Agenda Item #: 07/0102.9

Staff Report
City of Manhattan Beach

TO: Honorable Mayor Tell and Members of the City Council

THROUGH: Geoff Dolan, City Manager GD

FROM: Richard Gill, Parks and Recreation Director R.J.
Mark Leyman, Recreation Services Manager ML

DATE: January 2, 2007

SUBJECT: Presentation of the Synthetic Turf Proposal for Manhattan Village Field

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RECOMMENDATION:
Staff recommends that the City Council approve the installation of synthetic turf at Manhattan Village Field and appropriate $900,000 from available CIP Funds.

FISCAL IMPLICATION:
The total capital cost for the installation of synthetic turf will be approximately $900,000. Staff estimates this initial cost will be recovered in seven years through additional revenue and absence of costs for natural turf maintenance. A complete analysis is provided in Attachment "A".

At the December 19th City Council meeting, Council was presented with the FY 2005-2006 financial results, which indicated that we have combined unreserved General and CIP funds of $4.5 million available for allocation by the Council. Assuming Council allocates $250,000 for Council Chambers audio-visual upgrades, including a new integrated voting system and video monitors, there will be an unallocated balance of $4.25 million available. With the appropriation of funds for the Synthetic Turf Project ($900,000) the remaining available funds will total $3.35 million.

BACKGROUND:
As part of the City Council Capital Improvement Plan (CIP) for 2006/2007, City Council requested staff to research the feasibility of installing synthetic turf at the City's Manhattan Village Field.

DISCUSSION:
Manhattan Village field is the most heavily used soccer field in the City. Because of overuse, the City closes the field for 3 months at the beginning of June and completely renovates the field each year. When the field opens in September it is always in pristine condition. By the end of September, it starts to show heavy wear. By late October there is little turf area left on the field (see Attachment B). The field remains in this condition every year until the following renovation in June. It is fruitless to try to repair the field from November to June because of its heavy use and the winter not being a good time to grow turf.

At the June 6, 2006 City Council meeting, the City Council asked staff to work with community

user groups on gathering interest and information on the possibility of installing synthetic turf at Manhattan Village Field. Council also asked Manhattan Beach resident and South Bay Peninsula Soccer League representative John Sloway to work with City staff in establishing a committee to seek community interest and establish partnerships. A committee of individuals representing AYSO, South Bay Soccer Club, South Bay Peninsula Soccer League, a turf company representative and other interested Manhattan Beach residents was formed in June. The committee has met five times to discuss collaborative efforts and research synthetic turf. The user groups involved with this committee are supportive of the synthetic turf and have committed $90,000 towards the initial cost (AYSO $40,000, SBSC $40,000, SBPSL $10,000). The committee determined that for each $5,000 donated by a resident user group, one hour of field space will be guaranteed to that group for the life of the synthetic turf (estimated to be 8-10 years). The user groups must still pay the premium rate for every hour used.

In addition to the committee meetings, Staff met with representatives from the school district who are interested in installing synthetic turf at Mira Costa Football Field, and toured ten local synthetic turf fields to evaluate each field for the quality of the turf, quality of installation and to speak with the end-users of the fields. We are also sharing notes with the Mira Costa representatives as well as representatives from American Martyrs. There is the possibility that all three agencies will be installing synthetic turf and there may be a cost savings if all three fields can be done through the same vendor.

The initial cost for synthetic turf is approximately $900,000. However, as you can see from attachment A, this initial cost can be recovered within seven years. The warranty for most synthetic turf surfaces is between 8-10 years. At the end of the synthetic turf's useful life, the City will only need to replace the top layer of synthetic carpet that can be done at approximately one-half the cost of an initial installation, because the grading, drainage and irrigation systems are already in place. Staff believes that the attached estimated costs and revenues are conservative. They are based on a premium hourly rate and past field use, with the addition of one season. In addition, the estimated revenues do not include an additional 700 hours of unscheduled field use during the summer months when the field is usually closed. Staff believes that a large percentage of this time will be reserved based on discussions from other agencies who have installed the synthetic turf. Other local cities and private agencies who have installed synthetic turf have seen their field rentals increase dramatically. Also, the recommended premium rate that has been proposed is the average rate in the area for synthetic field rentals. Synthetic turf field rates from four other local fields ranged from $100/hour to $160/hour. The premium rates proposed for Manhattan Village will be $100/hour for residents and $150/hour for non-residents which are $82-$100/hour higher than current rates. We have discussed these rates with the agencies currently using Manhattan Village Field and they have stated support for the proposed rates.

