision that is attached to this Agreement as an Exhibit shall be void and unenforceable between the Parties.

### **ARTICLE 3. COMPENSATION**

#### **Section 3.1 Terms Of Payment.**

**Not To Exceed \$34,475, To be paid on progressive billings in accordance with quote of services dated September 5, 2017. To be funded from Deferred Maintenance Funding Account.**

In consideration for all Services to be performed by Provider, the District agrees to pay Provider Thirty-Four Thousand Four Hundred Seventy-five Dollars (\$ 34,475.00 ) for all hours & materials completed by Provider.

Provider shall submit to the District a statement of services rendered with an invoice. The District agrees to pay the amount due to Provider for the Services within 30 days after the Services are performed.

### **Section 3.2 No Payroll Or Employment Taxes.**

No payroll or employment taxes of any kind shall be withheld or paid with respect to payments to Provider. The payroll or employment taxes that are the subject of this Section include, but are not limited to, FICA, FUTA, federal personal income tax, state personal income tax, state disability insurance tax, and state unemployment insurance tax.

### **Section 3.3 Expenses.**

Provider shall be reimbursed for the reasonable and actual out-of-pocket expenses incurred by Provider in the performance of Provider's duties and responsibilities under this Agreement, as provided for in Appendix A, provided that Provider shall first furnish proper vouchers and expense accounts setting forth the information required by the Internal Revenue Service for deductible business expenses.

### **Section 3.4 Accounting Records Of The Provider.**

Records of the Provider's direct personnel and authorized reimbursable expenses and records of accounts between the District and Provider shall be kept on a generally recognized accounting basis, and shall be available for inspection by the District at mutually convenient times.

## **ARTICLE 4. OTHER OBLIGATIONS OF PROVIDER**

### **Section 4.1 Nonexclusive Services.**

Provider may represent, perform services for, and/or be employed by such additional companies, persons, or clients as Provider, in Provider's sole discretion, chooses.

### **Section 4.2 Workers Compensation And Unemployment Insurance And Licenses.**

Provider shall be responsible for providing, at Provider's own expense, disability, unemployment and other insurance, workers' compensation, training, permits and licenses for Provider and for Provider's employees, agents and independent Providers, as may be required by law.

### **Section 4.3 Materials And Equipment.**

Provider shall supply all materials and equipment required to perform the Services under this Agreement, except as may be otherwise specified in Appendix A.

### **Section 4.4 Licenses, Permits, Fees And Assessments.**

Provider shall obtain at Provider's sole cost and expense such licenses, permits and approvals as may be required by law for the performance of the Services required by this Agreement. Provider shall have the sole obligation to pay for any fees, assessments, and taxes, plus applicable penalties and interest, which may be imposed by law and arise from or are necessary for Provider's performance of the Services required by this Agreement.

#### **Section 4.5 Fingerprinting.**

For any work performed by Provider at District facilities, if and when requested by the District, Provider's employees are required to submit fingerprints to the Department of Justice where an employee may come into contact with students at any District site pursuant to Education Code section 45125.1. The Department of Justice will ascertain whether the employee has a pending criminal proceeding for a violent or serious felony, or has been convicted of a violent or serious felony as those terms are defined in Penal Code sections 667.5(c) and 1192.7(c), respectively. Provider shall not permit an employee to come into contact with students until the Department of Justice has ascertained that the employee has not been convicted of a felony as defined in Education Code section 45125.1. Provider shall provide District with a list of names of employees who may come into contact with students and must certify in writing to the District that none of its employees who may come into contact with students have been convicted of a felony as defined in Education Code section 45125.1. District may request the removal of an employee from a District site at any time. Failure to comply with any of the provisions of this Section may result in termination of this Agreement.

