

Re: DISCUSSION OF AIR-SUPPORTED STRUCTURES WITHIN THE
CONTEXT OF THE NORTH-EAST BURNABY LIBRARY/RECREATION SITE
LOUGHEED TOWN CENTRE - COMMUNITY PLAN AREA "G"

The following is a report of the Planning Director dated April 19, 1977 regarding the above.

Since this subject is of major concern to the Parks and Recreation Commission it would be appropriate to refer this report to the Commission for its consideration and comment prior to any action being taken by the Municipal Council. On the other hand, this is clearly a question that the Municipal Council is going to have to make a final decision on, and it will affect our Capital Budget. Because of the budgetary impact, a decision should be made very quickly so that any changes can be made to the Capital Budget (if indeed, there are going to be any made) prior to the adoption of the Capital Budget, a by-law for which this year must be finally adopted by May 9.

RECOMMENDATION:

1. THAT the Parks and Recreation Commission be asked for comment on this report item by April 28; and
2. THAT a copy of this report item be forwarded to the Parks and Recreation Commission and the Library Board.

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TO: MUNICIPAL MANAGER APRIL 19, 1977
FROM: DIRECTOR OF PLANNING
SUBJECT: DISCUSSION OF AIR-SUPPORTED STRUCTURES
WITHIN THE CONTEXT OF THE
NORTH-EAST BURNABY LIBRARY/RECREATION SITE
LOUGHEED TOWN CENTRE - COMMUNITY PLAN AREA "G"

1.0 BACKGROUND

The subject of air-supported structures was discussed briefly by Council on May 31, 1976 when Mr. Victor Lipp, President of the Burnaby Tennis Club presented a brief on a cover for and management of six tennis courts in the Burnaby Lake Sports Complex. The subject matter was also under consideration by the Parks and Recreation Commission at that time. The Planning Department has had a number of discussions with the Parks and Recreation Department on the subject of air-supported structures since the spring of 1976 within the context of the Burnaby Lake Sports Complex and the North-East Burnaby Library/Recreation Site. A number of concerns and objections have been raised by the Planning Department to the use of such structures for a number of reasons.

The Parks and Recreation Administrator submitted a report to Council on April 4, 1977 which included a recommendation to approve the construction of an air-supported gymnasium in conjunction with the establishment of the North-East Burnaby Community Centre on Cameron Street. The Planning Department had requested an opportunity to give additional consideration to such structures with the understanding that this further assessment would be based on information obtained from a tour of existing facilities in the other municipalities that are referred to in the Administrator's report, overall environmental and municipal development control criteria, and other appropriately related research that would be done on the matter.

On April 14, 1977 a tour of existing air-supported structures in Oak Bay and in Nanaimo (Malaspina College) was undertaken by a municipal group composed of 5 members of the Parks and Recreation Commission including the 2 Aldermen on the Commission, the Municipal Manager, and representatives of the Parks and Recreation and Planning Departments. An existing air-supported structure at the Airport Inn, Richmond was also visited on another occasion by the Planning Department. 142

2.0 AIR-SUPPORTED STRUCTURES

2.1 Historical Use of Air-Supported Structures

It is only since 1946 that air-supported structures have become practical. Through a research contract, the Cornell Aeronautical Laboratory initially developed them as spherical radomes for the U.S. Armed Forces. Their architectural use has remained limited and experimental in nature. Notable structures have included Pan-Am Building, Brussels Exhibition (1958), "Atoms for Peace" travelling exhibition (1960), New York World Fair restaurant (1963), Krupp Pavilion, Hanover Fair (1966), and various projects for Osaka Expo 70 such as the U.S. Pavilion.

On a commercial basis, it would appear that the low cost of these structures have been their most attractive feature. Over the years, they have been utilized as construction shelters, portable buildings, small sports facilities particularly to cover swimming pools and tennis courts on a seasonal basis, and temporary industrial warehouses. Recently a few larger assembly type structures have been constructed.

