



REVISED

Date: April 8, 2016

To: Patrick H. West, City Manager *T.M.*

From: *C.B.* Craig Beck, Director of Public Works
Marie Knight, Director of Parks, Recreation and Marine *M.K.*

For: Mayor and Members of the City Council

Subject: **REVISED Status of Previously Approved Soccer Field Turf Conversion Projects**

On November 17, 2015, the City Council requested the City Manager to direct the Parks, Recreation and Marine Department, in coordination with the Public Works Department, to provide an update on the current cost estimates for previously approved soccer field turf conversion projects at three parks – Admiral Kidd, El Dorado and Seaside. In addition, the City Council requested details on what other appropriate park uses could be developed at El Dorado Park in lieu of an artificial turf project, and report on when it would be feasible to bid on any such in lieu projects. This memo provides staff response to the City Council's requests.

Soccer Field Turf Conversion Project History

The City Council approved \$2.32 million in Fiscal Year 2014 (FY 14), and an additional \$1.27 million in FY 15 one-time funding for synthetic turf installation (Turf Project) at three parks - Admiral Kidd, El Dorado West, and Seaside.

Synthetic turf is commonly used in playgrounds, soccer fields and running tracks, making up the majority of fields installed each year at schools, universities and professional league stadiums. Replacing natural grass turf with synthetic turf on soccer fields provides several benefits, including:

- Reduced water use, helping to meet the State's water reduction mandate
- Better management of storm water runoff through subsurface drainage systems
- A more durable, consistent and safe playing surface that addresses field safety
- Increased playable hours, without the need to close fields for sod replacement or following rain events
- Reduced maintenance costs and provide a longer lifespan than natural grass fields

In addition, synthetic turf retains the City's ability to provide soccer fields amidst drought conditions. Currently, when the City takes down a soccer field for repair, the field needs to be watered several times a day for six to eight weeks. Given the drought conditions, the City will not be able to do this moving forward, and grass fields will not get the water necessary for proper refurbishment. This may result in more grass fields being unavailable for play due to safety and field conditions - having available synthetic turf fields can offset this impact.

The installation of synthetic turf requires “infill material” to be placed in between the tuft strands (blades of turf), above the carpet mat, providing support for the tufts. The infill material is spread onto the laid “carpet” and groomed into place, allowing for the artificial “grass” to protrude as it would do in the case of a natural lawn.

The most common infill material for synthetic fields is crumb rubber, which is made from recycled tire. However, some concern has been raised recently regarding its impact on player health. Accordingly, staff evaluated alternative infill materials with the goal of identifying a suitable material to be used for all synthetic turf conversions across the City. The evaluation considered factors such as water use, safety, playable hours, material availability, field temperature, as well as installation and maintenance costs. In June 2015, staff recommended to the Parks and Recreation Commission that coated crumb rubber be used for the following reasons:

- Minimal water is used for cooling and cleaning, helping to meet the State’s water reduction mandate;
- Subsurface drainage system manages water runoff;
- Playable hours on a durable, safe playing surface are maximized to meet the demand for use;
- Seven to ten year lifespan for turf infill will reduce maintenance costs by not needing to close fields for sod replacement;
- Available in colors other than black, such as green or tan, reducing the field temperature by 5 to 10 percent; and
- Compared to the current crumb rubber standard, coated crumb rubber is the lowest cost alternative.

The staff report presented to the Parks and Recreation Commission, which includes information on additional alternatives of synthetic turf infill, is included as Attachment 1.

The Commission voted to recommend to the City Manager the use of an organic infill material, instead of coated crumb rubber. Based on what is known about organic infill installation, maintenance, and replacement frequency, staff anticipated an increase to the cost of each of the three Turf Projects. The actual cost of organic infill material and its financial impact on the Turf Project budgets can only be determined once a project is put out to bid, and bids return with the contractor’s unit price for the material.

Following the Parks and Recreation Commission’s action, and City Manager direction, the plans and specifications for synthetic Turf Projects were changed to reflect organic infill material. On January 13, 2016, bids were opened for the Drake/Chavez Greenbelt project, which includes a synthetic turf field in the design. The organic infill material selected in this project will become the City’s standard material and will be used in the plans and specifications for the Admiral Kidd and Seaside Turf Projects, which are scheduled to be bid in April 2016.