#### **Section 4.6 Confidentiality.**

Provider acknowledges that, during the term of this Agreement, Provider may have access to privileged and confidential materials and information in the custody of clients of the District. Provider covenants and agrees to keep such information confidential and not to disclose such information directly or indirectly during, or subsequent to, the term of this Agreement. Provider further acknowledges that, during the term of this Agreement, Provider may obtain and have access to certain proprietary or confidential information, knowledge, technology, data, methods, files, records, and client lists relating to the District's business (collectively, the "Confidential Information"), which the District and Provider agree are proprietary or confidential in nature.

Provider acknowledges that:

- (a) The Confidential Information will be developed and acquired by the District at great expense, is of great significance and value to the District, and constitutes trade secrets;
- (b) The Confidential Information will be made known to the Provider in full reliance on this Agreement;
- (c) The Confidential Information is material and critically important to the effective and successful conduct of the District's business operations and activities; and
- (d) Any use of the Confidential Information by Provider other than for the District's benefit in connection with the business relationship between Provider and the District established by this Agreement will constitute a wrongful usurpation of the Confidential Information by Provider. The Provider hereby agrees to forever hold the Confidential Information in strict confidence and secret; provided, however, that Provider may disclose any or all of the Confidential Information to any corporation, partnership, trust, firm or other business entity not affiliated with the District if prior written consent of the District is obtained by Provider.

#### **Section 4.7 [Reserved]**

#### **Section 4.8 Insurance.**

Provider shall purchase and maintain policies of insurance with an insurer or insurers, qualified to do business in the State of California and acceptable to District which will protect Provider and District from claims which may arise out of or result from Provider's actions or inactions relating to the Agreement, whether such actions or inactions be by themselves or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The aforementioned insurance shall include coverage for:

(a) Workers' Compensation and Employers Liability Insurance in accordance with the laws of the State of California.

(b) Comprehensive general and auto liability insurance with limits of not less than ONE MILLION DOLLAR (\$1,000,000) combined single limit, bodily injury and property damage liability per occurrence, including:

- (i) owned, non-owned and hired vehicles;
- (ii) blanket contractual;
- (iii) broad form property damage;
- (iv) products/completed operations; and
- (v) personal injury.

#### **Section 4.9 Indemnification.**

To the fullest extent permitted by law, Provider shall fully indemnify, defend and hold harmless the District, its employees, agents and independent Providers from claims, demands, causes of actions and liabilities of every kind and nature whatsoever arising out of or in connection with Provider's services performed under this Agreement, to the extent caused by the Provider's Services. This indemnification shall extend to claims occurring after this Agreement is terminated as well as while it is in force.

MB/BFS 9.22.2017

#### **Section 4.10 Return Of District Property.**

On the termination of this Agreement or whenever requested by the District, Provider shall immediately deliver to the District all property in Provider's possession or under Provider's control belonging to the District in good condition, ordinary wear and tear and damage by any cause beyond the reasonable control of Provider excepted.

### **ARTICLE 5. PROVIDER'S WORK PRODUCT**

#### **Section 5.1 Ownership Of Provider's Work Product.**

(a) Provider agrees that any and all intellectual properties, including, but not limited to, all ideas, concepts, themes, computer programs or parts thereof, documentation or other literature, or illustrations, or any components thereof, conceived, developed, written, or contributed by Provider, either individually or in collaboration with others, pursuant to this Agreement, shall belong to and be the sole property of District.

(b) Provider agrees that all rights in all works prepared or performed by Provider pursuant to this Agreement, including patent rights and copyrights applicable to any of the intellectual properties described in Subsection (a) above, shall belong exclusively to District and shall constitute "works made for hire."

(c) The provisions of this Section shall not apply to any of Provider's rights in any invention for which no equipment, supplies, facilities, or trade secret information of District was used, which was developed entirely on Provider's own time, and which:

(i) Does not relate, at the time of conception or reduction to practice of the invention, to District's business or to District's actual or demonstrably anticipated research or development; or

(ii) Does not result from any work performed by Provider for District.