In the southern British Columbia area, air-supported structures are most commonly used for back-yard swimming pools and on a larger scale, for a few tennis court enclosures. West Vancouver and Richmond have air-supported structures over tennis courts which are utilized on a seasonal basis. The Airport Inn has a structure covering 3 tennis courts. The largest and most complex air-supported structures to date would appear to be the ones in Oak Bay and Nanaimo (Malaspina College) which were visited on April 14, 1977.

In summary, the historical development of air-supported structures could be evaluated in two paradoxical ways - a) that the state of the art which has been substantially developed only since 1946 is still in flux and b) that even though it has been developing for over 30 years, air-supported structures have not yet been embraced on a broad permanent basis by architects and North American urban society.

2.2 Type of Air-Supported Structure Under Consideration

In general air-supported structures are subdivided into two categories:

- a) The single membrane unit is the basic type of air-supported structure and is the one most commonly seen today. The membrane or skin, serving as the enclosure, is made from a durable, high strength fabric or film, or any other flexible material having uniform structural properties.
- b) The reinforced membrane structure is appropriate for larger enclosures over 120 feet in width. Its main design feature is that loads in the fabric are reduced by having cable reinforcements carry the major share of structural stress. These reinforcing cables also serve to reshape and stabilize the envelope.

There are a wide variety of related types of structures including air-inflated structures, air cushion structures, frame stabilized air structures, and tent-type structures; but these further types will not be discussed within the context of this report.

The essential components of large air-supported structures are:

- a) Membrane Enclosure - a structural fabric coated on both sides with resin. Fabric technology is changing from year to year as manufacturers experiment in creating more durable and longer lasting membranes. Reinforcing cables may also be introduced.
- b) Inflation Machinery - essentially a properly sized fan device fully automated on a 24 hour basis and keyed to the desired interior air pressure. In larger structures a back-up system would also be required including an emergency power source and standby blowers.
- c) Anchoring Devices - an essentially air-tight seal is required at the grade line. Appropriate structural foundations are required to withstand building stresses.
- d) Entry Facilities - these may be conventional doors which minimize air leakage, air-lock doors, or revolving doors.
- e) Mechanical Support Systems - lighting is usually provided. A heating system can also be integrated into the inflation machinery.

3.0 EXISTING AIR-SUPPORTED STRUCTURES

Air-supported structures are found in a number of British Columbia communities. Other than small private swimming pool enclosures which would be classed as accessory buildings, the main air-supported examples are tennis court enclosures. All of the tennis court structures are virtually off-the-shelf packages which are essentially temporary, in that they can be readily deflated permitting open air tennis use. The municipal permit for the West Vancouver Tennis Club structure which is located on leased municipal land stipulates that the air-supported structure can only remain inflated from October 1 to March 31, a maximum 6 month period. A tennis structure in Minoru Park, Richmond has also been taken down for the summer. A tennis structure covering three courts at the Airport Inn was also visited. It is a simple stock removable air-supported structure (non-ribbed) located behind the hotel tower and a restaurant pavilion. In comparison with more complex ribbed structures, a greater amount of echoing was discernible. The exit facilities and hardware are not designed to accommodate assembly uses.

The air-supported structures at Oak Bay and at Malaspina College near Nanaimo are described in greater detail in the following Sections 3.1 and 3.2.

3.1 Oak Bay Air-Supported Tennis Structure

The Oak Bay recreation centre is a major multi-use facility. The centre is a well-designed permanent structure which opened in October of 1975 and accommodates a curling rink (roller skating during the summer), swimming pool, a skating rink, and a social lounge. The air-supported tennis bubble is a freestanding structure which is located at the back of the recreation centre. It provides a cover for 4 tennis courts, covers an area of approximately 23,953 sq. ft., and is limited to a maximum occupancy of 200 people.

