

3. Re: Swangard Stadium Turf  
(Item 15, Report 75, October 9, 1973)  
(Item 23, Report 83, November 5, 1973)  
(Original Communications, Item (j), November 5, 1973)

ITEM 3

MANAGER'S REPORT NO. 92

COUNCIL MEETING Dec. 10/73

Council, at its meeting of October 9, 1973, received Item 15, Manager's Report No. 75 and, with other recommendations, adopted the following with respect to Swangard Stadium:

"THAT the Central Park Committee be asked by the Commission to consider the request made at the Committee's April 17, 1973 meeting that it bear one-half the cost of the \$10,000 extra expenditure for the correction of the drainage deficiency in the field."

Council, at its meeting of October 22, 1973, requested staff to provide a report explaining the reason for recent drainage problems at the Swangard Stadium playing field.

A letter dated October 26, 1973 from the B.C. Juvenile Soccer Association asking Council to correct drainage problems at Swangard Stadium was received by Council at its meeting of November 5, 1973. Item 23, Manager's Report No. 83, was also received by Council on November 5, 1973 and approved the Manager's recommendation that the letter from the B.C. Juvenile Soccer Association be referred to the Parks and Recreation Commission for study and comment.

The Parks and Recreation Commission, at its meeting of November 7, 1973, received Item 11, Parks and Recreation Administrator's Report No. 18, November 7, 1973 (copy attached) together with the attached copy of a report dated November 3, 1973 from Dr. L. Goss, Consulting Agronomist. The Commission referred the two reports to the Central Park Committee with the advice that the Municipality of Burnaby would pay the cost of an independent consultant to examine and advise on the Stadium problem.

Council will note from the Parks and Recreation Administrator's Report No. 18, November 7, 1973 that the consulting firm "Ron Davies and Associates" was engaged to design and supervise execution of reconstruction of the Stadium field in preparation for the Canada Summer Games. Dr. Goss was brought in by the Burnaby Parks and Recreation Department during the time of examination of alternatives to complete reconstruction of the field. The program of renovation which Mr. Davies prepared was based on the advice he had obtained from Dr. Goss.

The Parks and Recreation Commission, at its meeting of December 5, 1973, received Item 6, Administrator's Report No. 20, December 5, 1973, (copy attached). From the Report, Council will note that terms of reference have been prepared for a consultant to examine the problem at Swangard Stadium, and that the Burnaby Parks and Recreation Department and the Vancouver Board of Parks and Public Recreation have jointly determined that the study be undertaken by Ripley, Klohn & Leonoff International Ltd., Soil Engineers; and Mr. T.M. Lord, Consulting Agronomist. At the meeting of December 5, 1973, the Commission concurred with staff action taken to date.

For additional information purposes, attached is a copy of a letter dated November 26, 1973 from the Central Park Committee to Mr. B. Ramsell, President, Canada Summer Games Society, which advises regarding the matter of retaining "a consortium of independent consultants", and quotes a resolution of the Committee which expresses the Committee's opinion that the Committee and the Canada Summer Games Society both have a responsibility to rectify the situation at Swangard Stadium.

Council is advised that the report of the consultants will be available by December 31, 1973, following which it will be possible for staff to respond to Council's request of October 22, 1973 for a report explaining the reason for drainage problems at Swangard Stadium playing field.

As regards Council's request of October 9, 1973, referenced above, that the Central Park Committee consider that it bear one-half the cost of the \$10,000 extra expenditure for the correction of the drainage deficiency in the field, the Parks and Recreation Administrator advises that the matter has been tabled by the Central Park Committee until such time as the report of the consultants, Ripley, Klohn & Leonoff International Ltd., and Mr. T.M. Lord, is received.

This is for the information of Council.

Re: Swangard Stadium Turf

Recent very wet field conditions have precipitated considerable criticism of the result of Swangard Stadium field renovation. This work carried out under the auspices of the Canada Summer Games Society, involved the removal of the field crown.

The consulting firm, "Ron Davies and Associates", was engaged to design and supervise execution of the project. Much discussion took place between the consultant, the Summer Games Officials, The Burnaby Parks and Recreation Commission, the Vancouver Board, the staffs of Burnaby and Vancouver, and the Central Park Committee, regarding the wisdom of "levelling" the field.