## **Section 5.2 Use Of Copyrighted Materials.**

Provider warrants that any materials provided by Provider for use by District pursuant to this Agreement shall not contain any material that is protected under the Copyright Act or any other similar law, except to the extent of "fair use," as that concept is defined in the Copyright Act, and except to the extent that Provider has obtained permission to use such work from the copyright holder. Provider shall be solely responsible for ensuring that any materials provided by Provider for use by District pursuant to this Agreement satisfy this requirement. Provider agrees to hold District harmless from all liability or loss, including debt or exercise for attorneys' fees to which District is exposed on account of Provider's failure to perform this duty.

## **ARTICLE 6. GENERAL PROVISIONS**

### **Section 6.1 Disputes Resolution.**

In the event of any disputes or disagreement between the District and Provider with respect to the interpretation of any provision of this Agreement, or to the performance of the Parties under this Agreement, each Party shall appoint a designated representative to meet in good faith, to resolve the dispute or to negotiate an adjustment to any provision of this Agreement. Such negotiations shall be conducted in a timely manner to avoid undue delay in resolving the dispute. No formal proceeding for judicial resolution of any dispute or disagreement shall be commenced until a Party concludes in good faith and provides written notice to the other Party that an amicable resolution of the matter at issue through continued negotiation does not appear likely.

### **Section 6.2 Default.**

A Party will be considered in default of its obligations under this Agreement if such Party should fail to observe, to comply with, or to perform any term, condition, or covenant contained in this Agreement and such failure continues for ten (10) days after the non-defaulting Party gives the defaulting Party written notice thereof. In the event of default, the non-defaulting Party, upon written notice to the defaulting Party, may terminate this Agreement as of the date specified in the notice, and may seek such other and further relief as may be provided by law.



### **Section 6.3 Amendments.**

This Agreement may not be altered or modified, except by a writing signed by the Parties.

### **Section 6.4 Status Of Provider.**

Provider enters into this Agreement, and will remain throughout the term of the Agreement, an independent Provider. Neither Provider nor its employees, agents or independent Providers shall become an employee, joint venturer, partner, agent or principal of the District while this Agreement is in effect. Provider's employees, agents and independent Providers shall not be entitled to the rights or benefits afforded to the District's employees, including disability or unemployment insurance, workers' compensation, medical insurance, sick leave or any other employment benefit.

### **Section 6.5 Governing Law.**

This Agreement shall be governed by and construed according to the laws of the State of California that would apply if all Parties were residents of California and the Agreement was made and performed in California.

### **Section 6.6 Notices.**

All notices and demands between the Parties hereto shall be in writing and shall be served either personally or by registered or certified mail. Such notices or demands shall be deemed given when personally delivered or seventy-two (72) hours after the deposit thereof in the United States mail, postage prepaid, addressed to the Party to whom such notice or demand is to be given or made. Such notices and demands may also be sent by telex, telegraph, telecopier or other similar electronic transmission device providing for a permanent record of the notice or demand, and, if so served, such notice or demand shall be deemed given and made at the time the device confirms to the sender delivery thereof to the addressee.

All notices and demands shall be given as follows:

**To the District:**

Attn: Bruce Colby,  
Chief Business Officer

Davis Joint Unified School District  
526 B Street  
Davis, CA 95616-3811

**To the Provider:**

Attn: Larry Foster

BFS Landscape Architects  
425 Pacific Street, Suite 201  
Monterey, CA 93940

Each Party may designate in writing such other place or places that notices and demands may be given.

**Section 6.7 Assignment.**

This Agreement shall not be assigned by either Party without the prior written consent of the other Party.

**Section 6.8 Order Of Precedence.**

In the event of any conflict or inconsistency in the interpretation of this Agreement (including Attachments), such conflict or inconsistency shall be resolved by giving precedence to the body of this Agreement, then to the Attachments.

**Section 6.9 Agreement Interpretation.**

This Agreement is the result of arm's length negotiations between the Parties, and shall be construed as drafted by all Parties such that any ambiguities shall not be construed against either Party.