It is 40 feet high, 201 feet long, and 120 feet wide. It has a double opaque vinyl coated dacron membrane with insulating properties and has steel cable reinforcing, giving the structure a ribbed appearance. The inner thermal liner has a wrinkled appearance which together with the ribbing assists in reducing echoing effects. The Recreation Director felt that the heating and maintenance costs were comparable to a permanent structure. Indirect high intensity lighting has been provided. It is difficult to estimate the life expectancy of the fabric itself although a figure of up to 16 years was mentioned. A special all-weather porous concrete floor has been provided which permits the use of the tennis courts when the structure is not up. The opinion was expressed that a permanent structure would cost $2\frac{1}{2}$ to 3 times that of an air-supported structure. The fee for the use of tennis courts is \$5.00 per court per hour. The School Board uses the facility for 4 hours a day. The Recreation Director is pleased with its operation based on the first 5 months of use and a profit is expected on its operation.

The primary reason given for going to an air-supported structure was due to the lower cost which was noted as approximately \$220,000. Mayor Smith of Oak Bay stated that sufficient capital was not available for a permanent structure but that in time he wanted to have a permanent structure constructed.

The opinion of the Planning Department is that the air-supported structure at Oak Bay is not sympathetic to its surroundings and is clearly a temporary appearing building. It is noted that the interior has a spacious tent-like feeling and the structure is able to cover a large area at low cost. It is poorly sited in that its relationship to the main centre is not well considered, although it is placed in back of the main centre which essentially shields it from view from the street; and there is no discernable landscaping. The air-supported structure suffers in comparison with the main permanent recreation centre which is crisply and economically detailed and would be a credit to any municipality.

3.2 Malaspina College Air-Supported Gymnasium

The Malaspina College complex is located just outside of Nanaimo and is newly constructed. It occupies an open setting on the slope of a hill. The main complex can be described as simple wood sheathed rectilinear forms with strip fenestration and bright awnings arranged in a tight village grouping.

The air-supported gymnasium is located a distance down the hill from the main complex, dug into the hill somewhat and appears relatively isolated although it is adjacent to temporary wartime-type buildings utilized by the vocational section of the college. The gymnasium is considered the only air-supported structure in Canada designed as a permanent assembly facility. It is a custom designed facility. It covers an area of approximately 25,000 sq. ft. It is 125 feet wide, 200 feet long, and 40 feet high. It is a multi-purpose gymnasium accommodating a variety of court games and a jogging track on its periphery. It has a single translucent membrane with steel cables giving a ribbed appearance and rigid anchored end wall frames permitting greater vertical height at the ends of the structure. The synthetic bonded membrane is combustible under direct flaming but will not burn on its own once the flame source is removed. The membrane is only guaranteed for 4 years but statements as to the life expectancy ranged from

10 to 15 years. The change rooms and showers are provided in a 40' x 80' mezzanine structure within the overall enclosure to eliminate the need for air locks. The main entries to the enclosure are provided by two revolving doors. The air-handling blowers are directed from the floor. A synthetic indoor all-purpose tartan floor is to be provided. Indirect lighting standards are provided. It was acknowledged that the single membrane structure may be more costly to heat. On the other hand, lighting during the day may not be required due to the translucent nature of the membrane. It is estimated that the operating costs will be comparable to a conventional permanent building.

The general impression of the Malaspina air-supported structure is negative, due in large part to the observable deficiencies of the delivered membrane. The membrane of coated polyester which was made to order was delivered in a discoloured state ranging from a white to a light orange-yellow colour. It was delivered with a multiplicity of small patched pin-prick holes. There are also a few larger patches, a few caused by vandalism - the membrane can be cut easily. The patches appear objectionable since they are opaque against the general translucent background. The membrane was also delivered without the requested high green border around the base of the enclosure. The revolving doors in particular did not appear to be particularly durable for a public assembly building. However, it is noted that construction of the structure is not yet complete and much of the disorder may not be apparent in the finished product when all construction damage is repaired.