Staff has been in contact with the West Basin Municipal Water District for a water conservation grant, and California Integrated Waste Management Board for a recycled tire grant. Since these funds are not guaranteed, staff did not include grant funding in the cost projections, however will be submitting a grant proposal for funding.

Staff believes that the possibility of installing synthetic turf is important for the following reasons:

- Higher user satisfaction – over 3,000 AYSO participants, 500 SBSC, and 500 adult soccer group participants use Manhattan Village Field. Synthetic turf will serve the over 4,000 resident youth and adult soccer participants.

- Year round play – the field is available seven days per week, 365 days per year. Artificial surfaces don't become muddy or slippery in wet weather. They do not have to be closed June through September for renovation. This will enable new community user groups to use the field that have been shut out in the past.

- Fewer injuries - new manufacturing and installation procedures in the synthetic turf industry have increased the safety and playability of the turf. Injury rates are comparable to those on natural turf, depending upon the specific injury. However, when considering the holes, sand and uneven surface at Manhattan Village Field, the even, consistent playability of synthetic turf is much safer (See attachment C).

- Environmentally Friendly - Aside from the environmental advantages that come from lower water use, the removal of significant amounts of fertilizer and pesticides means less chance of contaminating groundwater. In addition, synthetic turf is made of recycled materials. The estimated average synthetic soccer/football field uses approximately 45,000 recycled tires that would otherwise take up space in a landfill or tire-waste site.

- Lower maintenance costs - Artificial turf requires no mowing, watering, fertilizing or re-seeding which significantly reduces maintenance costs. (See attachment A).

Concerns for Synthetic Field

- Greater initial cost – The initial outlay for the synthetic turf is significant, however, the benefits to the community are substantial and as attachment A shows, the cost recovery for the turf will be seven years. When discussing synthetic turf, the City Council should be aware of the Facility Strategic Plan. The cost to build whatever results from the Facility Strategic Plan Proposal will certainly cost many millions of dollars. Even though staff believes we will make the initial cost up in seven years, the Council should still discuss whether the $810,000 outlay would serve the community better than waiting for the outcome of the Facility Strategic Plan.

- Heat on the field – during the summer months, synthetic turf fields can generate up to an additional 15-20 degrees of heat from the field surface on the hottest days. To minimize the heat, irrigation can be installed at the perimeter of the field. Fortunately, the climate in Manhattan Beach is such that this should only be needed several weeks a year.

- Vandalism – to combat vandalism, the field will only be opened when it is reserved. Sections of the turf are able to be replaced, if vandalism were to occur.

- Difficult to clean – Items such as gum, sunflower seeds and sports drinks may find their way to the turf. As part of normal maintenance, the field will be swept to pick up debris and may be irrigated, to rinse off any items on the field.

- Bacterial Infections from Abrasions – There has been little research in this area due to the short time the synthetic turf field industry has been in existence. Because of the possibility of people getting bacterial infections from synthetic turf is relatively new, the concern is being researched by top universities. One study done by Penn State, states that there is no greater risk of receiving a bacterial infection than from natural turf, and that "The microbe population of natural turfgrass far exceeds anything we've found in the infill systems." (See attachment D). If the concern does materialize, an antimicrobial product can be applied periodically to the turf.

If Council were to approve the installation of synthetic turf, the window of opportunity for installation would be June through August of 2007. This is the normal field maintenance period where no activities are scheduled on the field.

Summary:

Staff recommends that City Council discuss the installation of synthetic turf at Manhattan Village Field and consider the following options:

A. Approve the installation of synthetic turf at Manhattan Village Field

B. Wait until the outcome of the Facility Strategic Plan process

C. Deny the proposal for installation of synthetic turf at Manhattan Village Field

Attachments: A. Manhattan Village Field Synthetic Turf Revenue and Payback Projection

B. Picture of Manhattan Village Field in October, 2006

C. Safety Article "Evaluation of Playing Surface Characteristics of Various In-Filled Systems – Athlete Performance and Safety"

