

CITY OF BURNABY

CIVIC DEVELOPMENT COMMITTEE

*HIS WORSHIP, THE MAYOR
AND COUNCILLORS*

RE: BURNABY LAKE SPORTS COMPLEX-WEST FIELDS 4 AND 5

RECOMMENDATIONS:

1. **THAT** this report be received for information.
2. **THAT** a copy of this report be forwarded to the Parks, Recreation and Culture Commission for information.

REPORT

The Civic Development Committee, at its Open meeting held on 2001 April 26, received and adopted the *attached* report regarding the feasibility of developing synthetic turf fields in place of the natural grass originally proposed for Fields 4 and 5. The Committee advised that synthetic turf is feasible provided the site is pre-loaded for a sufficient period to induce the required primary settlement to consolidate the compressible soils and provided that the synthetic turf can accommodate a reasonable degree of differential settlement over the life of the turf.

Arising from discussion, the Committee requested that staff develop plans to proceed with the pre-loading of Fields 4 and 5.

Respectfully submitted,

: COPY - CITY MANAGER
- DIRECTOR ENGINEERING
- DIRECTOR FINANCE
- DIR. PLNG. & BLDG.
- DIR. PARKS, REC. & CULT. SERV
- CHIEF BUILDING INSPECTOR

Councillor D.R. Corrigan
Chairman

Councillor G. Begin
Member

Councillor D. Evans
Member

TO: CIVIC DEVELOPMENT COMMITTEE 2001 APRIL 05

FROM: MAJOR CIVIC BUILDING PROJECT
COORDINATION COMMITTEE

SUBJECT: BURNABY LAKE SPORTS COMPLEX - WEST
FIELDS 4 AND 5

PURPOSE: To provide a summary of the geotechnical investigation and limitations of development.

RECOMMENDATION:

- 1) **THAT** this report be received for information purposes.

R E P O R T

1.0 BACKGROUND:

The original concept plan approved for the development of the Burnaby Lake Sports Complex - West included three (3) synthetic turf and two (2) natural grass fields.

Following the completion of the three (3) synthetic turf fields in 1999 December, the Parks & Recreation Department requested an investigation to determine the feasibility of developing synthetic turf fields in place of the natural grass originally proposed for the additional two fields. Given that the area of Fields 4 and 5 had not been prepared for synthetic turf, Golder and Associates were retained to undertake a detailed geotechnical investigation and provide a report on the existing soils, site preparation and an analysis of the potential settlement.

2.0 GEOTECHNICAL ANALYSIS SUMMARY:

The geotechnical investigation involved completing auger holes and placing monitoring instruments throughout the site. The sub-surface investigation identified a wide variance in the depth of organic and compressible soils. Compressible soils are organic in nature, such as top soil, peat and soft silty / clay soils that usually have a high water content and consequently do not provide firm bearing. Prior to any construction, these soils are either removed or subject to pre-loading to improve their bearing capacity.

Golder and Associates Associates have summarized their findings in a 2001 January 11 memo "Summary of Settlement Analysis". This summary does not include any data collected by instrumentation due to the short length of time since placing the devices. Data will be collected at regular intervals and summarized in a future report. Copies of the full geotechnical report are available for viewing, should the Committee members wish additional information.

In general, the findings conclude that the development of synthetic turf fields is feasible, providing ground improvements are undertaken. The removal of all organic and compressible soils is not considered feasible, however, pre-loading of the site for a period of approximately two years is an economical method to prepare the site for construction. Pre-loading will not eliminate all future settlement but it will significantly reduce the total settlement. On sites where soft and compressible soils are present, there are two types of settlement which occur when pre-loading and construction are undertaken. They are primary and secondary settlement. The primary settlement is that which is induced by placing a designed load on the existing ground for a period of time to consolidate the soil. The secondary settlement is that which occurs regardless of the load induced and is attributed to the natural breakdown of organic matter over time and its own weight. Within the summary of settlement analysis, the colour plot of compressible soils graphically shows that the depth of these soils varies from 1.0 m (3.3 ft.) to 5.0 m (16.4 ft.) in depth and location.

At the Burnaby Lake South Complex - West, the secondary settlement or consolidation is estimated to be approximately 30 mm (1.2 inches) over a period of 25 years. Due to varying soil conditions, it is expected that the southern portion of the proposed fields will see little settlement, where the northern and western portion will likely experience pockets of differential settlement up to 30 mm. Ongoing monitoring of the sub-surface instruments prior to and during pre-loading will be required to confirm the anticipated primary settlement and estimated secondary settlement. Given that the current synthetic turf has a life expectancy of approximately ten years, any settlement within the playfield area could be corrected prior to the placement of a new synthetic turf. However, if the fields experience significant pockets of differential settlement, the interim condition might not be acceptable and may require remedial work prior to the replacement of the turf surface.

3.0 CONCLUSION:

The proposed development of synthetic turf fields in place of natural grass for Fields 4 and 5 appears feasible, providing the site is pre-loaded for a sufficient period to induce the required primary settlement to consolidate the compressible soils and provided that the synthetic turf can accommodate a reasonable degree of differential settlement over the life of the turf.

Staff are not in a position to provide comment on the relative priority of providing additional synthetic turf fields on Fields 4 and 5. However, should it be determined that the City wishes to proceed in this direction, staff recommend that the required filling and preloading be undertaken in conjunction with an on-going monitoring program prior to committing to the use of synthetic turf. Should the monitoring data indicate that future settlement will be a problem, the filling and preloading will still provide a benefit in the development of natural grass / sand based fields.



W. C. SINCLAIR, CHAIR, MAJOR CIVIC BUILDING
PROJECT COORDINATION COMMITTEE



D.G. STENSON, DIRECTOR PLANNING
AND BUILDING



K. FRIARS, DIRECTOR PARKS, RECREATION AND
CULTURE SERVICES

JC/RP:ap

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- cc: City Manager
- Deputy City Manager - Corporate Labour Relations
- Deputy City Manager - Corporate Services
- Director Finance
- Chief Building Inspector