Soccer Field Turf Conversion Project Budget and Status Updates

Approximately \$3.59 million in one-time funding was previously approved by the City Council for turf conversion to synthetic turf projects, one field per park at Admiral Kidd, El Dorado West and Seaside Parks. An additional \$250,000 in grant funds was provided for the field at Seaside Park, bringing the total to \$3.84 million from all funds sources. The following table summarizes budget vs. estimated costs (costs are based on an engineer's estimate based on organic infill turf field bid prices received in February 2016).

Park Location	Project Budget*	Project Cost**	Balance
Admiral Kidd (1.4 acres)	\$1,540,000	(\$2,321,938)	(\$781,938)
Seaside (0.4 acres)	\$850,000	(\$838,659)	\$11,341
El Dorado West (1.9 acres)	\$1,450,000	(\$3,082,062)	(\$1,632,062)
Total	\$3,840,000	(\$6,242,659)	(\$2,402,659)

* Represents FY 14, FY 15 and grant funds.

** Estimated costs, final costs will be determined through the bidding process.

Plans and specifications for Admiral Kidd and Seaside are anticipated to be completed in April 2016. At that time, staff will go out to bid and bid openings are expected in May 2016. Once a contractor is selected for each of these projects, the Turf Project's plans, specifications, and construction contracts will be submitted to the City Council for final approval. The design for the El Dorado West improvements are further behind and pending direction for completion.

Alternatives for El Dorado Park

Alternatives to a synthetic turf soccer field at El Dorado Park include compact sport spaces or renovating the turf on the existing soccer field. However, these options were not a part of the original scope based on the previous City Council actions to fund synthetic turf soccer fields. Subsequent direction was to use organic infill materials for synthetic turf soccer fields in lieu of crumb rubber products. The November 17, 2015 City Council action directed staff to explore these options.

Compact Sports Space

Compact sports spaces are small-scale soccer fields, some of which are enclosed. An example in San Diego County measures 180 feet by 80 feet. This option requires additional research to determine the feasibility, cost and long-term maintenance, as well as the ability to place such a space in El Dorado Park amidst existing land use and park designation restrictions. El Dorado Park is subject to open space and recreational land use constraints in perpetuity from previous grant agreements. The City will need to further explore if this option is permissible.

Based on initial research, staff estimates costs for a 180 feet by 80 feet open air compact sports space in El Dorado Park will range from \$350,000 and \$650,000. Further design development is required to provide a better estimate of costs.

Turf Renovation

Turf grass maintenance programs range from basic cultural care such as mowing, to top-notch treatments such as those used in major league professional sport venues. These treatments, such as topdressing, vertical mowing, and over seeding, are utilized to keep the turf grass system operating at peak performance. Renovating the turf on the existing soccer field is possible, but comes with additional maintenance and rehabilitation costs not currently budgeted in the Department of Parks, Recreation and Marine. It would also require limiting field availability.

The recommended renovation and maintenance program would include an estimated one-time renovation cost of \$143,000 and an annual maintenance cost of \$24,500 for a premium level of care for the field, and would significantly reduce playable hours from the current 2,730 playable hours available today. This maintenance includes aeration and top dressing quarterly, and monthly fertilizing.

The dimension of the current soccer field at El Dorado West is roughly 45,000 square feet (300 x 150) of playing surface, which includes a mix of common Bermuda grass and Kikuyu grass. Reconstruction would be for 84,000 square feet (375 x 225) to account for fencing and seating areas inside the fence. In order to reconstruct the field to meet a higher level of quality, the following would be required:

Renovation	Details	Est. Cost
Irrigation Improvements	Adequate field water coverage	\$80,000
Sodding	Use higher quality sod	\$45,000
Drill & Fill Soil Amendment	2 years conversion to sand base	\$18,000
TOTAL		\$143,000*

* Total does not include additional four-day required watering to maintain field to premium level. This field, which is watered by reclaimed water, would require special provisions for the necessary watering, which would need to be secured from the Long Beach Water Department.

The recommended maintenance program is designed to protect the turf during play and allow recovery in and out of play times. Recovery times (no use) should be planned every three months for a minimum of two weeks.

Timeline for Alternatives at El Dorado

Depending on the desired alternative, funding would need to be identified and secured for design, construction, and project overhead costs. The following table outlines the timeline for designing, bidding, and awarding a capital improvement project.