The Commission will recall that the consultant first recommended complete reconstruction of the playing field to ensure adequate drainage. He substantiated his recommendation with a preliminary opinion from Robert F. Binne, Ltd., soil consultants. Because of the cost of such a project, alternatives were examined. The opinion of a consulting agronomist, Dr. R. Goss, was obtained. Dr. Goss advised that the removal of the crown of the existing field was practical. He indicated that the field should accommodate about three inches of rainfall in twenty-four hours. He recommended the incorporation of sand into the on-site soil, and the use of a "sand grown" turf.

On the basis of this information, Mr. Davies recommended that the crown of the field be removed, and advised that the field drainage would be no worse than it was originally, and probably would be better.

Renovation work proceeded, in accordance with specifications prepared by Mr. Davies; based on the soil treatment recommended by Dr. Goss.

During renovation, it became apparent that the soil beneath the field was not uniform throughout the area. A large area at the westerly side of the field was found to be composed of a heavy clay type soil which did not facilitate percolation of water. Clay soil and drainage tile was removed from approximately one third of the field area, and this area was completely reconstructed with a suitable sand, soil, sawdust mixture. This was done on the recommendation of Mr. Davies at an extra cost of \$10,000.

As the project neared completion a depression appeared in the vicinity of the southerly goal area. Turf was removed and the depression was filled by the contractor. Settlement continued to take place at various locations through the central section of the field. In one location, settlement of over six inches occurred; although the soil was "worked" to a depth of only eight inches. Finally, the Burnaby Parks and Recreation Department, at the request of the consultant; filled, and over seeded the more conspicuous depressions; and lowered one high area beyond the boundary of the contract.

Irrigation water was observed to stand in puddles near the north and south goal areas. Burnaby crews, at the consultant's request, installed some supplementary drainage to help facilitate removal of water from these areas. At this time it was observed that water was not penetrating the subsoil to reach the drainage system.

The month of July, 1973, was devoted to cultural maintenance of the field to promote growth of turf for the Summer Games held in August.

Beginning in June, and extending to the present time; a series of elevations were taken for the Burnaby Parks and Recreation Department by the Engineering Department. These elevations have shown minor variations throughout the field, which is generally within a tolerance of one inch from the mean elevation of 91.00 feet. Depressed areas average 2 1/4 inches below the mean elevation. The extreme low point is three inches below the mean. The extreme high point is 91.25 feet or three inches above the 91.00 foot mean elevation. Settlement which appeared to be taking place during the summer now seems to have stopped.

ITEM 3  
MANAGER'S REPORT NO. 92  
COUNCIL MEETING Dec. 10/73

The following is a summary of recent observations:

- October 11 Football game played after 1.07 inches of rain in two consecutive days.
- October 13 & 14 Eight football games played after four consecutive days of rain, totalling 2.94 inches. Field very wet, resulted in complaints.
- October 20 Soccer games played after four consecutive days of rain totalling .79 inches. Field very wet, resulted in complaints.
- October 21 Football games played after five consecutive days of rain totalling 1.33 inches. Field very wet.

During the month of October, frequent observations of field conditions have been made; and show the following:

1. The bulk of the field, at or above elevation 91.00 feet drains reasonably well.
2. The area of the field which was completely reconstructed, drains well, and has shown no evidence of standing water.
3. Significant amounts of rain produce large puddles of standing water in the depressed areas of the field. This standing water drains away in 12 to 24 hours.
4. Observations of standing water suggests that the field is percolating about 1/2 inch of water in 24 hours. This is insufficient to ensure reasonable playing conditions at all times.

The variations in field elevation would not, in themselves, create a problem if the drainage were functioning properly. The field is somewhat depressed in the centre, and this concentrates rain water in depressions; thus imposing an added load on the percolation capacity of the soil. Water percolates into the upper layer composed of mixed sand and soil, then flows much more slowly through the residual soil to the drainage system.

When the field was crowned, the limited effectiveness of drainage was minimized by heavy surface run-off during periods of excessive rainfall. Field drainage must now cope with all rainwater, and subsoil conditions do not allow sufficiently rapid percolation.

In my opinion, it is not necessary to reconstruct the field. I believe that installation of a secondary drainage system between goal lines through the central portion of the field would solve the problem. Drains should be spaced at ten foot intervals, trenches filled with pea gravel, and topped with sand. Such a system, properly installed, would release the water now "perched" in the upper eight inches of sandy soil. We have used this technique with excellent results on the four field hockey pitches in the Burnaby Lake Sports Complex, which suffered a very similar drainage problem.