The total cost is approximately \$640,000. A comparable permanent building was estimated at \$1.2 million one or two years ago. Originally a permanent building was proposed and preliminary designs prepared but due to the cost, the air-supported structure substitute was considered. It was noted that the procedures to obtain building permit approval from the approving agency were complicated and prolonged.

The hanger-like design of the air-supported structure is not compatible with the architecture of the main Malaspina College buildings but its location some distance away from the main buildings and down the slope of the hill may be of benefit. In its present state it is exposed but comprehensive landscape provisions may assist in screening the structure from view.

4.0 DISCUSSION OF AIR-SUPPORTED STRUCTURES

4.1 Structural Aspects

The typical air-supported structure is expected to withstand substantial wind loads although failures have been known. Snow is usually melted on the membrane by internal heat or may slide off of its steeper slopes. A double insulating membrane solution such as that in Oak Bay requires a special heater to heat the air between the two membranes into order to melt exterior snow. An air-supported structure has been noted as failing under the concentrated load of a sudden very heavy fall of wet snow. It is also noted that on a very bright day a standard air-supported structure will experience some "thermal lift" as the contained air is heated by the sun. Thermal lift is also a function of internal inflation pressures.

Pre-engineered and factory built air-supported structures are available in Canada. However, currently, no air-supported structures of a large scale are being manufactured in Canada. The range of quality and performance of the available, essentially temporary, structures is quite wide.

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4.2 Costs

The chief reason given for the use of air-supported structures is to span large spaces at a low cost. It is acknowledged that a stock air-supported structure can be inexpensive, say \$3.50 to \$5.50 per sq. ft. for a basic skeleton model, which is exclusive of major labour and installation, anchoring, foundation, site drainage, floor, lighting, services, etc. costs. However, it would not be correct to state flatly that air-supported structures are by nature inexpensive. Cost is a function of quality. The Malaspina membrane is custom made and cost in the order of \$70,000 for only the fabric. However, it did suffer from poor quality control. A higher quality membrane would be costlier. The revolving doors at Malaspina which have been damaged by vandalism, cost in the range of \$2,500 each while a top quality revolving door can cost in the range of \$15,000 each.

However, it is acknowledged that the quality question is applicable as well to permanent structures. A poorly designed inexpensive permanent structure is as objectionable as any other type of poorly designed structure.

The costs of air-supported structures can vary widely and in their most sophisticated permanent manifestations can approach the cost of quality permanent "hard" buildings. In the line of approach of the Malaspina example, it would be expected that the cost of a permanent air-supported structure would be less than that of a permanent hard structure, but well above that of a stock temporary "tennis bubble".

4.3 Maintenance

The maintenance costs of air-supported structures would appear to be variable and dependent on a number of conditions including the type of membrane, the degree of air leakage, the type of heating and/or cooling equipment, lighting, and its geographical location. For example, the heating costs will probably be lower for the Oak Bay example which has a double membrane as compared to the Malaspina example with its single membrane. On the other hand, the lighting costs of the Malaspina example may be less due to its translucent single membrane. Oak Bay generally has a milder climate than, say, the Lougheed Town Centre area, and this temperature differential would probably affect maintenance costs.

One study of operating data compiled in the summer of 1975 indicated that the total maintenance, heating, lighting, and blower operation costs of 15 United States' tennis/recreational type installations averaged \$0.85 per sq.ft./year for a 6-7 month season. It was noted that the use of membrane liners could reduce the heating costs to a point where it would be close to or equal to the cost of heating a conventional building. Dehumidification may also be required in colder climates.

There does not appear to be any broadly based hard evidence on the subject of maintenance costs. Our general evaluation of available information to date indicates that the costs of maintaining an air-supported structure will be either equal to or perhaps somewhat more than that of a conventional building bearing in mind that the costs will vary according

to a number of site specific and project specific variables. The lowering of maintenance costs is held back by such generic factors as the small mass and basic thinness of membranes.