**Section 6.10 Counterparts.**

This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and will become effective and binding upon the Parties as of the Effective Date at such time as all signatories hereto have signed a counterpart of this Agreement.

**Section 6.11 Entire Agreement.**

This Agreement contains the entire agreement between the Parties with respect to the subject matter of this Agreement and it supersedes all other prior and contemporary agreements, understanding, and commitments between the Parties with respect to the subject matter of the Agreement.

**Section 6.12 Severability.**

If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

**Section 6.13 Effect Of Recitals.**

The Recitals and Exhibits herein are deemed true and correct, are hereby incorporated into this Agreement as though fully set forth herein, and the Parties acknowledge and agree that they are bound by the same.

**Section 6.14 Force Majeure.**

Notwithstanding any other terms and conditions hereof, in the event that a Party is materially unable to perform any of its obligations hereunder because of severe weather, natural disasters, riots, wars, acts of terrorism, governmental action or other events of force majeure beyond the Party's control, then such Party shall, upon written notice to the other Party hereof, be relieved from its performance of such obligations to the extent, and for the duration, that such performance is prevented by such events; provided that such Party shall at all times use its best efforts to resume such performance.

IN WITNESS WHEREOF, the Parties hereto have entered into this Agreement as of the Effective Date of this Agreement.

**DISTRICT:**

**DAVIS JOINT UNIFIED SCHOOL DISTRICT**

By: \_\_\_\_\_



Name and Title: Bruce Colby, Chief Business Officer

**PROVIDER:**

**BFS LANDSCAPE ARCHITECTS**

By: \_\_\_\_\_



Name and Title: \_\_\_\_\_



**APPENDIX A**  
**SCOPE OF SERVICES**

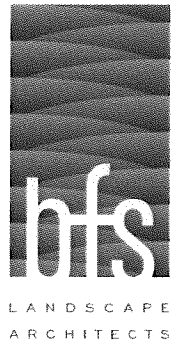
(attached)

**Prepare and develop construction plans and specifications for atheltic sports field turf replacement for Davis High School. The development for preformance criteria shall be through a series of stakeholder meeting of P.E., various Davis High School sport representatives and the school's Athletic Director. Scope of work also includes required support through bidding and awarding of contract, on-site construction monitoring as stated in the quote for services dated September 7, 2017 prepared by BFS Landscaping.**

# Scope of Services

*Davis Senior High School Synthetic Field Replacement*

September 5, 2017



## **3.0 CONSTRUCTION DOCUMENTS**

- 3.01 Review previous plans of initial installation. Attend Kick-off meeting and review site. Indicate items requiring repair or replacement other than the carpet.
- 3.02 Obtain CAD files of previously prepared plans. Refine / reformat base plans as required for Construction Documentation.
- 3.03 Prepare replacement plans to 75% complete Construction Drawings, including:
  - a. Cover Sheet, including sheet index, vicinity / location maps and notes
  - b. Existing Conditions Plan
  - c. Demolition Plan
  - d. Construction and Grading Plan
  - e. Construction Details (Include revised electrical outlets for existing boxes in the field)
- 3.04 Prepare Technical Specification Outline of items noted in 3.03.
- 3.05 Prepare estimate of probable construction cost.
- 3.06 Submit and review 75% Construction Documents with PM. Discuss project delivery method and vendors to submit quotes. Scope assumes design, bid, build process.
- 3.07 Based upon PM review, complete 100% complete Construction Drawings. Finalize estimate of probable construction costs.
- 3.08 Submit 100% Construction Documents with PM.
- 3.09 Based upon PM review, complete plans and specifications for bidding.
- 3.10 Prepare final Technical Specifications (in CSI format).
- 3.11 Disseminate plans and specifications to PM for bidding.