Task	Duration (weeks)
Consultant Procurement/Initial Scoping	4
Design Development/Environmental Review	16
Construction Drawings/Plan Check/Permits	16
Preparation of Specifications	4
Bid Posting/Opening	4
Selection of Lowest Bidder	2
Council Award of Contract/Approval of Plans & Specs	3
Construction	20
TOTAL	69

Conclusions and Next Steps

Summarized below are the recommended next steps:

- Admiral Kidd Park: Complete design utilizing cork/sand infill and bid the project. Allocate difference between project budget and actual costs, and move forward with construction.
- Seaside Park: Complete design utilizing cork/sand infill and bid the project. Allocate difference between project budget and actual costs, and move forward with construction.
- El Dorado Park: Proceed with preliminary design of a compact sports space to allow for more accurate estimated costs with the goal to have funding for a compact sports space and turf renovation. With an updated estimate, compare compact sport space costs to full-size synthetic turf field alternative. Identify any funding gaps and move forward as appropriate.

For additional information, please contact Marie Knight, Director of Parks, Recreation and Marine, at (562) 570-3170, or Craig Beck, Director of Public Works, at (562) 570-6771.

CB:MK/mr/jc/vhd

ATTACHMENTS:

1. PARKS AND RECREATION COMMISSION STAFF REPORT (06-15-15)
2. ARTIFICIAL TURF INFILL PROPERTIES
3. PRELIMINARY ANALYSIS OF BID RESULT FOR DRAKE/CHAVEZ SOCCER FIELDS AND GREENBELT PROJECT
4. COMPARISON OF CAPITAL AND MAINTENANCE COSTS ASSOCIATED WITH ARTIFICIAL TURF INFILL MATERIALS IN THE BIDS OF THE DRAKE/CHAVEZ SOCCER FIELDS AND GREENBELT PROJECT
5. SYNTHETIC TURF SYSTEMS OPTIONS SUMMARY

CC: CHARLES PARKIN, CITY ATTORNEY
LAURA L. DOUD, CITY AUDITOR
TOM MODICA, ASSISTANT CITY MANAGER
ARTURO SANCHEZ, DEPUTY CITY MANAGER
REBECCA JIMENEZ, ASSISTANT TO THE CITY MANAGER
MEREDITH REYNOLDS, PARKS, RECREATION AND MARINE
TIMOTHY RALSTON, PUBLIC WORKS



CITY OF LONG BEACH
DEPARTMENT OF PARKS, RECREATION & MARINE



2760 N. Studebaker Road, Long Beach, CA 90815-1697
(562) 570-3100 • FAX (562) 570-3109
www.LBParks.org

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June 15, 2015

MEMBERS OF THE PARKS AND RECREATION COMMISSION
City of Long Beach
California

RECOMMENDATION:

Recommend to the City Manager the use of coated crumb rubber as the standard infill material for all future synthetic field projects in City of Long Beach Parks. (Citywide)

DISCUSSION

As part of the Fiscal Year 14 (FY14) Budget, the City Council approved \$2.32 million, and as part of Fiscal Year 15 (FY15) Budget, the City Council approved \$1.27 million in one-time funding for turf conversion projects (Turf Project) and identified soccer fields at three park locations for synthetic turf installation. The three parks identified were Admiral Kidd Park, located at 2125 Santa Fe Avenue, El Dorado Park West, located at Studebaker Road immediately south of the Parks, Recreation and Marine Administration building at 2760 Studebaker Road and Seaside Park, located at Chestnut Avenue and W. 14th Street. Community meetings were held on January 26 and February 23, 2015 to provide an overview of the City's synthetic turf projects and solicit community feedback.

A consultant was retained by the Department of Public Works to provide information on the various synthetic turf materials available in the market (Attachment 1). Synthetic turf is commonly used in playgrounds, soccer fields and running tracks, making up the majority of fields installed each year at schools, universities, and professional league stadiums. Replacing natural grass turf with synthetic turf on athletic fields has several benefits. Synthetic turf can:

- Reduce water use, helping to meet the State's water reduction mandate;
- Manage stormwater runoff through subsurface drainage systems;
- Provide a durable, consistent, and safe playing surface that addresses field safety issues and meets the demand for use;

The average annual maintenance cost of a 72,660 square-foot natural grass soccer field is approximately \$11,000, which does not include field repair or replacement costs or the cost for the 900,000 to 1,200,000 gallons of water needed annually for upkeep. The average annual maintenance cost of a 72,660 synthetic turf field is approximately \$9,000, which does not include repair or replacement costs or the water needed for a cooling system. Should the City elect to include a cooling system, this would require up to ten percent of the water used on a grass field, or approximately 90,000 to 120,000 gallons a year. Therefore, every converted field would save \$2,000 annually on maintenance costs plus the cost savings associated with less water use.

