

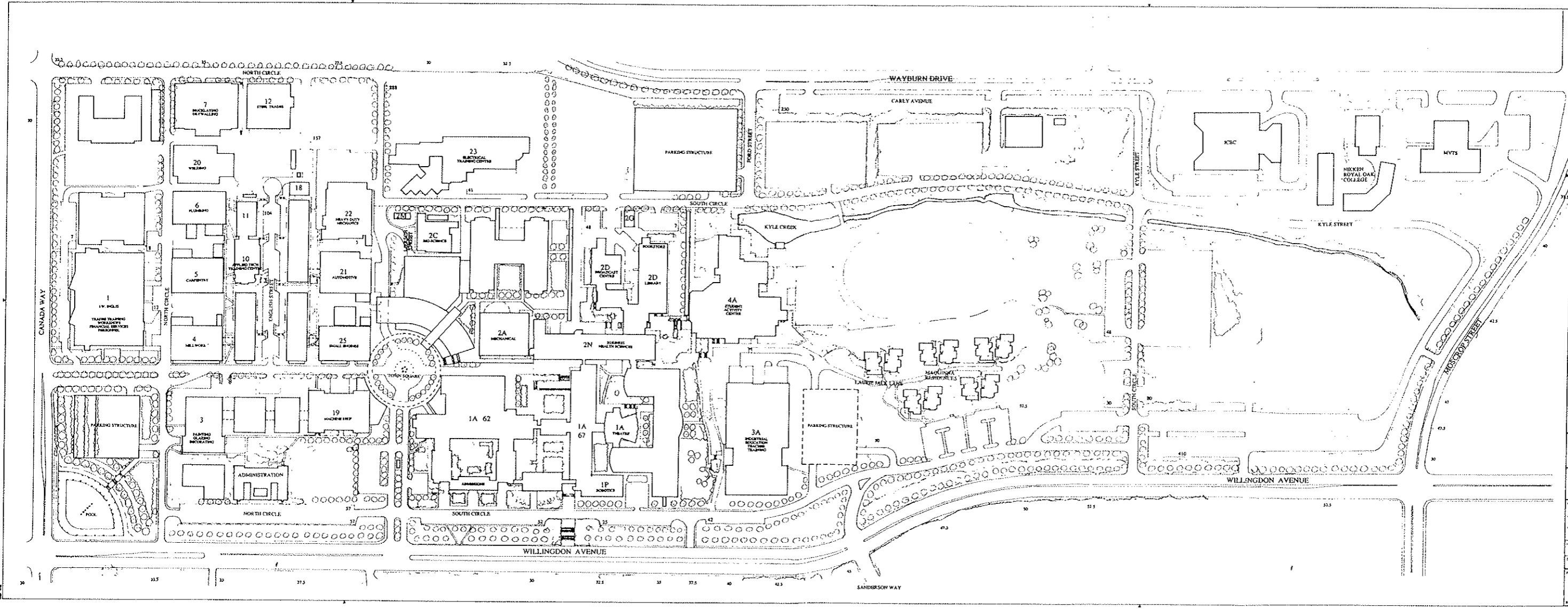
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B.C.I.T. MASTER PLAN

SITE PLAN PROPOSED

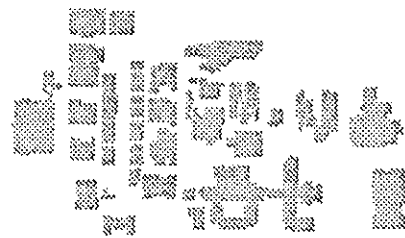
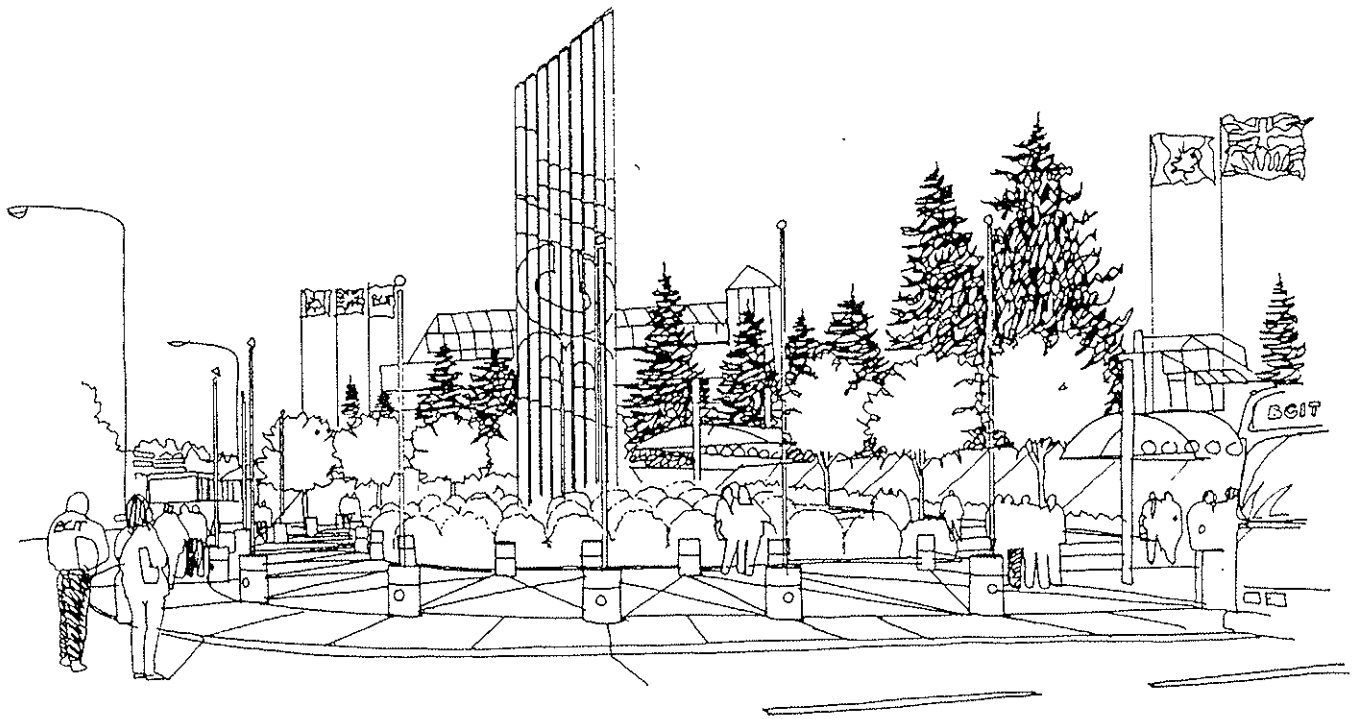
DATE: AUG 1, 1989

PROJECT NO: 8910

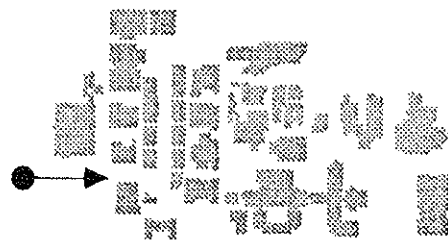
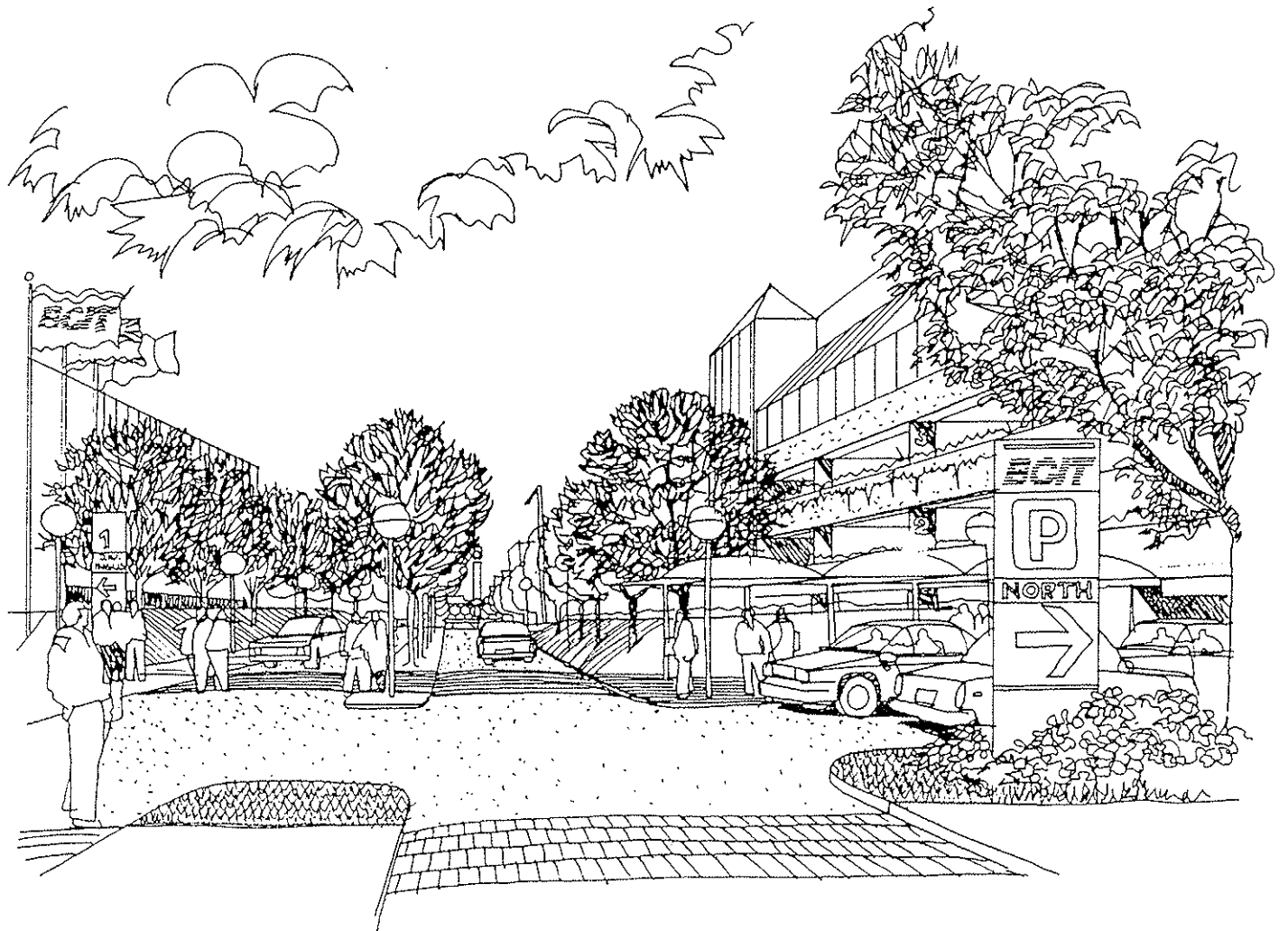
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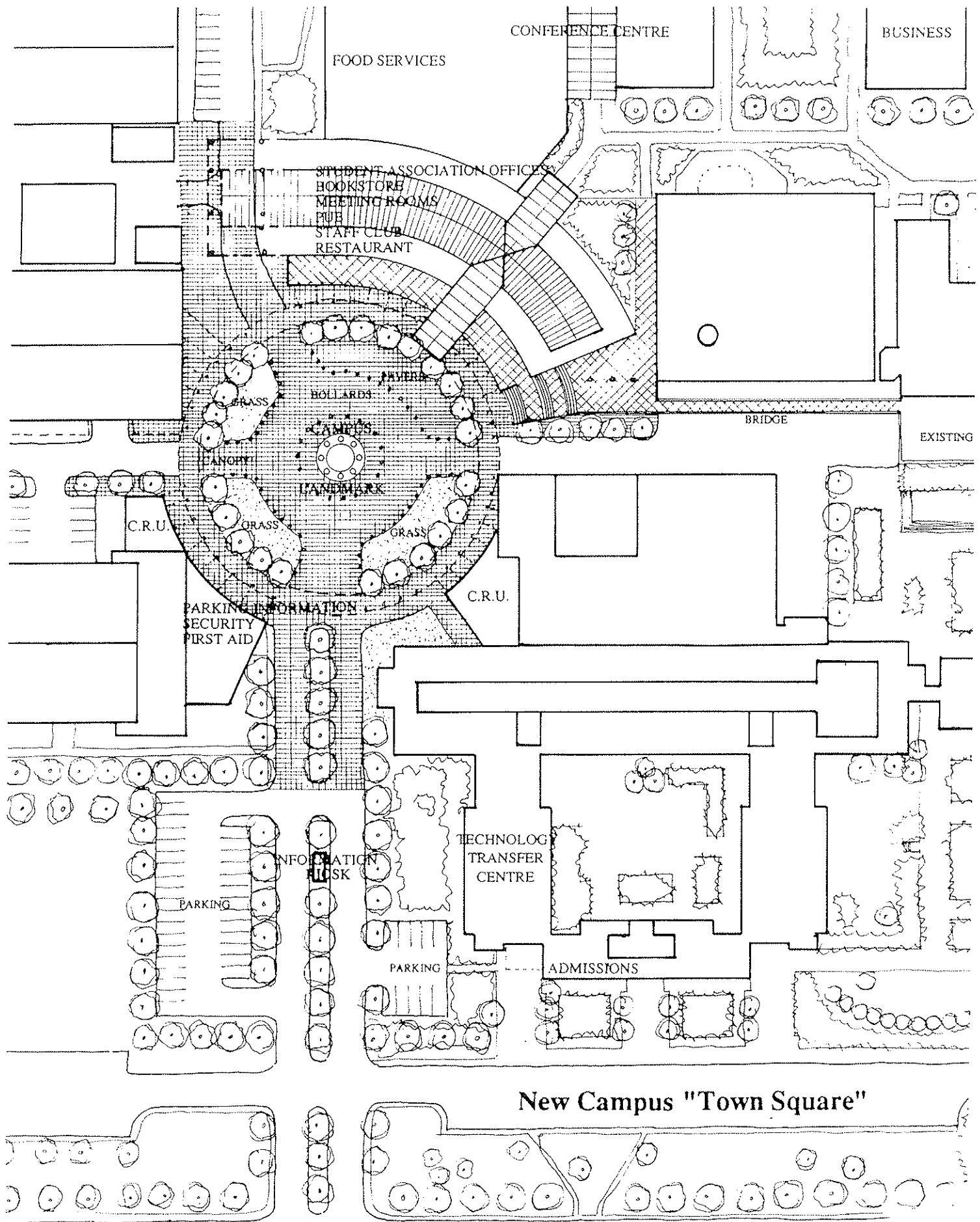
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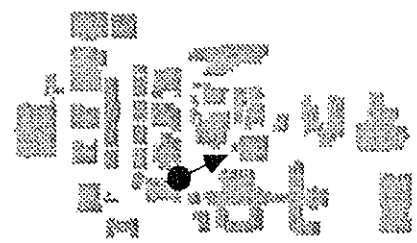
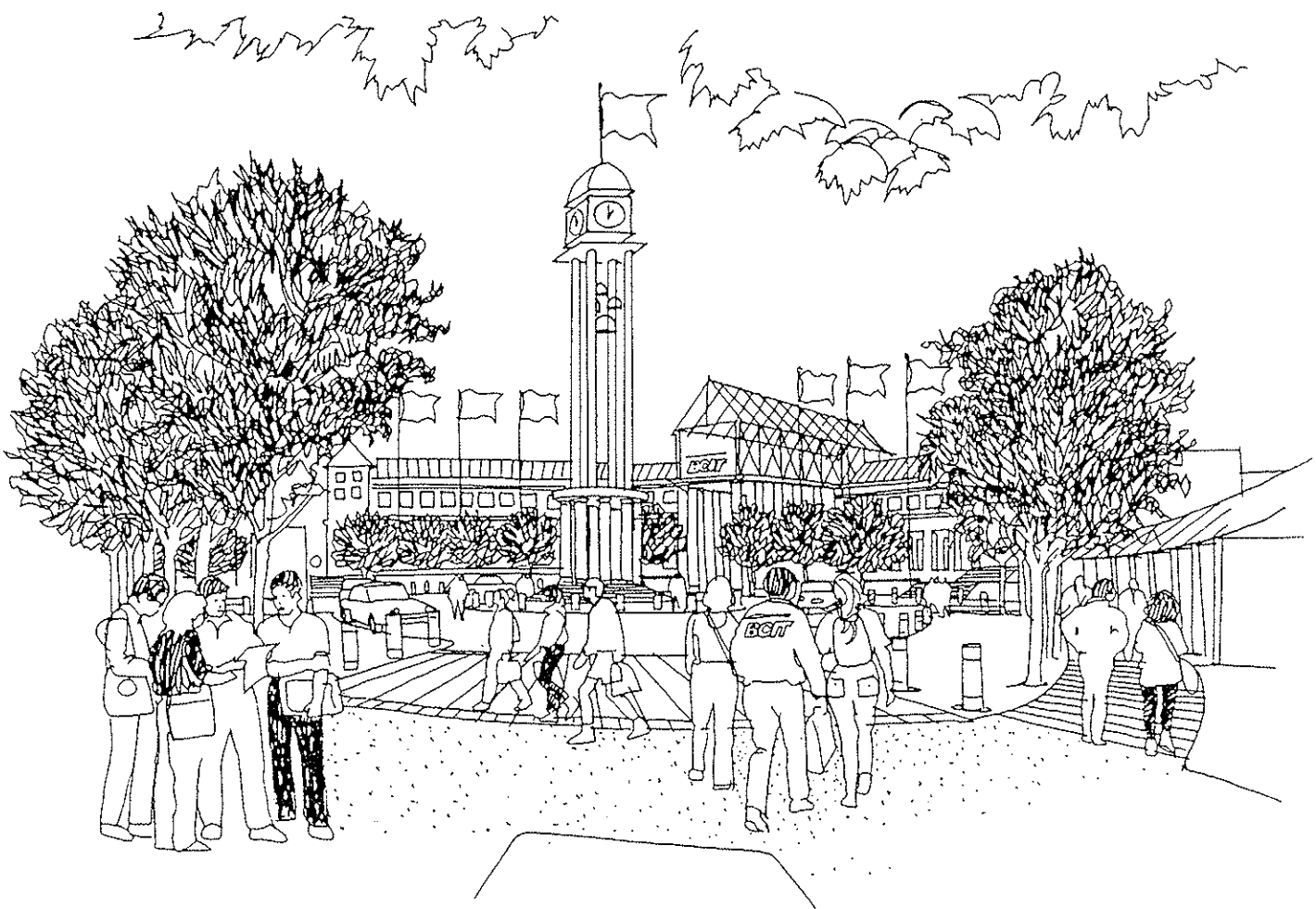
1. BCIT Plaza at Canada Way and Willingdon.