It is apparent that membrane manufacturers up to a year ago would only guarantee the membrane for 4 to 5 years, although it was expected by some that the material would last up to 15 years. In a 1971 source membrane materials included vinyl coated nylon or dacron with a life expectancy of 5 to 7 years and neoprene or hypalon coated dacron with a life expectancy above 10 years with maintenance. The hypalon material is noted as $2\frac{1}{2}$ to 3 times the cost of vinyl coated nylon. Expectations are that further improvements will be made with respect to membrane life expectancies. It is noted that 4 ply built-up tar and gravel roofing normally has a life expectancy in this area of 20 to 25 years.

4.4 Vandalism

Many concerns have been expressed as to vandalism in that the membrane is very thin and easily cut by, say, a pen knife. The response to date indicates that major vandalism has not been a problem. Minor cuts can be easily patched although the patches themselves are obvious as in the Malaspina example. One conjecture is that air-supported structures have tended to be special interest facilities utilized by coherent responsible groups (i.e. tennis) or to be in relatively isolated locations. It has also been pointed out that vandalism may be forestalled by the fact that a cut in the membrane results in the silent release of air and creates no particular noise or effect such as the breaking of glass. Some air-supported structures have been fenced to keep the membrane out of the reach of vandals but in the opinion of some, this preventative solution may only encourage them.

However, the continuing vulnerability of the membrane indicates that vandalism should remain a real concern particularly within the context of the desirable socially oriented drop-in type activities associated with a community centre in the developing higher density Lougheed Town Centre and environs.

4.5 Building Regulations

Air-supported structures must conform to various aspects of the National Building Code such as spatial separation requirements, flame test criteria, provision of failsafe power systems, and fire safety and exit requirements. Of particular note is that air-supported structures require a certificate of occupancy which must be renewed every 12 months.

As noted previously extensive work was carried out in the Malaspina example to satisfy the building authorities as to the appropriateness of air-supported structures for permanent assembly purposes, essentially the only one of its kind in Canada.

4.6 Appearance

The most common air-supported structures range from a smooth membrane "blimp-like" shape to a ribbed "cocoon-like" shape. The main examples of these structures have a height of 4 storeys (40 feet) and are extremely large. Their large size and simple shape tend to create a dominating scaleless presence. Attempts have been made to camouflage these structures with herbs and dense planting but their enormous size and significant height make them difficult to hide. The extent of landscaping required would be considered very costly.

The use of typical air-supported structures appears to be generally avoided by architects for use as permanent buildings in urban settings over the years. The structures lack a lower scaled modulated form, definition of floor lines, definition of fenestration, the use of appropriately scaled building materials such as cedar siding, brick, blocks - that is, the multiplicity of traditional building elements which define and reflect the human scale in an urban environment, say, from a house to a high rise apartment building or office building. The most successful experimental use of air-supported structures has been in the exhibition context where the awe-inspiring effects of large air-supported structures can be much appreciated.

A recent promising direction is the use of flatter shaped air-supported roofs as part of permanent hard walled building. In some instances, the wall is part of a very high earth berm. A few examples of this type of hybrid structure are the University of Santa Clara student centre and pool; a major stadium in Pontiac, Michigan; and the Milligan College fieldhouse. These low-profile roof hybrid buildings can take advantage of some of the cost savings of membrane roofs while appearing in elevation as a typical permanent hard building which may be designed to fit into any urban context.

It is the considered conclusion of the Planning Department that typical air-supported structures are not appropriate in urban areas of this municipality, areas where new structures should be responsive to the quality and textures of existing buildings, and areas of high imaginability.

5.0 RECREATION CENTRES

In order to give some assessment of the use of air-supported structures within a community multi-use centre it was considered useful to examine a few other community centres completed in recent years. Two examples of note are the West End Community Centre and the Britannia Community Centre (East Vancouver west of Commercial).