D. Athletic Turf Article "New Penn State study debunks staph scare in synthetic turf"

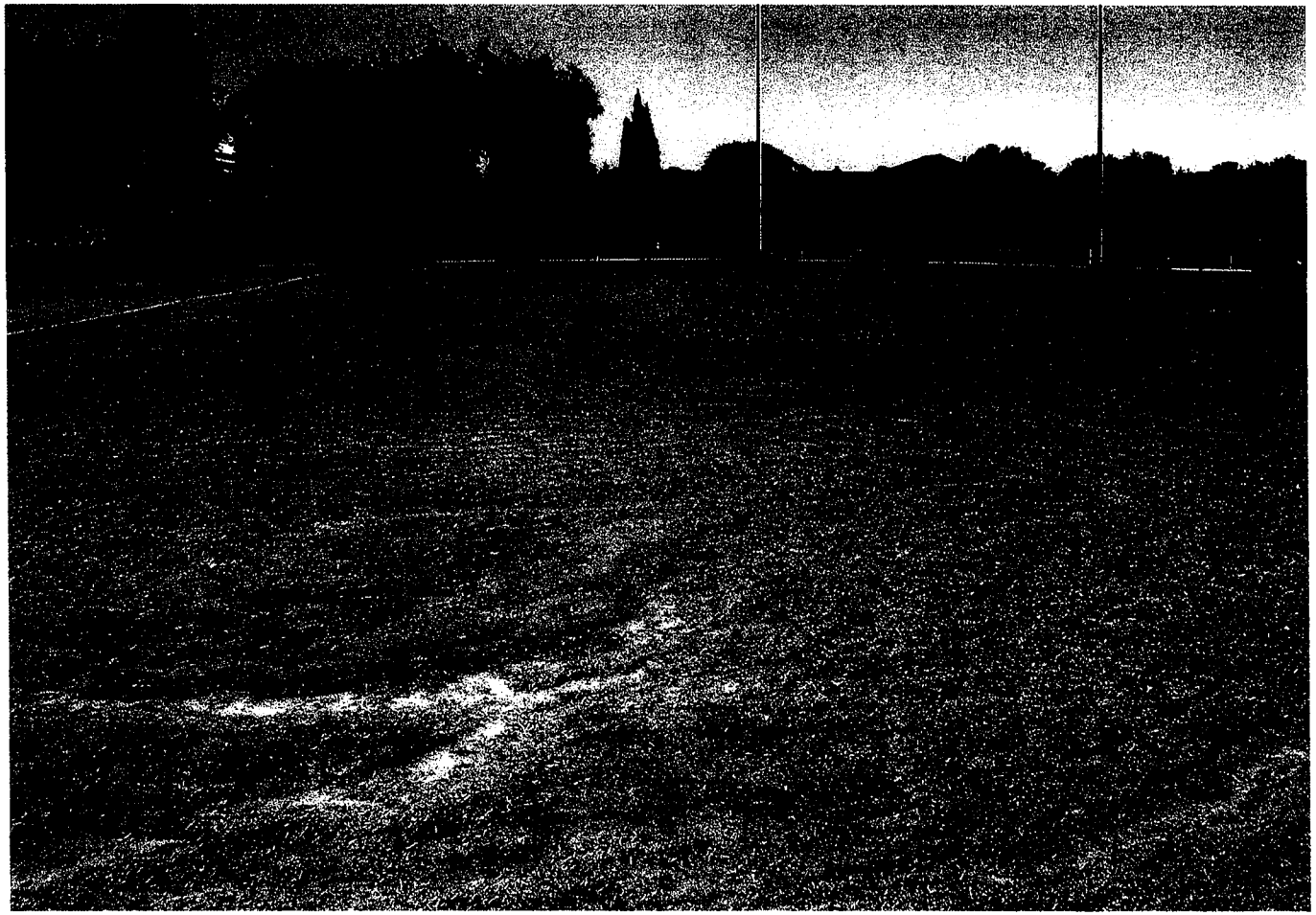
Synthetic Turf Financial Analysis

Annual Maintenance Cost				
	Current	Projected	Difference	Note
Tru Green Maintenance (mowing, weeding, fertilization, tree and landscape maintenance at park site)	$ 10,080	$ -	$ (10,080)	
Annual field renovation (June-September)	$ 10,000	$ -	$ (10,000)	
Contract extras for services outside the scope of work of the contract such as irrigation repair and rehabilitation, concrete repair, fence fabric, etc.	$ 14,140	$ 7,070	$ (7,070)	
Irrigation	$ 4,100	$ 1,000	$ (3,100)	
Routine maintenance of synthetic turf (labor and materials for weekly raking/maintenance)	$ -	$ 3,264	$ 3,264	
Totals	$ 38,320	$ 11,334		
Annual Cost Savings			$ 26,986	
Additional Revenue (Net of Expenses) for Added Summer Usage	Current	Projected	Difference	Note
7-on-7 Adult Coed Soccer	$ 30,000	$ 40,000	$ 10,000	
Brit West Soccer Camps	$ 40,950	$ 49,725	$ 8,775	
Field Rentals	$ 10,000	$ 85,600	$ 75,600	1
Totals	$ 80,950	$ 175,325		
Additional net revenue for Year 'Round Play			$ 94,375	
Net Change in cash flow through cost savings and additional revenue			$ 121,361	
Break Even Analysis				
Capital Cost of Installation	$ 900,000			
One Time Contributions from So. Bay Soccer Club, AYSO and So. Bay Peninsula Soccer League.	$ (90,000)			
Total Cost to City	$ 810,000			
Positive Cash Flow to City as a result of the field installation	$ 121,361			
Payback period (in years)	6.67			
Notes:				
1. Field rental rates would increase as follows:	Current	Proposed	Net Increase	
Resident (assuming 800 hours per year)	$ 18	$ 100	$ 65,600	
Non-Resident (assuming 100 hours per year)	$ 50	$ 150	$ 10,000	