Long Beach Municipal Code Section 2.54.005 B states that the Parks and Recreation Commission (Commission) shall recommend to the City Manager plans for development, beautification and maintenance of public park and recreational areas, including parks, recreation centers, playgrounds, beaches, parkways, and the City cemetery. It is therefore appropriate for the Commission to make a recommendation to the City Manager supporting the Department's recommendation to use coated crumb rubber as the standard turf infill material for turf conversions for athletic fields across the City.

Should the Commission support the recommendation to use coated crumb rubber as the standard turf infill material for turf conversions for athletic fields, construction plans will be finalized and put out to competitive bid. Once a contractor is selected, the Turf Project's plans, specifications, and construction contract will be submitted to the City Council for approval as part of the standard contract and purchasing approval procedure.

This matter was reviewed by Deputy City Attorney Kendra L. Carney on June 10, 2015.

FISCAL IMPACT

Synthetic turf fields can provide financial savings through reduced water use, reduced maintenance and longer field lifespans, thus saving long-term infrastructure investments. The City Council approved \$3.5 million in one-time funding for the Turf Project in FY14 and FY15. Maintenance of synthetic turf fields will be budgeted each year as a part of existing field maintenance operations.

SUGGESTED ACTION:

Approve recommendation.

Artificial Turf Infill Properties

Infill Type	Pros	Cons
Coated Crumb Rubber	<ul style="list-style-type: none"> • Low maintenance • Good drainage • Maintains resiliency • Manufacturers Warranties • No resilient pad requirement 	<ul style="list-style-type: none"> • High cost • Same chemical make-up as SBR Rubber • Limited analysis as turf infill • Limited availability
Coconut Fiber Matrix (organic)	<ul style="list-style-type: none"> • Natural Material/Renewable • Superior heat properties • Good resiliency 	<ul style="list-style-type: none"> • Higher first cost relative to coated crumb rubber and Cork/Sand • Requires irrigation system to maintain material integrity • Potential for weed and mold growth • Limited Availability • Higher maintenance requirements and costs relative to Cork/Sand
Cork/Sand (organic)	<ul style="list-style-type: none"> • Natural Material/Renewable • Superior heat properties • Does not require irrigation or hydration to maintain material integrity • Good resiliency • Less first cost vs. coconut • Lower maintenance requirements and costs relative to Coconut 	<ul style="list-style-type: none"> • Higher first cost relative to coated crumb rubber • Potential for weed and mold growth • Limited Availability

City of Long Beach - Department of Public Works
 Preliminary Analysis of Bid Result for Drake/Chavez Soccer Fields and Greenbelt Project

Item	Description	Bid Amount	Minimum Amount	Recommended Amount	Comments
1	Subtotal Base Bid (Lines 1 to 64)	\$ 2,036,170.68	\$ -	\$ -	
2	Mobilization (Line 65)	\$ 100,000.00	\$ -	\$ -	
3	Base Bid (Lines 1 to 65) + Additive A (Lines 66 to 67):	\$ 2,474,478.18	\$ 2,474,478.18	\$ 2,474,478.18	
4	ADDITIVE BID A ITEMS 66 to 67	\$ 338,307.50	\$ -	\$ -	Cork/Sand Infill (In Base Bid)
5	ALTERNATE BID B - ITEMS 68 to 70	\$ 623,828.00	\$ -	\$ -	Coconut Fiber Matrix Infill
6	ADD-3: Install Prefabricated Restroom	\$ 218,582.00	\$ -	\$ 218,582.00	
7	ADD-4a: Cable installation for lights	\$ 93,120.00	\$ -	\$ 93,120.00	
8	ADD-4b: Install Pedestrian Lighting	\$ 288,171.00	\$ -	\$ 288,171.00	
9	ADD-5: Install Concrete Basketball Court	\$ 68,808.00	\$ -	\$ 68,808.00	
10	ALT-6: 8' Tubular Fence (880 LF) around Primary	\$ 224,456.00	\$ -	\$ 224,456.00	
11	ADD-7: Electrical Conduits and Pull Rope	\$ 18,461.00	\$ -	\$ 18,461.00	
12	ADD-8a: Second Synthetic Turf Sports Field	\$ 397,370.40	\$ -	\$ -	Cork/Sand Infill
13	ADD-8b: Soccer Goal (8'x24'x7'6") for second	\$ 4,934.00	\$ -	\$ 4,934.00	
14	ADD-8c: Provide synthetic field maintenance	\$ 17,147.00	\$ -	\$ -	
15	ALTERNATE BID I - ITEMS 80 to 82	\$ 441,304.40	\$ -	\$ -	Coconut Fiber Matrix Infill
16	ADD-10: Install EV Charge Station Conduit	\$ 15,434.00	\$ -	\$ -	
17	ADD-11 Provide Construction Office	\$ 16,898.00	\$ -	\$ 16,898.00	
18	Total	\$ 7,377,470.16	\$ 2,474,478.18	\$ 3,407,908.18	
19	Grand Total of all Line Items (Lines 1 to 84 from Bid Form)	\$ 4,521,700.98			Needs = \$ 933,430.00
20	Difference	\$ 2,855,769.18			Low Total (Missing 4a and 4b)
21	Check	\$ 2,474,478.18			High Amount
22	Difference	\$ 381,291.00			Correct Difference Should be Zero