The West End Community Centre is a tightly compacted urban centre fronting onto the commercially oriented Denman Street. It includes an ice rink, court games, lounges, meeting rooms, a library, a restaurant, and a rooftop tennis court. A direct building connection is provided to an adjacent school facility. The scale, and siting of the complex is handled well and the building has a pleasing quality.

The Britannia Community Centre is located one short block back from the commercial development along Commercial Street. The area is an older part of Vancouver which requires some impetus towards rehabilitation and the maintenance of existing standards. A sloped roof lower scaled village environment is established with major pavilion facilities including court games, ice rink, swimming pool, and public library arranged in close proximity to each other. A school is also adjacent to this centre.

The design and environmental approach of both of these recent centres, although different in character from each other, is to create a permanent, quality facility which is carefully integrated into its urban setting with particular attention being given to the use of materials and achievement of a lower friendlier scale.

It is also noted that the participants on the tour to Oak Bay all appear to agree that the main permanent integrated community centre is a high quality and admirable development.

If an air-supported facility is not appropriate for the Lougheed Town Centre, other facility combinations may benefit from further examination. For example, points brought up in previous discussions mentioned the provision of outdoor tennis courts requiring a lower capital outlay and the provision of smaller gymnasium facilities for this smaller population sector of Burnaby rather than a large double gym which does not appear to be provided in any of the other major Burnaby recreational centres to date or even in few senior high schools. The initial recreation centre development was indicated as being staged which was reflected in the site acquisition procedures and directives. It has also been suggested that the architect who has been retained to design the first phase library/community centre could explore a number of facility combinations based on permanent structural methods.

6.0 LOUGHEED TOWN CENTRE

6.1 General Context

The community focus of the North-East Burnaby sector is the developing Lougheed Town Centre. The population of this sector is currently approximately 12,765 with a projected population of 26,610 by 1986. This town centre accommodates the major Lougheed Mall shopping centre, other commercial development, Cameron School directly to the west, and the designated Library/Recreation site to the north. Higher density residential development exists or is proposed in the vicinity of the town centre. This town centre area as it develops in intensity and complexity of use, will develop into a social and cultural centre serving as a meeting place and transactional centre for the people of North-east Burnaby be they families, young people, single persons, or senior citizens. As this town centre develops it is important that the scale of all town centre components be directed towards compatibility with a pedestrian oriented environment in which all components become interlocked and which allows for the long-range establishment of specialized public amenities such as public squares, fountains, urban promenades, etc. Within this context, the library/recreation centre, the main municipal contribution to the town centre area, should maintain an appropriate scale and quality. A large air-supported structure would be aesthetically objectionable, and an anomaly within the context of the town centre.

It is also noted that the North-east sector of Burnaby is one of the growing population centres. This growth pattern is consistent with municipal policies which are geared to the accommodation of reasonable population growth, the preservation of unique major natural amenities such as Burnaby Mountain and Burnaby Lake, and the protection of existing stable single-family dwelling areas. However, rapid growth in any given area is usually accompanied by some social strain and this is true of the Lougheed Town Centre area. The point is that the self-image of both recent and long time residents in this area of Burnaby is a function of the image of and pride in the surrounding physical environment - be it residential design, landscaping, commercial development, public buildings, and public walkways and parks. The library/recreation centre which will be one of the main foci for this distinct community area should convey a stable, permanent, and quality image.