A preliminary estimate of the cost of this work suggests that an expenditure of about \$7,000. would be required.

Your Administrator has arranged for Dr. Roy Goss, Consulting Agronomist, to examine the field on November 3, and advise on corrective action. Meanwhile, it is recommended that the Commission receive this report for information.

ITEM 3

MANAGER'S REPORT NO. 92

COUNCIL MEETING Dec. 10/73

PARKS *BKW*  
AND RECREATION  REFER  FILE

NOV 07 1973

RECOMMENDATIONS FOR REPAIR AND  
MAINTENANCE OF SWANGARD STADIUM

by Dr. Roy L. Goss  
November 3, 1973

To	Initial	Date
<i>R.L.G.</i>		

The Swangard Athletic Field was examined on November 3 by the writer and Mr. Bailey and Mr. Wilkinson. In general, the field is in fairly good condition with the exception of certain areas that are not responding properly to drainage, particularly in the heavier play concentration areas. Core samples taken throughout the field indicate considerable variability in the soil texture and depth, but for the most part, all soils appeared to be very permeable if properly maintained through aerification and vigorous grass growth.

TILE DRAINAGE

We discussed the possibility of laying a mainline tile down the center of the field and running herringbone laterals from this mainline every 10 to 15 feet. This should certainly improve the entire drainage situation and help make this a very dry field. The tile lines should be installed in trenches 12 to 14 inches wide to a depth of 16 inches deep with highly permeable material replaced to the very surface. You may use pea gravel over the tile lines, but in this case, you should allow for filling the top with 6 to 8 inches of good sand or sand-organic mixture.

SUNKEN AREAS

Some areas within the field have settled for obscure reasons, but should be repaired. In probing these areas, it was found that the depth of surface material was shallow and that restrictive layers were found at a depth of 6 to 8 inches. The soil should be removed from these areas to a depth of 12 or 14 inches and replaced with good quality sand to insure good permeability and root growth. While repairing these areas, the soil could be brought back to the original grade to eliminate these areas. If necessary, while the soil is removed, install additional drain tile in the heavy play areas.

All repaired areas should be resodded not later than the 15th of May to allow time for adequate healing before late summer or fall use. I highly recommend that the sod be obtained from sandy sites and then vigorously aerified throughout the summer, and then aerified and spiked during the fall play season. This will help to keep the surface open and keep water moving rapidly downward and not accumulate in the surface. Once surface water accumulates, the surface becomes extremely fluid and the grass is literally trampled into the upper surface whether it be sand or soil. I think it would be wise to top-dress the resodded areas once or twice with liberal applications of sand to help keep the aerifier holes open and encourage continuity of water flow downward.

The field should be fertilized according to schedules we have previously described for high-use playfields. You should try to apply up to 8 pounds of available nitrogen per 1,000 sq. ft. per season from a good 3-1-2 ratio fertilizer in order to maintain good turf density and excellent quality.

Many firm and dry areas were found within the field which indicates that most of it is draining and will stand up to heavier schedules of play if a good maintenance program is carried out.

ITEM No. 6  
ADMINISTRATOR'S REPORT No. 20  
COMMISSION MEETING Dec. 5, 1973

ITEM 3  
MANAGER'S REPORT NO. 92  
COUNCIL MEETING Dec. 10/73

Re: Swangard Stadium

At the Meeting of November 7, 1973 your Administrator reported advising the Commission of the nature of the Swangard Stadium drainage problem. No firm recommendation was made at that time as the report on the inspection by Dr. Roy Goss had not been received. Dr. Goss's report arrived and was distributed at the Commission Meeting. It recommended work which your Administrator estimated should cost approximately \$5,000. in addition to the \$7,000 estimated in the Administrator's Report #11.

At that time an oral recommendation was made that a "second opinion" be obtained from a knowledgeable Consultant.

The Commission concurred with this recommendation and agreed to bear the cost of the recommended Consultant.

At the Central Park Committee meeting of November 22, the Committee accepted Burnaby's offer to engage a Consultant to examine the problem.