DavisSr.HighScope.docx

425 Pacific Street, Suite 201, Monterey, California 93940 • (831) 646-1383 P • (831) 373-8653 F • bfsla.com

445 Sherman Avenue, Suite W, Palo Alto, California 94306 • (650) 326-6622 P • (650) 326-6626 F • bfsla.com

There are 2 (two) site meetings in this phase.

#### **4.0 BIDDING AND CONSTRUCTION REVIEW**

PM shall have the primary responsibility for the bidding and construction review phase of the project, including testing and inspection coordination, payment request processing and all related items.

- 4.01 Provide technical assistance during the bid process, including preparation of Addenda. Respond to questions as directed by PM. Provide written or graphic clarification as appropriate.
  - a. Evaluate quotes received.
- 4.02 Respond to Requests for Information (RFI); furnish Clarifications and Revisions to the Construction Inspector; prepare change orders for distribution by PM.
- 4.03 Review and process Submittals and samples. Review proposed substitutions if any, for conformance to drawings and technical specifications.
- 4.04 Attend bi-weekly project meetings (assume 8 week construction period) followed by written field reports and/or meeting minutes. Reviews shall also include the following for a total of 6 (six) site visits during construction phase.
  - a. Pre-Construction Meeting
  - b. Substantial Completion Review

#### **5.0 ADDITIONAL SERVICES**

Any additional presentations, drawings or documents not identified in the Scope of Services will be considered additional services. Additional services are provided only as authorized and on an hourly basis unless otherwise approved.

- 5.1 On PM authorization provide the Contractor with final Construction Plans incorporating revisions, for preparation of As-built Drawings. Prepare Record Drawings based on As-Built drawings provided by the Contractor.

#### **EXCLUSIONS**

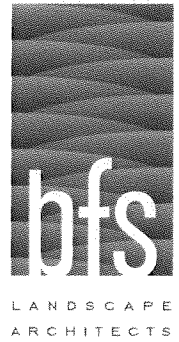
The following are excluded from our scope of services.

- 1. Site Survey.
- 2. Geotechnical Survey.
- 3. Storm Water Pollution Prevention Plan (SWPPP) / Notice of Intent (NOI) and Erosion Control Plan. If required these will be included as requirements for Contractor.
- 4. Electrical Engineering Plans.
- 5. Domestic water supply Plans.

6. Architectural Plans for ancillary support buildings and structures.
7. ADAAG (Accessible route) / Signage Plan.
8. Signage & graphics artwork.
9. Off-site improvements.
10. DSA preparation or visits to DSA offices.
11. Testing fees for construction testing procedures, i.e., compaction testing, percolation testing, construction staking verification.
12. Division 1 (General Conditions and Special Provisions) Project Specifications.
13. Printing of drawings on Mylar

-END -

August 29, 2017  
(530) 759-2182  
gparker@djud.net



MEMO TO: George Parker  
FROM: Larry Foster  
RE: **DAVIS SENIOR HS FIELD REPLACEMENT/Turf Executive Summary**

## EXECUTIVE SUMMARY

**General:** The existing stadium synthetic turf football field will be replaced with new synthetic surfacing. A series of estimates of probable construction costs for various options of turf have been prepared and are included herein as Exhibits 1-4. These estimates provide the total capital expenditures expected for the construction of the field synthetic surfacing and associated site work. The field area used for cost comparisons is 88,000 sf. They are arranged by lowest cost to highest cost of initial installation. SBR (Tire rubber) and sand is provided for comparison purposes.

**Exhibit 1, \$800,000;** 2-1/4-2-1/2" Turf Fiber Height with SBR Tire Rubber and Sand Infill (without a pad): It is understood that the traditional recycled tire rubber (SBR) is not desired for purposes of heat and the ever pressing and growing controversial environmental concerns; it is being shown for a more complete understanding of how the "traditional" and common system design all over the world for the last 15 years compares to the alternatives now available. This method does not use a performance pad underneath the carpet to keep the Gmax readings within industry (ASTM) accepted levels; however it is highly recommended as acceptable Gmax levels are lowering. It will be useful information to compare to other, perhaps more appropriate and recommended systems, such as Exhibit 2, to support the more recommended option. This system has shown to have lower than expected longevity, while having high force reduction of Gmax.

