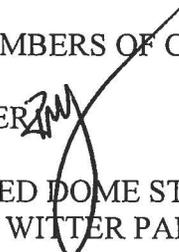


*City of Alexandria, Virginia*

MEMORANDUM

DATE: APRIL 17, 2012

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

FROM: RASHAD M. YOUNG, CITY MANAGER 

SUBJECT: BUDGET MEMO #40: AIR-SUPPORTED DOME STRUCTURES AND FIELD HOUSE-TYPE FACILITIES AT WITTER PARK AND JOSEPH HENSLEY PARK ATHLETIC FIELDS

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This memorandum responds to a request by Councilman Krupicka for information regarding rough cost analysis related to provision of an air-supported dome structure over rectangular athletic fields at Witter Park and Joseph Hensley Park.

This memorandum explores two types of structures: air-supported domes and field house facilities at designated sites. Each option provides unobstructed interior space without intermediate columns, could offer year-round use, and provides a clear interior ceiling height of approximately 60 feet. Dependent upon hours of operation, each option could provide a net seasonal increase in field time over a typical outdoor synthetic infill system turf field with aerial lights. In comparison to conventional building construction, each building envelope type has a lower initial cost and shorter construction time, however due to nature of construction method, may result in higher operating costs.

Air supported structures can be temporary structures, put up and taken down seasonally. Because of the labor, equipment and intensity of effort for erecting and removing the structures, these types of structures invariably become permanent after a couple of cycles, as the process of erecting and disassembling annually becomes operationally unsustainable. Once disassembled a suitable storage facility for a large quantity of materials is required and the fabric may become damaged during the processes as well. In contrast, a field house type structure would be considered a permanent structure because of the materials used to construct the facility. Additional details on each type of structure are included below.

Currently, there is no funding in the ten-year Capital Improvement Program for either of these types of structures or an indoor athletic field because they are not priority projects as a part of long-term facilities or field conversion plans. Should additional resources become available, conversion of natural grass fields to synthetic infill turf system fields, acquisition of additional open space, and provision of resources to enhance existing park facilities would likely continue as the identified priorities ahead of dome structures based on the current plan.

### **Witter Park Rectangular Fields**

The two Witter Park rectangular fields are each 240 x 350 feet including perimeter runoff (84,000 square feet each). The two fields have an interstitial team space of 85 x 240 feet between them. The fields are presently at 90 percent construction completion and the total project is at 70 percent construction completion. This location would require a retrofit if an air supported structure was added. These fields currently have aerial lighting and separate conditioned restroom facilities.

An air supported structure would be need to be comprised of coated PVC fabric held in place by a structural network of steel cables attached to a new concrete foundation at the perimeter of the site. These systems have redundant backups if failure should occur in order to maintain pressurization of the structure. Alarms may be integrated into the system to warn of leaks or failures.

Industry based hard/soft construction costs, including professional fees, supporting utilities, selective demolition, interior sports lighting and building service yields **a rough conservative opinion of probable costs per field at a minimum of \$4.62 million** or \$55 per square foot. These costs are for a single field at this site and do not include the space between fields. If two fields are considered, the costs generally increase proportionally. Given constraints of the site, it is unlikely that an air-supported structure could be erected without equipment and materials construction impacts to the newly constructed fields and other parts of the park. These remedy costs estimated to be an additional \$750,000 or more, are not included in the above estimate, and are dependent upon turf and foundation impacts on the newly placed fields.

Operating costs for site utilities, staffing/personnel and building maintenance are not included in the estimated costs. Site utility costs include continuous operation of blowers to maintain internal inflation pressure and a double-redundant emergency power supply. Air-supported domes typically have low insulation values resulting in significant year-round heating/cooling costs to maintain conditioned interior space. Industry estimates for utilities are about \$7,000 - 10,000 per month-dependent upon seasonal variations. Based on industry standards, the lifespan/replacement cycle of an air-supported dome is 15 to 20 years. At this site, at a minimum a Major Amendment to the existing Development Special Use Permit would be required, including (re)approval by Planning Commission and City Council.

### **Joseph Hensley Park Rectangular Field**

Site constraints dictate that upper rectangular field area at Joseph Hensley Park can accommodate a field of 200 x 330 feet including runoffs (66,000 square feet). The field is currently irrigated natural grass, has aerial field lights, and is fifth on the City's 2009 field conversion list. Instead of an air supported structure, a field house type building would be preferred at this site, which would include insulated hard wall exterior and interior long-span framing with interior sports lighting, large operable doors on building sides and an insulated hard roof. The structure and the field itself would be new construction at this site; therefore staff believes the field house option would be preferred for this location. The field house would be a permanent structure. The park currently has separate restroom facilities, which could be incorporated into a new site plan.

Industry based hard/soft construction costs, including professional fees, utilities, interior sports lighting and building service yields a **conservative opinion of probable costs of \$6.2 million** or \$94 per square foot. This cost does not include conversion costs to a synthetic infill turf system field, which would add at a minimum \$1.0 million to the project. Life-cycle operating costs for site utilities, staffing/personnel and building maintenance are not included in these costs. Site utility costs will include heating/cooling costs to provide conditioned space and site maintenance but would be variable dependent upon use of operable doors. Based on industry standards, the lifespan/replacement cycle of a field house type-building envelope may be as much as 35 years. At this site, at least a Development Special Use Permit would be required, including approval by Planning Commission and City Council.

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