Your staff, working in cooperation with the staff of the Vancouver Board of Parks and Public Recreation, have prepared the terms of reference for the study; and have determined that the study be undertaken by Ripley, Klohn & Leonoff International Ltd., Soil Engineers; and Mr. T. M. Lord, Consulting Agronomist.

We anticipate that the study will cost \$3,000 to \$4,000.

Attached for your reference you will find Administrator's Report #11 of November 7th, describing the drainage condition presently prevailing at Swangard Stadium; the report from Dr. Roy Goss, dated November 3, 1973; terms of reference for the Consultants who are to examine and report on the problem; letter dated November 27, 1973 from the Parks and Recreation Administrator to the Purchasing Agent adding to the Consultants' terms of reference.

RECOMMENDATION:

That the Commission concur with the action taken to date.

ITEM 3

MANAGER'S REPORT NO. 92

COUNCIL MEETING Dec. 10/73

**BURNABY PARKS AND RECREATION COMMISSION**

**SWANGARD STADIUM DRAINAGE PROBLEM**

**Re: Consultant's Terms of Reference**

**Two Soils' consultants (an engineer and an agronomist) are to examine the soil drainage condition of the Swangard Stadium Sports Field.**

**The consultants must review the total background and history of the field, its construction and renovation. The consultants may make as many test holes as needed; however, all test holes must be dug carefully so as to minimize the amount of damage to the existing turf.**

**The consultants are to prepare a joint technical report on the drainage condition advising the Burnaby Parks and Recreation Administrator on the following:**

- (a) the nature and cause or causes of the drainage problem**
- (b) recommendations as to the procedures to correct the drainage problem**

**Report to be completed by December 31, 1973. A key to the stadium grounds will be provided.**

ITEM 3

MANAGER'S REPORT NO. 92

COUNCIL MEETING Dec. 10/73

PURCHASING AGENT

PURCHASING

NOV. 27, 1973

ADMINISTRATOR

PARKS AND RECREATION

SWANGARD STADIUM DRAINAGE

Further to my Purchase Requisition, dated November 26, 1973, and attachments, I wish to add to the terms of reference the further requirement that the Consultants are to provide an estimate of the cost of the corrective work which they recommend.

The Consultants should be contacted and asked to respond immediately, in writing, indicating their acceptance of the terms of reference or their recommendation for additions, deletions, or alterations to the terms of reference which I have prepared.

BRW:nh

B. R. WILKINSON

cc: Secretary, Central Park Committee  
Municipal Manager





THE BURNABY PARKS  
AND RECREATION  
COMMISSION

# Central Park Committee

TELEPHONE 681-1141

2099 BEACH AVENUE  
VANCOUVER 101, B.C.

COMMISSION AGENDA  
DECEMBER 5, 1973  
CORRESPONDENCE

ITEM 3  
MANAGER'S REPORT NO. 92  
COUNCIL MEETING Dec. 10/73

THE VANCOUVER BOARD  
OF PARKS AND PUBLIC  
RECREATION

November 26, 1973

RECEIVED IN  
PKS

C57-49  
A13-11

Mr. B. Ramsell, President,  
Canada Summer Games Society,  
c/o Dairyland,  
Box 9100,  
Vancouver 3, B.C.

Dear Mr. Ramsell:

Re: Swangard Stadium - Field Repairs

At the last meeting of the Central Park Committee, staff reports describing the condition of the playing field at Swangard Stadium were considered. The Committee endorsed a recommendation of the Burnaby Parks and Recreation Commission to hire a consortium of independent consultants to examine drainage problems, to identify the nature of the problems and to recommend corrective action.

As it is apparent that any recommendation by the consultants will ultimately cost the Central Park Committee money to put the field back into a suitable condition, the following resolution was passed:

....."That a letter be sent to the Canada Summer Games Society advising them of the field condition brought about by the removal of the crown and pointing out that they have a responsibility, along with this Committee, to rectify the situation, and expressing the hope that if the Canada Summer Games Society has any monies, they will be used to help correct the problem.

- Carried.".....

Would you please bring this matter to the attention of your Society.

Yours sincerely,

*C.A. Man*  
C.A. Man,  
Secretary.

c.c. Honourable M. Lalonde, Minister, Federal Department of National Health & Welf.  
Honourable J. Padford, Minister, Provincial Department of Recreation & Cons.  
New Westminster Parks and Recreation Commission  
Burnaby Parks and Recreation Commission