Attachment B

Manhattan Village

October, 2006



PENNSTATE
Department of Crop and Soil Sciences

Evaluation of Playing Surface Characteristics of Various In-Filled Systems

Andrew S. McNitt, The Pennsylvania State University
Dianne Petrunak, The Pennsylvania State University

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Athlete Performance and Safety

Numerous studies have been conducted to evaluate the safety and playability of traditional (non-infill) synthetic turf surfaces. Three methodologies are used to compare the safety and performance of various surfaces. These include 1) material tests where mechanical devices simulate human movement and measure the associated forces; 2) human performance tests where researchers measure the forces associated with the interaction of a human subject and a surface; and 3) epidemiological studies in which the number and type of injuries sustained by athletes during actual sporting events are counted.

Material tests have been completed that measure the shoe-surface traction and surface hardness of synthetic turf surfaces (Bowers and Martin, 1975; McNitt and Petrunak, 2001; Valiant, 1990). Human subject tests have shown improved athlete performance on traditional synthetic turf when compared to natural turfgrass (Krahenbuhl, 1974; Morehouse and Morrison, 1975) and epidemiological studies have counted the number of

knee and ankle injuries on synthetic versus natural turfgrass (Meyers and Barnhill, 2004; Powell and Schootman, 1992; Powell and Schootman, 1993).

No large-scale epidemiological studies have been published comparing the number of surface-related injures sustained by athletes playing on infill synthetic turf systems to the number of injures sustained on either traditional synthetic turf or natural turfgrass surfaces. One study (Meyers and Barnhill, 2004) compared injury incidence of eight high school (American) football teams in Texas USA playing on infilled synthetic surfaces (FieldTurf) and natural turfgrass surfaces. Although similarities in injury occurrence existed between FieldTurf and natural grass fields over a five-year period of competitive play, there were significant differences in injury time loss, injury mechanism, anatomical location of injury, and type of tissue injured between playing surfaces. The researchers reported higher incidences of 0-day time loss injuries, noncontact injuries, surface/epidermal injuries, muscle-related trauma, and injuries during higher temperatures on FieldTurf compared to natural turfgrass surfaces. Higher incidences of 1- to 2-day time loss injuries, 22+ day time loss injuries, head and neural trauma, and ligament injuries were recorded on natural turfgrass fields compared to FieldTurf. The researchers state a number of limitations to their study including the random variation in injury typically observed in high-collision team sports and the percentage of influence from risk factors, other than simply surface type. Field conditions at the time of injury were not measured although the researchers noted that the majority of injuries (84.4%) occurred on natural turfgrass surfaces under conditions of no precipitation (dry surface).

The United States National Collegiate Athletic Association (NCAA) is collecting injury data from numerous men's and women's sporting events across the United States using a computerized system called " NCAA Injury Surveillance System" (National Collegiate Athletic Association, 2004) but presently does not have sufficient data from which to draw conclusions (R. Dick, 2004, personal communication).

Stefanyshyn et al. (2002) used human performance comparisons to evaluate 20 configurations of infill synthetic turf systems. Human subjects performed various maneuvers on the surfaces and the forces associated with the cleated foot interacting with the surface were recorded in the laboratory using a force plate installed beneath the turf surface. Stefanyshyn et al. (2002) reported a significant range of traction and surface hardness differences among the infill synthetic surfaces (Table 1) and grouped the 20 infill surfaces into categories of highly recommended, recommended, and not recommended based on surface hardness and both the rotational and translational (linear) traction recorded on these surfaces.