**Exhibit 2, \$862,400;** 1-1/4" Turf Fiber Height with Zeolite Infill Only (with pad): Exhibit 2 is the recommended solution to replace the current carpet system at DHS. Pad included is the more expensive drainage pad. Porous stone base fields can use a shock pad only for vertical drainage; a savings of approximately \$0.45/sf.

This system eliminates the controversial infill, whether alternative or not and only uses a product called Zeolite, which is a naturally occurring mineral mined in Nevada. It is Proposition 65 safe, the only infill to be EPA endorsed and is also used to filter drinking water and is installed in turf systems used for dog runs where it absorbs the urine and odors. Zeolite absorbs approx. 80% of its weight in moisture, which equates to approx. 0.16 gallons/sf. It can assist in storm water management calculations.

Zeolite's porous make up keeps fields cooler whether wetted down from a watering system or not. It absorbs moisture and then hydrates, releasing the moisture, similar to sweating, thus cooling field temperatures by 25-40 degrees, without the effects of humidity. The system requires a performance pad under the carpet to maintain acceptable Gmax levels. It takes a little more labor than traditional systems to install because it has a very dense face weight (ounces of green fiber per square yard) causing for more accurate cuts for seaming and it takes a bit more time to install the Zeolite within the system.

This system is quickly becoming the most popular especially in California simply because it avoids the use of rubberized infill materials completely eliminating the controversy and expensive alternatives, while offering true cooling effects when watering systems are available.

BFS Landscape Architects • bfsia.com

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1580 West El Camino Real, Suite 11, Mountain View 94040 • (650) 326-6622 P • (650) 326-6626 F • bfsia.com



**Exhibit 3, \$955,680;** 2" Turf Fiber Height with Organic and Zeolite Infill (with pad) : Traditionally organic material and sand is used. It is recommended that Zeolite be used in lieu of sand for the purposes explained in Exhibit 2. This system requires a performance pad underneath as well to maintain acceptable Gmax levels.

Organic infill is comprised typically of coconut husks and peat, which is very safe and natural, however, it requires a significant amount of water yearly to keep it moist to obtain benefits of a cooler surface and to keep it from getting very hard and compacted, whereby it would blow away. It also requires adding approximately 10% more organic material every year to maintain proper fill levels to keep the fibers upright that adds significantly to the long term cost associated with using this material. Aside from the higher initial capital cost compared to the recommended Exhibit 2 system, the year to year water use and infill maintenance add to the reasons not to recommend this as a viable option for the EAHS field conversion. Expected yearly cost to maintain is approx. \$20,000. An expensive watering system, approx. \$75K total would also be highly recommended.

**Exhibit 4, \$1,013,760;** 2" Turf Fiber Height with Alternative (TPE or EPDM) and silica sand, with Pad: The "rubberized" alternatives to SBR that are currently considered acceptable are the synthetic material, TPE (Thermoplastic Elastomers) and what is considered "virgin" rubber, EPDM (Ethylene Propylene Diene Monomer). These pass the CAM 17 heavy metals testing for the state of California, however, it is not known if other elements of their makeup may be found to be detrimental to human health. In other words, will they fall to the same fate of the SBR tire rubber simply over time of being used as an alternative to the SBR? The State of California at this point is not testing these materials as scrupulously as they will be doing for SBR.

This solution requires a shock pad to maintain Gmax. The TPE or EPDM adds to the cushioning. The 2" pile height is the minimum necessary to install the TPE or EPDM. This minimum pile height also allows for less overall pounds per sf of these expensive materials. The pad helps add long-term consistency in performance and Gmax control. The additional cost is insignificant when comparing the water use and infill maintenance as discussed in Exhibit 3 paragraph.

END