City of Long Beach - Department of Public Work
Comparison of Capital and Maintenance Costs Associated with Artificial Turf Infill Materials in the Bids of the
Drake/Chavez Soccer Fields and Greenbelt Project

Item	Description	Unit Price	Item Total	Comments
66	ADD-1a: Install synthetic turf w/carpet, cork/sand infill, and shock and drainage underlayment (48,150 SF)	\$ 7.22	\$ 347,402.25	Baseline (100%)
67	ADD-1b: Provide synthetic field maintenance for the duration of the field warranty for cork/sand infill (8 yrs.)	\$ 16,112.13	\$ 16,112.13	Baseline (100%)
Subtotal - Option A1			\$ 363,514.38	\$7.55/SF Baseline
68	ALT-2a: Install synthetic turf w/carpet, coconut fiber matrix infill, and shock and drainage underlayment (48,150 SF)	\$ 10.54	\$ 507,501.00	168% of Baseline Cost
69	ALT-2b: Install irrigation system for coconut fiber matrix infill system. Include larger electrical panel and conduit & cable as required for irrigation system.	\$ 75,758.88	\$ 75,758.88	Cost included in Item 68's comparison with Baseline Cost
70	ALT-2c: Provide synthetic field maintenance for the duration of the field warranty for coconut fiber matrix infill (8 yrs.)	\$ 105,698.88	\$ 105,698.88	656% of Baseline Cost
Subtotal - Option B1			\$ 688,958.76	\$14.31/SF 190%
77	ADD-8a: Second Synthetic Turf Sports Field (includes subgrade preparation; subgrade liner; subsurface panel drain system; perimeter drain; drainage connection; permeable base stone; geotextile fabric. Install synthetic turf to include carpet and cork /sand infill. Either Install Option 1- Shock and Drainage Tile Underlayment or Option 2- Shock and Drainage Pad Underlayment (26,160 SF)	\$ 12.48	\$ 326,378.70	Baseline (100%)
78	ADD-8b: Soccer Goal (8'x24'x7'6") for second soccer field	n/a	n/a	Not included in comparison of infill costs
79	ADD-8c: Provide synthetic field maintenance for the duration of the field warranty for cork/sand infill (8 yrs.) for second soccer field.	\$ 16,899.63	\$ 16,899.63	Baseline (100%)
Subtotal - Option A2			\$ 343,278.33	\$13.12/SF Baseline
80	ALT-9a: Second Synthetic Turf Sports Field (includes subgrade preparation; subgrade liner; subsurface panel drain system; perimeter drain; drainage connection; permeable base stone; geotextile fabric. Install synthetic turf to include carpet and coconut fiber matrix infill. Either Install Option 1- Shock and Drainage Tile Underlayment or Install Option 2- Shock and Drainage Pad Underlayment	\$ 13.25	\$ 346,620.00	122% of Baseline Cost
81	ALT-9b: Install irrigation system for coconut fiber matrix infill system. Include increased meter size; field irrigation kit; upsize pump; larger electrical panel and conduit & cable as required for irrigation system	\$ 72,531.75	\$ 72,531.75	Cost included in Item 80's comparison with Baseline Cost
82	ALT-9c: Provide synthetic field maintenance for the duration of the field warranty for coconut fiber matrix infill (8 yrs.) for second soccer field	\$ 54,235.25	\$ 54,235.25	321% of Baseline Cost
Subtotal - Option B2			\$ 473,387.00	\$18.10/SF 138%