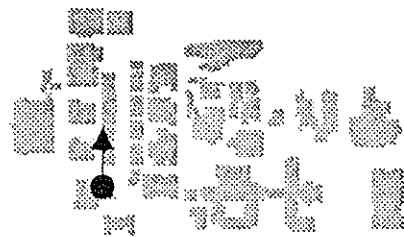
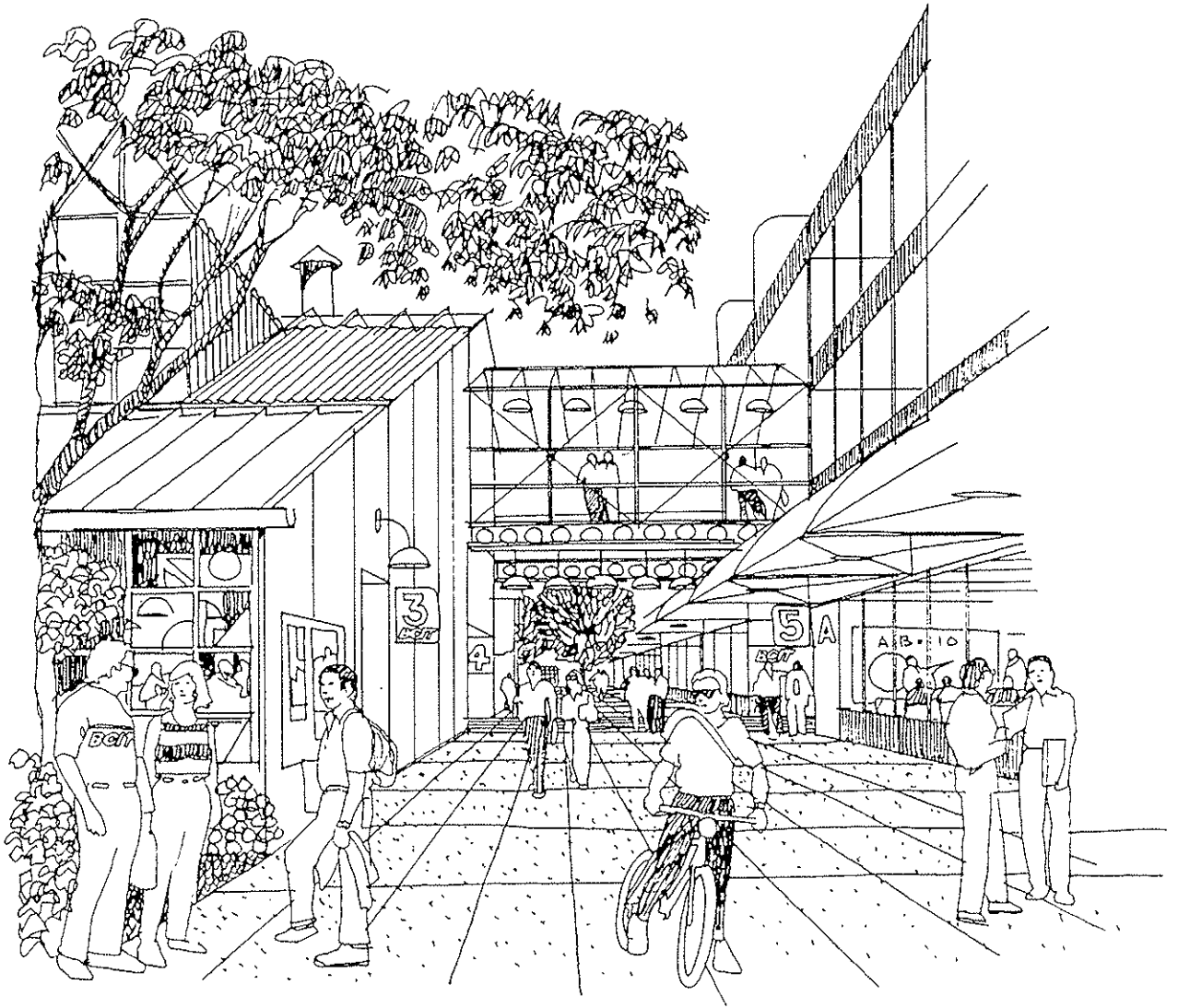
2. New Campus entrance from Canada Way looking towards Campus Centre.



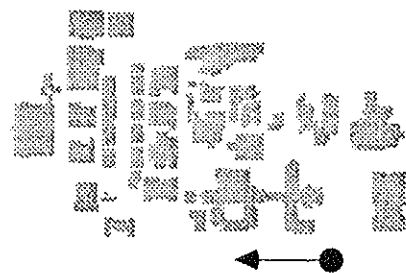
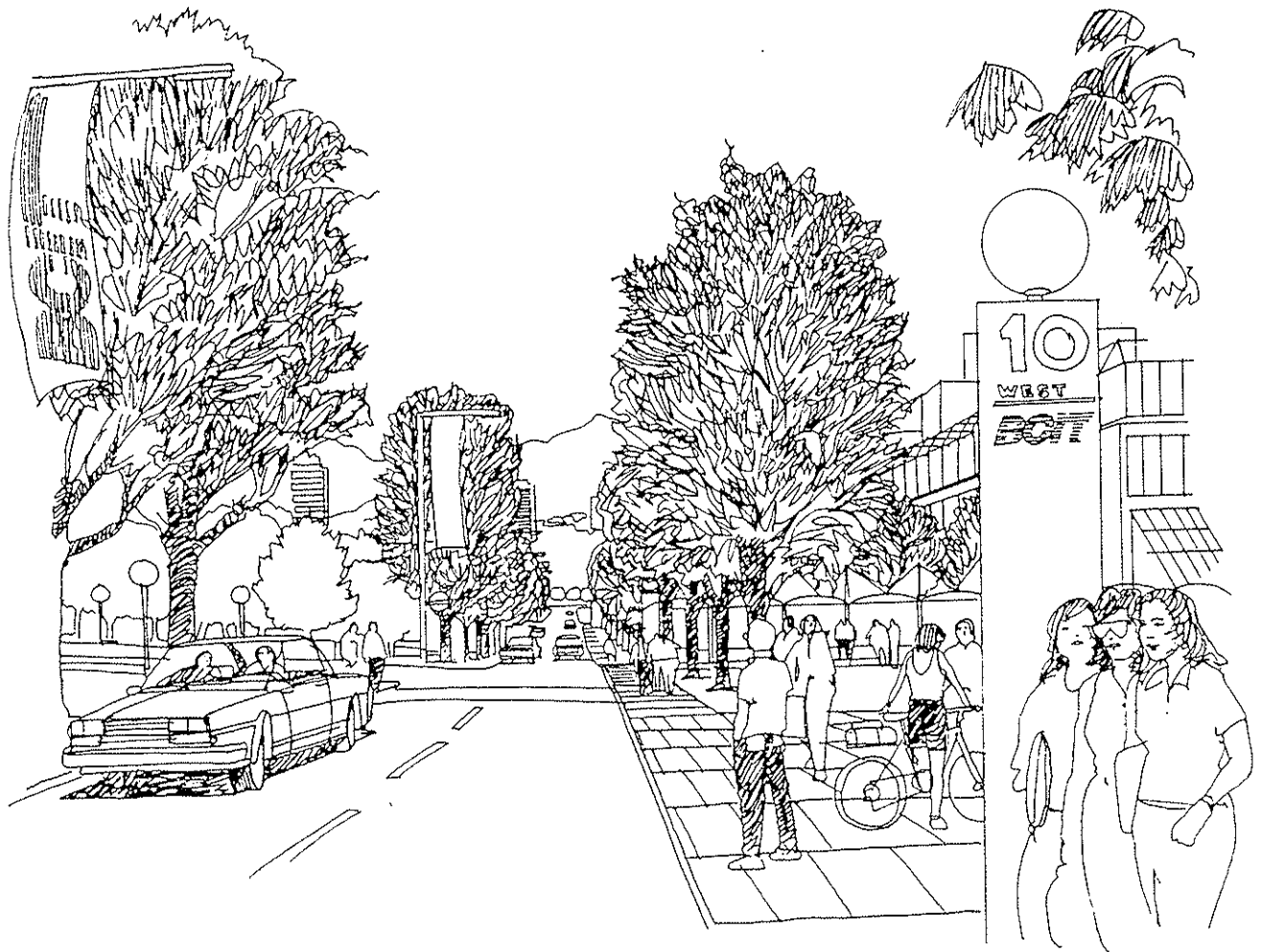
New Campus "Town Square"