6.2 Specific Site

The designated North-East Burnaby Library/Recreation site is of sufficient size to accommodate a library and a comprehensive recreation complex. The 1.75 acre library site has been acquired. The initial proposals were for a staged

recreation complex which could ultimately accommodate a community centre (physical and social), a small public pool, and an indoor ice rink. The first phase development is to be a community centre and procedures are underway to acquire a site to accommodate this first stage. A minimum 4 to 5 acre site for the overall recreation complex was indicated and previously considered desirable. Thus far the first stage site will comprise 1.97 acres. The extent of land acquisition has always been subject to site planning consideration of the buildings themselves. However, the suggestion of an air-supported structure of very large dimensions say 120' by 200', which is a $\frac{1}{2}$ acre building, raises the question of the need for more extensive land acquisitions at the initial stage. As with the library site and other public buildings the site area is calculated to provide suitable area for buildings, setbacks, landscaping features and screening, screened parking, and pedestrian accesses. The larger the building mass the greater the setback required to provide suitable landscaping and intervening transitional lower scaled elements. 150

It would also appear that the permanent recreation centre component contemplated would not be of any scale to hide an air-supported structure. The structure would be clearly visible from Cameron Street. The scale of the proposed library/recreation complex should also be compatible with the existing Sullivan Heights single-family dwelling neighbourhood to the north and to probable lower scaled multiple-family housing developments to the west. An air-supported structure would not appear to be compatible in this regard.

7.0 MUNICIPAL DEVELOPMENT PROCESS

It is our opinion that allowing the Municipality to construct large air-supported structures inconsistent with the degree of permanence and quality expected of private developers would be unfair. The matter of permanence and quality, as a basic principle, has far reaching effects and is not only applicable to, say, other private tennis clubs but also to the approval of other types of buildings from residential to office, industrial park, commercial, and institutional buildings. The quality of permanent development within a municipality ensures the livability of the urban environment in the long term. It is important that environments "mellow" rather than "run down" over time. There are many quality projects in Burnaby which are a source of pride not only to its citizens but also to their owners. If new developers are to be encouraged to consider Burnaby as a good location to construct high quality buildings, the quality of existing development would be most relevant. The leadership of the municipality in establishing reasonable permanent standards for its public buildings and facilities would also promote appropriate standards in the private sector.

As detailed in this report under Section 4.6, the Planning Department is of the opinion that the appearance of large air-supported structures, "the bubble", is not appropriate. There are obvious design limitations in accommodating large air-supported structures due to its restrictive technology. In permanent buildings, although cost is still a major factor, the design limitations are more those of the architect rather than of the technology.

A point on the temporary nature of stock air-supported structures is that just by being left up they can in operation become permanent. Wartime temporary buildings are good examples of de facto permanency.

ITEM	13
MANAGER'S REPORT NO.	31
COUNCIL MEETING	Apr. 25/77

8.0 SUMMARY

The Planning Department has assessed air-supported structures in the light of:

- a) the tour of Oak Bay and Malaspina College facilities,
- b) a discussion of various aspects of air-supported structures including physical structure, costs, maintenance, vandalism, building regulations, and appearance,
- c) a brief commentary on two existing permanent community centres,
- d) its setting relative to the Lougheed Town Centre and the specific designated site, and
- e) the overall environmental and municipal development control criteria.

Although acknowledging that a large air-supported structure can span a large space at a lower capital cost than that for a permanent building, our view is that there are many negative aspects to the establishment of an air-supported structure in the Lougheed Town Centre particularly from a long term environmental viewpoint. No reliable broadly based figures are available to enable a true comparative analysis of costs and suitability of air-supported structures for major permanent assembly use, relative to a permanent "hard" structure due to the changing and experimental nature of air-support technology. As noted in the report the one approach of merit but still somewhat experimental is in the low-profile air-supported roof with permanent walls.

However, sufficient analysis of air-supported structures and their environmental effects has been pursued to indicate that the establishment of a large air-supported structure similar to those provided at Oak Bay or at Malaspina College is clearly not appropriate in the Lougheed Town Centre within the designated library/recreation centre site.

9.0 RECOMMENDATION

It is recommended THAT Council not approve the construction of an air-supported gymnasium on the North-East Burnaby library/recreation centre site.


A. L. Parr,
DIRECTOR OF PLANNING.

KI:cm

c.c. Parks and Recreation Administrator
Chief Librarian
Chief Building Inspector