Shorten et al. (2003) performed material tests in which weighted shoes were dragged across varying infill synthetic turf systems and traditional synthetic turf. The translational and rotational traction of the various shoe-surface combinations were measured. The researchers concluded that both shoes and surfaces significantly affect traction. On all surfaces tested, shoes with lower profile cleats or studs had better overall traction performance compared to shoes with longer cleats and infill systems had better traction performance than traditional synthetic turf. Traction performance was calculated using an

index where rotational traction values were subtracted from translational traction values. To eliminate scaling and range differences between the translational and rotational resistance measures, calculations were done using "standard scores" rather than raw data. The standard score is a measure of where a particular result lies relative to the average and distribution of all the results recorded: ex. Standard Score = (Actual Score - Average Score) / (Standard Deviation of All Scores). The researchers stated that further research is required to determine the effects of moisture, temperature and aging on surface traction performance. Both the study by Stefanyshyn et al. (2002) and the study by Shorten et al. (2003) were performed on newly constructed infill systems in a laboratory setting.

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Attachment D

ATHLETIC TURF

New Penn State study debunks staph scare in synthetic turf

ATHLETIC TURF

Aug 29, 2006
Athletic Turf News

As high school and college athletes prepare for a new football season, sports trainers and coaches are concerned about outbreaks of an antibiotic-resistant staph bacterium that some people have associated with synthetic turf fields. But a study by researchers in Penn State's College of Agricultural Sciences should help put those concerns to rest.

Conducted by the university's Center for Turfgrass Science, the study found no trace of Staphylococcus aureus bacterium in any of the 20 infilled synthetic turf fields tested in various locations in Pennsylvania.

"These infilled systems are not a hospitable environment for microbial activity," says study author Andy McNitt, associate professor of soil science. "They tend to be dry and exposed to outdoor temperatures, which fluctuate rapidly. Plus, the infill media itself (ground-up tires) contains zinc and sulfur, both of which are known to inhibit microbial growth.

Considering the temperature range for growth of *S. aureus* is 7-48 degrees Celsius, we didn't expect to find this bacterium in fields exposed to sunlight, since the temperatures on these fields far exceed 48 degrees frequently." *Staphylococcus aureus* is a common bacterium that often lives harmlessly on the skin or in the nose. When introduced into the body through a cut or medical incision, it can cause anything from minor skin lesions to life-threatening bloodstream infections, pneumonia or organ damage.

A strain of the bacterium, MRSA (methicillin-resistant *staphylococcus aureus*), has developed resistance to the antibiotic -- synthetic penicillin -- typically used to treat it and is becoming a major concern for sports teams with synthetic turf fields. The strain has also become one of the most common causes of skin infections requiring emergency room treatment nationally.

"Currently, there are between 700 and 800 of these fields being installed annually in the country, and there's been quite a scare about turf and MRSA," McNitt says. "Some pro football players came down with it, and a Pennsylvania high school team has had 13 players sickened by it over the last two years. So this is an important finding."

McNitt says the center's study didn't differentiate between MRSA and the nonresistant strain because "they are the same bacterium. It's just that some of the bacteria have developed resistance to antibiotics."

"We didn't differentiate, as we didn't find any staph — resistant or otherwise — in the synthetic turf."

The Penn State study also found low overall microbial populations in the synthetic turf systems. "The microbe population of natural turfgrass far exceeds anything we've found in the infill systems," McNitt says.

"In fact, a number of the infill systems had zero living microbes in the sample at the time of testing."

Even though temperatures of indoor fields would not be expected to fluctuate nearly as much as outdoor fields, he says, the microbe population of the indoor fields tended to be lower than outdoor fields.

"That was unexpected," he says. "We really expected to see higher microbe populations indoors and purposely tested the fields during periods of high use and humidity. While we are unsure as to why the indoor fields had lower microbe counts, it could be due to the almost complete lack of moisture."

The researchers did find *S. aureus* on other surfaces (blocking pads, weight equipment, stretching tables and used towels), as well as on the hands of five randomly tested passersby. The bottom line, McNitt says, is that while everyone should be concerned about the spread of bacteria and the cleanliness of equipment and other surfaces that players contact, infilled synthetic turf systems do not appear to be a breeding ground for microbes generally.

"Some other studies indicate that a player playing on synthetic turf may acquire more skin abrasions due to the abrasiveness of the surface," McNitt says. "Thus, they have more entry points for the staph, but they're not getting it from the field -- they're picking it up in the locker room or somewhere else. One study shows that players who shave their ankles prior to taping up, for instance, also have a greater incidence of staph because the shaving creates little nicks for infection to enter."

McNitt will present a keynote address on the study at The International Horticulture Society Conference on Turfgrass Science and Management for Sport Fields in Beijing, China, in June 2007. A preliminary report can be found at http://cropsoil.psu.edu/mcnitt/microbial/index.cfm.