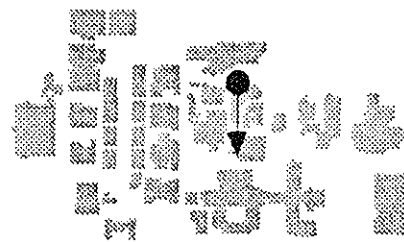
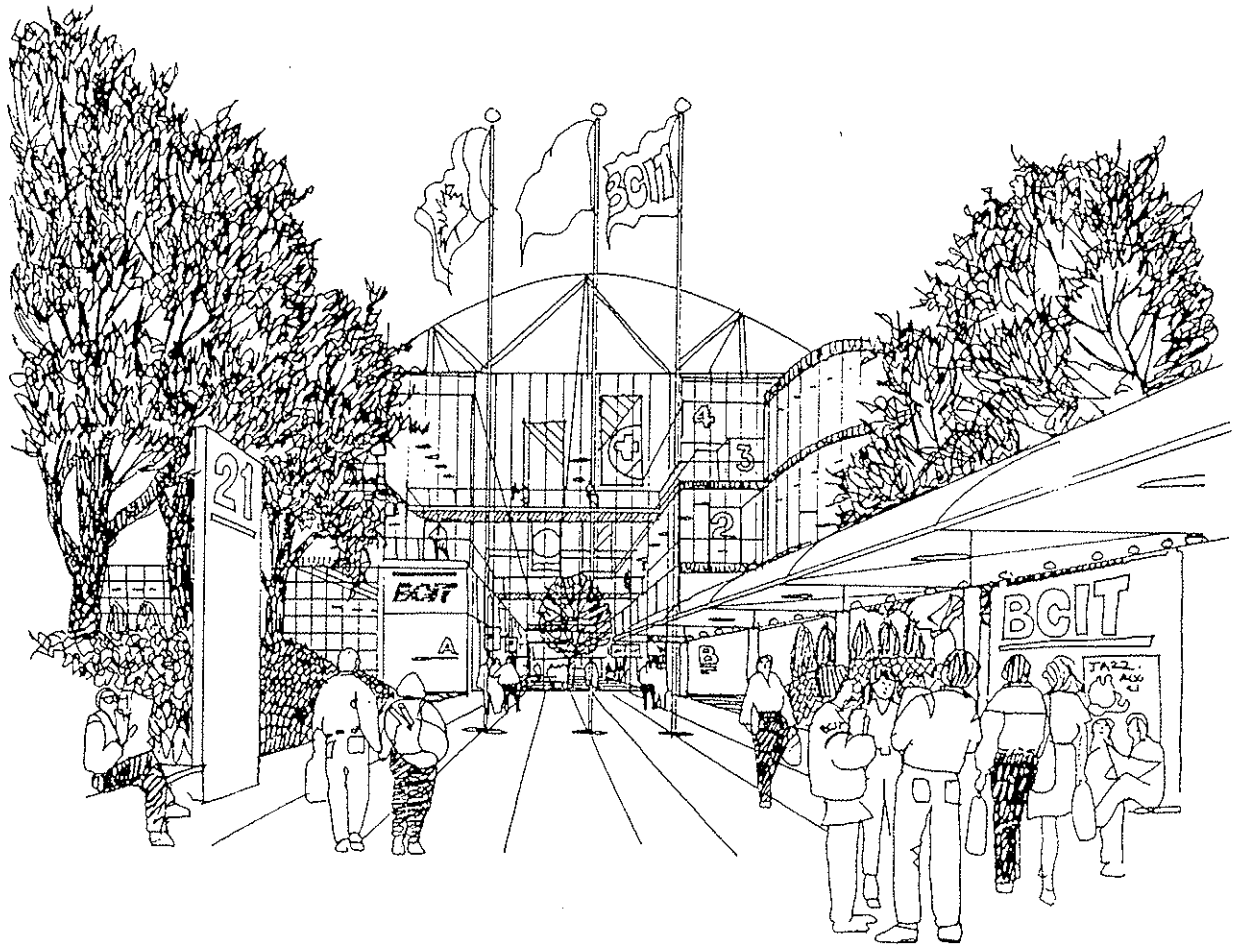
3. View of Campus "Town Square" and Campus Centre project.



4. View along spine in Trade Centre area between refinished existing shop buildings and new linked lab/class/office blocks.



5. South Circle ring road looking north showing landscape character, street entrance, lighting and component addresses.



6. View of typical new core area pedestrian entrance on east side including proposed new building block.

4.0 DEVELOPMENT PRINCIPLES

This section outlines the proposed B.C.I.T. Master Plan in a disaggregated form by means of fourteen development principles. This way of conceiving the Plan is important since it is not a static vision or one that will be achieved in a single development. Rather, the proposed campus order will evolve through a number of projects, each contributing to the realisation of the whole if each reflects the principles outlined. The principles are interrelated and are generated by the overall concept, however the detail of how particular projects are realised will have considerable latitude.

Each of the fourteen issues is presented by the statement(s) of the principles, a brief rationale, commentary and a diagram. The latter is a campus plan, where relevant, indicating the location or extent of the physical implications of the principle.

4.1 Perimeter Landscape and Campus Identity

Principles:

The perimeter edge of the B.C.I.T. site should be landscaped to convey the image of a "green" campus setting for the buildings. The perimeter landscape should be punctured at critical points to provide framed site lines to key internal vistas, spaces, building facades or other elements.

The site at the corner of Canada Way and Willingdon should be developed as part of the perimeter landscape with a major open space and B.C.I.T. identifying structure. This corner is seen to be the major symbolic corporate presence of the B.C.I.T. campus within the region.

Rationale:

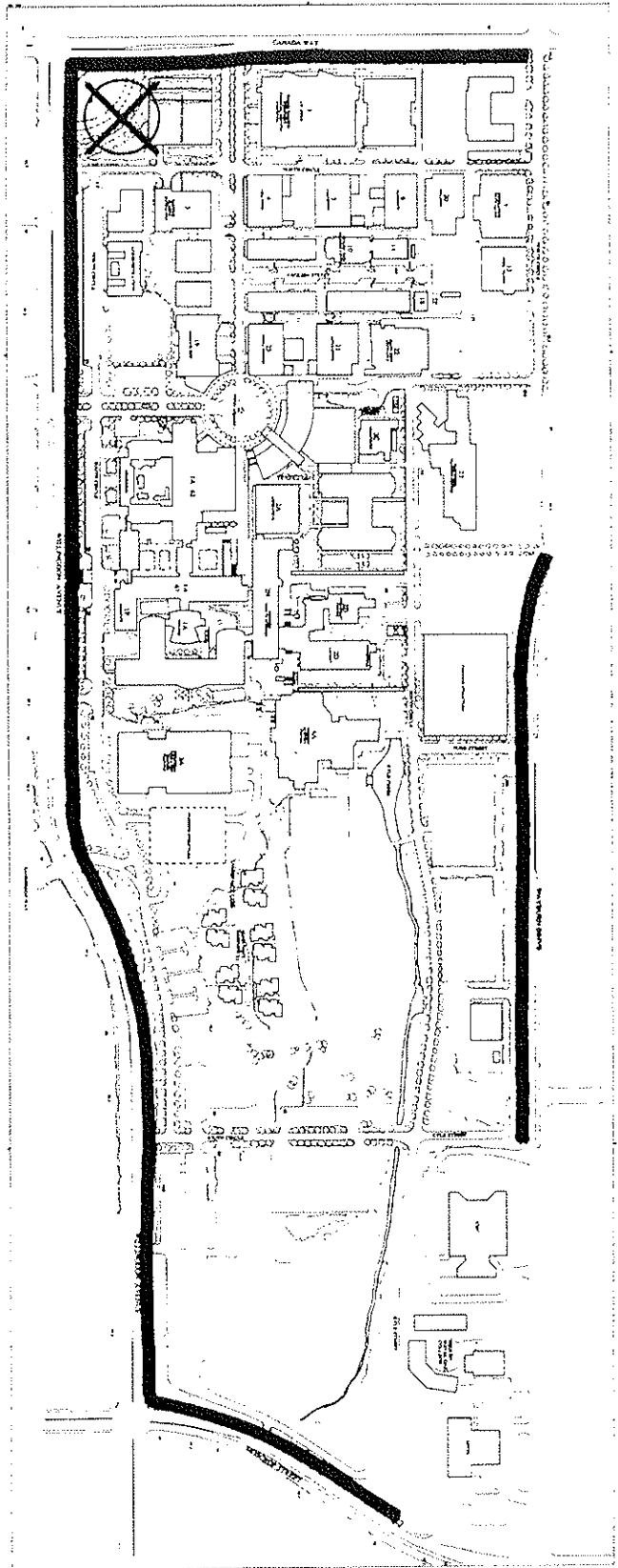
Well landscaped sites are in the tradition of major West Coast campuses to which B.C.I.T. is inevitably compared.

The site is bounded by major arterials - the landscaped edge provides both a visual relief for drivers and a visual buffer for campus users.

Burnaby Planning Department is not encouraging of uses on the street edge. Further, there are no obvious B.C.I.T. uses that would be appropriately showcased on the campus edge.

The Canada Way/Willingdon corner is a major intersection in the Lower Mainland on which B.C.I.T. has the potential to present a strong image. The current site user is a significant detraction and obstacle to realising an optimum B.C.I.T. campus plan (see also Parking).

1. PERIMETER LANDSCAPE AND CAMPUS IDENTITY



4.2 Campus Entrances

Principles:

Develop multiple vehicle entrances to the campus. At each entrance, provide an orientation device (e.g. identifying gatepost, simplified campus plan, etc.).

Specific recommendations are to develop the following access points:

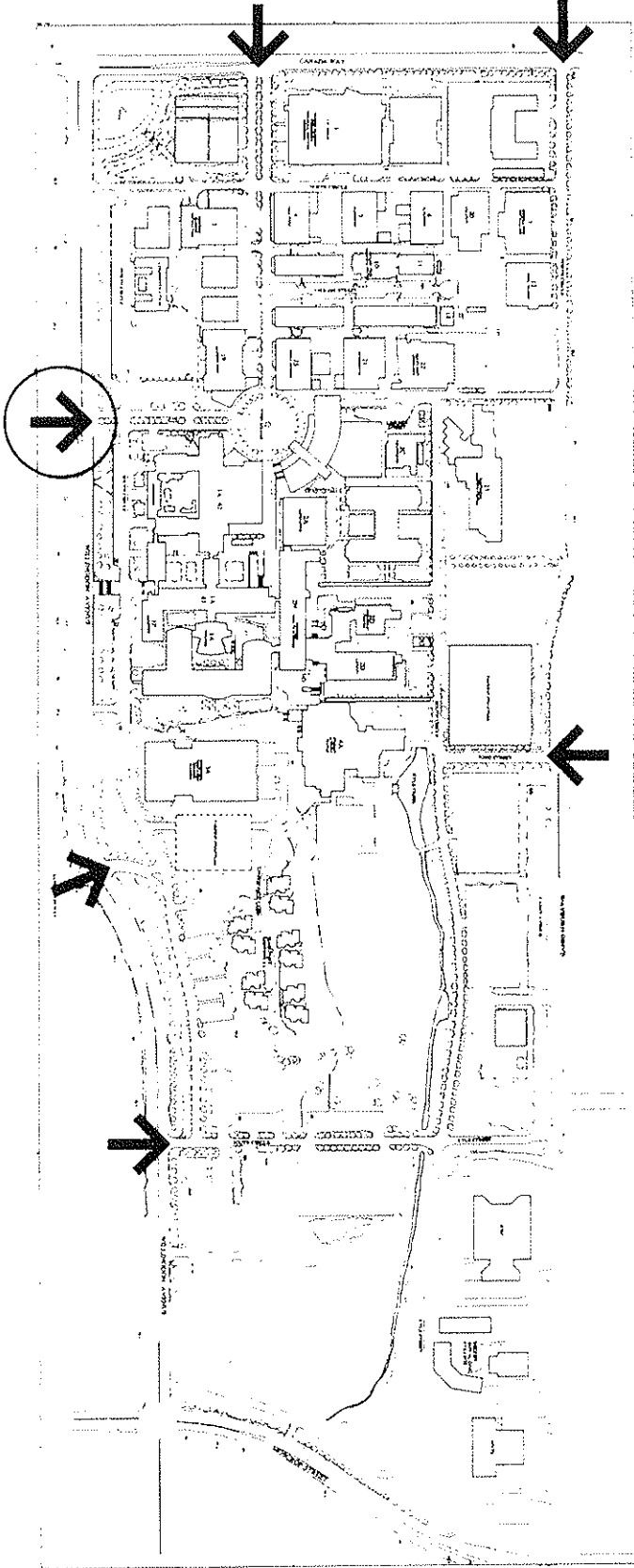
- . Maintain/improve current access at Willingdon/Goard Way; Canada Way/Carey Avenue; and, Wayburn Drive/Ford Street.
- . Relocate access points to Willingdon in the alignment of the east/west portion of Kyle Street.
- . Develop new access points from Canada Way at the approximate existing access to the Department of Highways yard (in line with Lister Avenue).
- . Investigate the cost effectiveness of an access at Willingdon/Sanderson Way (which could possibly be signalised).

Further, reinforce the Willingdon/Goard Way access as the main address entrance (front door) which first time users, V.I.P.'s. etc., will use. Associate an information service with this entrance, or directly accessible from this entrance.

Rationale:

The site size and traffic situation require multiple entrances to distribute the access flow. This raises potential problems of orientation. A main "front door" entrance can alleviate part of this difficulty. Willingdon is the traditional front door to B.C.I.T. and can be improved in this role as part of the overall Plan.

2. CAMPUS ENTRANCES



4.3 Circulation Ring Roads

Principles:

Develop a clear perimeter circulation road comprising two rings with a common side along Goard Way (North Circle, South Circle).

Develop the Goard Way link in which it can serve as a through route, it can also be made discontinuous, with turn-arounds at each end, so that the centre of the campus can be primarily pedestrian on a daily basis.

Define the rings with a consistent treatment. Specifically recommended are Plane trees each side, distinctive new street lamp standards and banners, and resurfacing of existing pavement.

Rationale:

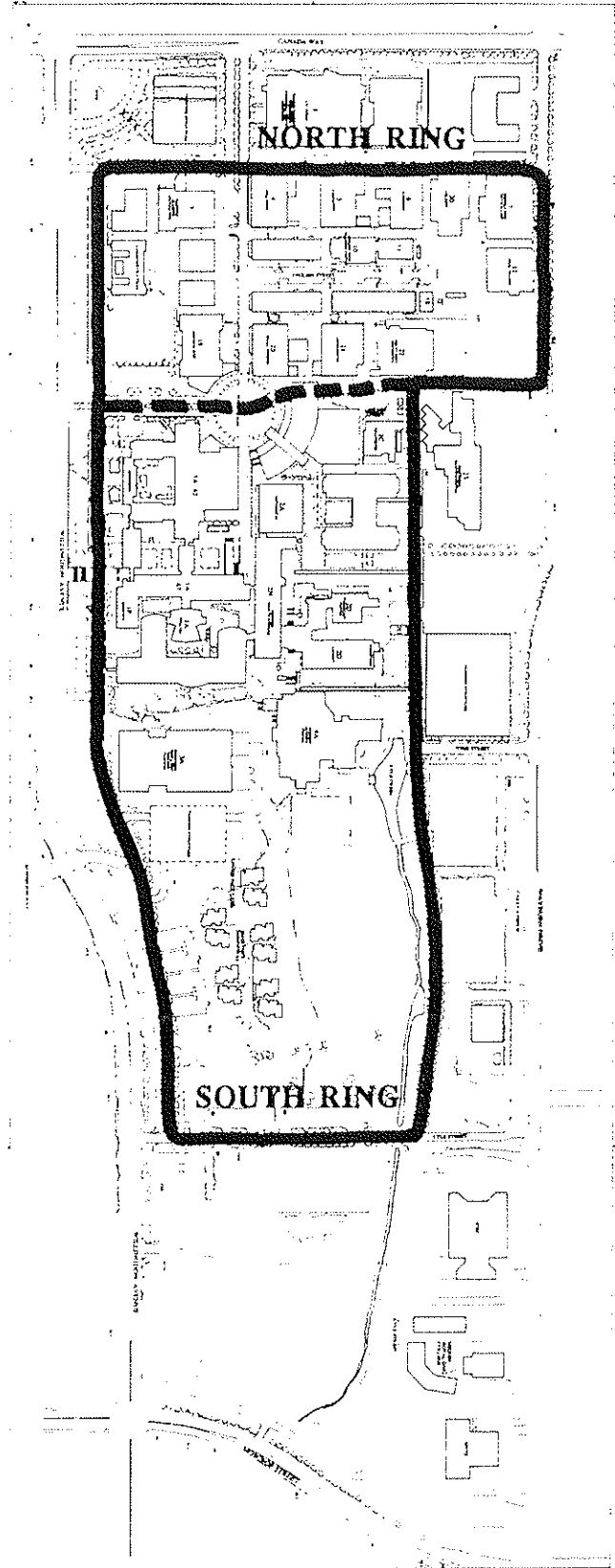
Ring roads can encourage the effective use of multiple campus entrance points. Rings are also of considerable practical benefit for service and emergency functions.

The proposed North Circle and South Circle can provide the basis for an address system as discussed later.

B.C.I.T. users felt that a pedestrian north/south connection would be better served if the Goard Way link were not required as a major connector on a daily basis. It will be required for service vehicles and could beneficially be used for traffic during some periods.

A clear landscape/site development is required since the Circles are more than only a vehicle road but an ordering component of the Plan. Further, the full use of the ring concept depends on the pattern being easily identified by campus users.

3. CIRCULATION RINGS



4.4 Parking

Principles:

Develop the main parking areas around the campus perimeter, linked by the ring road, and ideally on the edge of a ten minute walking radius (refer to Report 1B). Each major parking node should be served also by an adjacent campus entrance. A specific recommendation is to develop a new major parking area at the northwest campus corner (Site 21).

Designate sites to be considered for possible future parking structures (Sites 15, 21, optionally 19).

Develop secondary short term and special visitor parking lots adjacent to address entrances to core area.

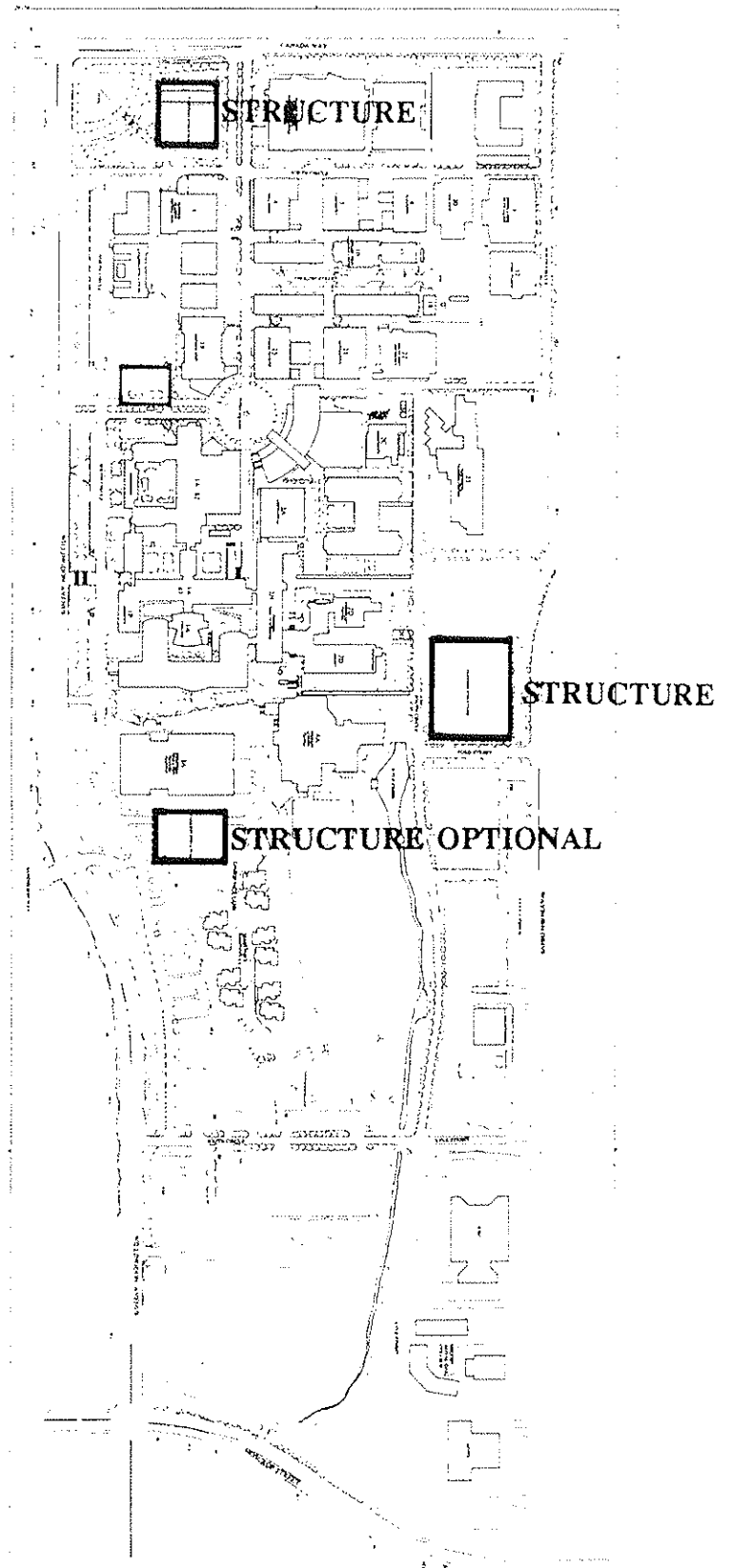
Rationale:

Parking is the first destination of the majority of B.C.I.T. users' it must be easily accessible and as closely located to the building destinations as possible. The addition of parking in the northwest corner would have many benefits:

- . It would be strategically located close to many destinations where there is currently no major parking.
- . It would reinforce many of the entrance and north/south connection principles.
- . It would change user perceptions of the campus in ways that would serve to help integrate the campus and encourage a more flexible and orderly use of facilities on campus.

Future conditions are almost certainly going to require some structured parking. Two strategic sites should be reserved for this use, located where the whole campus can be served. Smaller lots adjacent to main component addresses are required to encourage outside visitors to form the liaisons with B.C.I.T. implied by the program directions.

4. PARKING



4.5 Site Development

Principles:

Implement land use policy procedures to ensure the remaining available sites on the campus are developed to their best use. Specifically, ensure sites are built so that the density/capacity required by the facility shortfall estimates in document 1A can be realised. The table following proposes development directions for twenty-two sites.

Consolidate adjacent land to the extent practically feasible, particularly the Department of Highways and B.C.B.C. sites along Canada Way.

Rationale:

B.C.I.T. ultimately has a limited site on which to accommodate its future directions. Orderly site development is necessary to realise the optimum site capacity. The two sites recommended for annexation (as have previous studies) are in strategic locations for B.C.I.T. future development.

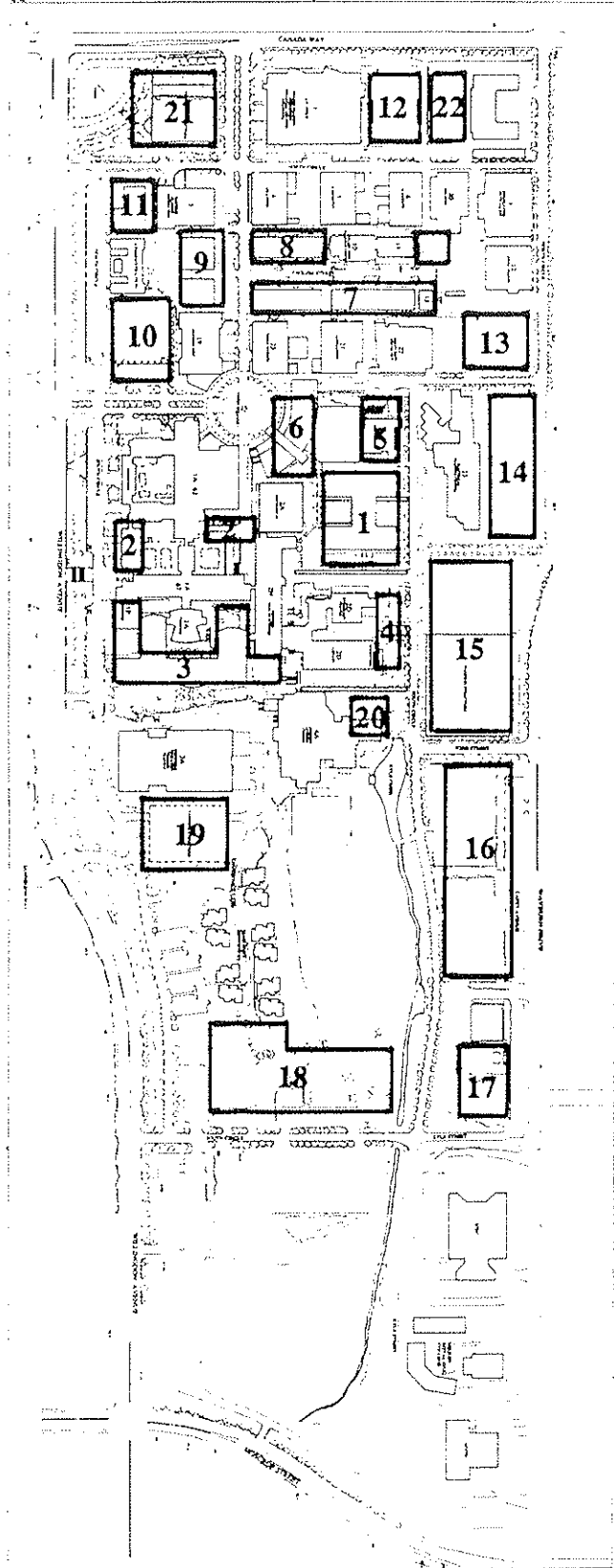
BCIT
DEVELOPMENT DISTRIBUTION BY SITE

SITE	MAIN FUNCTIONS	10-15 YEAR REQUIREMENT:			TOTAL ASSIGN. GROSS	TOTAL GROSS	20200:		TOTAL GROSS
		SHORTFALL	REPLACEMENT ##	RELEASE ###			SHORTFALL	GROSS	
1	BUSINESS, CLASS/LECTURE, PROGRAM CENTRE	5,094	798	900	5,992	8,688	4,918	7,130	15,818
2	ENG. TECH. SAC. DIV. FACULTY FACILITIES	1,307			1,307	1,894	671	973	2,867
3	HEALTH, ENG. TECH	7,271	2,108	1,871	7,508	10,887	5,716	8,287	19,174
4	MINOR PARKING/FUTURE EXPANSION	0			0	0	0	0	0
5	EXTENSION OF SITES 1/6 DEPENDING ON DEVELOPMENT OPTIONS	0			0	0	2,600	3,770	3,770
6	CAMPUS CENTRE FUNCTIONS/FOOD SERVICES	5,208		1,269	3,939	5,712	1,245	1,805	7,517
7	TRANSPORTATION CENTRE	4,612	890	2,711	2,791	4,046	4,113	5,963	10,009
8	CONSTRUCTION CENTRE, TECH. TRANSFER LABS	2,090	890	1,068	1,912	2,772	1,500	2,175	4,947
9	MANUFACTURING CENTRE	2,920	890		3,810	5,525	2,000	2,900	8,425
10	MAJOR LANDSCAPE FEATURE, MINOR PARKING	0			0	0	0	0	0
11	EXTERNAL ASSOCIATIONS, ADMINISTRATION	3,040			3,040	4,408	705	1,022	5,430
12	FUTURE TRADES EXPANSION, MINOR PARKING	0			0	0	3,000	4,350	4,350
13	FUTURE TRADES EXPANSION, MINOR PARKING	0			0	0	0	0	0
14	FUTURE TRADES EXPANSION, MINOR PARKING	0			0	0	0	0	0
15	MAJOR PARKING (STRUCTURE)	0			0	0	0	0	0
16	MAJOR PARKING	0			0	0	0	0	0
17	WAREHOUSE EXPANSION	70			70	102	400	580	682
18	HOUSING EXPANSION	0			0	0	0	0	0
19	FUTURE TECH. EXPANSION, MINOR PARKING ALTERNATIVE: MAJOR PARKING STRUCTURE	0			0	0	0	0	0
20	DAYCARE SERVICES (COULD BE IN BLDG. 4A)	400			400	580	200	290	870
21 ‡	MAJOR LANDSCAPE FEATURE, MAJOR PARKING (STRUCTURE)	0			0	0	0	0	0
22 ‡	PHYSICAL PLANT, MINOR PARKING								
		(FIT IN THE EXISTING FACILITIES IS ASSUMED)							
TOTALS		33,011	5,576	7,819	30,768	44,613	27,067	39,246	83,859

‡ SITE ACQUISITION REQUIRED

REPLACEMENT REFERS TO SPACE IN PORTABLES TO BE REMOVED

5. DEVELOPMENT SITES



4.6 Character Areas

Principles:

Develop the campus on the basis of distinct character areas; define the edges of the areas along major vehicle or pedestrian routes.

Within each character area develop a consistent built form typology which integrates building and landscape/open space concepts.

The recommended character areas are diagrammed on the site plan as follows:

- . The Green
- . Canada Way Edge
- . Industrial Village
- . Core Grid Block
- . Campus Centre
- . Pavilions
- . Parking Edge
- . Uplands
- . The Fields
- . The Creek
- . The Bush
- . Business/Industrial Park

Rationale:

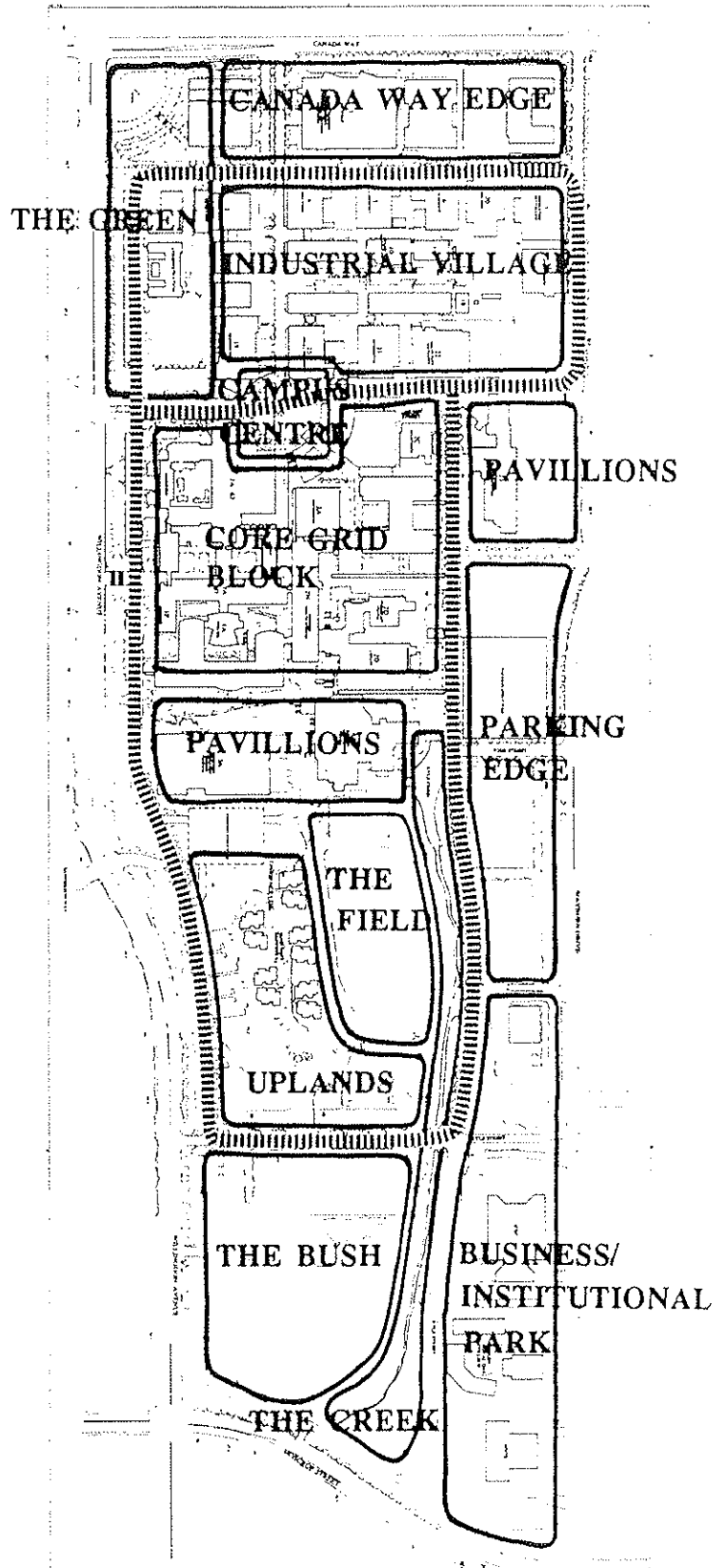
B.C.I.T. has an existing set of buildings and site structure which exhibits different patterns. It would be unreasonable to propose redevelopment along a single theme. Some existing areas have a strong identifiable character; the less successful areas currently do not exhibit a particular character and the Plan proposes a character area designation for these.

By definition each character area would have different characteristics of built form, colour, etc. The overall campus structure is advanced by the South Circle and North Circle, which can be considered another (linear) character area.

The Green is somewhat different than the other areas in that it incorporates part of the North Circle and South Circle and the main Willingdon/Goard Way entrance. While the entire site perimeter is proposed as a landscaped edge, this section is particularly important for establishing the campus image.

For the most part the character areas are self explanatory. The Canada Way Edge is envisaged to reflect changes to the north facade of the Inglis Building to add human interest and scale, and additional separate structures in the future of significant size but set behind a landscaped buffer.

6. CHARACTER AREAS



4.7 Component Zones

Principles:

Organise B.C.I.T. components into functional and recognizable zones without defining fixed edges or dedicating buildings too specifically.

The following patterns are recommended:

- . Focus Business in new facilities located on Site 1.
- . Focus Healthy on the fourth level of Buildings 1A, 2N and in new facilities on Site 3.
- . Engineering Technology both currently and in the future has a number of centres; Buildings 1A, 2N and 3A with some relocation to Building 1 and expansion on sites 2, 3, 7, 8 and 9.
- . Organise trades primarily around thematic centres:
 - Electrical Trades: Building 23 and Site 14.
 - Construction Trades: Buildings 4, 5, 6, 7, 12, 20 and Site 8.
 - Transportation Centre: Buildings 21, 22, 25 and Site 7.
 - Manufacturing Centre: Buildings 3, 19 and Site 9.

Rationale:

The concept of zones encourages cross over activity and effective shared use of resources. It also helps users develop a mental map of the campus. However, the concept should not be an overly rigid or limiting principle given the changing nature of the institution and the need for flexibility.

The Schools of Business and Health Sciences can be focused within a zone for their main activity relatively easily. Due to size the Schools of Engineering Technology and Trades Training do not lend themselves to a single zone. The latter would appear to lend itself to form main centres in accordance with its operational directions. Engineering Technology, while having certain clear zones also appears to be increasingly allied with other components so as to be appropriately distributed in a number of locations.

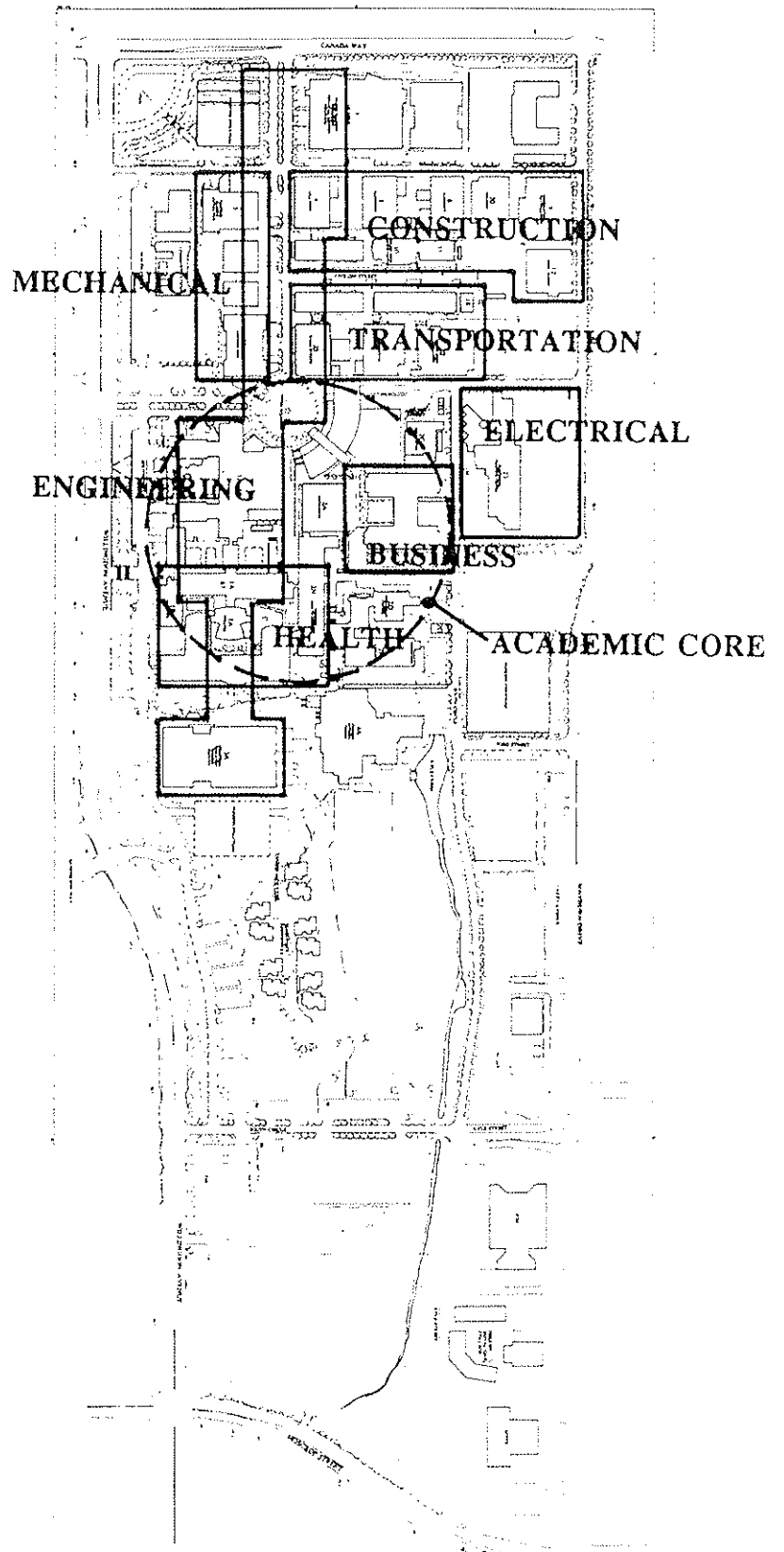
At a detailed level a great deal of effort is required to determine and maintain an optimum occupancy pattern. Detailed recommendations are not provided in this study since these are outside its "broad brush" scope, and except for some short term/interim moves, depend on the definition of new development which will proceed after the completion of this study. Some general observations are as follows:

- . The Inglis Building contains released space in the short term which can accommodate new uses for either staging or long term occupancy.

. The 1A - 2N block will require some components to vacate in order to allow others to expand within the building. Business activity is recommended to relocate but is dependent on new facilities. Some Engineering Technology components could relocate, Civil Engineering being one possibility.

. In order to develop Site 1, likely in the short term, staged accommodation will be required for the components currently in portables.

7. ZONES



4.8 Campus Town Square

Principles:

Develop a Campus Centre comprising both an outdoor focal area (e.g. square) and a concentration of functions used by the B.C.I.T. community as a whole (e.g. Food Services, Book Store, Retail/Personal Services, Association Offices, Meeting/Gathering Spaces, etc.).

The specific recommendation for the Campus Centre is around the intersection of Goard Way and Lister Avenue with the redevelopment/expansion of the surrounding buildings.

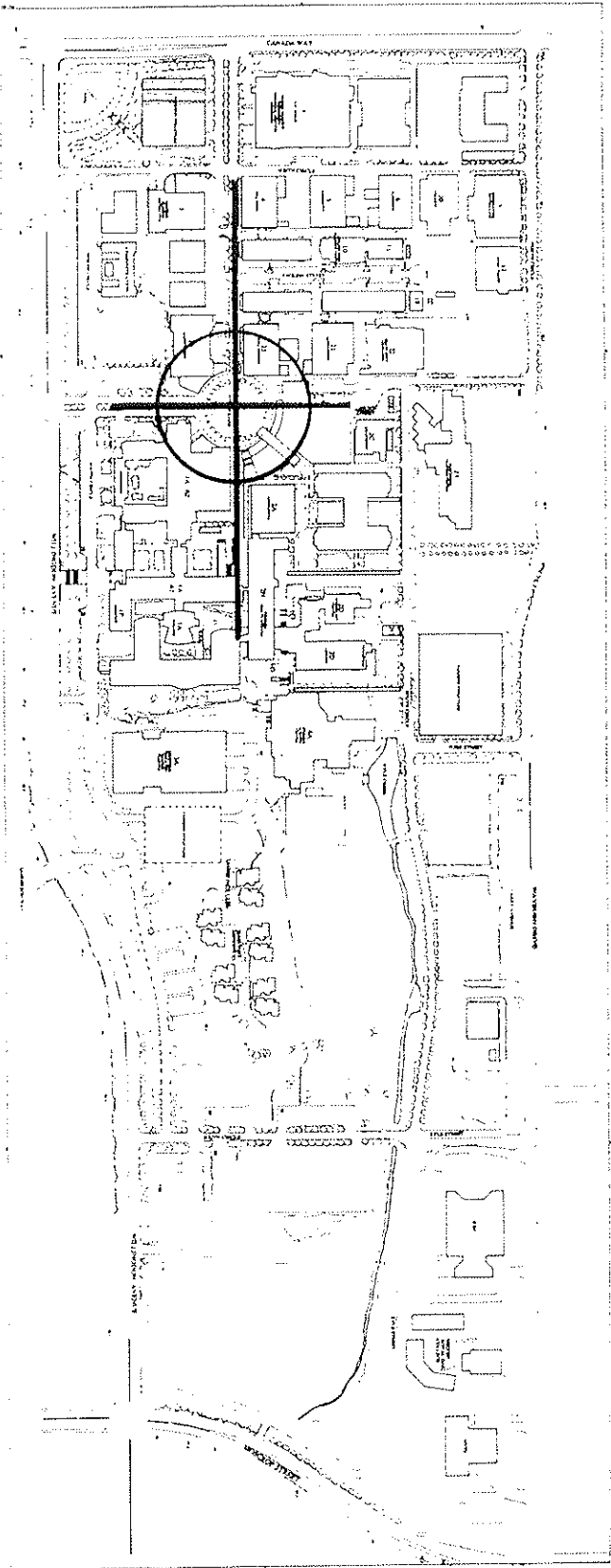
Integrate the Campus Centre proposal with the Program Centre and other central educational facilities.

Rationale:

The lack of a centre is one of the most commonly noted shortcomings of the campus. A centre can improve the quality of daily campus life, provide a locale for special events and help to give B.C.I.T. a strong external image. This recognition has motivated the Student Association proposal for a Campus Centre on the north side of the A1 building. The recommendation of this Plan would support the same objectives and building program but change the location to the site of the 3A building (possibly incorporating or replacing the 3A building subject to a cost-effectiveness study). This site is more geographically central, linked to pedestrian routes. It also can develop a better relation to an outdoor square and is a more appropriate site location for many of the informal functions associated with the Campus Centre.

The development of the proposed Industry Program Centre would logically be linked to the Centre for reasons of centrality, shared food service and other supports and as a means of improving the funding viability for the project.

8. CAMPUS CENTRE



4.9 Pedestrian Movement

Principles:

Develop the ground plane in orderly manner that provides pedestrians with an orienting structure for the campus. The main routes are illustrated in the campus diagram following. The main features are further noted below.

Develop the movement routes from the parking areas to the core campus as main orienting points of entry.

Link all major points of entry to the core with major building entrances and outdoor spaces.

Develop a strong north/south spine from the deck on the west side of the 2N building north, continuing all the way to Canada Way. To achieve this a new bridge link is required from the deck to the new Campus Centre.

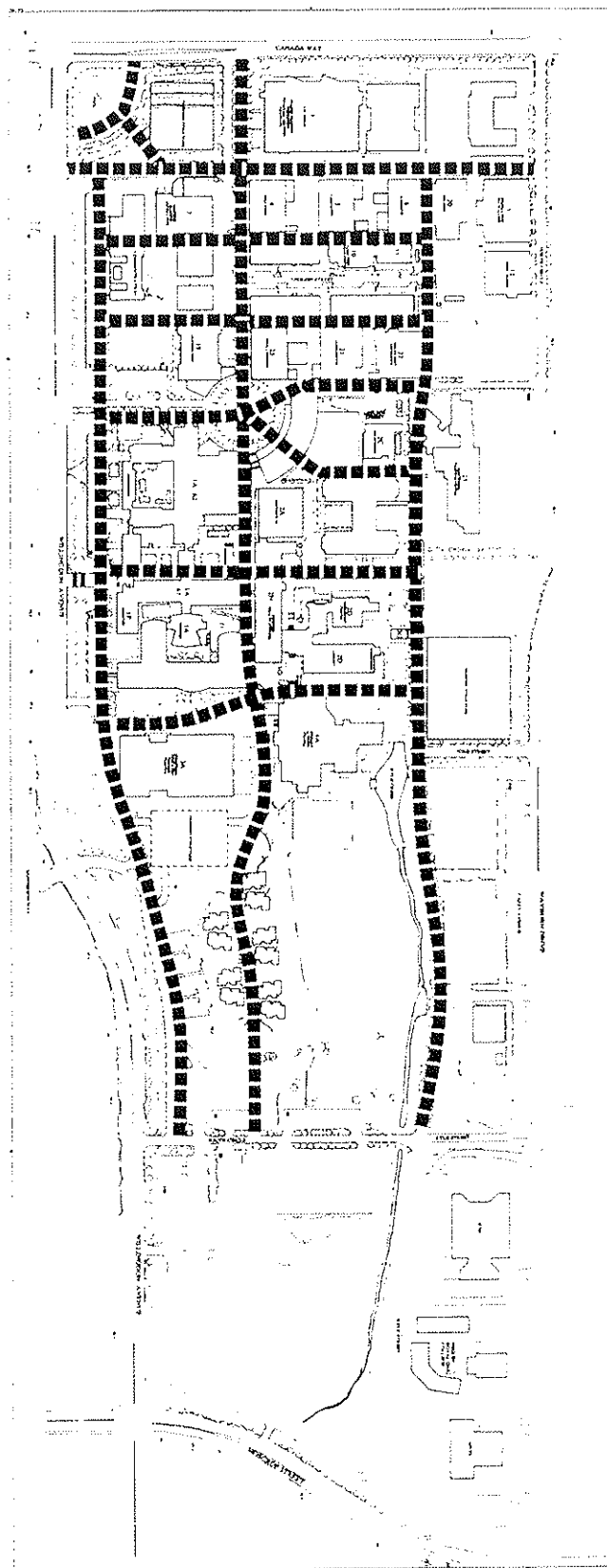
Develop a system of paving, lighting, rain protection and signage to define the main pedestrian routes.

Where appropriate to the building form, develop upper level linked horizontal circulation routes but punctuate these with transparent portions so users can orient themselves to the outdoors.

Rationale:

The system of pedestrian movement is the most important linking and orienting structure for the campus. Buildings should be designed to extend a logical structure. By functional necessity, there is an internal circulation system, but this should be related to the general plane to maintain a recognisable pattern. The north/south spine is a major need of the current campus.

9. PEDESTRIAN ROUTES



4.10 Addresses

Principles:

Develop for each major component an address on the North and South Circles which can be identified when driving. Each address should have a small parking lot and a ground level entrance to the appropriate building.

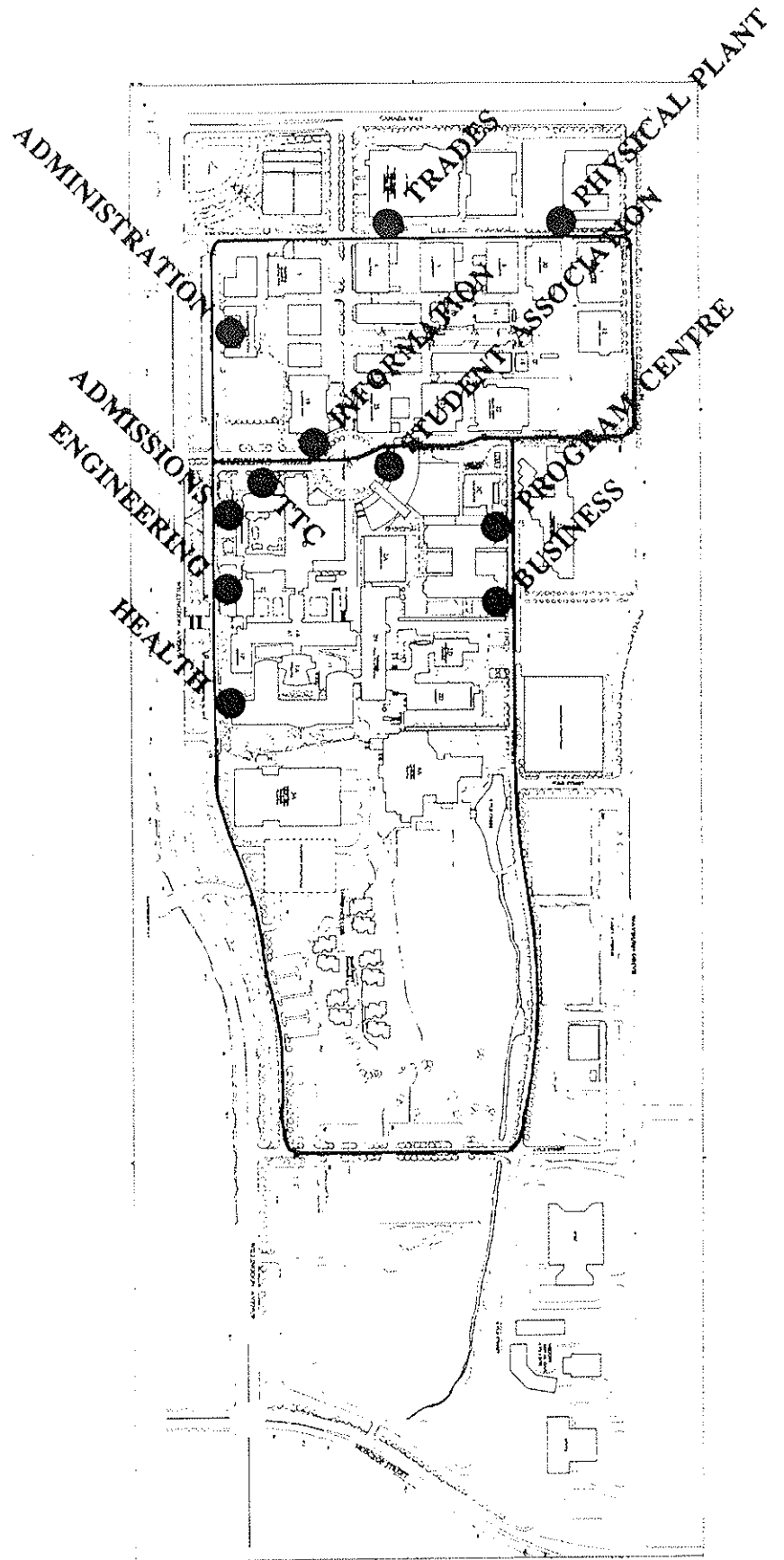
The following are proposed to have such addresses:

- . Administration
- . Admissions/Registration
- . The Four Schools: Business; Engineering Technology, Health Sciences; and, Trades Training
- . The Technology Transfer Centre
- . The Program Centre
- . Physical Plant

Rationale:

The campus is of such a size that allowing major addresses to be identified from the vehicle rings can make the campus more accessible. Small parking areas can give visitors direct access to the main components.

10. ADDRESSES



4.11 Appropriate Work Space

Principles:

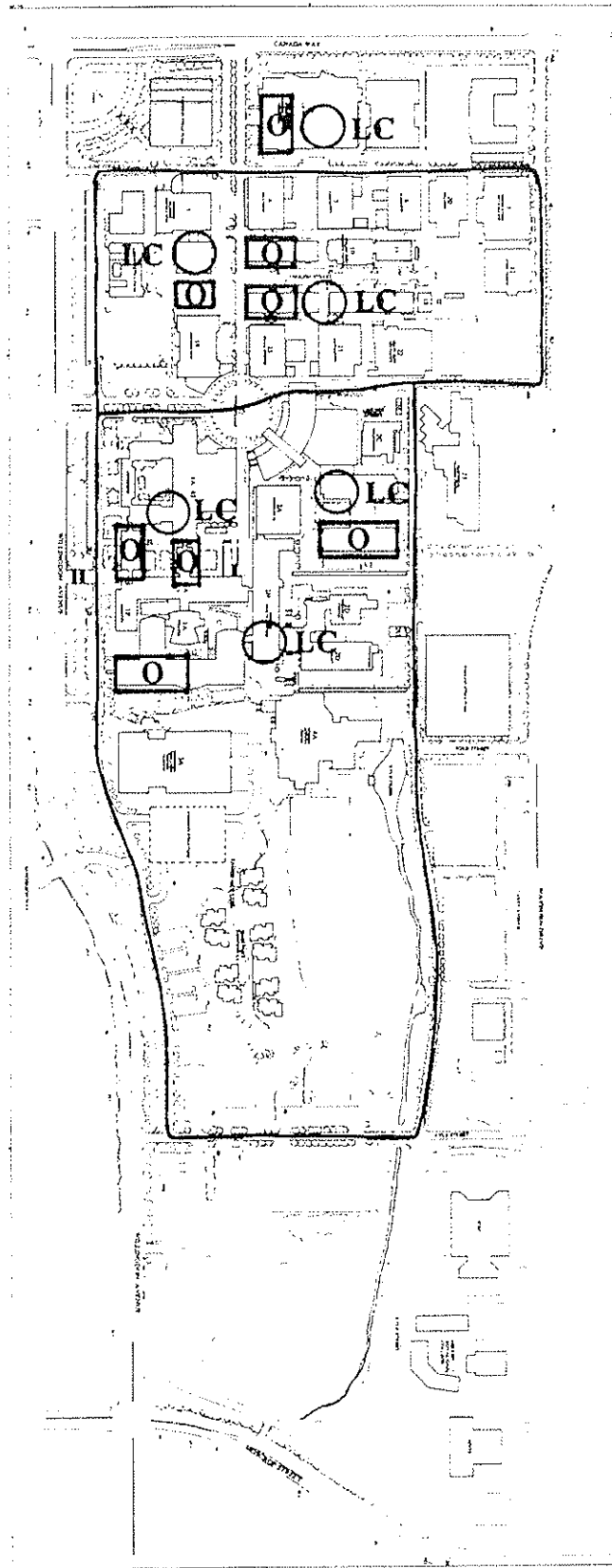
Develop building wings that consolidate faculty offices and support facilities (identified 'O' on plan).

Develop central student learning centres in the core of a discipline's specialised lab facilities (identified 'L.C.' on plan).

Rationale:

B.C.I.T.'s current space inventory appears to have deficiencies in specific work space outside labs/classes. Consolidated wings of faculty offices and associated support space can provide a major improvement to the dynamics of faculty interaction which will support the type of involvement implied by the program directions. While relatively small in the amount of space considered, centres for student learning organised by discipline would provide a desired focus for student project work outside structured class/lab time.

11. APPROPRIATE WORKSPACE



4.12 Classroom/Lecture Centres

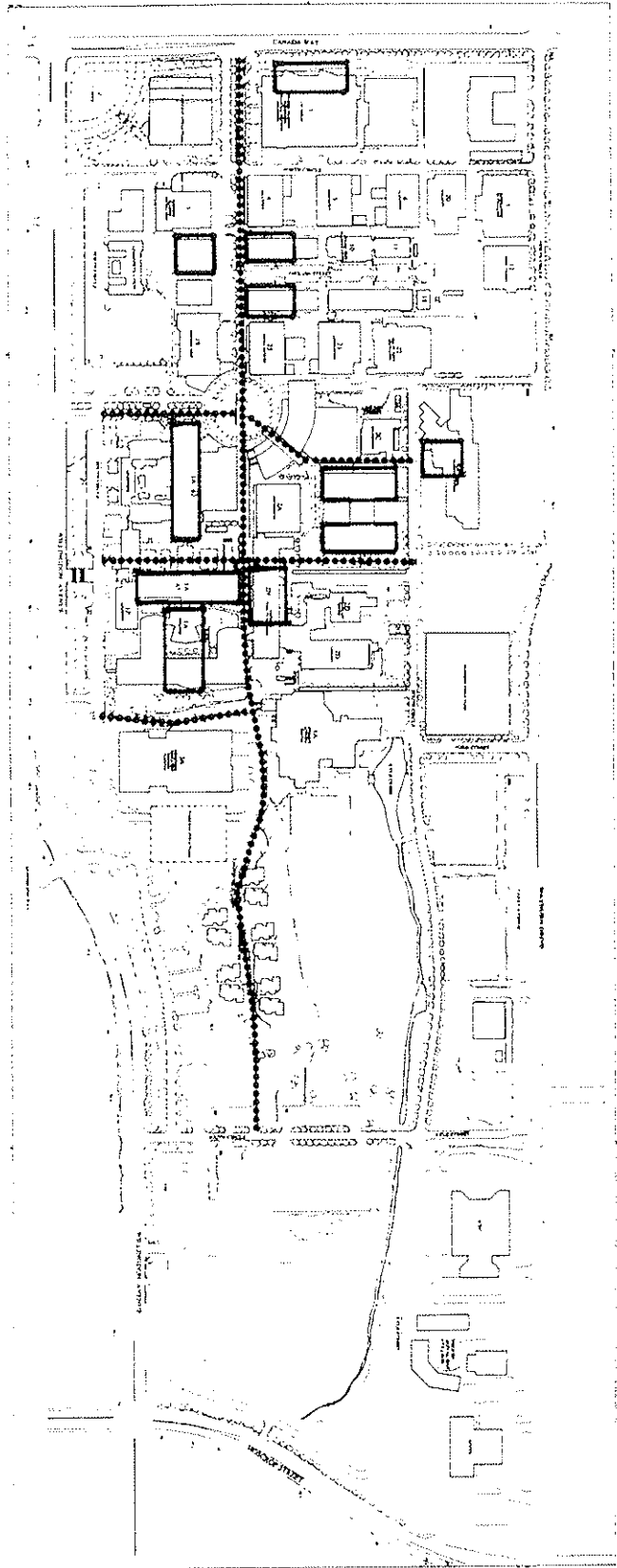
Principle:

Develop nodes of common instructional space at locations that are easily accessible for all users (identified 'C' on plan).

Rationale:

It is in the overall interest of the Institute to maintain a common pool of instructional space. This space is used by a wide range of functions including much of the part time programming so that ease of access is critical. The locations identified either coincide with current concentrations of class/lecture space, or are strategically located on the main pedestrian spines.

12. CLASS LECTURE CENTRES



4.13 Service Functions and Access

Principles:

Consolidate Physical Plant operations on the edge of the central campus area. The B.C.B.C. site would be the ideal and recommended location if feasible.

Relocate the Hazardous Chemical Storage Bunker out of the central area. For reasons of security/supervision, the location should be Physical Plant if possible.

Develop a Central Stores operation which reduces or eliminates the need for semi-trailer trucks to have to access the area in the corner level of the 2N building.

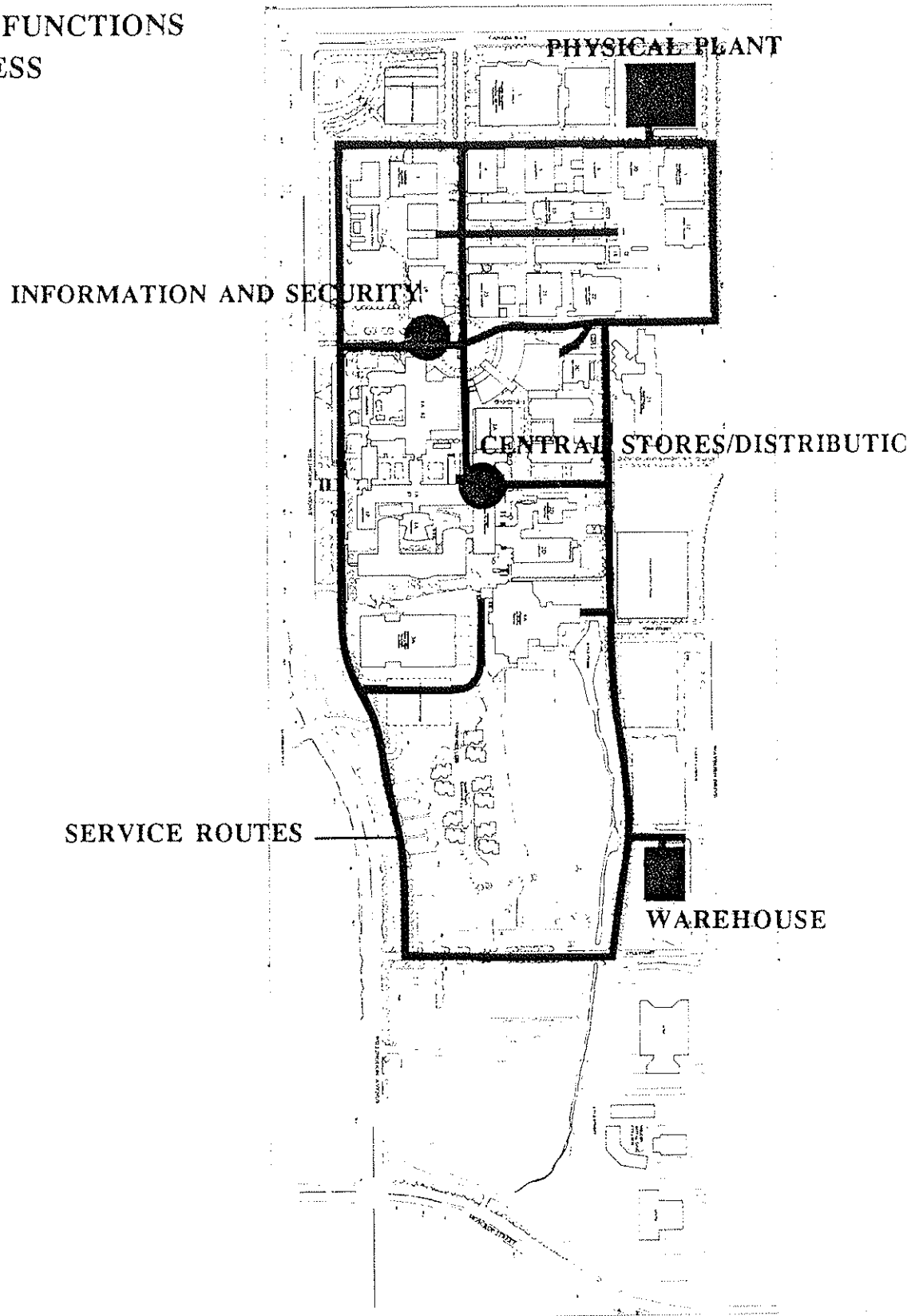
Maintain a system of service vehicle routes but develop these with a character that clearly identifies them as second order routes not to be confused with the North and South Circles. On a daily basis these routes may be primarily pedestrian oriented.

Rationale:

The B.C.B.C. building is ideal for Physical Plant since the existing facilities are appropriate, it is adjacent to one main campus entrance, it is on the edge of the core area and consistent with the proposed Character Area.

A campus the size of B.C.I.T. requires a network of service roads/routes that is of a "finer grain" than the main access rings. As long as the character of these routes is differentiated they do not conflict with the overall campus order. Given current conditions a combined pedestrian/service route is appropriate in many areas of the campus.

13. SERVICE FUNCTIONS AND ACCESS



4.14 Co-ordinated Implementation

Principles:

Define the realisation of the overall B.C.I.T. Master Plan into individual projects of a supportable magnitude which can be planned in detail.

Include in each project aspects that will achieve multiple objectives, i.e. improve the site infrastructure, provide instructional space, provide social/amenity space.

Propose first those projects which will have the largest impact on achieving the development objectives.

Structure the Plan so that as early as possible the campus is upgraded to a basic and sound standard so that maintenance can be routinised.

Ensure that each individual project contributes incrementally to the realisation of the overall Plan. Therefore, building projects must also contain funding for infrastructure and landscaping costs.

Rationale:

The magnitude of overall development is larger than could be supported in a single capital request and, further, the incremental growth reflects the fact that the requirements are based on future directions, not only short term need.

5.0 IMPLEMENTATION

5.1 Project Identification/Phasing

The Master Plan will be advanced by means of a number of individual but complementary projects. Each project requires identification, and considerable further analysis before it can be realistically proposed for funding. In order to establish a preliminary definition of capital projects B.C.I.T. would logically be advancing over the future period of time, the following approach has been taken:

- . Three 5 year periods are considered covering the time assumed to be required to realise the requirements associated with this same approximately fifteen year time frame. Development beyond fifteen years, to the 12,000 F.T.E. enrolment level, is not considered in the cost estimates.
- . Capital projects are considered in four categories:
 - Infrastructure Development
 - Building Renovations/Upgrades
 - New Building Development
 - Site Development
- . An assumed scope of development is assigned to each of the five year periods in each project category. Unit cost assumptions are also assigned and the magnitude of capital project estimated.
- . The assumed scope of work for each time period is outlined in the matrix following.

SCOPE OF WORK MATRIX

Time Period
One

Time Period
Two

Time Period
Three

A. Infrastructure

Water Service

Install additional valves and hydrants to improve fire protection and maintenance procedures

Sanitary Sewers

Redirect flows at Willingdon to Municipal sewage system.

Replace substandard sections of pipe in conjunction with major building developments.

Storm Sewer

Install a new storm water trunk system in conjunction with the development of the ring roads.

Electrical Service

Install a microprocessor based meter to measure future growth in power demand.

Communications Service

Plan and develop an underground telephone and computer network to both meet anticipated demands and remove current code non-compliance. This work should coincide with development of the ring roads and pedestrian pathways.

Sanitary Sewers

Complete replacement of substandard sections of pipe in conjunction with major building development.

**Time Period
One**

**B. Building Upgrade
and Renovations**

Undertake all building upgrade required to achieve basic condition of repair, building code compliance and energy use efficiency.

Undertake all building upgrade required to achieve basic condition of repair, building code compliance and energy use efficiency.

**C. New Building
Development**

Develop a co-ordinated proposal for:

- . The Campus Centre proposal on Site 8 including the Industry Program Centre.
- . A lab/class/office block on Site 1.

The combined gross area required is 14,400 m² assuming Building 2B is retained; additional replacement space would be required if it is not cost effective to retain the existing building.

Develop office wing(s), addition(s) to the 1A Building of approximately 1,900 m².

**Time Period
Two**

Undertake renovations to rationalise space use in conjunction with new development projects. (Magnitude of work required can only be approximate at this stage.)

Develop a lab/class/office block on Site 3 of approximately 10,000 m².

Develop new lab/class/office blocks for the Transportation Centre on Site 7 at approximately 4,050 m² and for the Manufacturing Centre on Site 9 at approximately 5,525 m².

Develop a Day Care Centre on Site 20 at approximately 580 m².

(The priority for projects between the time periods may shift with educational priorities.

**Time Period
Three**

Undertake renovations to rationalise space use in conjunction with new development projects. Magnitude of work required can only be approximate at this stage.)

Develop a new lab/class/office block for the Construction on Site 9 at approximately 2,800 m².

Develop warehouse expansion on Site 7 at approximately 690 m².

Develop an External Associations office building expansion on Site 11. (The timing and feasibility of this project depends on external agencies.)

**Time Period
One**

**Time Period
Two**

**Time Period
Three**

D. Site Development

Develop perimeter landscape concept.

Develop Sanderson Avenue/
Willingdon campus entrances.

Develop/enhance campus entrances except as noted in Period 2.

Extend pedestrian routes with building projects.

Extend pedestrian routes with building projects.

Develop ring roads

Improve open space.

Improve open space.

Develop major pedestrian routes including north/south spine.

Relocate chemical storage bunker.

Develop parking structure.

Develop Campus Centre Square.

Improve open space.

Upgrade surface parking.

5.2 Development Costs

The table following summarises the estimated development costs for the fifteen year time frame. The unit costs have been estimated by Barnett Treharne Yates Ltd. based on comparable cost data. These could be subject to modification when actual design proposals have been prepared. The unit cost estimates include:

- . Basic construction costs.
- . All related connections.
- . Basic furnishings and equipment.
- . An allowance for all soft costs.

The figures are in current (July 1989) dollars with no adjustments for escalation.

BCIT
PROJECT DEVELOPMENT COST ESTIMATES

PROJECT CATEGORY-TYPE	UNIT COST \$ PER	TIME PERIOD ONE (5 YEARS)		TIME PERIOD TWO (5 YEARS)		TIME PERIOD THREE (5 YEARS)		TOTALS FOR ALL TIME PERIODS	
		SCOPE	DEV. COST	SCOPE	DEV. COST	SCOPE	DEV. COST	SCOPE	DEV. COST (\$ 1989)
A. INFRASTRUCTURE:									
WATER SERVICE	NA.		19,500		0		0	0	19,500
SANITARY SEWER	NA.		247,000		78,000		0	0	325,000
STORM SEWER	NA.		1,300,000		0		0	0	1,300,000
ELECTRICAL SERVICE	NA.		13,000		0		0	0	13,000
COMMUNICATIONS SERVICE	NA.		1,950,000		0		0	0	1,950,000
CENTRAL HEATING SYSTEM	NA.		0		0		0	0	0
SUBTOTALS			3,529,500		78,000		0		3,607,500
B. BUILDING UPGRADE/RENOVATIONS:									
BASIC REPAIR-MAJOR BLOCKS	229 M2	93,940 M2	21,512,260	0 M2	0	0 M2	0	93,940 M2	21,512,260
BASIC REPAIR-INDUSTRIAL BLDG	237 M2 ‡	28,260 M2	6,697,620	0 M2	0	0 M2	0	28,260 M2	6,697,620
MINOR USE CHANGE	250 M2 ††	1,630 M2	407,500	1,701 M2	425,125	790 M2	197,500	4,121 M2	1,030,125
MAJOR USE CHANGE	750 M2 ††	815 M2	611,250	850 M2	637,688	395 M2	296,250	2,060 M2	1,545,188
SUBTOTALS			29,228,630		1,062,813		493,750		30,785,193
C. NEW BUILDING DEVELOPMENT:									
SMALL INFILL	1,650 M2	1,900 M2	3,135,000	0 M2	0	M2	0	1,900 M2	3,135,000
MAJOR DEVELOPMENT	1,500 M2	14,400 M2	21,600,000	17,005 M2	25,507,500	7,900 M2	11,850,000	39,305 M2	58,957,500
SUBTOTALS			24,735,000		25,507,500		11,850,000		62,092,500
D. SITE DEVELOPMENT:									
NEW CAMPUS ENTRANCES	NA.		500,000		280,000		0	NA.	780,000
RING ROADS	NA.		1,531,400		0		0	NA.	1,531,400
PEDESTRIAN PATHWAYS	NA.		1,200,000		600,500		312,000	NA.	2,112,500
CAMPUS CENTRE SQUARE	NA.		2,889,900		0		0	NA.	2,889,900
OPEN SPACE	NA.		900,000		400,000		400,000	NA.	1,700,000
KYLE CREEK UPGRADE	NA.		195,000		0		0	NA.	195,000
PERIMETER LANDSCAPING	NA.		308,100		0		0	NA.	308,100
SURFACE PARKING	NA.		1,660,100		0		0	NA.	1,660,100
PARKING STRUCTURES	9,000 STL		0		0	700 STL	6,300,000	700 STL	6,300,000
CHEMICAL STORAGE RELOCATION	NA.		0		100,000		0	NA.	100,000
SUBTOTALS			9,184,500		1,380,500		7,012,000		17,577,000
DEVELOPMENT TOTALS (\$ 1989)			66,677,630		28,028,813		19,355,750		114,062,193

‡ RECLADDING AND ASBESTOS REMOVAL ASSUMED
 †† AREAS ASSUMED AT 10% AND 5% OF NEW CONSTRUCTION RESPECTIVELY

5.3 Additional Tasks

The product of this study, the Campus Master Plan, also suggests itself as a starting point for additional tasks based on the Plan. A range of these are outlined below:

- .1 The Campus Master Plan needs to be presented, reviewed and hopefully endorsed by all major internal and external authorities. If this occurs successfully it then requires official sanction by the B.C.I.T. Board so as to become an effective guiding document.
- .2 The Master Plan proposes annexing two parcels of land on Canada Way controlled by B.C.B.C. and the Department of Highways. Initiating this process is necessary in support of implementing the Plan.
- .3 The initial capital project(s) for new building development require(s) definition including a detailed analysis of program requirements and a more specific cost assessment.

A revised proposal for the Campus Centre building is suggested in concert with the Student Association. It is recommended that an integrated approach to food service operations be investigated and that the concept of the Industry Program Centre be added to this project.

A lab/class/office block on Site 1 is also considered to be an early development project which will ultimately allow for the relocation of Business activity but will also provide staging space that will allow some reorganising of space use in Building 1A by Engineering and Health.

- .4 An interim accommodation plan is required so that Site 1 can be cleared of portable buildings. This is likely to use the Inglis Building and possibly suggests early timing for the office wings proposed for Site 2, attached to Building 1A.

Similarly, a short term accommodation/renovation plan is required to meet changing needs in advance of any new space being available through development.

- .5 A schedule of building maintenance upgrade projects is required to restore the buildings to a sound state of repair.
- .6 In conjunction with item #5 a number of separate detailed studies beyond the scope of the Master Plan should be undertaken. These include:
 - . Detailed study of Kyle Creek, its unprotected banks, the settling pond and the outflow weir.
 - . Lighting level study checking light levels.
 - . Energy conservation, mainly checking light sources.

- . Fire alarm compliance study checking compliance of fire alarm systems with present codes.
 - . Controls/systems feasibility of a central campus DDC/EMCS system.
 - . Central plant impact of reduction of central hot water system operating temperature on individual building heating system performance.
 - . Ventilation, fresh air quantities for different building occupancy types in light of present code requirements.
 - . Energy conservation, building construction/insulation, equipment efficiency, operating methods, heat recovery from large air exhaust volumes, etc.
- .7 Site development projects require further consideration and design. It is particularly recommended that the Campus Centre open space and the North and South Circles be given priority, as these will have a very significant impact on improving the overall campus image.
- .8 Development of overall design guidelines for the campus based on the Master Plan and the identified campus character areas in order to insure an orderly and integrated development.

APPENDIX A

Development Cost Estimate Summaries
Barnett Treharne Yates Ltd.

BTV

Barnett
Treharne
Yates (B.C.) Limited
Quantity Surveyors

600-2695 Granville Street
Vancouver B.C. V6H 3H4
Tel: (604) 734-3126
Fax: (604) 734-3110

Principals
Brian P. Treharne
Joe M.A. Pexko

MEMORANDUM

TO: Mr. Joost Bakker,
Hotson Bakker Architects

FROM: Brian Treharne

SUBJECT: B.C.I.T. Masterplan

DATE: August 3, 1989

Vancouver

Calgary

Edmonton

Winnipeg

Los Angeles

Our unit cost estimate for general basic repairs as required per your assessment of the condition of the existing buildings is \$235.00/m² in current 1989 dollar costs. This unit cost allowance includes 20% for soft costs, but excludes furnishings and equipment.

We have developed a unit cost/m² matrix for other (change in use) renovations, as follows:

	SCOPE OF RENOVATION			GENERAL SPACE
	<u>Minor</u>	<u>Medium</u>	<u>Major</u>	<u>TYPE</u>
Low	167	333	500	Shops
Medium	250	500	750	Classrooms/Admin.
High	333	667	1000	Laboratories

These costs also include soft costs and, if done in conjunction with basic repairs, might be less.

BPT:mmk

BTY

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Yates (B.C.) Limited
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Tel : (604) 734-3126
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Principals
Brian P. Treharne
Joe M.A. Rexab

MEMORANDUM

TO: Mr. Joost Bakker,
Hotson Bakker Architects

FROM: Brian Treharne

SUBJECT: B.C.I.T. Masterplan

DATE: August 2, 1989

Vancouver
Oregon
Edmonton
Technology
Los Angeles

We would like to comment herein on the current 1989 unit cost of \$1,250.00/m² we discussed yesterday. Please note that this number was derived from known costs for the new Kwantlen College, Surrey Campus and projected for their proposed Richmond Campus, as follows:

- Construction (excluding site development)	\$ 1,000.00/m ²
- Furnishings & equipment - 10%	100.00/m ²
- Professional fees & disbursements - 10.5%	105.00/m ²
- Supplementary costs - 2%	20.00/m ²
- Round-off to nearest \$50.00	<u>25.00/m²</u>
Total	\$ 1,250.00/m² =====

However, it should be pointed out that recent high school construction costs have been in the region of \$1,200.00/m² for construction, including some site development. We note that \$1,076.00/m² (\$100/sf) was used in the November 1988 facility renewal report. The rule of thumb for F.F. & E. is 10 to 15% of new construction and the figure above is based on the low end of this range. Also, there are a number of specific exclusions e.g. site clearance and preparation, project management costs, development cost charges, or other municipal levy's, special consultants costs.

BTY

-2-

Based on the foregoing, we therefore recommend that the unit cost for new building development be amended to \$1,500.00/m², as follows:

	- Construction	\$ 1,200.00/m ²
	- Furnishings & equipment - 10%	120.00/m ²
	- Professional fees & disbursements - 10.5%	126.00/m ²
	- Supplementary costs - 2%	24.00/m ²
Vancouver	- Contingency for items not included above - 2.5%	<u>30.00/m²</u>
Calgary	Total Amount	\$ 1,500.00/m² =====
Edmonton		

The cost for infill space would probably be in the range of 10 to 20% higher i.e. \$1,650.00 to \$1,400.00/m².

It should also be reiterated that these are current 1989 dollar costs and do not include any allowance for future cost escalation.



BPT:mmk

BTY

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Treharne
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Principals
Brian P. Treharne
Joe M.A. Rekab

MEMORANDUM

TO: Mr. Joost Bakker,
Hotson Bakker Architects

FROM: Brian Treharne

SUBJECT: B.C.I.T. Masterplan

DATE: August 1, 1989

Vancouver

Enclosed please find site development estimate cost summary.

Calgary

Please note that these costs are in current 1989 dollars.


Edmonton

The above grade parking structure cost per N.D. Lea Consultants Ltd. is \$7,000.00 per stall. However, we would recommend a higher cost of \$9,500.00 per stall to include access ramps, stairs, elevators, lighting, etc.

Winnipeg

Los Angeles

We have also included and recommend that you carry at least a 10% design contingency, in addition to the contractor's mark-up, and the itemized allowance for miscellaneous site hardware, etc.



BPT:mmk

Encls.

V1684M.BT

PROJECT: B.C.I.T. Masterplan

DATE: Aug. 1, 1989

SHEET: 1 of 3

SITE DEVELOPMENT - COST SUMMARY

<u>1. Open Space</u>	<u>\$ Amount</u>	<u>\$ Totals</u>
- Major landscape with sculptural feature (\$100.00 cash allowance)	260,000	
- Berms, ground cover, etc.	100,000	
- Repair & enhance existing	400,000	
- New landscaped courtyards	240,000	
- Clear existing bush & replace with lawn and trees	190,000	
- Miscellaneous site furnishings, etc.	<u>119,000</u>	1,309,000
<u>2. Campus Square</u>		
- Site preparation, including demolition and removal	63,500	
- Pavers on sand base	336,000	
- Exposed aggregate concrete paving	148,800	
- Concrete steps	8,000	
- Asphalt paving/parking	52,500	
- Concrete curbs	24,000	
- Canopy structure, including glazing and supports	1,000,000	
- Secondary canopy system	250,000	
- Clock tower - allow	50,000	
- Soft landscaping/planting	45,000	
- Trees	30,000	
- Sodding	13,500	
- Miscellaneous items, including site hardware, handrails, etc.	<u>201,700</u>	2,223,000
<u>3. Surface Parking</u>		
- Resurface existing parking	217,000	
- New surface parking	360,000	
- Concrete curbs	14,000	
- Lighting	250,000	
- Storm drainage	80,000	
- Soft landscaping	240,000	
- Miscellaneous items - allow	<u>116,000</u>	1,277,000

QUANTITY
SURVEYORS

APPENDIX B

Civil, Structural, Electrical and Mechanical Overviews
Reid Crowther & Partners Ltd.

PROJECT: B.C.I.T. Masterplan

DATE: Aug. 1, 1989

SHEET: 2 of 3

SITE DEVELOPMENT - COST SUMMARY - Continued

4.	<u>Perimeter Landscaping</u>	<u>\$ Amount</u>	<u>\$ Totals</u>
	- Street trees	120,000	
	- Make good & repair sodding	47,400	
	- Soft landscaping	48,000	
	- Miscellaneous - allow	<u>21,600</u>	237,000
5.	<u>Ring Roads</u>		
	- Resurface existing	344,000	
	- Street lighting	280,000	
	- Street trees	320,000	
	- Sodding	77,000	
	- Signage - allowance	50,000	
	- Miscellaneous items - allow	<u>107,000</u>	1,178,000
6.	<u>New Entrances and Access Roads (Per N.D. Lea Consultants Ltd.)</u>		
	- Road construction	313,600	
	- Curbs & gutters	27,650	
	- Street lighting	62,100	
	- Sidewalk	27,650	
	- Street painting	5,000	
	- Storm sewers	24,000	
	- Contingency allowance	<u>140,000</u>	600,000
7.	<u>Parking Structure (Per N.D. Lea Consultants Ltd.)</u>		
	- Above grade cost per stall	7,000	n/a
8.	<u>Pedestrian Pathways</u>		
	- Site preparation	34,000	
	- Exposed aggregate concrete paving	326,000	
	- Lighting to new paths	217,000	
	- Lighting to existing	30,000	
	- Trees	48,000	
	- Canopy, including structural supports	822,000	
	- Miscellaneous items - allow	<u>148,000</u>	<u>1,625,000</u>

PROJECT: B.C.I.T. Masterplan

DATE: Aug. 1, 1989

SHEET: 3 of 3

SITE DEVELOPMENT - COST SUMMARY - Continued

	<u>\$ Amount</u>	<u>\$ Totals</u>
<u>Sub-total Items 1 - 6 & 8</u>		\$ 8,072,000
9. Contractor's overhead & profit (10%)		<u>807,200</u>
		\$ 8,879,200
10. Design contingency allowance (10%)		<u>887,800</u>
<u>TOTAL AMOUNT</u>		<u>\$ 9,767,000</u>

NOTES:

- A.) All costs in current 1989 dollars.
- B.) Cost excludes professional fees for design and supervision.
- C.) Parking structure costs to be added.
- D.) Chemical storage relocation - cost to be added.

APPENDIX B

Civil, Structural, Electrical and Mechanical Overviews
Reid Crowther & Partners Ltd.

BCIT MASTER PLAN

CIVIL OVERVIEW

The storm sewer system has been found to be substandard throughout the campus with the exception of the area around the Maquinna Residences. One solution to the problem would be to install a new storm water trunk system to take some of the pressures off the two existing trunks. The cost of such a new system has been estimated at \$600,000. Once this trunk is in place, the local storm services could be improved gradually as the campus redevelops. As the nature of this redevelopment is unknown, an estimate for site servicing can only be roughly estimated at an additional \$400,000.

The sanitary sewage system is at or exceeding capacity during peak flows. As some of the flows responsible come from outside the site, it is recommended that these flows be cut-off at Willingdon and redirected to the Municipal sewage system. The estimated cost of this work is \$150,000. Individual sections should also be examined and pipes replaced where necessary. The replacement of substandard sections of pipe, which could be replaced as redevelopment occurs, is estimated to cost an additional \$100,000.

The water distribution system is laid out adequately for the site. It is recommended to install two (2) additional hydrants and six (6) additional valves to improve fire protection and maintenance procedures. The estimated cost of this is \$15,000.

BCIT MASTER PLAN

ELECTRICAL OVERVIEW

For electrical installation, there is still some capacity for expansion in the large workshop type buildings. However, very limited expansion capacity exists for most of the classroom blocks. In general, installations such as conduit, panel distribution centres and raceway systems are in satisfactory condition. The area that needs attention is lighting. As recommended, group re-lamping is worth considering. A new raceway system will be required for future expansion of communication facilities. If there is addition or modification to be done on older buildings, it is advisable to investigate further the related supply system and make improvements as appropriate.

For costing purposes it has been assumed that a parallel underground duct system is required to separate power and communications and to provide for growth. The length assumed required is 1,500 metres at a cost in the order of \$1,000/metre.

BCIT MASTER PLAN

MECHANICAL OVERVIEW

1. H.V.A.C. control systems in general are outdated and do not provide good energy efficient space comfort control. A form of centralized Direct Digital Control Campus Energy Management Control System should be investigated.
2. With the exception of the welding shop, workshops are energy inefficient. No provision is made for return of large exhaust air quantities (dust collection etc.) after filtration. Lack of make-up air causes also uncomfortable space conditions as a result of cold air infiltration. Solution: Provide make-up air with heat recovery (optional), where appropriate.
3. Most buildings with air handling systems do not have return air fans, which usually results in building pressure problems, particularly with fresh air intake at 100% (free cooling). Solution: Add fans, where appropriate.

BCIT MASTER PLAN

STRUCTURAL OVERVIEW

This is a broad-brush report on the structural condition of the existing BCIT buildings. Detailed checking of the structural stability and adequacy of the elements is not within the scope.

Efforts have been made to cover all parts of the structures. However, there are still some areas where the structural elements are concealed by architectural finishes such as false ceiling, wall and floor finishes.

From the structural point of view, the structures within the campus are in good condition. Most structures in the southern portion of the campus are reinforced concrete. They require very little maintenance. There are some locations, such as J.W. Inglis Building, where some mild steel brackets for supporting the other precast concrete elements are badly rusted due to the leakage of the roof. The movement joint between the Business Health Science Building and Building 1A is deteriorating due to the relative movement of the two buildings. Repair should be reviewed and should be carried out before this condition becomes worse. Hairline cracks appearing at some reinforced concrete columns of Building 1A are not common. Further investigation of this condition is recommended. Interior walls mostly consist of masonry and dry wall. Relocation of such walls is feasible although checking of the supporting elements will be necessary before doing so.

Structures in the northern portion of the campus are predominantly steel braced frames and their condition is generally good. As most of these structures are 1 storey work sheds, flexibility of relocation of the non-structural partitions is possible. Besides, if renovations and alterations are required, these structures will also provide better flexibility.

Building Upgrade/Renovations

For purposes of estimating costs for upgrading existing buildings on campus to bring them to a high standard of performance the following assumptions were used:

Basically two categories of buildings were assumed:

1. Sheds/workshops.
2. Classroom/lab blocks.

Scope of Work Assumptions

1. Sheds:

Structural

- . recladding.
- . some roof leaks.
- . some asbestos removal.
- . minor repairs.

Electrical

- . group relamping.
- . fire alarm system upgrading and combined with centralised system.

Mechanical

- . HVAC control systems.
- . no provision for return of large exhaust air quantities, provide make-up air.

Interiors

- . general upgrade.

2. Block Buildings

Structural

- . some roof leaks.
- . some asbestos removal.
- . minor repairs.

Electrical

- . group relamping.
- . fire alarm system upgrading and combined with centralised system.

Mechanical

- . HVAC control systems.
- . building pressure problems relieved with new return air fans.

APPENDIX C

Road Cost Estimates
Lea Associates, B.C.I.T.

